

## Glossary

To look up a specific word in the Glossary, select a letter and then select the word. To move through the alphabet, use Browse.

To select a letter using the mouse, point to a green letter with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

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To select a definition using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

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**abbreviated cell address**

A cell address that contains a cell's column letter and row number, but not its worksheet letter. You use an abbreviated cell address to refer to a cell in the current worksheet.

**absolute reference**

In a formula, a reference to a cell or a range that always refers to the same cell or range when you copy the formula. Use absolute references in formulas when you do not want a cell or range address to change when you copy the formula.

In an absolute cell reference, a \$ (dollar sign) precedes the worksheet letter, column letter, and row number (\$A:\$A\$4). In an absolute range name, a \$ (dollar sign) precedes the range name (\$INTEREST).

For example, if you copy the formula  $+\$A\$1*B10$  entered in cell C10 to C11 and C12, the formula changes to  $+\$A\$1*B11$  and  $+\$A\$1*B12$ . The absolute reference ( $\$A\$1$ ) does not change.

**active area**

The area bounded by cell A1 and the lowest and rightmost nonblank cell in the current worksheet. Use END HOME to find this cell. The size of the active area affects the amount of memory a worksheet requires.

**active file**

An open worksheet file.

**active window**

The window in which you are working. Only one window can be active at a time.

**add-in**

A special program, created by Lotus and other software developers, that you can use with 1-2-3 to extend its capabilities.

**address box**

The left area of the edit line, which indicates the full cell address of the current cell.



**adjustable cell**

One or more cells that the Solver can change to solve a problem. Adjustable cells must contain numbers and cannot be protected.

**anchor cell**

The cell at which you begin to highlight a range.

**ANSI (American National Standards Institute)**

A set of character codes used by Windows. The ANSI character set contains 256 character codes. The first 128 ANSI characters (0-127) are the same as the ASCII character set.

**answer**

In the Solver, a solution the Solver finds for a problem. An answer can be the optimal answer, the best answer, or a sample answer.

**area graph**

A line graph in which a different pattern or color fills the area between each plotted line.

**argument**

Text, a value, location, or condition that you provide for an @function or macro command. For example, in the formula @SUM(A1..A10), the argument is A1..A10. In the macro {BRANCH TOTALS}, the argument is the range name TOTALS.

**argument separator**

A , (comma), ; (semicolon), or . (period) that separates one argument from another in an @function or macro command, and one range from another in some commands. Commas and semicolons are the initial default argument separators. A ; (semicolon) is always a valid argument separator, but you can set either . (period) or , (comma) as an argument separator using Tools User Setup International.

**arithmetic operator**

A symbol in a formula that indicates the arithmetic relationship between two values or the type of operation being performed: + (addition), - (subtraction), \* (multiplication), / (division), ^ (exponentiation).



**ASCII (American Standard Code for Information Interchange)**

A standard set of character codes many computers and devices use to create text. LMBCS (Lotus Multibyte Character Set) and ANSI (American National Standards Institute) include the ASCII character set.

**@function**

A formula built into 1-2-3 to perform a specialized calculation automatically. You can use an @function by itself as a formula, combine it with other @functions and formulas, or use it in a macro.

There are eight categories of @functions: database, date and time, financial, logical, mathematical, special, statistical, and string.

**attempt**

In the Solver, a result that the Solver finds that does not satisfy one or more constraint formulas.

**autoexecute macro**

A macro named \0 (backslash zero) that 1-2-3 executes automatically if the Run autoexecute macros option in Tools User Setup is selected when you open a file that contains the \0 macro.

**axis**

A vertical or horizontal reference line in a graph, usually called x-axis, y-axis, or 2nd y-axis, against which 1-2-3 plots numeric values or adds labels that identify data you are graphing.

**axis title**

Text that describes the x-axis, y-axis, or 2nd y-axis.

**axis-unit exponent**

In a graph, the power of ten by which numbers along the axis scale must be multiplied to reflect the values you are graphing.

**axis-unit name**

In a graph, text that describes the axis scale (for example, Thousands).



**background recalculation**

A feature that lets you continue working in the worksheet while 1-2-3 recalculates formulas, if Tools User Setup Recalculaton is set to Automatic.

**Backsolver**

Use Tools Backsolver to make the result of a formula in a cell equal to a value you specify.

**backup file (.BAK and .FMB)**

A file that 1-2-3 creates when you use File Save As or File Extract To and select Backup to save a file with an existing file name.

For example, the version of SALES.WK3 on disk is renamed SALES.BAK, and the version currently in memory is saved as SALES.WK3. The backup version of the format file (used to store formatting information associated with a worksheet file) is saved as SALES.FMB and the current format file is saved as SALES.FM3.

**bar graph**

A graph that represents values as a set of bars that are evenly spaced along the x-axis. Each bar represents a value in the range you are graphing.

**binding constraint**

In the Solver, a constraint formula that is satisfied at its most limiting condition for the current answer. For example, if the constraint formula is  $+B6 \geq 5$ , and the Solver adjusts the value in B6 to be 5, the constraint is binding for the answer.

**blank cell**

A cell that contains no label-prefix character, letters, numbers, or spaces.

**border**

In a worksheet, the outline you define along one or more edges of a selected cell or range. In a window, the outline of the window, which is highlighted when the window is active. In a graph, the lines around the graph data.

**bounding box**

A rectangle that outlines each object you add in a Graph window. The bounding box does not print and is visible only when you move an object or change the size or shape of an object in a Graph window.



**branch**

A transfer of macro control to another macro routine. Unlike subroutine calls, branches do not return control to the original macro.

**byte pointer**

A place marker that moves by bytes in a text file. 1-2-3 uses the byte pointer in some of the file-manipulation macro commands.

**cancel**

To abandon a command before completing it.

## Cancel button



Appears in the edit line to the left of the contents box when you enter data. Click the Cancel button to cancel an entry and return 1-2-3 to READY mode.

In a dialog box, the Cancel command button closes the dialog box and cancels the command.

**cascade menu**

A menu that displays additional commands from a pulldown or cascade menu. If an arrowhead follows a command name on a pulldown menu, a cascade menu appears when you choose the command.

**cell**

The basic unit of a 1-2-3 worksheet. The intersection of a column and a row forms a cell. You enter and store data in a cell.

**cell address**

The location of a cell, identified by worksheet letter, column letter, and row number; for example, A:A1.

**cell contents**

The number, label, or formula stored in a cell. You see the cell contents in the edit line when the cell pointer is on the cell.



**cell format**

The way 1-2-3 displays values on the screen. A number's displayed value may differ from the actual value entered in the cell depending on the cell format. For example, the entry 25.451 may appear as \$25.45, 2545%, or 25.4.

**cell pointer**

The rectangular highlight in the worksheet that marks the current cell.

**cell reference**

The address or range name of a cell used in a formula. Cell references can be absolute, relative, or mixed.

**character set**

The set of letters, numbers, and special characters that a program can display, print, and store in files. 1-2-3 for Windows stores characters in the Lotus Multibyte Character Set (LMBCS), but displays and prints characters in the ANSI (American National Standards Institute) character set.

Windows uses the ANSI character set. If Windows cannot represent a LMBCS character, a fallback character will appear.

**check box**

In a dialog box, the box that turns the associated option on and off. When an X appears in the box, the option is on. When the box is blank, the option is off. When the box is filled, 1-2-3 cannot determine the state of the option for the current selection.

To change the check box for a selected option, click the check box, press the space bar, or press the underlined letter.

**circular reference**

A formula that refers to itself, either directly or indirectly. For example, a circular reference occurs if you enter the formula `+B1+1` in cell B1. When a formula contains a circular reference, 1-2-3 displays CIRC in the status line. To identify the location of the circular reference, choose About 1-2-3 from the Help menu.

**click**

To press the mouse button and quickly release it.

**Clipboard**

A temporary storage area used by Windows to copy information from one location to another. 1-2-3 for Windows uses the Clipboard to temporarily store data when you use Edit Cut or Edit Copy. Use Edit Paste to paste the Clipboard contents into the 1-2-3 window or another application in Windows.



**collating sequence**

The order 1-2-3 uses to arrange entries beginning with letters, numbers, symbols, or blank cells when you sort data using Data Sort. Use Install to change the collating sequence.

**column**

A vertical block of 8,192 cells in a worksheet. A column is one cell wide and runs the entire length of the worksheet. For example, column B contains cells B1 through B8192. A worksheet contains 256 columns, and each column is identified by a letter or letter combination from A to IV.

**column letters**

The letters (A-Z, AA-AZ, BA-BZ, and so on through IV) in the worksheet frame that identify a worksheet column. Each worksheet contains 256 columns. The number of characters you can display in a column depends on the font you use.

**column width**

The number of characters that 1-2-3 can display in a column. The initial column width is 9 characters, but you can assign a column width from 1 to 240 characters.

**command**

An instruction you give 1-2-3. Commands are listed in menus and appear as buttons in dialog boxes. To complete some commands, you choose commands from menus and select options and enter specific information in dialog boxes.

If an ... (ellipsis) follows the command name, a dialog box appears when you choose the command. If an arrowhead follows the command name, a cascade menu appears when you choose the command.

**command button**

In a dialog box, an oblong button labeled with a command. The command is carried out when you click the button, press ENTER when the button is selected, or press the key corresponding to the underlined letter in the command name.

**compose sequence**

A series of keystrokes beginning with ALT+F1 (COMPOSE) that you use to produce a character that is not on your keyboard.

You can use a compose sequence to produce any character in the Lotus Multibyte Character Set (LMBCS). Windows displays and prints characters in the ANSI character set, which includes many characters in the LMBCS character set. If Windows cannot represent a LMBCS character, a fallback character will appear.

**concatenate**

To join pieces of text using & (ampersand), the text operator, within a text formula. The text formula + "Sales "&"Totals" concatenates the text inside the quotation marks to produce the label Sales Totals.



**configuration setting**

A setting from Tools User Setup or Window Display Options that 1-2-3 stores in the 1-2-3 configuration file (123W.INI) when you select Update.

## **Confirm button**



Appears in the edit line to the left of the contents box when you enter data. Click the Confirm button to enter data in a cell and return 1-2-3 to READY mode.

In a dialog box, the OK command button confirms the command and closes the dialog box.

**constraint**

In the Solver, a logical formula each Solver answer must satisfy. Constraint cells can use the following logical operators: > < >= <= or =. They cannot use <>, #AND#, #NOT#, or #OR#.

**contents box**

The right area of the edit line, which is the fourth line from the top of the 1-2-3 window. An entry you are typing or editing appears in the contents box until you confirm it or cancel it.

## **Control menu box**



The box located in the left corner of the top line of a window or dialog box. The Control menu displays commands for moving, sizing, and closing the window, and for switching to another Windows application, or to another window in 1-2-3. The Control menu in a dialog box lets you move and close the box.

**control panel**

The four lines at the top of the 1-2-3 window: the title bar, menu bar, format line, and edit line. The control panel displays the product name, the menu items, the formatting description of the current cell, the current mode, the address of the current cell, and the cell contents.

**criteria**

Values, labels, formulas, @functions, or logical expressions that you enter in a criteria range. In Data Query, 1-2-3 uses the criteria to select records in a database table.

In database @functions, the argument *criteria* is the address or name of the criteria range.

**criteria range**

The range in which you enter criteria when you use Data Query or database @functions. The criteria range must contain at least two rows. The first row lists some or all of the field names from a database table; the second and any subsequent rows contain the criteria. The criteria range cannot be a 3-D range.

Criteria are values, labels, formulas, @functions, or logical expressions that you enter in a criteria range to select records with Data Query or perform calculations with database @functions. In database @functions, the argument *criteria* is the address or name of a criteria range.



**current cell**

The cell in the worksheet that contains the cell pointer. The next selection, entry, or edit affects the current cell. The address of the current cell appears in the address box in the edit line.

**current directory**

The directory that 1-2-3 automatically uses during a session to save, read, or list files. The current directory is the directory from which you started 1-2-3 or the directory you specified with Tools User Setup.

**current file**

The file that contains the cell pointer.

**current graph**

The graph displayed in the active Graph window.

**current selection**

The highlighted cell, range, or worksheet(s), which the next command will affect. In a graph, the current selection is the object marked by handles or another symbol, which the next command will affect.

**current worksheet**

The worksheet that contains the cell pointer.

**data label**

The label you assign to a bar or point in a graph.

**data point**

The coordinates of a value plotted in a line graph, XY graph, HLCO graph, or mixed graph. Data points are usually connected by line segments and may be marked by a symbol. Use Chart Options Lines to display data points as symbols.



**data range**

A range of data that is plotted in a graph.

**data series**

A graphical representation of a data range; for example, a set of bars or a line.

**database**

One or more database tables. A database table is a collection of related data organized in rows and columns. A 1-2-3 database table consists of records (rows of data) whose parts are identified by labeled fields (columns).

**database @function**

An @function that scans a database table (or tables), selects records that meet the criteria in a criteria range, and then performs calculations on the selected records.

Database @functions: @DAVG, @DCOUNT, @DGET, @DMAX, @DMIN, @DQUERY, @DSTD, @DSTDS, @DSUM, @DVAR, @DVAR.S.

**database table**

A collection of related data organized in rows and columns. A 1-2-3 database table consists of records (rows of data) whose parts are identified by labeled fields (columns). Each field contains one kind of information. For example, in an employee database table that contains the fields Last Name, First Name, and so on, each record contains information about one employee.

**date @function**

Calculates numbers that correspond to dates between January 1, 1900 (the date number 1), and December 31, 2099 (the date number 73050). To display a date number as the date it represents, select a date format in Range Format or Worksheet Global Settings Format. In the Graph window, choose Chart Axis [X, Y, 2nd Y] Format.

Date @functions: @DATE, @DATEVALUE, @DAY, @DAYS360, @D360, @MONTH, @NOW, @TODAY, @YEAR.

## **Date format**

The way 1-2-3 displays a date number in a worksheet or a graph. A date number is a number from 1 through 73050 that 1-2-3 assigns in sequence to each date from January 1, 1900, through December 31, 2099. Select a date format in Range Format or Worksheet Global Settings Format to display date numbers as dates in the worksheet. In the Graph window, choose Chart Axis [X, Y, 2nd Y] Format.

<b><u>Date format</u></b>	<b><u>Example</u></b>
Day-month-year	31-Dec-91
Day-month	31-Dec
Month-year	Dec-31
Long Intl Date	12/31/91
Short Intl Date	12/31

**date number**

A number from 1 through 73050 that 1-2-3 assigns in sequence to each date from January 1, 1900, through December 31, 2099. For example, the date number for July 21, 1991, is 33440. Use date @functions to enter date numbers. You can use date numbers in calculations.



**DDE (Dynamic Data Exchange)**

Links data between files. Use Edit Link Options to create links between a 1-2-3 worksheet file and a file created with another Windows application that supports DDE.

**debug**

To locate and correct errors in a macro so it performs correctly.

**default directory**

The directory that 1-2-3 automatically uses for worksheet files when you start 1-2-3. Initially, 1-2-3 uses the directory you specified in the Install program, but you can specify a different default directory with Tools User Setup.

**default font**

The font 1-2-3 uses for all data in a worksheet file, except for data in cells you have explicitly formatted with another font. The default font is the first font in the list box in Style Font.

**default font set**

The group of fonts that is initially available to you when you open a new file. 1-2-3 uses an initial default font set that consists of typefaces in various point sizes; you can, however, change the default font set to include any font that 1-2-3, Windows, or your printer supports.

**default page settings**

The File Page Setup settings that are initially available when you open a new file.

**default printer**

The printer 1-2-3 automatically uses for printing when you start 1-2-3.

**default setting**

A setting that 1-2-3 automatically uses when you open a new file. For example, 1-2-3 has default settings for number format, column width, and label alignment. Use Worksheet Global Settings, Tools User Setup, and Window Display Options to change default settings.



**defined range name**

A range name associated with a range address.

**delimited text file**

A file in ASCII format that contains rows of data with delimiters. A delimiter is a comma, space, colon, or semicolon entered between numbers and labels in each row. All labels must be enclosed in quotation marks. For example, "Stolper","Boston",1400,1300,2800 is a line from a delimited text file. Use File Import From Numbers to bring data in a delimited text file into a 1-2-3 worksheet.

**destination range**

When you use Edit Link Options and Edit Paste Link, the range in a file that receives data from another file.

**dialog box**

A window that requests information needed to carry out a command. When 1-2-3 displays a dialog box, you must complete it or cancel it before you can go to any other task. When a dialog box component is not available, it is dimmed.

**directory**

A subdivision of a disk. You can create and name a directory and store related files in it when you save the files on a disk. Doing this makes finding and reading the files easier.

**directory name**

The name of a subdivision of a disk. In 1-2-3 documentation, a \ (backslash) separates the directory names in a path from each other and from the file name. For example, in C:\FEBRUARY\BUDGET.WK3, the directory name is FEBRUARY, and the file name is BUDGET.WK3.

**dotted box**

A rectangular, dotted-line outline that indicates the current selection in a dialog box.

**double-click**

To press and release the mouse button twice, quickly.



**draft display mode**

In draft display mode, formats and graphs do not appear in the worksheet; however, the format line displays the formatting description of the current cell, and final printed output reflects formatting changes you make. Use Window Display Options to switch between draft and graphic display mode.

**drag**

To press the mouse button and hold it while moving the mouse.

**drive name**

The two characters (a letter and a colon) that identify the disk drive. For example, C: is the name of drive C, the hard disk on your computer.

**driver**

A program that tells 1-2-3 how to communicate with a piece of hardware, such as a printer or monitor, or how to perform a particular task, such as reading data in an external database table.

**drop-down box**

In a dialog box, a box that shows a single option until you select the scroll arrow to the right of the option; then a list of options drops down. Some drop-down boxes let you enter text in the top box; in others, you must select an option from the list.

**drop shadow**

A graphic enhancement -- a wide, dark or colored line below and to the right of a range, as if the range were casting a shadow.

**edit line**

The fourth line from the top of the 1-2-3 window. The edit line is used to display and edit data in one cell. The left area of the edit line is the address box, which indicates the worksheet address of the current cell. The middle area displays the Confirm and Cancel buttons when you are entering data. The right area is the contents box, where you type or edit entries.

**entry**

Data entered in a cell. Every entry is either a label or a value.



## **ERR**

A special value that either 1-2-3 generates to indicate an error in a formula or you generate with @ERR. ERR can ripple through formulas: any formula that refers to a cell that contains ERR results in ERR, and any other formula that depends on that formula also results in ERR. When you correct the formula that contains ERR, the results of dependent formulas also become correct.

The label ERR is not equivalent to the value ERR.

**extension**

At the end of a file name, a . (period) followed by up to three characters. When 1-2-3 for Windows creates a worksheet file, it automatically adds the extension .WK3. You can override this extension by entering a different extension when you save the file.

**external database**

A collection of related information, organized systematically in tables and stored in files that are not 1-2-3 files, such as dBASE IV, Paradox, or SQL Server files.

**external database table**

A table in an external database that contains a collection of related information. External databases are stored in files that are not 1-2-3 files, such as dBASE IV, Paradox, or SQL Server files.

**field**

A labeled column in a database table that contains the same kind of information for each record. For example, an employee database table usually contains fields labeled First Name, Last Name, and Employee Number.

**field name**

A label in the first row of a database table that identifies the contents of a field. For example, an employee database usually contains the field names First Name, Last Name, and Employee Number.

In database @functions, the argument *field* is the field name enclosed in " " (quotation marks); an offset number that indicates the position of the field (column) in the database table; or the address of a cell that contains an offset number or field name in quotation marks.

**file**

A named collection of data saved on disk. Use File Save or File Save As to save one or more worksheets in a worksheet file. Use File Extract To to save data in a text file in ASCII format.

**file name**

The name you use when you save or open a file. In 1-2-3 for Windows, a new worksheet file has a default name (FILEXXXX.WK3), where XXXX is a number like 0001, 0002, and so on. You can keep or change this file name. A file name can be up to eight characters long and can contain letters (A through Z), numbers (0 through 9), \_ (underscores), and - (hyphens).



**file reference**

A file name and extension, with or without a path, enclosed in << >> (double angle brackets). Use a file reference in formulas and commands to refer to data in a worksheet file other than the current worksheet file.

**financial @function**

An @function that uses a complex formula to analyze investments or annuities, determine depreciation, or calculate cash flow or loan values.

Financial @functions: @CTERM, @DDB, @FV, @IRR, @NPV, @PMT, @PV, @RATE, @SLN, @SYD, @TERM, @VDB.

**flow of control**

The way in which control passes from one set of macro instructions to another during macro execution. Some macro commands that govern the flow of control are {BRANCH}, {DEFINE}, {FOR}, and {RETURN}.

**font**

A typeface of a particular size, such as Times Roman, 10 point or Dutch, 8 point.

**font set**

A group of fonts available for use with a worksheet file. The font set is listed in the Style Font dialog box. Use Style Font Replace to change the font set.

**footer**

A line of text 1-2-3 prints above the bottom margin of each printed page.

**format file**

A file in which 1-2-3 for Windows and other releases of 1-2-3 store formatting information associated with a worksheet file: .FM3 (for 1-2-3 for Windows and Wysiwyg in 1-2-3 Release 3.1), .FMT (for Impress in 1-2-3 Release 2.3), and .ALL (for Allways in 1-2-3 Release 2.2) are the extensions for format files.

**format line**

The third line from the top of the 1-2-3 window. On the left, the format line displays the formatting description, which gives information about the selected cell or range. On the right, the format line displays the mode indicator.



**formatting**

The styles applied to a cell or range, including italics, underlining, drop shadow, shading, and color.

## **formatting description**

An abbreviated description of a format you applied to a cell. The description appears in the format line when the cell is current.

For example, {H20 Bold U3 S1} (C2) U [W15] appears as the description of a cell with the following formats: {row height, 20 points; bold; wide underlining; light shading}; (Currency format, 2 decimal places); unprotected cell in a protected worksheet; [column width, 15 characters].

**formula**

An entry that calculates data in a worksheet file. 1-2-3 has three types of formulas: numeric, text, and logical. A formula can contain numbers, text, operators, cell and range addresses, range names, @functions, and other formulas. The result of a formula is text (a label) or a value.

**free cell**

The cell located diagonally opposite the anchor cell when you select a range.

**function key**

A key beginning with F, such as F1, that performs a special Windows or 1-2-3 function when used alone or in combination with ALT, SHIFT, or CTRL.

**global setting**

A setting chosen from Worksheet Global Settings, Tools User Setup, or Window Display Options, which 1-2-3 uses for entire worksheets or files.

**graph**

A pictorial representation of data.

**graph type**

A graph available in 1-2-3: area, bar, HLCO, line, mixed, pie, and XY. Some graph types are available with 3-D effects.



**Graph window**

A window that appears when you create a graph with Graph New or view a graph with Graph View. You can use this window to edit and enhance graphs.

**grid lines**

Lines that run along the rows and columns of your worksheet, enclosing every cell in the window or in a printout. You can also display grid lines in a graph. Use Window Display Options to turn grid lines on and off in a worksheet. Use Chart Borders/Grids to turn grid lines on and off in a graph.

**guess value**

In the Solver, a new value you specify for an adjustable cell when the Solver needs more information to solve a problem.

**handle**

One of the small boxes that forms part of the bounding box. Handles show that a graph object is selected.

**hatch pattern**

The pattern that distinguishes one data range from another in bar and area graphs, and one slice from another in pie charts.

**header**

A line of text that 1-2-3 prints below the top margin of each printed page.

## **Help**

A series of context-sensitive topics that describe 1-2-3 and appear in the Help window. To get Help with the 1-2-3 feature you are using, press F1 (HELP).

Help for 1-2-3 for Windows contains descriptions of all commands and some information that is not available in printed documentation, such as detailed information about @functions and macro commands, a glossary, and an index to error messages.

**highlight**

A distinctly colored background on the screen that indicates the current selection. The cell pointer, menu pointer, and indicators are also highlights.

As a verb, highlight means to position the menu pointer on a menu item or the cell pointer on a cell, or to expand the highlight on the worksheet.



**HLCO graph (high-low-close-open)**

A graph that illustrates stock performance (or any data that fluctuates in evenly defined time periods) by plotting four sources: the high, low, close, and open values.

**horizontal graph**

A graph with a horizontal y-axis. In a horizontal graph, the usual orientation of the axes is rotated clockwise 90 degrees. You can create a horizontal graph for all graph types except pie.

**icon**

A small picture that represents an available option, operation, or application (such as a minimized 1-2-3 window). Select an icon to perform specific tasks.

**if-then-else**

In a macro, conditional processing that directs the flow of control according to whether a specified condition is true or false.

**inconsistent constraint**

In the Solver, a logical formula that is not satisfied for a Solver attempt.

**indicator**

A word or icon that provides status information about a program or function key. For example, when 1-2-3 is in READY mode, the word READY appears at the right end of the format line. 1-2-3 displays status indicators in the status line at the bottom of the 1-2-3 window.

**information box**

A rectangular area in some dialog boxes in which 1-2-3 displays information on an item in a list box. You cannot edit the contents of an information box.

**initial setting**

A setting 1-2-3 uses the first time you start 1-2-3 for Windows. The initial settings remain as the default settings for 1-2-3 unless you change them.



**input cell**

A cell in which 1-2-3 temporarily stores values while it performs calculations for creating a what-if table.

**input range**

The range that contains one or more database tables that 1-2-3 searches when you use Data Query.

In database @functions, the argument *input* is the range that contains the database table(s); *input* can be the address or name of a range that contains the database table(s), or the name of the external database table(s), but it cannot be a 3-D range.

**input value**

In a what-if table, a number or text that 1-2-3 substitutes in a formula to perform sensitivity analysis or cross-tabulation.

**insertion point**

A flashing vertical bar in the contents box or a text box that indicates where text that you type will be inserted. As you type, text appears to the left while the insertion point moves to the right.

**Install program**

The program you use to install and configure 1-2-3 for Windows so 1-2-3 can work with your computer hardware.

**iteration**

One of a specific number of times 1-2-3 recalculates formulas during a {RECALC} or {RECALCCOL} macro command, when Order of recalculation is set to Rowwise or Columnwise, or when the worksheet contains a circular reference. Use Tools User Setup Recalculation to change the iteration setting.

**keystroke instruction**

A 1-2-3 macro instruction that represents a key on the keyboard. Keystroke instructions cause 1-2-3 to perform the same actions that pressing keys would perform.

**keyword**

The first word in a macro command. The keyword tells 1-2-3 what action to perform. In the command {LET TOTAL,HALF1+HALF2}, LET is the keyword, and TOTAL and HALF1+HALF2 are the arguments.



**label**

Any entry you begin with a letter or label-prefix character.

When you type a letter, 1-2-3 automatically inserts a label-prefix character. To create a label that begins with a number or with + - \$ ( # @ \ or / , you must first type a label-prefix character, such as an ' (apostrophe), " (quotation mark), or ^ (caret).

1-2-3 does not display the label-prefix character in the cell but does display it in the edit line when you highlight a cell that contains a label.

**label alignment**

The position of a label in a cell (left-aligned, right-aligned, or centered). To control label alignment, use Style Alignment, Worksheet Global Settings, or type a specific label-prefix character before you type a label.

**label range**

A range that 1-2-3 uses as the source of data labels or legend labels for a graph.

## label-prefix character

The first character in a label entry. It defines the entry as a label and controls how 1-2-3 aligns the label in the cell. Use Style Alignment or Worksheet Global Settings to set the label-prefix character 1-2-3 uses when you type a label. To enter a label that begins with a number or with + - \$ ( # @ / or \, type one of these label-prefix characters ( ' ^ ") first.

<u>Label-prefix character</u>	<u>Effect</u>
' (apostrophe)	Left-aligns labels (default)
" (quotation mark)	Right-aligns labels
^ (caret)	Centers labels
\ (backslash)	Repeats one or more characters across a cell
(vertical bar)	Entered in the first cell of a print range, tells 1-2-3 not to print that row of data

**landscape mode**

The orientation in which a printer prints across the length of the paper.

**legend**

In a graph, the explanation of the patterns, symbols, or colors used to represent the data ranges.

**legend label**

In a graph, text that describes a pattern, symbol, or color for each data range.

**LICS (Lotus International Character Set)**

The 256 codes (0 through 255) that Symphony and 1-2-3 Release 2 use to display, store, and print characters. LICS codes 32 through 127 are equivalent to ASCII and LMBCS codes 32 through 127.



**line graph**

A graph in which each line represents a data range and each point on the line represents one value.

**linear scale**

Equal intervals along the y-axis or the 2nd y-axis. In an XY graph, the x-axis may also have a linear scale.

**link**

A connection between two files that lets the files share data.

You can link a worksheet file to another Windows application that supports DDE (Dynamic Data Exchange) using Edit Link Options or Edit Paste Link.

To create links between 1-2-3 worksheet files, you can use file references in formulas.

**linked files**

Any two files that share data either through file references in formulas or DDE links.

**list box**

A list of choices that appears in a dialog box. If there are more choices than can fit in the visible area of the list box, use the scroll bar or the arrow keys to bring the other choices into view.

**literal string**

Text, including letters, numbers, punctuation marks, character spaces, and special characters, enclosed in quotation marks and used in text formulas, @functions, and macros. For example, the text formula +"Wendy "&"Clarke" combines two literal strings to display the label Wendy Clarke.

**LMBCS (Lotus Multibyte Character Set)**

The character set that 1-2-3 Release 3 uses that includes all the characters contained in LICS, ASCII, and most other international character sets. If Windows cannot represent a LMBCS character, a fallback character will appear.

**logarithmic scale**

Regular intervals along the y-axis or the 2nd y-axis that represent logarithmic changes in the plotted values. In an XY graph, the x-axis may also have a logarithmic scale.



**logical @function**

An @function that evaluates a Boolean condition -- a condition that is either true (producing the value 1) or false (producing the value 0). Except for @IF, all logical @functions return either 1 or 0; they cannot return any other values, including ERR (error) or NA (not available).

Logical @functions: @FALSE, @IF, @ISAFF, @ISAPP, @ISERR, @ISNA, @ISNUMBER, @ISRANGE, @ISSTRING, @TRUE.

**logical formula**

A formula that evaluates a condition by using a logical operator or a logical @function. The result of a logical formula is 1 for true or 0 for false. For example, the formula `+A2>8` returns 1 (true) when the value in A2 is greater than 8; it returns 0 (false) when the value in A2 is 8 or less.

**logical operator**

A symbol in a formula that indicates the relationship between two values or defines the criteria in a query. Logical formulas return 1 if true and 0 if false. For example, `+A12>500` returns 1 if the value in A12 is greater than 500; otherwise, the formula returns 0.

Logical operators: = (equal to), < (less than), <= (less than or equal to), > (greater than), >= (greater than or equal to), <> (not equal to), #AND# (AND), #NOT# (NOT), #OR# (OR).

**long label**

A label that exceeds the column width. If the cell to the right is blank, a long label extends into the next column. If the cell to the right is not blank, 1-2-3 displays as much of the label as possible. 1-2-3 stores the entire label in the cell. To see the entire label, widen the column or place the pointer on the cell and view the label in the edit line.

**long value**

A formatted value that is wider than the cell's column width minus one. For example, in a cell that is nine characters wide and formatted as Currency with two decimal places, 1500 is a long value because \$1,500.00 contains nine characters -- one more than the cell's width minus one. Depending on the cell format, 1-2-3 displays a long value in scientific notation or displays \*\*\* (asterisks). To display the value, widen the column.

**loop**

A set of macro instructions that executes repeatedly. You can use the macro commands {FOR} and {BRANCH} to create a loop in a macro.

**macro**

A set of instructions for automating a 1-2-3 task. Macros include keystroke instructions and macro commands. You can use a macro to enter data or to perform a series of 1-2-3 commands that will format worksheets or files, guide users through specific applications, calculate complex formulas with variable data, extract database records for use in a report, and so on.

**macro command**

A macro instruction that tells 1-2-3 to perform a built-in programming function. Each macro command consists of a keyword and its arguments (if any), enclosed in braces. {BRANCH TOTALS} is an example of a macro keyword (BRANCH) and its argument (the range name TOTALS).



**macro instruction**

A keystroke instruction or a macro command in a macro.

**main macro**

The macro that initiates a subroutine call, branch, or loop.

**marker**

A symbol at each data point in a line graph or XY graph.

## **mathematical @function**

An @function that performs a mathematical operation, such as calculating square roots, or replaces complex trigonometric calculations. Mathematical @functions use only values, including the special values ERR and NA, and the address or range name of a single cell that contains a value.

Mathematical @functions: @ABS, @ACOS, @ASIN, @ATAN, @ATAN2, @COS, @EXP, @INT, @LN, @LOG, @MOD, @PI, @RAND, @ROUND, @SIN, @SQRT, @TAN.

## **Maximize button**



The button that appears at the far right end of a window title bar. Click this button to expand the window to fill the entire screen, or choose Maximize from the Control menu.

**maximum value**

In a graph, the highest numeric value for the axis scale. Values that are larger than the maximum value are not displayed in the graph.

**menu bar**

The second line from the top of the 1-2-3 window. The menu bar displays the main menu for the Worksheet, Graph, or Transcript window, depending on which window is active.

**menu pointer**

A highlight that marks the current menu item.



## **Minimize button**



The button that appears at the right end of a window title bar. Click this button to reduce the window to an icon, or choose Minimize from the Control menu.

**minimum value**

In a graph, the lowest numeric value for the axis scale. Values that are smaller than the minimum value are not displayed in the graph.

**mixed cell reference**

In a formula, a reference to a cell in which one or two parts of the address are absolute; that is, preceded by \$ (dollar sign). For example, if you copy the reference +A:\$C4, the column letter stays the same while the worksheet letter and row number change.

**mixed graph**

A graph that includes both lines and bars. A mixed graph can include up to three lines and three sets of bars.

**mode**

A state in which 1-2-3 performs a particular process. For example, in READY mode, you can enter data or choose commands. In POINT mode, you can select a range by expanding the highlight. The mode indicator, located at the right end of the format line, tells you the current mode.

## mouse pointer

The symbol that indicates the location of the mouse on the screen. The pointer is usually shaped like an arrow, but can change depending on the task. For example, when you change the size of a window, the pointer becomes a white two-headed arrow.



## **NA**

A special value that either 1-2-3 or you generate to indicate that a value needed to complete a formula is not available.

NA can ripple through formulas: any formula that refers to a cell that contains NA results in NA (no matter how the value NA is generated) unless the cell contains ERR. (ERR takes precedence over NA.) This ripple-through effect also means that when you provide the previously unavailable value to a formula that contains NA, the results of the dependent formulas also become correct.

The label NA is not equivalent to the value NA.

**named font set**

A file in which you save a font set so that you can use it with worksheet files. Use Style Font Replace to save and retrieve named font sets. 1-2-3 automatically adds the extension .AF3 to a named font set when you save it.



## **named page settings**

Print options, such as margins, headers, and footers, that you named and saved with File Page Setup Save. 1-2-3 for Windows saves page settings to an .AL3 file. When you save page settings, you can use them again without having to respecify them.

**named style**

A collection of styles copied from a single cell that you can apply to a range in a file.

**nested subroutine**

In a macro, a subroutine that is called from within another subroutine. If 1-2-3 encounters a subroutine call while executing a subroutine, it transfers control to the subroutine specified in the subroutine call, performs the instructions there, returns to the first subroutine, finishes the instructions there, and finally returns to the main macro.

**nonblank cell**

A cell that contains a label-prefix character, letters, numbers, or spaces. A nonblank cell can appear to be blank if it has only a label-prefix character or spaces in it.

**numeric formula**

A formula that calculates numeric values using one or more of the arithmetic operators + - \* / and ^. For example, the numeric formula +H16\*2 multiplies the value in cell H16 by 2.

## **1-2-3 Classic**

The command structure and functionality of 1-2-3 Release 3.1, available in 1-2-3 for Windows. 1-2-3 Classic provides keystroke and macro compatibility so you can run macros created in other releases of 1-2-3 in 1-2-3 for Windows.

**object**

A part of a graph or annotation, such as a shape, a line, an arrow, or text -- anything that you can create, select, or manipulate within a Graph window.

**offset number**

The number that corresponds to the position of a specified row, column, character, or byte; used in some @functions and macros. The first row, column, character, or byte always has an offset number of 0, the second 1, the third 2, and so on.

In a database @function, the *field* argument can be the offset number for a field in the database table. For example, if the field TOTALS is in the fifth column of the database table, the offset number for that field is 4.



## **operator**

A symbol in a formula that indicates the relationship between two values or the type of operation to be performed. 1-2-3 uses arithmetic, logical, and text operators.

### **Arithmetic operators**

+ (addition), - (subtraction), \* (multiplication), / (division), ^ (exponentiation)

### **Logical operators**

= (equal to), < (less than), <= (less than or equal to), > (greater than), >= (greater than or equal to), <> (not equal to), #AND# (AND), #NOT# (NOT), #OR# (OR)

### **Text operator**

& (ampersand)

**optimal answer**

In the Solver, the answer that contains the mathematical optimum (the highest or lowest value) for the cell you specify as the optimal cell.

**optimal cell**

In the Solver, the cell for which the Solver is to find the highest or lowest value. The optimal cell may be an adjustable cell or a cell whose formula depends on at least one adjustable cell.

**option button**

In a dialog box, a round selection button. You can select only one option button in a group of related options.

## order of precedence

The order in which 1-2-3 performs operations in a formula. The lower the precedence number, the earlier 1-2-3 performs the operation. Operations with the same precedence number are performed sequentially from left to right. To override the order of precedence, put ( ) (parentheses) around the operations you want 1-2-3 to do first.

- 1     ^ (exponentiation)
- 2     - + (negative, positive values)
- 3     \* / (multiplication, division)
- 4     + - (addition, subtraction)
- 5     = < <= > >= <> (logical operators)
- 6     #NOT# (logical operator)
- 7     #AND#, #OR#, & (logical and text operators)

**orientation**

The placement of the y-axis in a graph as either vertical (default) or horizontal, or the placement of a printed range on a page in either portrait mode or landscape mode.

**output range**

In Data Query, the worksheet range or external database table into which 1-2-3 places records it extracts from one or more database tables.

**page settings**

The options you specify for printing such as margins, headers, and footers using File Page Setup. You can name and save page settings.



**panes**

A display of two parts of a worksheet in the same window. Use Window Split to divide a worksheet window into panes, to synchronize or unsynchronize panes, and to clear panes.

**path**

The root directory and all the subdirectories in which you save a file. In C:\1991\  
BUDGET.WK3, C:\1991\ is the path for the file BUDGET.WK3.

**percent scale**

Equal intervals along the y-axis or 2nd y-axis that represent changes in the plotted values as percentages of the sum (100%) of the plotted values.

**perspective view**

A layered display of three contiguous worksheets from a worksheet file. To create a perspective view, choose Window Split.

**pie chart**

A graph that compares parts to the whole. In a pie chart, each value is represented as a slice of the pie. The size of each slice corresponds to the percentage of the total that the value represents.

**pitch**

A measurement of the number of characters printed per inch.

**plot frame**

The rectangular area in a graph, defined by the axes, where 1-2-3 plots data.

**point**

To position the mouse pointer. Your next mouse action affects the element you are pointing at.

In reference to fonts, a point is a unit of measurement that determines the height of a character. A point is approximately  $1/72$  of an inch.



**point sizes**

The type sizes available for a selected font.

**pointer-movement keys**

Keys that control the movement of the cell pointer, menu pointer, and insertion point. These keys include UP, DOWN, LEFT, RIGHT, PG UP, PG DN, and HOME and can be combined with CTRL and END to move around active files and worksheets in the same file.

**portrait mode**

The orientation in which a printer prints across the width of the paper.

**preselection**

The action of selecting a range before you choose the command that will affect the range. A preselected range remains selected after you complete the command.

**print job**

Ranges of data, graphs, and/or blank lines that 1-2-3 sends to a printer.

**print range**

The range of data you want to print. A print range can include text and graphics.

**printer driver**

A software program that controls how 1-2-3 communicates with your printer. 1-2-3 for Windows uses the printer drivers supplied by Windows.

**printer font**

A font specific to your printer.



**proportional spacing**

A way of spacing characters on a line that gives each character in a typeface a different amount of space based on its size. For example, a font that uses proportional spacing gives less space to the letter I than to the letter W.

**protect**

To prevent changes to a range, worksheet, or file.

**pulldown menu**

The vertical list of commands that appears when you choose a command from the menu bar.

**radian**

The unit 1-2-3 uses to measure an angle, equal to approximately 57 degrees, 17 minutes.

**RAM (random access memory)**

The temporary storage area in which your computer holds both programs and data.

**range**

A single cell, a block of adjoining cells, or an entire worksheet file. A 2-D range is a range in one worksheet; for example, A:B1..A:B5. A 3-D range spans two or more worksheets; for example, A:B1..B:B5.

**range address**

The location of a range in a file. A range address consists of the cell addresses of any two diagonally opposite corner cells of the range, separated by two periods; for example, A:A4..M:C20.

**range name**

A name you create with Range Name Create or Range Name Label Create to identify a range. A range name can be up to 15 characters long. You can use range names in formulas and commands to refer to one cell or a range of cells.



**read**

To copy a file from disk into memory.

**recalculation**

Re-evaluation of formulas in active files using the latest cell values.

**recalculation order**

The order in which 1-2-3 recalculates formulas. The three orders are natural (recalculates all values on which a formula depends before recalculating the formula), columnwise (recalculates by column, starting with A:A1), and rowwise (recalculates by row, starting with A:A1). Natural is the default setting. Use Tools User Setup to change the recalculation order.

**recalculation setting**

One of two settings, Automatic (the default) or Manual, that determines when 1-2-3 recalculates formulas in the current worksheet file. Automatic recalculates formulas every time you enter a value in a cell referenced by the formulas. Manual recalculates formulas only when you press F9 (CALC) or F8 (TABLE). Use Tools User Setup Recalculation to change the recalculation setting.

**record**

A one-row collection of information about one item in a database table. The first row of a database table contains field names, which identify the data in records; all other rows contain records.

**relative reference**

In a formula, a reference to a cell or a range that changes when you copy the formula. A relative reference refers to the location of the data in relation to the formula. A relative reference can be an address or range name.

For example, if the formula  $+A1+A2$  is in cell A4 and you copy this formula to B4, the formula changes to  $+B1+B2$ . A1 and A2 are relative references, which means that they refer to the values entered in cells two and three rows above the formula. After you copy the formula, the relative references still refer to the cells two and three rows above the formula.

If you do not want a cell or range address to change when you copy a formula, use an absolute reference.

**repeating label**

A label that repeats across the entire width of a cell. You create a repeating label with the \ (backslash) label-prefix character. For example, entering \= in a cell 10 characters wide displays = across the width of the cell like this: =====.

**reservation**

A guarantee that a user who has changed a file can save the changes to the file on disk.



**reset**

To clear a setting or restore default settings.

## **Restore button**



The button that appears at the far right of the title bar of a maximized window. Click the Restore button to return the window to its previous size or choose Restore from the Control menu.

**ripple-through effect**

The condition that occurs when one formula depends on another formula that evaluates to ERR or NA. The dependent formula will also result in ERR or NA. When you correct the formula that evaluates to ERR or provide the unavailable value to the formula that evaluates to NA, the dependent formulas also change.

**row**

A horizontal block of 256 cells in a worksheet. A row, identified by a row number, is one cell high and runs across the entire width of the worksheet. There are 8,192 rows in a worksheet.

**2nd y-axis**

A second y-axis you create in a graph, which is used as a reference line marked in regular intervals with numeric values.

**save**

To copy a file from memory to disk.

**scroll bar**

The bar that appears at the right and/or bottom of a window or a list box when the contents exceed the size of the window or list box. To scroll within a window or list box, click the scroll arrows, drag the scroll box, or use the navigation keys.



**scroll box**

The square box in a scroll bar, which you drag with the mouse pointer to make another area of the worksheet or list box visible.





**scrolling**

Moving horizontally or vertically through a window or a list box, or moving the cell pointer from one worksheet to another. To scroll within a window or list box, click the scroll arrows, drag the scroll box, or use the navigation keys.

**sealed file**

A file that was sealed with File Administration Seal File to prevent changes from being made to some of the file's graph, print, range, worksheet, and reservation settings.

**select**

To highlight or specify cells in a worksheet, records in a database table, commands on a menu, options in a dialog box, or objects in a graph.

**selection**

The area of cells in a worksheet, records in a database table, or objects in a graph, that the next or current action affects (depending on when you make the selection).

**setting**

A characteristic of a cell that affects how the contents of a cell appear. For example, format and label alignment are settings. These settings appear as parts of the formatting description in the format line.

## **SmartIcons**

Buttons (icons) in Worksheet and Graph windows that let mouse users select commonly used commands and macros. Click SmartIcons to select them. Choose Tools SmartIcons Customize to change the set of SmartIcons and to create SmartIcons for your own macros.

**soft font**

A font that you transfer from a file on disk to your printer.

**Solver**

Analyzes data in a worksheet and shows you a variety of possible solutions to a what-if problem you define. The solutions satisfy constraints, or limits, that you specify.



**sort**

To arrange data in a range or records in a database table in a particular order, determined by the contents of one or more columns or fields. In 1-2-3, use Data Sort to sort data in ascending (A through Z, 0 through 9) or descending (Z through A, 9 through 0) order. You can select a collating sequence when you install 1-2-3 to control how 1-2-3 sorts labels.

**source range**

When you use Edit Link Options and Edit Paste Link, the range that supplies data to another file.

## **special @function**

An @function that returns information about cells, ranges, or the operating system; finds the contents of a cell; or marks places where information is missing or incorrect. Special @functions are particularly useful with macros.

Special @functions: @@, @CELL, @CELLPOINTER, @CHOOSE, @COLS, @COORD, @ERR, @HLOOKUP, @INDEX, @INFO, @NA, @ROWS, @SHEETS, @SOLVER, @VLOOKUP.

**specify**

To select from the items in a list box or enter a new item by typing.

**spreadsheet**

A tool used in financial analysis and modeling that establishes mathematical and logical relationships among numbers and formulas that appear in rows and columns. The 1-2-3 worksheet is an electronic spreadsheet.

### **statistical @function**

An @function that performs calculations on a list of values in a range. Each statistical @function except @SUMPRODUCT has an equivalent database @function, which you can use to calculate values in a field that meet specific criteria. All statistical @functions have the argument *list*.

Statistical @functions: @AVG, @COUNT, @MAX, @MIN, @STD, @STDS, @SUM, @SUMPRODUCT, @VAR, @VARS.

**status indicator**

An indicator that appears at the bottom of the screen, in the status line, to alert you that 1-2-3 is performing an action or has detected a condition, or that you are using a certain key. For example, CMD tells you that 1-2-3 is running a macro, CIRC tells you that a circular reference exists, and CAPS tells you that you pressed the CAPS LOCK key.

**status line**

The last line of the 1-2-3 window, which displays the status indicators, the date, and the time.



## **stock market graph**

An HLCO graph, which shows high, low, close, and open values.

**string @function**

An @function that provides information about text in cells, and performs other operations on text.

String @functions: @CHAR, @CODE, @EXACT, @FIND, @LEFT, @LENGTH, @LOWER, @MID, @N, @PROPER, @REPEAT, @REPLACE, @RIGHT, @S, @STRING, @TRIM, @UPPER, @VALUE.

**subdirectory**

A subdivision of another directory. In C:\1991\JUNE91\BUDGET.WK3, JUNE91 is a subdirectory of C:\1991.

**subroutine**

A discrete set of macro instructions executed from the macro. When the main macro calls the subroutine, control passes to the subroutine. After 1-2-3 completes the instructions in the subroutine, control returns to the main macro.

**subroutine call**

A macro instruction that transfers control to a subroutine and completes it before going on to the next macro instruction.

**summary worksheet**

A worksheet you create that consolidates related information from other worksheets.

**3-D graph**

A graph in which the lines, areas, bars, or pie slices are represented as solids, having depth as well as height and width.

**3-D range**

A range that includes the same cells in two or more contiguous worksheets. The 3-D range A:A1..B:B2 contains the cells A:A1, A:A2, A:B1, A:B2, B:A1, B:A2, B:B1, B:B2.



**temporary file (.TMP)**

A file 1-2-3 creates to use during the current work session only. 1-2-3 deletes the file when you exit 1-2-3.

**text box**

A rectangular area in some dialog boxes in which you enter information and edit text required by a command.

**text file**

A file on disk in ASCII format. Use File Extract To to create a text file in 1-2-3 for Windows. Use File Import From to read data from a text file into 1-2-3.

**text formula**

A formula that uses text in quotation marks and the text operator & (ampersand) in its calculations. For example, the formula + "Mr." & "Arthur" combines the two words and a space between them to display the label Mr. Arthur.

**text operator**

The & (ampersand) used to combine (concatenate) text in a text formula. For example, the formula +"Kathy "&"Howard" combines the two words and a space between them to display the label Kathy Howard.

**tick marks**

In a graph, short lines on the x-axis and y-axis. On the x-axis, tick marks indicate data points, unless the graph is an XY graph. On the y-axis, the 2nd y-axis, and the x-axis of an XY graph, tick marks represent the numeric scale.

**tilde (~)**

The keyboard character that represents ENTER in macros.

**time @function**

Calculates numbers that correspond to times between 12:00 midnight (the time number 0.000000) and 11:59:59 PM (the time number 0.999988). Use time @functions to calculate differences between times, sort by times, and compare a range of times to a particular time. To display a time number as the time it represents in a worksheet, use Range Format or Worksheet Global Settings Format. In the Graph window, choose Chart Axis [X, Y, 2nd Y] Format.

Time @functions: @HOUR, @MINUTE, @NOW, @SECOND, @TIME, @TIMEVALUE.



## **Time format**

The way 1-2-3 displays a time number on the screen. Use Range Format or Worksheet Global Settings Format to specify time formats in a worksheet. In the Graph window, choose Chart Axis [X, Y, 2nd Y] Format.

<b><u>Time format</u></b>	<b><u>Example</u></b>
Hour:minutes:seconds AM/PM	11:59:59 PM
Hour:minutes AM/PM	11:59 PM
Long Intl Time	23:59:59
Short Intl Time	23:59

**time number**

A decimal from 0.000000 through 0.999988 that 1-2-3 assigns in sequence to each moment in the 24 hours from midnight through 11:59:59. Use a time @function to enter a time number in a worksheet. Use Range Format or Worksheet Global Settings Format to display a time number as the time it represents.

**title**

Text entered in a row and/or column that remains in view at the top and/or left of the worksheet as you scroll through a worksheet. Use Worksheet Titles to set and clear titles.

In a Graph window, you can create titles for a graph, the x-axis, y-axis, and 2nd y-axis using Chart Headings and Chart Axis.

**title bar**

The horizontal bar across the top of a window or dialog box.

**Transcript window**

The window in which you can edit, delete, or play back recorded keystrokes and mouse actions to create macros. The Transcript window holds up to 512 bytes (most characters use one byte). You can paste keystrokes from the Transcript window into a worksheet to create a macro. Choose Tools Macro Show Transcript to open the Transcript window.

**Translate utility**

The 1-2-3 program that converts files from one file format to another so you can share data between 1-2-3 for Windows and other applications. The Translate utility lists the applications for which translation is available.

**typeahead buffer**

The buffer in which 1-2-3 stores keystrokes you make during noninteractive parts of a macro.

**typeface**

The overall design of printed characters. Each typeface has a distinct appearance, and all characters within a typeface share common design characteristics. For example, Swiss and Courier are two typefaces.



**undefined range name**

A range name that is not assigned to a range. Formulas that contain undefined range names evaluate to ERR.

**unused constraint**

In the Solver, a constraint the Solver did not need to use to find an answer for the problem. For example, if the constraint formula is  $+B6 > 5$ , and the Solver adjusts the value in B6 to 7, the constraint is unused.

**value**

An entry that is a number or the result of a formula or an @function. 1-2-3 changes the mode to VALUE if you begin an entry with a number or one of the following symbols: + - @ . ( # or \$ (or the current currency symbol).

**variable**

In a formula, a reference to a cell in which different values can be substituted.

**vertical graph**

A graph in which the y-axis and the 2nd y-axis are plotted vertically. This is the default display for most graphs.

**weight**

The thickness of a line in a graph object.

**what-if calculation**

A calculation that uses different values in formulas to determine more than one solution. Solver and Data What-if Tables do what-if calculations.

## **wildcard character**

The \* (asterisk) or the ? (question mark) used in file names and criteria.

\* Represents any number of sequential characters

? Represents a single character

In file names, for example, \*.wk3 lists all files with a .wk3 extension; \*.wk? lists all files with extensions that begin with .wk such as .wk1 and .wk3. In criteria, B\* matches all entries that begin with B. The criteria B??? matches all entries that begin with B and contain three other characters.



**window**

The area of the screen in which you can view your work. The title bar in the active window is always highlighted. Several windows can be open, but only one window at a time can be active. 1-2-3 for Windows has four types of windows: Worksheet, Graph, Transcript, and Help.

**worksheet**

The 1-2-3 electronic spreadsheet in which you enter and manipulate spreadsheet data and database tables. Each worksheet contains 256 columns and 8,192 rows.

**worksheet file**

A 1-2-3 file that is made up of one or more worksheets. A worksheet file can contain up to 256 worksheets. Unless you provide a different extension, 1-2-3 for Windows saves a worksheet file with a .WK3 extension.

**worksheet frame**

The horizontal bar that contains the column letters (A through IV) and a worksheet letter (A: through IV:) at the top of the 1-2-3 worksheet, and the vertical bar that contains the row numbers (1 through 8192) at the left side of the worksheet. You can use Window Display Options to hide the worksheet frame.

**worksheet letter**

The letter in the top left corner of the worksheet that identifies each worksheet in a worksheet file. A 1-2-3 worksheet file can contain up to 256 worksheets, with letters from A (for the first worksheet) through IV (for the 256th worksheet). In formulas, the worksheet letter is followed by a colon (A:) to distinguish it from the column letter (A).

**Worksheet window**

The window in which you view a 1-2-3 worksheet.

**x-axis**

In a graph, a reference line marked in regular intervals with labels. In an XY graph, the intervals represent numbers.

## **/X commands**

Eight macro commands that 1-2-3 for Windows supports to provide compatibility with prior releases of 1-2-3. Each /X command has a corresponding macro command.



**X range**

A range that 1-2-3 plots as labels for bar, line, pie, and mixed graphs.

**XY (scatter) graph**

A graph that shows how values change relative to other values. XY graphs use both a scaled x-axis and a scaled y-axis.

**y-axis**

In a graph, a reference line marked in regular intervals with numbers.

## Help Topic

Green text with a solid underline indicates a cross-reference to another Help topic. When you select a cross-reference, the topic explaining the underlined text replaces the current topic in the Help window.

Press **b** or click Back in the Help icon bar to return to the previous topic, or select a cross-reference to go to that topic.

**definition**

A definition or an example is displayed in a pop-up box. When you release the mouse button or ENTER, the pop-up box disappears.

## **hand icon**



When the mouse pointer takes this shape, you can select a Help topic or see a definition.



## **Keyboard Index**

### Accelerator Keys

Execute commands by using key combinations.

### Control Menu Keys

Move, size, and close windows and dialog boxes, and give you access to other windows that are open in the 1-2-3 window, or to other open Windows applications.

### Dialog Box Keys

Move and close dialog boxes, and move around and select options in dialog boxes.

### Editing Keys

Move around, select, and change the entry in a cell or text box.

### File Navigation Keys

Move between active files.

### Function Keys

F1 through F10 perform special operations when used alone or combined with ALT and CTRL.

### Help Keys

Move, size, and close the Help window, and move around a Help topic.

### Online Books Keys

Move, size, and close the Online Books window, and move around an Online Books topic.

### Pointer-Movement Keys

Move around the worksheet.

### Show Me Player Keys

Play and pause a movie, turn sound on and off, move forward and backward in a movie, and close a movie.

### Special Keys

Use of ALT, ALT+ - (hyphen), CTRL+BREAK, CTRL+ a letter, and ESC.

### Worksheet Navigation Keys

Move between worksheets in the current file.

## Accelerator Keys

Execute commands by using key combinations.

ALT+BACKSPACE

Reverses the effect of the most recently executed command or action that you can undo. ALT+BACKSPACE is equivalent to [Edit Undo](#).

ALT+F4

Ends the 1-2-3 session, prompts you to save any unsaved files, and returns you to the Windows Program Manager; this use of ALT+F4 is equivalent to [File Exit](#). You can also use ALT+F4 to close the Help window or a dialog box.

CTRL+INS

Copies selected data and related formatting from the worksheet to the [Clipboard](#). CTRL+INS is equivalent to [Edit Copy](#).

CTRL+ a letter

Runs a macro in 1-2-3 for Windows. CTRL+ a letter is equivalent to [Tools Macro Run](#). In 1-2-3 Release 2 and 1-2-3 Release 3, ALT+ a letter runs a macro.

DEL

Deletes the [cell contents](#) of selected cells without using the Clipboard. DEL is equivalent to [Edit Clear](#).

SHIFT+DEL

Cuts selected data and related formatting from the worksheet to the Clipboard. SHIFT+DEL is equivalent to [Edit Cut](#).

SHIFT+INS

Copies selected data and related formatting from the Clipboard to the worksheet. SHIFT+INS is equivalent to [Edit Paste](#).

See also:

[Keyboard Index](#)



## Control Menu Keys

Move, size, and close windows and dialog boxes, and give you access to other windows that are open in the 1-2-3 window, or to other open Windows applications.

ALT+ ESC

Cycles through open Windows applications.

ALT+F4

Closes the 1-2-3 window, prompts you to save any unsaved files, and returns you to the Windows Program Manager; this use of ALT+F4 is equivalent to Close in the Control menu of the 1-2-3 window, and to File Exit. You can also use ALT+F4 to close the Help window or a dialog box.

ALT+ - (hyphen)

Opens the Control menu for the active window.

ALT+ space bar

Opens the Control menu for the 1-2-3 window, the Help window, and dialog boxes.

CTRL+ESC

Displays the Windows Task List, which lets you go to another Windows application. CTRL+ESC is equivalent to Switch To in the Control menu of the 1-2-3 window.

CTRL+F4

Closes the active window and prompts you to save the file if it contains unsaved changes. If the window you close is the only active window, CTRL+F4 closes the window and opens a new window that contains a blank untitled worksheet file. CTRL+F4 is equivalent to Close in the Control menu of a window within the 1-2-3 window, and to File Close.

CTRL+F6

Makes the next open Worksheet, Graph, or Transcript window active. CTRL+F6 is equivalent to Next in the Control menu of a window in the 1-2-3 window.

See also:

[Keyboard Index](#)

## Dialog Box Keys

Move and close the dialog box, and move around and select options in the dialog box.

ALT+ a letter

Selects the option or command with the underlined letter that you press.

ALT+F4

Closes the dialog box without completing the command. This is equivalent to selecting Cancel.

ALT+ space bar

Opens the Control menu for the dialog box. The Control menu contains commands to move and close the dialog box.

ALT+UP OR ALT+DN

Opens and closes a drop-down box.

END

Selects the last item in a drop-down box or list box.

ENTER

Completes the command and closes the dialog box.

ESC

Closes the dialog box without completing the command. This is equivalent to selecting Cancel.

HOME

Selects the first item in a drop-down box or list box.

PG UP OR PG DN

Moves to the top or bottom item in the list of items currently visible in a drop-down box or list box, and selects the item.

SHIFT+TAB

Moves backward to the previous option, from bottom to top and right to left.

TAB

Moves forward to the next option, from left to right and top to bottom.

UP, DOWN, LEFT, RIGHT

Move within a group of options.

## Using Characters to Select an Item in a Drop-Down Box or List Box

You can press a letter, number, or symbol to select an item in a drop-down box or list box.

To select an item	Press
Beginning with a letter	The letter. For example, to select Inches in the Frame option of Window Display Options, press <b>i</b> .
Beginning with a number	The number. For example, to select the Short Intl Date format in Range Format, press <b>5</b> .
Beginning with a symbol	The symbol. For example, to select the Comma format in Range Format, press <b>,</b> (comma).

When a list box is attached to a text box, you can type a letter to scroll to the first item that begins with that letter.

1. Click the list box or press TAB to enter the list box.
2. Type a letter.

See also:

[Keyboard Index](#)

## Editing Keys

You can use the following keys in the contents box and in a text box when 1-2-3 is in EDIT mode. If 1-2-3 is in another mode, press F2 (EDIT) to get into EDIT mode.

### Keys to Change an Entry

BACKSPACE

Erases the highlighted selection or the character to the left of the insertion point.

DEL

Erases the character to the right of the insertion point or erases the highlighted selection.

ESC

Erases all characters in the entry. Not available in a text box.

F2 (EDIT)

Switches 1-2-3 between EDIT and READY, POINT, VALUE, or LABEL mode.

F9 (CALC)

Converts a formula to its current value when 1-2-3 is in EDIT or VALUE mode. Not available in a text box.

### Keys to Move the Insertion Point

CTRL+LEFT or SHIFT+TAB

In labels, moves the insertion point to the left of the previous word. In values, moves to the beginning of the value. Not available in a text box.

CTRL+RIGHT or TAB

In labels, moves the insertion point to the left of the next word. In values, moves to the end of the value. Not available in a text box.

END

Moves the insertion point to the last character in the entry.

HOME

Moves the insertion point to the first character in the entry.

RIGHT or LEFT

Moves the insertion point one character to the right or left.

### Keys to Select Characters in an Entry

SHIFT+LEFT

Extends the highlight to the left of the insertion point.

SHIFT+RIGHT

Extends the highlight to the right of the insertion point.

### Keys to Complete Editing in the Contents Box

CTRL+PG UP or CTRL+PG DN

Completes editing and, if you are using multiple worksheets, moves the cell pointer forward or back one worksheet.

ENTER

Completes editing and leaves the cell pointer in the current cell.

PG UP or PG DN

Completes editing and moves the cell pointer up or down the number of rows currently visible in the window.

UP or DOWN

Completes the entry and moves the cell pointer up or down one cell.

See also:

[Entering Data](#)

[F2 \(EDIT\)](#)

[Keyboard Index](#)

## File Navigation Keys

Move the cell pointer between active files. Only CTRL+F6 cycles through all windows that are open in the 1-2-3 window.

**Note** The order in which the cell pointer moves between active files, expressed in the terms first, last, next, and previous in the following definitions, depends on

- \* Which file is current when you open a file
- \* The order in which you open the files

CTRL+END CTRL+PG DN

Moves the cell pointer to the cell you last highlighted in the previous active file.

CTRL+END CTRL+PG UP

Moves the cell pointer to the cell you last highlighted in the next active file.

CTRL+END END

Moves the cell pointer to the cell you last highlighted in the last active file.

CTRL+END HOME

Moves the cell pointer to the cell you last highlighted in the first active file.

CTRL+F6

Makes the next open Worksheet, Graph, or Transcript window active. CTRL+F6 is equivalent to Next in the Control menu of a window in the 1-2-3 window.

CTRL+PG DN

When the cell pointer is in the first worksheet of a file, moves the cell pointer to the cell you last highlighted in the previous active file.

CTRL+PG UP

When the cell pointer is in the last worksheet in a file, moves the cell pointer to the cell you last highlighted in the next active file.

See also:

[Keyboard Index](#)

[Window Commands](#)

## Function Keys

F1 through F10 perform special operations when used alone or combined with ALT and CTRL.

### F1 (HELP)

Displays a Help topic.

### F2 (EDIT)

Switches 1-2-3 between EDIT and READY, POINT, VALUE, or LABEL mode. In EDIT mode, you can change data in the contents box or in a text box.

### F3 (NAME)

Lists names of files, graphs, ranges, @functions, macro key names, and macro commands.

### F4

In EDIT, POINT or VALUE mode, changes the cell references in formulas from absolute to mixed to relative.

In READY mode, F4 anchors the cell pointer so you can select a range.

### F5 (GOTO)

Moves the cell pointer to a cell, named range, worksheet, or active file. F5 (GOTO) is equivalent to Range Go To.

### F6 (PANE)

Moves the cell pointer between panes and between worksheets you display in perspective view.

### F7 (QUERY)

Repeats the last Data Query command.

### F8 (TABLE)

Repeats the last Data What-if Table command.

### F9 (CALC)

In READY mode, recalculates formulas. In EDIT or VALUE mode, converts a formula to its current value.

### F10 (MENU)

Activates the menu bar. F10 (MENU) is equivalent to ALT.

### ALT+F1 (COMPOSE)

Creates characters in 1-2-3 that you cannot enter directly from your keyboard.

### ALT+F2 (STEP)

Turns STEP mode on or off.

### ALT+F3 (RUN)

Displays a list of the macros in the active files. ALT+F3 (RUN) is equivalent to Tools Macro Run.

### ALT+F6 (ZOOM)

Enlarges the current horizontal, vertical, or perspective pane to the full size of the window or shrinks it to its original size.

### ALT+F7 (ADD-IN 1), ALT+F8 (ADD-IN 2), ALT+F9 (ADD-IN 3)

Start an available 1-2-3 add-in assigned to the key.

See also:

[Keyboard Index](#)

## Pointer-Movement Keys

Move the cell pointer around the worksheet when 1-2-3 is in READY mode. When 1-2-3 is in POINT mode, you can use these keys to move the cell pointer and specify a range in the worksheet.

CTRL+HOME

Moves the cell pointer to cell A:A1 in the current file. If you hide A:A1 or freeze it with Worksheet Titles, CTRL+HOME moves the cell pointer to the topmost, leftmost cell in the current file.

CTRL+LEFT OR BACKTAB (SHIFT+TAB)

Moves the cell pointer left the number of columns currently visible in the window.

CTRL+RIGHT OR TAB

Moves the cell pointer right the number of columns currently visible in the window.

END+HOME

Moves the cell pointer to the lower right corner of the worksheet's active area.

END+RIGHT OR END+LEFT

Moves the cell pointer right or left to a cell that contains data and is next to a blank cell.

END+UP OR END+DOWN

Moves the cell pointer up or down to a cell that contains data and is next to a blank cell.

HOME

Moves the cell pointer to cell A1 in the current worksheet. If you hide A1 or freeze it with Worksheet Titles, HOME moves the cell pointer to the topmost, leftmost cell in the worksheet.

PG UP OR PG DN

Moves the cell pointer up or down the number of rows currently visible in the window.

RIGHT OR LEFT

Moves the cell pointer right or left one column.

UP OR DOWN

Moves the cell pointer up or down one row.

See also:

[Keyboard Index](#)

[Scrolling with the Mouse](#)



## Special Keys

ALT

When 1-2-3 is in READY mode, activates the menu bar. Used with the underlined letter of a command name, ALT chooses the command from a menu.

In a dialog box, ALT+ a letter selects the option or command with the underlined letter you press. ALT also performs special operations when used in combination with the function keys.

ALT+ - (hyphen)

Opens the Control menu for the active window.

CTRL+BREAK

Cancels the current 1-2-3 command or operation and returns 1-2-3 to READY mode.

CTRL+ a letter

Runs a macro in 1-2-3 for Windows. In 1-2-3 Release 2 and 1-2-3 Release 3, ALT + a letter runs a macro.

ESC

Cancels a dialog box without completing the command, cancels the current entry in the edit line, or returns you to the previous menu.

See also:

[Keyboard Index](#)

## Worksheet Navigation Keys

Move the cell pointer between worksheets in the current file when 1-2-3 is in READY mode. When 1-2-3 is in POINT mode, you can use these keys to move the cell pointer and specify a range.

CTRL+HOME

Moves the cell pointer to cell A:A1 in the current file. If you hide A:A1 or freeze it with Worksheet Titles, CTRL+HOME moves the cell pointer to the topmost, leftmost cell in the current file.

CTRL+PG DN

Moves the cell pointer to the previous worksheet, for example, from worksheet B to worksheet A.

CTRL+PG UP

Moves the cell pointer to the next worksheet, for example, from worksheet A to worksheet B.

END CTRL+HOME

Moves the cell pointer to the lower right corner of the current file's active area.

END CTRL+PG DN

Staying in the same row and column, moves forward through worksheets to the next cell that contains data and is next to a blank cell.

END CTRL+PG UP

Staying in the same row and column, moves back through worksheets to the next cell that contains data and is next to a blank cell.

See also:

[Keyboard Index](#)

## **F2 (EDIT)**

Switches 1-2-3 between EDIT and READY, POINT, VALUE, or LABEL mode. In EDIT mode, you can change data in the contents box or in a text box.

1-2-3 changes to EDIT mode when you

- \* Click anywhere in the contents box.
- \* Press F2 (EDIT) when you are typing an entry.
- \* Press F2 (EDIT) when 1-2-3 is in READY mode.
- \* Enter information in a text box.
- \* Type an entry that 1-2-3 cannot accept. 1-2-3 places the insertion point at the point where it detects an error.

Use the editing keys to change data when 1-2-3 is in EDIT mode.

See also:

[Entering Data](#)  
[Keyboard Index](#)

## **F3 (NAME)**

Lists range names, active file names, graph names, @functions, or macro commands and key names, depending on what you are doing when you press F3 (NAME).

### **Listing Range Names or Names of Active Files**

Press F3 (NAME) to list range names and names of other active files

- \* When you are specifying a range in a text box
- \* When you are writing a formula and 1-2-3 is in POINT or VALUE mode

### **Listing and Entering @Functions**

Type @ and press F3 (NAME) to display a list of @functions. When you choose an @function, 1-2-3 enters it in the contents box.

### **Listing and Entering Macro Commands**

Type { (left brace) and press F3 (NAME) to display a list of macro commands and key names. When you choose a macro command, 1-2-3 enters it in the contents box.

### **Selecting a Name from the List Box**

To select a name in the list box, double-click the name in the list box; or press TAB to move to the list box, use UP and DOWN to highlight the name you want, and then press ENTER.

See also:

[Function Keys](#)

## **F4**

Has two functions, depending on what mode 1-2-3 is in.

### **Selecting a Range**

When 1-2-3 is in READY mode, F4 anchors the cell pointer so you can select a range using the pointer-movement keys.

### **Changing References in Formulas**

When 1-2-3 is in POINT, VALUE, or EDIT mode, pressing F4 changes the cell references in a formula from absolute to mixed to relative.

When you are creating or editing a formula, press F4 when the insertion point is on or to the right of a reference. 1-2-3 changes the references by entering a \$ (dollar sign) in front of the worksheet letter, column letter, row number, or range name.

For example, if you typed the formula +A:C5 and pressed F4 several times, 1-2-3 would change it in the following ways:

+\$A:\$C\$5	Absolute address
+\$A:C\$5	Mixed address
+\$A:\$C5	Mixed address
+\$A:C5	Mixed address
+A:\$C\$5	Mixed address
+A:C\$5	Mixed address
+A:\$C5	Mixed address
+A:C5	Relative address

See also:

[Types of Cell and Range References](#)  
[Function Keys](#)

## Types of Cell and Range References



[About Cell References \(4:10\)](#)

The types of references you use in a formula control what happens to the formula when you copy it to another part of the file.

All cell and range references in a formula are relative unless you change them to mixed or absolute. (A range reference can only be relative or absolute.) To create a mixed or absolute reference in a formula, either type a \$ (dollar sign) in the cell reference, or press F4 when you are entering or editing the formula.

### Relative reference

Identifies a cell by its position relative to the location of the formula. A relative reference, like A:B2, changes when you copy a formula that contains it.

For example, you enter the formula +A1+A2 in cell A4. A1 and A2 are relative references, which means that they refer to the values entered in cells two and three rows above the formula. When you copy this formula to B4, 1-2-3 changes the formula to +B1+B2, and the relative references still refer to the cells two and three rows above the formula.

### Absolute reference

Contains a \$ in front of the range name, or worksheet letter, column letter, and row number, for example, \$RATE or \$A:\$B\$2. An absolute reference always refers to the same cell or range name when you copy a formula that contains it.

### Mixed reference

Contains a \$ in front of the worksheet letter, column letter, or row number, for example, A:\$B2. When you copy a formula that contains a mixed reference, the part of the reference that contains the \$ stays the same and the rest of the reference changes.

See also:

[Entering Formulas](#)

[F4](#)

## F5 (GOTO)

Moves the cell pointer to a specified cell, a named range, another worksheet, or another active file. When you go to another worksheet or file, 1-2-3 moves the cell pointer to the cell you last highlighted in that worksheet or file. F5 (GOTO) is equivalent to Range Go To.

Press F5 (GOTO). The Range Go To dialog box is displayed. Do one of the following:

<b>To go to</b>	<b>Do this</b>
Cell in the current file	Enter the cell address in the Range <u>text box</u> and select OK.
Named range in the current file	Enter the range name in the text box or select the range name from the list box, and then select OK.
Worksheet in the current file	Enter the worksheet letter and a colon in the text box, for example, C:, and select OK.
Another active file	Enter a <u>file reference</u> in the text box or select the file name from the list box, and then select OK. If you enter the name of a file that is not in the <u>current directory</u> , you must also enter the <u>path</u> as part of the file reference.
Range in another active file	Specify a file reference in the text box, followed by the range name or cell address, and then select OK. For example, <<BUDGET.WK3>>A:C5 goes to cell A:C5 in a file named BUDGET.WK3.

See also:

Function Keys

## **F6 (PANE)**

After you create [panes](#) or use [perspective view](#), press F6 (PANE) to move the cell pointer between panes or from one worksheet to another in perspective view.

Choose [Window Split](#) or use the mouse to divide a worksheet window into two panes. Choose Window Split to turn perspective view on and off.

See also:

[Function Keys](#)



## **F7 (QUERY)**

Repeats the last Data Query command you selected when working with a database table.

You can use F7 (QUERY) with the following Data Query commands:

### Data Query Delete

Deletes the records in a database table that match the criteria you entered in the criteria range.

### Data Query Extract

Copies to the output range records from a database table that match the criteria you entered in the criteria range.

### Data Query Find

Locates records in a 1-2-3 database table that match the criteria you entered in the criteria range.

See also:

Data Query

Function Keys

## **F8 (TABLE)**

Repeats the last Data What-if Table command you selected to calculate a what-if table.

You can use F8 (TABLE) with the following Data What-if Table commands:

### Data What-if Table 1-Way

Calculates the results of one or more formulas that use one variable.

### Data What-if Table 2-Way

Calculates the results of one formula that uses two variables.

### Data What-if Table 3-Way

Calculates the results of one formula that uses three variables.

See also:

Data What-if Table

Function Keys

## **F9 (CALC)**

Performs one of two functions, depending on what mode 1-2-3 is in.

### **Recalculating Formulas in Active Files**

When 1-2-3 is in READY mode, F9 (CALC) recalculates formulas in active files.

- \* When Tools User Setup Recalculation is set to Manual, use F9 (CALC) to recalculate the formulas in active files. 1-2-3 displays the CALC indicator in the status line whenever you change data to remind you to press F9 (CALC) to update formulas.
- \* When Tools User Setup Recalculation is set to Automatic, 1-2-3 automatically recalculates formulas that are affected by changes to data. Automatic recalculation occurs in the background, so you can continue working while 1-2-3 performs the recalculation.

**Note** If a worksheet contains formulas that link to data in files on disk, use File Administration Update Links to update those formulas.

### **Converting a Formula to Its Displayed Value**

When 1-2-3 is in EDIT or VALUE mode and the current cell contains a formula, press F9 (CALC) and then press ENTER to convert the formula to its displayed value.

See also:

Function Keys

Tools User Setup Recalculation

## **ALT+F1 (COMPOSE)**

Enters characters in 1-2-3 that you cannot enter directly from the keyboard.

1-2-3 for Windows uses the American National Standards Institute (ANSI) character set to display and print characters and the Lotus Multibyte Character Set (LMBCS) to store characters.

You can enter a LMBCS character in a worksheet either by using @CHAR and the LMBCS code for the character or by using a compose sequence.

**Note** If Windows cannot represent a LMBCS character, a fallback character will appear. For more information about what characters Windows can represent, see the *Microsoft Windows User's Guide*.

### **To Use a Compose Sequence**

1. Press ALT+F1 (COMPOSE).
2. Enter the appropriate keystrokes.

For example, to enter the character £ (British pound sterling symbol), press ALT+F1 (COMPOSE) and type L=.

For more information on using ALT+F1 (COMPOSE), see [Appendix B](#) of the 1-2-3 for Windows *User's Guide*. Appendix B also contains a complete list of LMBCS codes, compose sequences, and the characters you can enter in 1-2-3 using a compose sequence.

See also:

[Function Keys](#)

## **ALT+F6 (ZOOM)**

Enlarges the current pane or worksheet in perspective view to the current size of the active window. Press ALT+F6 (ZOOM) again to shrink the pane or worksheet to its original size.

After you press ALT+F6 (ZOOM), 1-2-3 displays the ZOOM indicator in the status line.

Choose Window Split or use the mouse to divide a worksheet window into two panes.

See also:

Function Keys



## Mouse

The mouse can provide a shortcut for many actions because it lets you manipulate objects on the screen without choosing a command.

For example, clicking one of the SmartIcons replaces the whole procedure needed to enter the current date in the worksheet; clicking another of the SmartIcons lets you cycle through all the fonts in the current font set.

Moving objects in a graph may also be easier and quicker using the mouse rather than the keyboard.

### Mouse Buttons

1-2-3 for Windows uses the same mouse button -- the left button -- for every mouse action (see the two exceptions that follow). When Help topics mention the mouse button, the left mouse button is intended.

There are two uses for the right mouse button in 1-2-3 for Windows:

- \* To view the description of one of the SmartIcons, point to the SmartIcon, and then press and hold the right mouse button. The description appears in the title bar of the 1-2-3 window.
- \* To delete the last drawn line segment created in the Graph window with Draw Line, Draw Arrow, or Draw Polygon, press the right mouse button.

### Mouse Instructions

The following table lists the terms you need to know to follow instructions for the mouse.

<b>Term</b>	<b>Means</b>
Click	Press and release the mouse button quickly.
Double-click	Press and release the mouse button twice, quickly.
Drag	Press and hold the mouse button while you move the mouse.
Point	Position the mouse pointer.

### Mouse-Pointer Shapes

The mouse pointer is the symbol that indicates the location of the mouse on the screen. To move the mouse pointer, you move the mouse.

The mouse pointer changes shape depending on the task you can perform at the current location of the mouse pointer.

The following example shows some of the mouse-pointer shapes that appear in 1-2-3 for Windows.

### Example

#### Mouse-Pointer Shapes

### Moving Among Windows

To move to another open window, click it; the window you clicked becomes the active window. If the window you want is hidden by other windows, use Window Tile or Window Cascade to make it visible, and then click it.

See also:

Control Menu  
Keyboard Index

1-2-3 for Windows Help Contents

Scrolling with the Mouse

## Scrolling with the Mouse

The vertical and horizontal scroll bars let you view information not visible in a window. The following table describes how to use the mouse to scroll.

<b>To scroll</b>	<b>Do this</b>
Up	Click the Up scroll arrow
Down	Click the Down scroll arrow
Left	Click the Left scroll arrow
Right	Click the Right scroll arrow
Continuously	Click a scroll arrow and hold down the mouse button
One window up	Click the scroll bar above the scroll box
One window down	Click the scroll bar below the scroll box
One window left	Click the scroll bar to the left of the scroll box
One window right	Click the scroll bar to the right of the scroll box
To the first row*	Drag the <u>scroll box</u> to the top of the scroll bar
To the last row*	Drag the scroll box to the bottom of the scroll bar
To the first column*	Drag the scroll box to the left end of the scroll bar
To the last column*	Drag the scroll box to the right end of the scroll bar

\*The terms first and last refer to locations within the active area of the worksheet.

See also:

Mouse

Pointer-Movement Keys



## Moving a SmartHelp Window



### To Move the Help, Show Me Player, or Toggle Window

1. Move the mouse pointer to the title bar at the top of the window.
2. Press the mouse button while moving the mouse to drag the window to a new location.
3. Release the mouse button.



### To Move the Help, Show Me Player, or Toggle Window

1. Press ALT+ space bar to open the Control menu for the window.
2. Press M to choose Move.
3. Press UP, DOWN, LEFT, or RIGHT to move the window.
4. Press ENTER.

See also:

[Control Menu](#)

[Mouse](#)

[1-2-3 for Windows Help Contents](#)

[Using SmartHelp](#)

[Viewing 1-2-3 and Help Together on the Screen](#)

## Closing a SmartHelp Window



### To Close the Help, Show Me Player, or Toggle Window

1. Move the mouse pointer to the Control menu box in the upper left corner of the window and double-click the mouse button.



### To Close the Help, Show Me Player, or Toggle Window

1. Press ALT+F4.

See also:

[Control Menu](#)

[Mouse](#)

[1-2-3 for Windows Help Contents](#)

[Using SmartHelp](#)

## **Closing a Window in 1-2-3**

### **Closing a Worksheet, Graph, or Transcript Window**

You can do any of the following to close a Worksheet, Graph, or Transcript window:

- \* Move the mouse pointer to the Control menu box in the upper left corner of the window and double-click the mouse button.
- \* Choose Close from the Control menu of the window.
- \* Choose File Close from the menu bar.
- \* Press CTRL+F4.

### **Closing the 1-2-3 Window**

You can do any of the following to close the 1-2-3 window:

- \* Move the mouse pointer to the Control menu box in the upper left corner of the window and double-click the mouse button.
- \* Choose Close from the Control menu of the 1-2-3 window.
- \* Choose File Exit from the menu bar.
- \* Press ALT+F4.

See also:

[Control Menu](#)

[1-2-3 for Windows Help Contents](#)

[Using Help](#)

## **Exiting and Ending 1-2-3 for Windows**

- \* You can exit -- that is, temporarily leave -- 1-2-3 to use another Windows application without ending the current 1-2-3 session. You can later return to your 1-2-3 session.
- \* You can permanently end the current 1-2-3 session.

### **Temporarily Leaving 1-2-3**

Save your work before you temporarily leave 1-2-3.

You can use any of the following ways to leave 1-2-3 temporarily.

- \* Press ALT+ESC to cycle through active Windows applications, including the Windows Program Manager and icons of active applications.
- \* Choose Switch To from the 1-2-3 window Control menu.  
Select another active Windows application from the Windows Task List.
- \* Reduce 1-2-3 to an icon by clicking the Minimize button or choosing Minimize from the 1-2-3 window Control menu.  
  
To enlarge the 1-2-3 icon so you can return to your work, double-click the icon; or press ALT+ESC until the 1-2-3 icon is active, press ALT+ space bar to open the Control menu, and choose Restore.

For more information about switching among applications, consult the *Microsoft Windows User's Guide*.

### **Ending the 1-2-3 Session**

You can use any of the following ways to end the 1-2-3 session.

- \* Choose File Exit.
- \* Choose Close from the 1-2-3 window Control menu.

See also:

[1-2-3 for Windows Help Contents](#)

## Areas of the 1-2-3 Window

When you start 1-2-3 for Windows, the first thing you see is the 1-2-3 window with the application name, 1-2-3 for Windows, in its title bar. The 1-2-3 window contains 1-2-3 and all the Worksheet, Graph, and Transcript windows that you open in order to do your work. (Help appears in its own window.)

You also see a single Worksheet window with the word Untitled in its title bar. The Worksheet window contains a worksheet file, which is the 1-2-3 electronic spreadsheet. You enter and manipulate values, formulas, and text in a worksheet file. The Untitled worksheet file is ready for you to use.

The 1-2-3 window consists of three areas. From top to bottom, the three areas are as follows:

- \* Control panel
- \* Work area
- \* Status line

### Control Panel

In the control panel, 1-2-3 displays information about 1-2-3 and the window you're working in. The control panel consists of four lines: the title bar, menu bar, format line, and edit line. You choose commands from the menu bar. You enter data in the edit line.

For more detailed information, see [Control Panel](#).

### Work Area

The work area is the area between the control panel and the status line. The work area contains the windows you work in and the icon palette.

1-2-3 opens [Worksheet](#), [Graph](#), and [Transcript](#) windows in the work area. You can open multiple windows in the work area and move easily among them; but you can work in only one window at a time.

The icon palette displays SmartIcons. The first time you start 1-2-3 for Windows, the icon palette appears in a fixed location, and it stays there unless you move it or hide it.

<b>To learn how to</b>	<b>Select this</b>
Create a graph	<a href="#">Graph New</a>
Move among open windows	<a href="#">Control Menu</a> or <a href="#">File Navigation Keys</a> or <a href="#">Mouse</a>
Move and hide the icon palette	<a href="#">Tools SmartIcons</a>
Open the Transcript window	<a href="#">Tools Macro Show Transcript</a>
Open worksheet files	<a href="#">File Commands</a>
Use SmartIcons	<a href="#">Using SmartIcons</a>

### Status Line

The status line is the last line of the 1-2-3 window. The status line displays the status indicators, the date, and the time.

For descriptions of the status indicators, see [Status Indicators](#). To change the format of the date and time, or to remove them from the status line, see [Tools User Setup](#).

See also:

1-2-3 for Windows Help Contents

## Control Panel

In the control panel, 1-2-3 displays information about 1-2-3 and about the active window. The control panel comprises the four lines at the top of the 1-2-3 window. From top to bottom, the four lines are as follows:

- \* Title bar
- \* Menu bar
- \* Format line
- \* Edit line

### Title Bar

From left to right, the title bar contains the Control menu box, the application name, the Minimize button, and either the Maximize button or Restore button.

When you highlight a command, or when you point to a SmartIcon while holding down the right mouse button, the title bar displays a short description of the command or SmartIcon.

### Menu Bar

The menu bar contains the commands for the active window. The commands in the menu bar change depending on whether a Worksheet window, Graph window, or Transcript window is active.

To activate the menu bar, click it, or press ALT or F10 (MENU). For information on choosing a command, see Choosing a 1-2-3 Command.

### Format Line

From left to right, the format line displays the formatting description of the current cell, and the current mode indicator.

### Edit Line

From left to right, the edit line contains the address box and the contents box. When you are working in the contents box, 1-2-3 displays the Cancel and Confirm buttons to the left of the contents box.

See also:

Entering Data  
F2 (EDIT)  
Mode Indicator

## Choosing a 1-2-3 Command

A command is an instruction you give 1-2-3. Commands are located in the menu bar, which is immediately below the title bar that contains the name of the application: 1-2-3 for Windows.



### To Choose a Command

1. Point to the command you want in the menu bar.
2. Click the mouse.  
1-2-3 highlights the command and drops down the pull-down menu.
3. Drag the mouse pointer to the command you want.
4. Release the mouse button.



### To Choose a Command

1. Press ALT+F4 to close Help.
2. Press ALT or F10 (MENU).  
1-2-3 highlights File, the first command in the menu bar.
3. Press the underlined letter of the command you want in the menu bar.  
The pull-down menu drops down.
4. Press the underlined letter of the command you want.

## Leaving a Menu

- \* To leave a menu using the mouse, point to some part of the 1-2-3 window other than the menu, and then release the mouse button.
- \* To leave a menu using the keyboard, press ESC one or more times. You back out of the menu one level at a time until 1-2-3 returns to READY mode.

## Commands with an Arrowhead

Some commands in a pull-down menu have an arrowhead after them. When you highlight such a command, another menu, called a cascade menu appears. You can choose commands from a cascade menu the same way that you choose them from a pull-down.

## Commands with an Ellipsis

Many commands are followed by . . . (ellipsis). An ellipsis indicates that the command brings up a dialog box.

In a dialog box, you select options, enter information, and identify the data the command affects.

## Commands Without an Arrowhead or Ellipsis

Most commands that are followed by neither an arrowhead nor an ellipsis execute immediately.

A few such commands, for example, Range Protect, execute immediately only if you select a range that is larger than one cell before you choose the command. If only one cell is selected, the command brings up a dialog box in which to specify the range.

See also:

Mouse



1-2-3 for Windows Help Contents

Specifying a Range

## Mode Indicator

1-2-3 displays the mode indicator at the right end of the format line to tell you what mode or state 1-2-3 is in.

### EDIT

You pressed F2 (EDIT) to edit an entry; you are entering or editing text in a text box; or you made an incorrect entry.

### ERROR

1-2-3 is displaying an error message. Select Help or press F1 (HELP) to get Help; select OK to clear the error message. See Error Message Index for a list of error messages.

### FILES

You are in 1-2-3 Classic and 1-2-3 is displaying a list of file names.

### FIND

You selected Data Query Find or pressed F7 (QUERY) during a Data Query Find command.

### LABEL

You are entering a label. See LABEL Mode for more information.

### MENU

You clicked the menu bar, or pressed ALT or F10 (MENU); or in a dialog box, the dotted box is in a list box or on a check box, option button, or command button.

### POINT

You are specifying a range before choosing a command, while working in a dialog box, or while entering a formula.

### READY

1-2-3 is ready for you to enter data or choose a command.

### VALUE

You are entering a value. See VALUE Mode for more information.

### WAIT

1-2-3 is completing a command or process, such as saving a file.

See also:

Control Panel

## Status Indicators

When you press specific keys and when 1-2-3 performs certain actions, 1-2-3 displays status indicators. All status indicators except RO appear in the status line at the bottom of the 1-2-3 window.

### CALC

You need to recalculate formulas by pressing F9 (CALC), or 1-2-3 is performing background formula recalculation.

### CAPS

You pressed CAPS LOCK so that you can type uppercase letters without using SHIFT.

### CIRC

You entered a formula that contains a circular reference. Choose Help About 1-2-3 to identify the cell that contains the circular reference.

### CMD

1-2-3 is running a macro.

### END

You pressed END to use it with a pointer-movement key.

### FILE

You pressed CTRL+END to move between files.

### GROUP

The current file is in GROUP mode.

### MEM

The amount of available memory is below 32 KB (kilobytes), or memory is divided into small blocks. See Increasing Available Memory.

### NUM

You pressed NUM LOCK so that you can use the numeric keypad to type numbers.

### RO

The current file has read-only status, which means you cannot save changes to the file unless you get the file reservation. RO appears in the title bar of the Worksheet window, next to the file name.

### SCROLL

You pressed SCROLL LOCK so that UP, DOWN, LEFT, and RIGHT move the worksheet as well as the cell pointer.

### SST

1-2-3 is running a macro in STEP mode.

### STEP

You pressed ALT+F2 (STEP) and selected Step to run a macro in STEP mode.

### ZOOM

After using Window Split to create panes or a perspective view, you pressed ALT+F6 (ZOOM) for a full-window view of the current pane or worksheet.

See also:

Areas of the 1-2-3 Window

## Entering Data

1-2-3 is ready for you to enter data in the worksheet when you see the READY mode indicator in the upper right section of the 1-2-3 window.



### To Enter Data

1. Move the mouse pointer to the cell that you want to receive the data. Click the cell.

The cell pointer moves to the cell you selected. The cell, the basic unit of the 1-2-3 worksheet, is formed by the intersection of a column and a row.

2. Type your data. A cell can receive up to 512 characters.

As you type, your data appears in the contents box, and the Cancel and Confirm buttons appear to the left of the contents box.

3. Click the Confirm button to complete the entry.

1-2-3 clears the contents box and your data appears in the cell you selected in the worksheet.

If you click the Cancel button, 1-2-3 clears the contents box and nothing appears in the selected cell.

If 1-2-3 beeps when you click the Confirm button, you probably made an error. Edit your entry or press ESC to clear your entry and start over.



### To Enter Data

1. Press ALT+F4 to close Help.

2. Use the pointer-movement keys to move the cell pointer to the cell that you want to receive the data.

The cell, the basic unit of the 1-2-3 worksheet, is formed by the intersection of a column and a row.

3. Type your data. A cell can receive up to 512 characters.

As you type, your data appears in the contents box.

4. Press ENTER or one of the pointer-movement keys to complete the entry.

ENTER keeps the cell pointer in the cell that received the data. The pointer-movement keys move the cell pointer one cell.

If 1-2-3 beeps when you press ENTER, you probably made an error. Edit your entry or press ESC to clear your entry and start over.

## Classifying Data as a Label or a Value

1-2-3 automatically classifies the data you enter as either a label or a value based on the first character you type. At the same time, 1-2-3 changes the mode indicator to LABEL or VALUE.

### **If the first character is    The data is a LABEL and**

---

A letter	1-2-3 automatically aligns the data according to the Align labels option set in Worksheet Global Settings.
' (apostrophe)	1-2-3 left-aligns any data you enter after an ' (apostrophe).
" (double quotation mark)	1-2-3 right-aligns any data you enter after a " (double quotation mark).
^ (caret)	1-2-3 centers any data you enter after a ^ (caret).

\ (backslash)

1-2-3 repeats the data you enter to fill the cell.

**If the first character is The data is a VALUE and**

---

A number

1-2-3 automatically right-aligns the data.

\$ (or current currency symbol)

1-2-3 automatically right-aligns the data.

Any of the following symbols:

1-2-3 automatically right-aligns the data.

+ (plus sign)

- (minus sign)

@ (at sign)

. (period)

( (open parenthesis)

# (pound sign)

See also:

[Editing Keys](#)

[F2 \(EDIT\)](#)

[Long Labels and Values](#)

[Mouse](#)

[1-2-3 for Windows Help Contents](#)

## **LABEL Mode**

Indicates you are entering a label. 1-2-3 classifies an entry as a label if the first character you type is a letter or a label-prefix character. A label can be up to 512 characters long.

### **Entering Labels**

When you type any letter, 1-2-3 automatically enters the default label-prefix character before the letter. 1-2-3 does not display the label-prefix character in the cell, but does display it in the contents box when you highlight the cell.

### **Entering Numbers as Labels**

You can enter a label that starts with a number (such as a street address, ZIP code, or phone number) or one of the symbols + - @ . ( # in two ways:

- \* Type the label prefix. For example, entering '8 Pushkin Avenue creates a label because you enter the label-prefix character ' (apostrophe) in front of the number 8.
- \* Use Range Format and format a range as Label before you enter data; then 1-2-3 automatically adds a label prefix to all new entries in the range.

### **Editing Labels**

Use the following keys when 1-2-3 is in LABEL mode:

BACKSPACE

Erases the character to the left of the insertion point; after erasing the final character, BACKSPACE cancels the entry and returns 1-2-3 to READY mode.

ENTER

Enters the label in the current cell.

ESC

Cancels the entry and returns 1-2-3 to READY mode.

F2 (EDIT)

Switches between LABEL and EDIT mode. When 1-2-3 is in EDIT mode, you can use all the editing keys.

SHIFT+LEFT

Extends the highlight to the left of the insertion point.

SHIFT+RIGHT

Extends the highlight to the right of the insertion point.

See also:

[Accelerator Keys](#)

[Entering Data](#)

[Long Labels and Values](#)

## Long Labels and Values

1-2-3 displays long labels and long values in different ways.

### Long Labels

A label can include up to 512 characters. When a label is longer than the cell's column width, 1-2-3 displays as much of the label as it can.

If cells to the right of the label are blank, 1-2-3 displays the label across the blank cells. If cells to the right of the label contain a label-prefix character, data, or spaces, 1-2-3 displays only the part of the label that fits in the cell where it is entered. You can see the entire label, however, in the contents box.

### Long Values

A long value is a value that, as displayed, is wider than the cell's column width minus 1. Unlike long labels, 1-2-3 does not let long values overlap into adjacent blank cells, nor does it display only part of the value when adjacent cells contain data.

Depending on how the cell is formatted, 1-2-3 displays the long value in one of the following ways:

- \* If the cell is formatted as General and the integer part of the value exceeds the column width, 1-2-3 displays the value in scientific notation. If the cell is too narrow to display the value in scientific notation, 1-2-3 displays \*\*\* (asterisks) across the cell.
- \* If the cell is formatted as General and the integer part of the value fits within the column width, but some or all of the decimal part doesn't fit, 1-2-3 displays the value rounded.
- \* If the cell is formatted as anything other than General, 1-2-3 displays \*\*\* (asterisks) across the cell instead of the value.

To display the actual value, either change the cell format with Range Format or widen the column with Worksheet Column Width.

See also:

LABEL Mode  
VALUE Mode

## VALUE Mode

Indicates you are entering a value. 1-2-3 classifies an entry as a value if the first character you type is a number (0 through 9) or any one of the characters + - @ . ( # or \$ (or the current currency symbol).

Besides a number, a value can also be a formula, or an @function.

## Editing Values

Use the following keys when 1-2-3 is in VALUE mode:

### BACKSPACE

Erases the character to the left of the insertion point; after erasing the final character, BACKSPACE cancels the entry and returns 1-2-3 to READY mode.

### ENTER

Enters the value in the current cell.

### ESC

Cancels the entry and returns 1-2-3 to READY mode.

### F2 (EDIT)

Switches between VALUE and EDIT mode. When 1-2-3 is in EDIT mode, you can use all the editing keys.

### F4

Switches a cell or range reference between relative, mixed, and absolute.

### F9 (CALC)

Converts a formula to its current value.

### SHIFT+LEFT

Extends the highlight to the left of the insertion point.

### SHIFT+RIGHT

Extends the highlight to the right of the insertion point.

See also:

[Accelerator Keys](#)

[Entering Data](#)

[Long Labels and Values](#)



## Numbers

1-2-3 accepts as an entry the number 0 (zero) and any positive or negative number from 1E-99 to 9.99E+99.

You can type a number with or without thousands separators, for example, 123000 or 123,000.

You can also type a number as a percentage or a fraction, as currency, or in scientific notation. For example, to enter the number 2.75, you can type 275%, 2 3/4, \$2.75, or 27.5E-1.

You can control the way 1-2-3 displays numbers by setting the cell format with [Worksheet Global Settings Format](#) or [Range Format](#).

See also:

[Entering Data](#)

[Long Labels and Values](#)

[Types of Formulas](#)

[VALUE Mode](#)

## Types of Formulas



[About Cell References \(4:10\)](#)

A formula is an entry that performs a calculation using numbers, text, other formulas, or the address or range name giving the location of these elements in a worksheet. In 1-2-3, you can enter three types of formulas:

### Logical

Compares two or more values using logical operators and produces a result that is either 1 (true) or 0 (false).

For example, `+A1>500` returns 1 if the value in cell A1 is greater than 500 and 0 if the value in A1 is less than or equal to 500.

### Numeric

Performs calculations with numbers and uses one or more of the arithmetic operators.

For example, `+B5*5` multiplies the value in B5 by 5.

### Text

Performs calculations with text enclosed in " " (quotation marks) using the text operator & (ampersand).

For example, the formula `+"Mr. "&B2` joins Mr.(space) and the label in cell B2.

## @Functions

1-2-3 also has built-in formulas, called @functions, that perform calculations automatically.

For example, the @function `@SUM(B20..F20)` is a formula that calculates the sum of the values entered in the range B20..F20.

See also:

[@Function Basics](#)

[Entering Formulas](#)

[Linking Files with Formulas](#)

[Operators](#)

## Entering Formulas

- ▶ About Calculations (2:30)
- ▶ About Cell References (4:10)
- ▶ Creating Formulas (1:20)
- ▶ Using @Functions to Calculate (1:25)

A formula is an entry that performs a calculation using numbers, text, other formulas, or the address or range name giving the location of these elements in a worksheet.

A formula can contain up to 512 characters. When you enter a formula in a cell, 1-2-3 displays the formula's result in the cell and the formula itself in the contents box.

### Beginning a Formula

For 1-2-3 to recognize an entry as a formula, begin the entry in one of the following ways:

- \* Begin a formula with a number (0 through 9) or one of the numeric symbols + - @ . ( .  
Use \$ (dollar sign) only if it is the current currency symbol. Use # (pound sign) only at the beginning of a logical formula.
- \* Enter + - or ( before a cell address, range name, file reference, or text enclosed in "(quotation marks) when one of these is the first element in a formula.  
For example, +B7/B8, +SALES-EXPENSES, and +"Ms. "&LAST are valid formulas.
- \* When a formula looks like a date in day-month-year (31-Dec-90), day-month (31-Dec), or a Long Intl Date (for example, 12/31/90) format, begin the formula with +. Otherwise, 1-2-3 enters a date number instead of the formula.  
For example, +30-Nov-95 is a valid formula; but if you enter 30-Nov-95, 1-2-3 enters the date number 35033 in the cell.

### Valid Data in a Formula

You can use the following types of data in a formula:

- \* Numbers, for example, 450
- \* @Functions, for example, @SUM(A4..A8)
- \* Cell addresses, for example, A:B32
- \* Range addresses and range names, for example, A4..A8 and JANSALES
- \* Text enclosed in " " (quotation marks), for example, "Budget for"

### Attaching a Note to a Formula

To include an explanatory note with the formula, type a ; (semicolon) immediately after the formula and then type the note.

The following formula includes an explanatory note:

```
@SUM(JANSALES)*0.10;commission due on January sales
```

The note does not appear in the cell with the formula unless the cell is formatted as Text; it appears only in the contents box when the cell pointer is on the cell.

### Displaying a Formula, Not Its Result

To display the formula in the worksheet instead of the value it evaluates to, format the cell

that contains the formula as Text using [Range Format](#) or [Worksheet Global Settings Format](#).

See also:

[@Function Basics](#)

[Specifying a Range](#)

[Linking Files with Formulas](#)

[Operators](#)

[Types of Formulas](#)

## Operators



Operators are used to create formulas.

1-2-3 performs operations in a formula in a certain order, called the order of precedence. Each operator is assigned a precedence number, which is shown in parentheses in the the list below.

1-2-3 performs operations with lower precedence-numbers first. 1-2-3 performs operations with equal precedence from left to right, in the order they appear in the formula.

To override the order of precedence, enclose an operation in ( ) parentheses.

<b>Operator</b>	<b>Operation</b>
^	(1) Exponentiation
+ -	(2) Positive and negative values
* /	(3) Multiplication and division
+ -	(4) Addition and subtraction
= <>	(5) Equal-to and not-equal-to
< >	(5) Less-than and greater-than
>=	(5) Greater-than-or-equal-to
<=	(5) Less-than-or-equal-to
#NOT#	(6) Not condition
#AND#	(7) Both condition 1 and condition 2
#OR#	(7) Either condition 1 or condition 2
&	(7) Join text in " " (quotation marks)

See also

[Entering Formulas](#)

[Types of Formulas](#)

## **Help About 1-2-3**

Displays the 1-2-3 for Windows release number and copyright notice. When the CIRC indicator is displayed in the status line, Help About 1-2-3 also displays the address of the cell containing a circular reference.

See also:

[Help Commands](#)

[Entering Formulas](#)

[Status Indicators](#)

## **Hiding Data**

Prevents displaying and printing data.

### **Hiding Data in a Worksheet**

#### Range Format Hidden

Hides data in a range. The data appears in the contents box when the cell pointer is on a hidden cell unless the worksheet is globally protected.

#### Worksheet Global Settings Format Hidden

Hides all data in a worksheet. The data appears in the contents box when the cell pointer is on a hidden cell.

#### Worksheet Global Settings Zero Display

Hides zeros in cells in the current worksheet that contain either the number zero or a formula that evaluates to zero.

#### Worksheet Hide

Hides columns and worksheets.

### **Hiding a Graph and Data in a Graph**

#### Chart Options Colors (Graph Window)

Hides text and data ranges in a graph.

#### Setting Up a Colors Range

Explains how to hide slices of a pie chart.

#### Setting Up a Percent-Labels Range

Explains how to hide the percent labels of a pie chart.

#### Style Display Options (Graph Window)

Turns off the display of the current graph in the worksheet.

See also:

[Protecting Data and Files](#)

## Increasing Available Memory

When you are using 1-2-3, there are several factors that affect the amount of memory available for your files. These factors include the other programs in memory, the type of data in your worksheets, and the structure of your worksheet files.

To increase available memory, do one or more of the following:

- \* If Edit Undo is on, use Tools User Setup to turn Edit Undo off.
- \* Consolidate worksheets and files to make the active area smaller.
- \* Close active files and delete data that you no longer need in memory.
- \* If you have programs in memory in addition to 1-2-3, end one or more of those programs.

For information on how to use memory efficiently with 1-2-3, see [Appendix C, "Using Memory Efficiently,"](#) in the *User's Guide*.



## Working with Multiple Worksheets in a File

 [About Multiple Worksheets \(3:55\)](#)

 [Managing Multiple Worksheets \(3:50\)](#)

You can include up to 256 worksheets in a 1-2-3 for Windows worksheet file. With multiple worksheets, you can keep related data together in one file but organize and format data differently in separate worksheets.

For example, you can protect data in one worksheet and leave data unprotected in another worksheet.

When you want to manage worksheets in a file as a group instead of individually, you can turn on GROUP mode for the file with [Worksheet Global Settings Group Mode](#). When GROUP mode is turned on, settings and formats you assign to the current worksheet are assigned to all worksheets in the file.

You can also use @functions to perform consolidations and other types of calculations on data in a series of worksheets. For example, you can enter @SUM formulas in one worksheet to consolidate data stored in other worksheets in the file.

### Creating Multiple-Sheet Files

To add worksheets to the current file, you use [Worksheet Insert](#). 1-2-3 for Windows assigns each worksheet in the file a letter from A (for the first worksheet) to IV (for the 256th worksheet).

To save the file and all of its worksheets to disk, you use [File Save](#) or [File Save As](#).

**Note** During a 1-2-3 for Windows session, no more than 256 worksheets can be open at one time across all [active files](#).

### Moving Around Multiple-Sheet Files

To move the [cell pointer](#) between worksheets, you use the [worksheet navigation keys](#).

You can also highlight a range across two or more worksheets in the same file (3-D range). For more information, see [Highlighting a Range](#).

To display three contiguous worksheets in a file in [perspective view](#), you use [Window Split](#). When worksheets are displayed in perspective view, you can move between worksheets by using F6 (PANE), and you can move the previous or next worksheet into view by pressing CTRL+PG UP OR CTRL+PG DN.

See also:

[File Commands](#)

[Files in 1-2-3 for Windows](#)

[Worksheet Commands](#)

## Working with Multiple Files

In 1-2-3 for Windows, several worksheet files can be open (active) in different windows at the same time. When multiple files are active, you can perform the following tasks easily and quickly:

- \* View the contents of several files at the same time.
- \* Work with data in more than one file.
- \* Combine data from several files into one file.
- \* Run a macro located in one file while you work in another file.
- \* View a graph created in one file while you update the data on which it is based in another file.
- \* Work in one file and specify a range in another file by highlighting it.
- \* Work in one file and specify another file by selecting the second file from a list of active files.
- \* Copy or move data between files.
- \* Link one active file to another.

You can also link an active 1-2-3 for Windows worksheet file to a file on disk; specify a range in a file on disk; and copy data from an active 1-2-3 file to a file on disk or from a file on disk to an active file.

## Managing Multiple Files

To open a worksheet file, you use [File Open](#). 1-2-3 for Windows opens each file in a separate window. You can then arrange and set display options for the open windows by using the [Window](#) commands.

To close a file, you use [File Close](#).

## Moving Between Active Files

To move the [cell pointer](#) from one active file to another, you use the [file navigation keys](#). The file that contains the cell pointer is the current file and is affected by the activities you perform and the commands you choose until you move the cell pointer and make another file current.

## Moving Data Between Files

You can find information about accessing data in a file and moving it to another file in the following topics:

- \* [Copying Data in 1-2-3](#)
- \* [Linking Files](#)
- \* [Specifying a File](#)
- \* [Specifying a Range](#)

See also:

[File Commands](#)  
[Files in 1-2-3 for Windows](#)

## Working with Excel Version 2.2 Files in 1-2-3 for Windows

You use File Open in 1-2-3 for Windows to open an Excel Version 2.2 worksheet file.

When you open the Excel file, 1-2-3 creates a copy of the file in .WK3 format in memory, associates a format file (.FM3) with the new .WK3 file, and leaves the original Excel file unchanged on disk.

If the Excel file is password-protected, you must remove the password before you can open the file in 1-2-3.

### File Name and Directory

When you open an Excel file, 1-2-3 uses the Excel file name to create the 1-2-3 worksheet file name. For example, if you open an Excel file named BUDGET.XLS, 1-2-3 assigns the name BUDGET.WK3 to the new worksheet file.

If the file name already exists, 1-2-3 assigns the next available default file name; for example, FILE0004.WK3.

When you save the file, 1-2-3 -- by default -- saves the 1-2-3 worksheet file in the directory that contains the original Excel file. If this directory is on a write-protected disk, 1-2-3 saves the worksheet file in the 1-2-3 default drive and directory.

You can save the file on another drive or in another directory by using File Save As.

### Worksheet Settings and Display Options

The following Excel settings do not translate: a page break with no data below it, window protection, window splits, row and column headings, formula display, zero suppression, grid-line display, grid and heading color.

### Row and Column Formats

Excel row heights not supported in 1-2-3 are translated as follows:

<b>Excel row height</b>	<b>In 1-2-3, translates to</b>
0	1
256 through 409	255

Excel column widths not supported in 1-2-3 are translated as follows:

<b>Excel column width</b>	<b>In 1-2-3, translates to</b>
0	Hidden column
240 through 255	240

Numbers from Excel that are larger than 9.99E+99 (the largest number in 1-2-3) and smaller than 1E-99 (the smallest number in 1-2-3) appear as \*\*\* (asterisks) when they are translated to the 1-2-3 worksheet file.

### Cell and Range Contents and Formats

Excel cell notes do not translate to 1-2-3.

ANSI characters in Excel translate to their LMBCS equivalent in 1-2-3.

Excel remote references (references to cells, cell ranges, values, and fields in other

applications) are replaced with the phrase **Untranslatable formula** in the 1-2-3 worksheet file.

Cell coordinates that are located below row 8192 and cell references to locations (range names, print ranges) below row 8192 in an Excel worksheet are placed on sheet B in the 1-2-3 worksheet file.

Excel multiple-selection ranges are not translated.

Excel custom formats translate to the 1-2-3 format that most closely approximates the Excel data type.

### **Numeric Formats**

Excel numeric formats are translated to 1-2-3 formats as follows:

<b>Excel format</b>	<b>1-2-3 format</b>
<i>nE+nn or n.nnE+nn</i>	Scientific
<i>\$n,nnn or \$n,nnn.nn</i>	Currency
<i>n,nnn or n,nnn.nn</i>	, (Comma)
<i>n or n.nn</i>	Fixed (up to 15 decimal places are maintained in 1-2-3)

The Excel Hidden format does not translate to 1-2-3.

Colors assigned to Excel numbers are translated as follows:

- \* When a color is assigned to negative numbers in an Excel custom format, the color red is assigned to the negative numbers in 1-2-3.
- \* The first color in an Excel custom color format is assigned to text, 0 (zero), and numbers (including negative numbers when no color is explicitly assigned to them).

### **Range Names**

The following Excel range names are translated:

- \* A range name that has an absolute (\$) cell reference (range names in Excel are absolute by default).
- \* Range names that do not extend below row 8192 of the Excel worksheet.

Range names that refer to a value or to a formula, rather than to a cell, are not translated. If possible, range names referring to a value or formula will be translated as the value or formula displayed in the Refers to field in the Formula Define Name dialog box.

### **Links**

When a translated Excel worksheet contains a file name in a linking formula, the extension in the file name is changed to .WK3. The link works in 1-2-3 when the file referred to in the formula is also translated to 1-2-3.

### **Functions and Formulas**

When an Excel array formula or data table formula cannot be used in 1-2-3, the phrase **Untranslatable formula** is entered in its place in the 1-2-3 worksheet file.

Excel functions that have no equivalent in 1-2-3 are translated with the **@XL\_** prefix. To use these functions, you can write an add-in @ function with the Lotus 1-2-3 for Windows Add-in Development Kit.

## Printing

An Excel print area is translated if it is defined as a single range.

Excel formatting codes for header and footer text are translated as follows:

<b>Excel print code</b>	<b>In 1-2-3, translates to</b>
&&	Ampersand (&)
&C	Center text ( Text )
&D	Current date (@)
&B	Bold (b and end-of-format sequence)
&I	Italics (i and end-of-format sequence)
&L	Left-align text (Text )
&P	Page number (#)
&R	Right-align text ( Text)

See also:

[Worksheet Commands](#)

## Linking Files

You can link files so that data in one file can be used to accomplish tasks in the other file.

- \* You can link two 1-2-3 files with a [formula](#) link. To create a formula link, you enter a formula that uses a [file reference](#) to identify the file you are linking to.
- \* You can link a 1-2-3 file and a file in another Windows application with a [DDE](#) link. To create a DDE link, you use Edit Paste Link or Edit Link Options Create.

### Source and Destination Files

The 1-2-3 file in which you create a link is called the destination file, and the range in which you create the link is called the destination range. The file that supplies data to the destination file is called the source file.

A file can be both a source file and a destination file, receiving data through one link and sending data through another link.

### DDE Client and Server Support

In a DDE link, a file can be a source file only when the Windows application to which it belongs supports DDE as a server. Similarly, in a DDE link, a file can be a destination file only when the application to which it belongs supports DDE as a client.

1-2-3 for Windows supports DDE both as a server and a client. Any 1-2-3 file can be a client and a server, receiving data through one DDE link and sending data through another DDE link.

### Linking to Open and Closed Files

Before data can be shared or updated through a DDE link, the source and destination files must both be open. In a formula link, however, one worksheet file can be open and one can be on disk.

See also:

[Edit Link Options](#)

[Edit Paste Link](#)

[Linking Files with DDE](#)

[Linking Files with Formulas](#)

## Linking Files with Formulas

You can use a formula to link two 1-2-3 worksheet files so that you can use data in one file to accomplish tasks in the other file.

The file that receives data is the destination file. The file that sends data is the source file. Both files can be active, or you can link to a source file on disk.

**Note** To link to a password-protected file, you must open the file first.

You create the link in the destination file by entering a formula that contains a file reference. The file reference identifies the source file that contains the range of data you want to use. The range in the source file can contain a graph.

When you save the destination file, 1-2-3 links the files.

### Example

You are working in a file called COMM.WK3, and you want to calculate the total commissions due on the sales made in the eastern territory of your company. The sales information is in a 1-2-3 worksheet file called EAST.WK3, in a range named TOTALS.

Using COMM.WK3 as the destination file, you create a link by entering the following formula:

```
@SUM(<<C:\SALES\EAST.WK3>>TOTALS)*A:A15
```

where A:A15 is the cell that contains the percentage used to calculate commissions and <<C:\SALES\EAST.WK3>> is the file reference for the source file.

After you save COMM.WK3 and 1-2-3 links the files, the formula in COMM.WK3 is updated whenever the data in TOTALS changes.

### Including the Path in a File Reference

To ensure that the link to a file works even if you change your current directory, include the file's path, as well as the file name, in the file reference.

If you share files with other users and want the link to work for a file in each of their current directories, do not include the path in a file reference. The links work as long as the current directory is set to the directory where the linked files are located.

### Creating a File Reference

You can create a file reference in any of the following ways:

- \* Type the file reference in front of the range address or range name. This is the only way to create a formula link to a source file on disk.
- \* While entering a formula in the control panel, type an operator -- for example, ( + > or &. Then press a pointer-movement key. When 1-2-3 enters POINT mode, you can highlight the range you want.  
1-2-3 automatically enters the file reference, including the path, in the formula.
- \* Use F3 (NAME) to specify a range name.

For example, your destination file is COMM.WK3 and you are creating a formula that needs the sum of the values in two named ranges, SALES and SALES2, in the file JULY.WK3.

Type + and press F3 (NAME). Specify the file JULY.WK3, and then specify the range name SALES. Then type + again, press F3 (NAME), specify JULY.WK3, and then specify SALES2. Press ENTER to complete the formula.

1-2-3 automatically enters the file reference, including the path, in the formula.

- \* Use <<?>> (wildcard file reference) if the data is in a named range and only one active file contains a range with that name.

If you use a wildcard file reference and then delete the range name that the formula refers to, 1-2-3 treats the range name as an undefined range name.

- \* Use <<>> (double angle brackets with no space between them: a noname file reference) to create a formula that refers to data in a worksheet you have not yet saved in a file.

For example, the formula +<<>>A:A4\*100 multiplies by 100 the value in cell A4 of your first unsaved worksheet. If you then save this worksheet in a file or delete it from memory, the noname reference becomes invalid and the formula evaluates to ERR.

### **Updating Linked Data**

When files are linked through a formula, data in the destination file is updated automatically to reflect the changes in the source file when you open the destination file.

After a file is open, you can update data in the destination file by using File Administration Update Links.

If recalculation is set to Manual in Tools User Setup Recalculation, use File Administration Update Links to recalculate data after you open the file, or press F9 (CALC).

See also:

Entering Formulas

Linking Files

Linking Files with DDE



## Linking Files with DDE

You can create a [DDE](#) link between a 1-2-3 file and a file in another Windows application that supports DDE as a server.

The file that receives data is the destination file. The file that sends data is the source file.

You create a DDE link by using [Edit Paste Link](#) or [Edit Link Options Create](#). You change, delete, or deactivate a DDE link, with [Edit Link Options](#) commands.

### Creating a DDE Link

To create a link to another Windows application, you must specify the application, the file (or other topic) in the application, and the data item in the file that you want to link to. You can also specify the format in which you want data transferred from the source file, and whether you want data updated in the destination range automatically or manually.

The source file can be an [active file](#) or a file on disk. The link is in effect as soon as you create it, but the destination range can be updated with data from the source file only when the destination file and the source file are active.

### Updating Linked Data

When files are linked through DDE and the update mode is set to Automatic, data in the destination file is updated automatically when the destination file and the source file are open and data in the source file changes. If the destination file is closed when data in the source file changes, the destination file is updated the next time both files are open.

When the update mode is set to Manual, you must use [Edit Link Options Update](#) to update data in the destination file.

See also:

[Entering Formulas](#)

[Linking Files](#)

[Linking Files with Formulas](#)

## Deleting a 1-2-3 for Windows File

To delete a 1-2-3 for Windows file, you must be in the Windows Program Manager or at the DOS prompt.

### To Delete a File from the Windows Program Manager

1. Make the Main window the active window.
2. Select File Manager.  
The Directory Tree window becomes active.
3. Select the drive name of the disk that contains the file to delete.
4. Select the directory that contains the file.  
A window displaying the subdirectories and files in the directory becomes active. If the file is in a subdirectory, select the subdirectory.
5. Select the file to delete.
6. Choose File Delete.  
The Delete dialog box is displayed.
7. Select Delete to remove the selected file, or enter another file name to remove a different file.  
The File Manager dialog box is displayed and asks you to confirm the deletion.
8. Select Yes to delete the file.

### To Delete a File from the DOS Prompt

1. Change to the drive and directory that contains the file to delete.
2. Type **del** <filename.ext>.
3. Press ENTER.

See also:

[File Commands](#)

[1-2-3 for Windows Help Contents](#)

## **1-2-3 for Windows Help Contents**

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### **Selecting a Help Topic**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the left mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **Viewing a Definition**

To view the definition of a term using the mouse, point to green text with a dotted underline. When the mouse pointer changes to a hand icon, press and hold the left mouse button. Using the keyboard, press TAB until the definition is highlighted, and then press and hold ENTER.

The definition appears in a pop-up box and stays visible until you release the mouse button or ENTER.

### **F1 (HELP)**

When you are not in the Help window, you can press F1 (HELP) to open the Help window and get Help on what you are doing in 1-2-3.

**Note** When the Help window is the active window, pressing F1 closes 1-2-3 for Windows Help and opens How to Use Help. When the Online Books window is the active window, pressing F1 closes Online Books and opens How to Use Online Books.

## How Do I?

To look up a specific task in How Do I? select a letter and then select a Help topic. To move through the alphabet, use Browse.

To select a letter using the mouse, point to a green letter with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the letter is highlighted, and then press ENTER.

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
<u>F</u>	<u>G</u>	<u>H</u>	<u>I</u>	<u>J</u>
<u>K</u>	<u>L</u>	<u>M</u>	<u>N</u>	<u>O</u>
<u>P</u>	<u>Q</u>	<u>R</u>	<u>S</u>	<u>T</u>
<u>U</u>	<u>V</u>	<u>W</u>	X	Y
<u>Z</u>				

## **A**    How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Add a border to a graph

-- see Chart Borders/Grids (Graph Window)

Add a border to a range

-- see Style Border

Add a column, row or worksheet

-- see Worksheet Insert

Add decimals or dollar signs to data

-- see Range Format

Add a drop shadow to a range

-- see Style Border

Add graph enhancements

-- see Chart Commands (Graph Window)

-- see Draw Commands (Graph Window)

Add a graph to a worksheet

-- see Graph Add to Sheet

Add a graphic to a range

-- see Range Annotate

Add a header or footer

-- see Specifying Header and Footer Text

Add a note to a formula

-- see Entering Formulas

Add a note to a graph

-- see Chart Headings (Graph Window)

Add a note to a Help or Online Books topic

-- see Edit Annotate (Help and Online Books Windows)

Add numbers

-- see @SUM

Add shading to a range

-- see Style Shading

Add SmartIcons

-- see Tools SmartIcons Customize

Align labels in a range or worksheet

-- see Style Alignment

-- see Worksheet Global Settings Align Labels

Anchor the cell pointer

-- see F4

Arrange data

-- see Data Sort

Arrange graph objects

-- see Layout Commands (Graph Window)

-- see Rearrange Commands (Graph Window)

Arrange records in a database

-- see Data Sort

Arrange windows

-- see Window Commands

Average numbers

-- see @AVG

## **B**     How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Back up work

-- see File Save As Backup

Beep on error

-- see Tools User Setup

Bold data

-- see Style Font

Bookmark a Help or Online Books topic

-- see Bookmark Define (Help and Online Books Windows)

Border a graph

-- see Chart Borders/Grids (Graph Window)

Border a print job

-- see File Page Setup Borders

Border a range

-- see Style Border



## **C**     How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Cancel the last action or command

-- see Edit Undo

Center labels

-- see Style Alignment

-- see Worksheet Global Settings Align Labels

Change the appearance of data

-- see Range Format

-- see Style Font

Change a column of long labels into several columns of data

-- see Data Parse

Change column width

-- see Worksheet Column Width

Change a font

-- see Fonts in 1-2-3 for Windows

Change formulas to values

-- see Edit Quick Copy

-- see F9 (CALC)

Change global default settings

-- see Tools User Setup

-- see Window Display Options

-- see Worksheet Global Settings

Change graph type

-- see Chart Type (Graph Window)

Change label alignment

-- see Style Alignment

Change print settings

-- see File Page Setup

Change row height

-- see Worksheet Row Height

Change the size of a graph range

-- see Graph Size

Change the sort order

--see Sort Order (Collating Sequences)

Change the window display

-- see Control Menu

-- see Window Commands

Choose a command

-- see Choosing a 1-2-3 Command

-- see For Upgraders: 1-2-3 Classic

Choose a printer  
-- see [File Printer Setup](#)

Clear cell contents  
-- see [Edit Clear](#)

Clear types of data and formatting  
-- see [Edit Clear Special](#)

Close an active file  
-- see [File Close](#)

Close a window  
-- see [Closing a Window in 1-2-3](#)

Color data, parts of a worksheet or a graph  
-- see [Colors in 1-2-3 for Windows](#)

Combine two worksheet files  
-- see [File Combine From](#)

Compose a LMBCS character  
-- see [ALT+F1 \(COMPOSE\)](#)

Connect to an external database  
-- see [Data Connect to External](#)

Copy data  
-- see [Copying Data in 1-2-3](#)

Copy a graph  
-- see [Copying Data in 1-2-3](#)

Copy a graph from a file on disk to the current file  
-- see [Graph Import](#)

Copy a Help or Online Books topic  
-- see [Edit Copy \(Help and Online Books Windows\)](#)

Copy link information from the Clipboard to a worksheet  
-- see [Edit Paste Link](#)

Correct a mistake  
-- see [Editing Keys](#)  
-- see [Edit Undo](#)

Create characters not on the keyboard  
-- see [ALT+F1 \(COMPOSE\)](#)

Create a database  
-- see [Creating a 1-2-3 Database Table](#)

Create database criteria  
-- see [Creating the Criteria Range](#)

Create a frequency distribution of values in a range  
-- see [Data Distribution](#)

Create a graph  
-- see [Creating Graphs](#)

Create a link  
-- see [Linking Files](#)  
-- see [Linking Files with DDE](#)

-- see [Linking Files with Formulas](#)

Create a list of range names and their addresses

-- see [Range Name Paste Table](#)

Create a macro

-- see [Writing a Macro](#)

Create a multiple-sheet file

-- see [Worksheet Insert](#)

Create named page settings

-- see [File Page Setup Save](#)

Create a new worksheet file

-- see [File New](#)

Create a page break

-- see [Worksheet Page Break](#)

Create a range name

-- see [Range Name Create](#)

-- see [Range Name Label Create](#)

Create SmartIcons

-- see [Tools SmartIcons Customize](#)

Create a text file

-- see [File Extract To](#)

Create a what-if table

-- see [Data What-if Table](#)

Customize SmartIcons

-- see [Tools SmartIcons Customize](#)

Cut data and place it on the Clipboard

-- see [Edit Cut](#)

## **D**     How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Debug a macro

-- see Debugging a Macro

Delete a column, row or worksheet

-- see Worksheet Delete

Delete data

-- see Edit Clear

-- see Edit Cut

-- see Editing Keys

Delete a file

-- see Deleting a 1-2-3 for Windows File

Delete a graph

-- see Graph Name Delete

Delete a link between worksheet files

-- see Edit Link Options Delete

Delete a page break

-- see Worksheet Page Break

Delete a range name

-- see Range Name Delete

Delete a record from a database

-- see Data Query Delete

Delete types of data and formatting

-- see Edit Clear Special

Display data, parts of a worksheet or a graph in color

-- see Colors in 1-2-3 for Windows

Display a graph

-- see Graph View

Display Help

-- see Using Help

Display Help and 1-2-3 together

-- see Viewing 1-2-3 and Help Together on the Screen

Display a hidden column or worksheet

-- see Worksheet Unhide

Display a list of open windows

-- see Window (Window Name)

-- see Window More Windows

Display negative values in red

-- see Style Color

Display 1-2-3 Classic

-- see For Upgraders: 1-2-3 Classic

Display three worksheets in a file at once

-- see Window Split

Display windows one on top of another

-- see Window Cascade

Display windows side by side

-- see Window Tile

Draw a drop shadow

-- see Style Border

Draw a graph object

-- see Draw Commands (Graph Window)

Draw a graphic in a range

-- see Range Annotate

Draw lines around a range

-- see Style Border

## **E**     How Do I? Index

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Edit data

-- see [Editing Keys](#)

-- see [F2 \(EDIT\)](#)

Edit a graph

-- see [Edit Commands \(Graph Window\)](#)

Edit a macro in the Transcript window

-- see [Using the Transcript Window](#)

Edit records in a database

-- see [Data Query Modify](#)

End 1-2-3

-- see [Exiting and Ending 1-2-3 for Windows](#)

Enter an @function

-- see [Writing an @Function](#)

Enter characters not on the keyboard

-- see [ALT+F1 \(COMPOSE\)](#)

Enter data

-- see [Entering Data](#)

Enter a date

-- see [@DATE](#)

-- see [Date Formats](#)

Enter a formula

-- see [Entering Formulas](#)

Enter a macro

-- see [Writing a Macro](#)

Enter a sequence of values in a range

-- see [Data Fill](#)

Enter a time

-- see [Time Formats](#)

Erase data

-- see [Edit Clear](#)

-- see [Editing Keys](#)

Erase a file on disk

-- see [Deleting a 1-2-3 for Windows File](#)

Erase types of data and formatting

-- see [Edit Clear Special](#)

Exit Help or Online Books

-- see [File Exit \(Help and Online Books Windows\)](#)

Exit 1-2-3

-- see [Exiting and Ending 1-2-3 for Windows](#)

Explode a pie slice

-- see [Setting Up a Colors Range](#)

Extract data to a file on disk

-- see [File Extract To](#)

Extract records from a database

-- see [Data Query Extract](#)

## **F**     How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Fill a range with numbers or dates

-- see Data Fill

Find a circular reference

-- see Help About 1-2-3

Find a movie

-- see Movie Guide

Find an online book topic

-- see Using Online Books

Find data

-- see Edit Find

Find Help and Online Books information

-- see Using Search

Find maximum and minimum values

-- see @MAX

-- see @MIN

Find records in a database

-- see Data Query Find

Fix a macro

-- see Debugging a Macro

Fix a mistake in a worksheet

-- see Edit Undo

-- see F2 (EDIT)

Format a range of data

-- see Range Format

Freeze a column or row as a title

-- see Worksheet Titles



## **G**    How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Get a file reservation

-- see Reserving a File

Go to another Windows application

-- see Control Menu Keys

Go to a specified range

-- see F5 (GOTO)

-- see Range Go To

Graph data

-- see Creating Graphs

Group worksheets

-- see Worksheet Global Settings Group Mode

## **H**     How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Hide a column or worksheet

-- see Worksheet Hide

Hide data

-- see Hiding Data

Hide a graph in the worksheet

-- see Style Display Options (Graph Window)

Hide grid lines

-- see Window Display Options Options

Hide the icon palette

-- see Tools SmartIcons

Hide percent labels in a pie chart

-- see Setting Up a Percent-Labels Range

Hide a pie slice

-- see Setting Up a Colors Range

Hide text and data ranges in a graph

-- see Chart Options Colors (Graph Window)

Hide the Show Me Player Toggle

-- see Toggling Between a Movie and a 1-2-3 Window

Hide the worksheet frame

-- see Window Display Options Frame

Hide zeros in a worksheet

-- see Worksheet Global Settings Zero Display

Highlight a range

-- see Highlighting a Range

## I [How Do I? Index](#)

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Import data from a text file

-- see [File Import From](#)

Import a graph from a file on disk

-- see [Graph Import](#)

Increase available memory

-- see [Increasing Available Memory](#)

Insert a column, row or worksheet

-- see [Worksheet Insert](#)

Insert data from the Clipboard

-- see [Edit Paste](#)

Insert a page break

-- see [Worksheet Page Break](#)

Invert a matrix

-- see [Data Matrix Invert](#)

Italicize data

-- see [Style Font](#)

## **J**     How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Join database tables

-- see Querying Multiple Database Tables

Join text in a formula

-- see Types of Formulas

Justify a column of labels

-- see Range Justify

## **K**    How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Keep a title in view

-- see Worksheet Titles

## **L**     How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Leave Help or Online Books

-- see File Exit (Help and Online Books Windows)

Leave 1-2-3

-- see Exiting and Ending 1-2-3 for Windows

Link files

-- see Linking Files

-- see Linking Files with DDE

-- see Linking Files with Formulas

List @functions

-- see @Function Index

List file information

-- see File Administration PasteTable

List graphs in a file

-- see Graph Name Paste Table

List information about an external database

-- see Data External Options Paste Fields

List macro commands

-- see Macro Command Index

List range names

-- see Range Name Paste Table

Load an add-in

-- see Tools Add-in Load

## **M**    How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Maximize a window

-- see Control Menu

Minimize a window

-- see Control Menu

Move to another Windows application

-- see Control Menu

Move around a dialog box

-- see Dialog Box Keys

Move around a window or worksheet

-- see F5 (GOTO)

-- see Pointer-Movement Keys

-- see Scrolling with the Mouse

Move between active files

-- see F5 (GOTO)

-- see File Navigation Keys

Move between a movie and a 1-2-3 window

-- see Toggleing Between a Movie and a 1-2-3 Window

Move between worksheet panes

-- see F6 (PANE)

Move between worksheets in a file

-- see F5 (GOTO)

-- see Worksheet Navigation Keys

Move data

-- see Edit Move Cells

Move a SmartHelp window

-- see Moving a SmartHelp Window

Move to the next window

-- see Control Menu

Move SmartIcons

-- see Tools SmartIcons

Move to a specified graph range

-- see Graph Go To

Move to a specified range

-- see F5 (GOTO)

-- see Range Go To

Move a window

-- see Control Menu

Multiply matrixes

-- see Data Matrix Multiply





## **N**     How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Name a cell format

-- see Style Name

Name a file

-- see Naming a 1-2-3 File

Name a font set

-- see Style Font Replace Save

Name a graph

-- see Graph New

Name a macro

-- see Naming a Macro

Name page settings

-- see File Page Setup Save

Name a range

-- see Range Name Create

## ○ How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Open the Graph window

-- see Graph New

-- see Graph View

Open the Help window

-- see Using Help

Open the 1-2-3 Classic window

-- see For Upgraders: 1-2-3 Classic

Open the Transcript window

-- see Tools Macro Show Transcript

Open a worksheet file

-- see File Open

Open an online book

-- see Using Online Books

Order books

-- see Using Online Books

Organize a database table

-- see Creating a 1-2-3 Database Table

Outline a graph

-- see Chart Border/Grids (Graph Window)

Outline a range

-- see Style Border

## **P**     How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Parse data

-- see Data Parse

Paste Clipboard data to a worksheet

-- see Edit Paste

Paste link information from the Clipboard to a worksheet

-- see Edit Paste Link

Play a movie

-- see Playing a Show Me Movie

Play the Guided Tour

-- see Taking the Guided Tour

Predict values using regression analysis

-- see Data Regression

Preview the print range

-- see File Preview

Print data

-- see Printing Data

Print a graph

-- see Printing Data

Print grid lines or worksheet frame

-- see File Page Setup Options

Print a Help or Online Books topic

-- see File Print Topic (Help and Online Books Windows)

Protect data

-- see Protecting Data and Files

## **Q**    How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Query a database table

-- see Data Query

Query multiple database tables

-- see Querying Multiple Database Tables

Quit Help or Online Books

-- see File Exit (Help and Online Books Windows)

Quit 1-2-3

-- see Exiting and Ending 1-2-3 for Windows

## **R**     How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Read a text file into a worksheet

-- see File Import From

Read a worksheet file into memory

-- see File Open

Recalculate linked formulas

-- see File Administration Update Links

Recalculate a worksheet

-- see F9 (CALC)

Record keystrokes

-- see Using the Transcript Window

Redisplay a hidden column or worksheet

-- see Worksheet Unhide

Redisplay hidden data

-- see Hiding Data

Release a file reservation

-- see Reserving a File

Remove an active file from memory

-- see File Close

Remove an add-in

-- see Tools Add-in Remove

Remove a column, row, or worksheet

-- see Worksheet Delete

Remove data

-- see Edit Clear

-- see Edit Cut

-- see Editing Keys

Remove grid lines

-- see Window Display Options Options

Remove a page break

-- see Worksheet Page Break

Remove protection

-- see Range Unprotect

-- see Worksheet Global Settings Protection

Remove SmartIcons

-- see Tools SmartIcons Customize

Remove the worksheet frame

-- see Window Display Options Frame

Replace data

-- see Edit Find

Replace a font

-- see [Style Font Replace](#)

Reserve a file

-- see [Reserving a File](#)

Restore a window

-- see [Control Menu](#)

Retrieve a file

-- see [File Open](#)

Reverse the last action or command

-- see [Edit Undo](#)

Round numbers

-- see [@ROUND](#)

Run a macro

-- see [Running a Macro](#)

Run a movie

-- see [Playing a Show Me Movie](#)

Run the Guided Tour

-- see [Taking the Guided Tour](#)

## **S**     How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Save data

-- see File Save

-- see File Save As

Save data in Release 2 format

-- see Saving Files in 1-2-3 Release 2 (.WK1) Format

Save a macro

-- see Saving a Macro

Save page settings

-- see File Page Setup Save

Save part of a worksheet file

-- see File Extract To

Seal a worksheet file

-- see File Administration Seal File

Search for data

-- see Edit Find

Search for a Help or Online Books topic

-- see Using Search

Search for records in a database

-- see Data Query Find

See a movie

-- see Playing a Show Me Movie

See three worksheets at once

-- see Window Split

Select a command

-- see Choosing a 1-2-3 Command

-- see For Upgraders: 1-2-3 Classic

Select a graph object

-- see Selecting Objects in the Graph Window

Select a movie

-- see Movie Guide

-- see Playing a Show Me Movie

Select options in a dialog box

-- see Dialog Box Keys

Share files on a network

-- see File Administration Network Reserve

Size a graph

-- see Graph Size

-- see Window Commands (Graph Window)

Size a graph object

-- see Rearrange Adjust Size (Graph Window)

Size a window  
-- see [Control Menu](#)

Solve a what-if problem  
-- see [Solver Basics](#)

Sort data  
-- see [Data Sort](#)

Sort records in a database  
-- see [Data Sort](#)

Specify color  
-- see [Colors in 1-2-3 for Windows](#)

Specify column width  
-- see [Worksheet Column Width](#)

Specify data ranges for a graph  
-- see [Chart Ranges \(Graph Window\)](#)

Specify a file  
-- see [Specifying a File](#)

Specify a font  
-- see [Fonts in 1-2-3 for Windows](#)

Specify global default settings  
-- see [Tools User Setup](#)  
-- see [Window Display Options](#)  
-- see [Worksheet Global Settings](#)

Specify graph enhancements  
-- see [Chart Commands \(Graph Window\)](#)  
-- see [Draw Commands \(Graph Window\)](#)

Specify a graph type  
-- see [Chart Type \(Graph Window\)](#)

Specify a password  
-- see [File Password Protection](#)

Specify a printer  
-- see [File Printer Setup](#)

Specify print settings  
-- see [File Page Setup](#)

Specify a range  
-- see [Specifying a Range](#)

Specify a range format  
-- see [Range Format](#)

Specify row height  
-- see [Worksheet Row Height](#)

Split a window into two panes  
-- see [Window Split](#)

Start a macro  
-- see [Running a Macro](#)

Start a new worksheet file



-- see File New

Stop a macro

-- see Running a Macro

Switch from a movie to a 1-2-3 window

-- see Toggling Between a Movie and a 1-2-3 Window

Switch to another Windows application

-- see Control Menu

## **T**     How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Take the Guided Tour

-- see Taking the Guided Tour

Test a macro

-- see Debugging a Macro

Toggle between a movie and a 1-2-3 window

-- see Toggling Between a Movie and a 1-2-3 Window

Total numbers

-- see @SUM

Transpose a range of data

-- see Range Transpose

Turn the beep on or off

-- see Tools User Setup

Turn Undo on or off

-- see Tools User Setup

## **U**    How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Underline data

-- see Style Font

Undo a command or action

-- see Edit Undo

Unhide a column, row or worksheet

-- see Worksheet Unhide

Unhide data

-- see Hiding Data

Unprotect a range of data

-- see Range Unprotect

Update graphs in a file

-- see Graph Refresh

Update a link between worksheet files

-- see Edit Link Options Update

## **V**    How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

View a graph

-- see Graph View

View Help

-- see Using Help

View Help and 1-2-3 together

-- see Viewing 1-2-3 and Help Together on the Screen

View a hidden column or worksheet

-- see Worksheet Unhide

View a list of open windows

-- see Window (Window Name)

-- see Window More Windows

View a movie

-- see Playing a Show Me Movie

View open windows one on top of another

-- see Window Cascade

View open windows side by side

-- see Window Tile

View three worksheets in a file at once

-- see Window Split

## **W**    How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Widen a column

-- see Worksheet Column Width

Write an @function

-- see Writing an @Function

Write database criteria

-- see Creating the Criteria Range

Write a formula

-- see Entering Formulas

Write a macro

-- see Writing a Macro

## **Z**    How Do I? Index

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Zoom cell display

-- see Window Display Options Zoom

Zoom a window pane

-- see ALT+F6 (ZOOM)

## **1-2-3 Main Menu (Worksheet Window)**

### File

Organizes, maintains, moves data between, and prints files.

### Edit

Copies and moves data from a worksheet file to another open file or application; establishes links between a worksheet file and other applications; and undoes commands and actions.

### Worksheet

Controls the display and organization of worksheets, and controls global worksheet settings.

### Range

Manipulates ranges of data.

### Graph

Creates, defines, and displays graphs.

### Data

Analyzes and manipulates data in worksheets, 1-2-3 database tables, and external databases.

### Style

Controls the appearance of data on screen and in print.

### Tools

Controls global settings; manipulates the icon palette and SmartIcons; and lets you use add-ins, macros, and tools for what-if calculations.

### Window

Controls the display of the Worksheet window, and controls the placement of windows that are open in the 1-2-3 window.

### Help

Provides access to broad categories of 1-2-3 for Windows Help topics.

## **File Commands**

Organize, maintain, move data between, and print files.

### New

Creates a new blank worksheet file on disk and places it in a window.

### Open

Reads a worksheet file into memory and places it in a window.

### Close

Closes the active window.

### Save

Saves the current worksheet file on disk.

### Save As

Saves a worksheet file with a name you specify, or saves all modified files on disk; assigns a password to files.

### Combine From

Incorporates data from a worksheet file on disk into the current file.

### Import From

Reads data from a text file on disk into the current worksheet.

### Extract To

Extracts a range of data from an active file and saves it in a worksheet or text file on disk.

### Administration

Controls reservations for worksheet files, seals worksheet files, recalculates linked formulas, and creates a table of file information.

### Preview

Displays the print range as 1-2-3 will format it for printing.

### Page Setup

Specifies the layout for a printed page; specifies header and footer text; and lets you create, save, and retrieve named page settings.

### Print

Prints a range or ranges of data; specifies pages and number of copies.

### Printer Setup

Specifies the printer destination and modifies printer settings.

### Exit

Ends the 1-2-3 session.

See also:

File Password Protection  
Protecting Data and Files  
Reserving a File



## **Edit Commands**

Copy and move data from a worksheet file to another open file or application; manage links between a worksheet file and other applications; and undo commands and actions in a worksheet file.

### Undo

Reverses the effect of the most recently executed command or action.

### Cut

Deletes data from the worksheet and places it on the Clipboard.

### Copy

Copies data from the worksheet to the Clipboard.

### Paste

Copies the contents of the Clipboard to the worksheet.

### Clear

Deletes cell contents from the worksheet without using the Clipboard.

### Clear Special

Deletes selected types of data (cell contents, cell format, formatting, or graph) from a range without using the Clipboard.

### Paste Link

Uses link information on the Clipboard to create a link between the current worksheet file and the file referred to on the Clipboard.

### Link Options

Creates, deletes, edits, and updates dynamic links between worksheet files and files created with another Windows application.

### Find

Finds or replaces specified characters in labels and formulas in a range.

### Move Cells

Transfers data to another range in the same worksheet file, without using the Clipboard.

### Quick Copy

Copies data to a range in the same worksheet file or a different worksheet file, without using the Clipboard.

## **Worksheet Commands**

Control the display and organization of worksheets, and control the global worksheet settings.

### Global Settings

Control global settings for the current worksheet.

### Insert

Inserts one or more blank columns, rows, or worksheets.

### Delete

Deletes one or more columns, rows, or worksheets in the active file, closing up the space left by the deletion.

### Hide

Hides columns or worksheets to prevent display and printing of data.

### Unhide

Redisplays columns or worksheets hidden with Worksheet Hide.

### Column Width

Sets the width of one or more columns in the worksheet, or resets columns to the global column width.

### Row Height

Sets the height of one or more rows in the worksheet, or resets rows to the default row height for the current global font.

### Titles

Freezes or unfreezes rows and columns at the top and/or left edges of the worksheet.

### Page Break

Inserts or removes horizontal and vertical page breaks in printed worksheets.

## **Range Commands**

Manipulate ranges of data.

### Format

Sets the display of data in a range.

### Name

Creates, deletes, and undefines range names, and creates a table of defined range names.

### Justify

Rearranges a column of labels to fit within a specified width.

### Protect

Prevents changes to unprotected cells in a range when the worksheet is globally protected.

### Unprotect

Allows changes to cells in a range when the worksheet is globally protected.

### Transpose

Copies a range of data, transposing the layout of the data and converting any formulas to their current values.

### Annotate

Adds objects to a range in a worksheet.

### Go To

Moves the cell pointer to a specified range.

See also:

[Highlighting a Range](#)

[Range Basics](#)

[Specifying a Range](#)

## **Graph Commands**

Create, define, and display graphs.

### New

Creates and names a graph based on a range of data in the current worksheet.

### View

Displays a graph in the Graph window.

### Add to Sheet

Adds a graph to the current worksheet.

### Name

Deletes graphs and lists all graphs in a file.

### Import

Copies a graph from a .PIC file or a .CGM file on disk to the current file.

### Size

Resizes a graph added to the current worksheet by resizing the range the graph occupies.

### Refresh

Updates all graphs in the current file to reflect recalculation of graph data ranges.

### Go To

Moves the cell pointer to the range that contains the graph you specify.

See also:

[Creating Graphs](#)

[Graph Window Commands](#)

## **Data Commands**

Analyze and manipulate data in worksheets, 1-2-3 database tables, and external databases.

### Fill

Enters a sequence of values in a range.

### Sort

Arranges data in a range or records in a database table in the order you specify.

### What-if Table

Creates a table that shows how the results of formulas vary when you change the values used in the formulas.

### Distribution

Creates a frequency distribution of the values in a range.

### Matrix

Inverts or multiplies matrixes formed by rows and columns of data.

### Regression

Performs multiple linear regression analysis to determine the relationships of up to 75 independent variables to a dependent variable.

### Parse

Converts a single column of long labels into one or more columns of data.

### Query

Finds, copies, deletes, calculates, or changes specific records in a database table.

### Connect to External

Establishes a connection between 1-2-3 and an external database table.

### External Options

Lists the fields in an external table, sends a command to an external database, creates a table in an external database, and ends the connection to an external table.

## **Style Commands**

Control the appearance of data on screen and in print.

### Font

Applies fonts and text attributes to a range; updates and restores the the default font set for a worksheet file; and saves and retrieves named font sets.

### Alignment

Aligns labels in a range either within a cell or across columns.

### Border

Draws horizontal and vertical lines along the edges of cells, outlines around cells and ranges, and drop shadows around ranges.

### Color

Displays and prints ranges in color, and displays negative values in red.

### Shading

Adds light, dark, or solid shading to a range.

### Name

Defines the format of a cell as a named style.

### Style (Named Style)

Formats a range with a style you defined with Style Name.

## **Tools Commands**

Control global settings; use add-ins, macros, and tools for what-if calculations.

### Backsolver

Finds a value for one cell that makes the result of a formula equal to a value you specify.

### Solver

Finds answers for what-if problems in worksheet models.

### SmartIcons

Positions and hides the icon palette, adds and removes SmartIcons, and creates custom SmartIcons.

### User Setup

Changes settings that affect the display and behavior of 1-2-3 for Windows.

### Macro

Starts macros; starts STEP mode and opens the Macro Trace window so you can debug a macro; and opens the Transcript window, which records and plays back keystrokes and mouse actions.

### Add-in

Reads add-ins into memory and removes add-ins from memory.

## **Window Commands**

Control the display of the Worksheet window, and control the placement of windows that are open in the 1-2-3 window.

### Split

Divides a Worksheet window horizontally or vertically into two panes, or displays three contiguous worksheets in perspective view.

### Display Options

Controls display settings for the current 1-2-3 session.

### Tile

Sizes open windows and places them side by side in the 1-2-3 window.

### Cascade

Sizes open windows and arranges them in the 1-2-3 window so they appear one on top of the other, with just the title bars showing.

### (Window Name)

Lists up to nine open windows and displays a check mark next to the active window.

### More Windows

Lists all windows that are open in the 1-2-3 window when more than nine windows are open.



## **Help Commands**

Provide access to broad categories of 1-2-3 for Windows Help topics.

### Contents

Displays categories of Help topics, including commands, terms, tasks, and error messages. You can get to any part of the 1-2-3 Help system from Help Contents.

### Using SmartHelp

Provides information about how to use 1-2-3 SmartHelp.

### Movie Guide

Displays a list of all Show Me movies available in 1-2-3 for Windows.

### Online Books

Displays a list of all online books available in 1-2-3 for Windows.

### Guided Tour

Starts playing the Guided Tour for 1-2-3 for Windows.

### About 1-2-3

Displays the release number and copyright notice of 1-2-3 for Windows. When the status line displays CIRC, About 1-2-3 gives the cell address of a cell containing a circular reference.

About SmartHelp Displays the release number and copyright notice for Multimedia SmartHelp.

See also:

Help Buttons

Help and Online Books Window Commands

Online Books Buttons

## Control Menu

The 1-2-3 window, the Worksheet, Graph, Transcript, and SmartHelp (that is, Help, Online Books, Show Me Player, and Toggle) windows, and all dialog boxes have a Control menu.

The commands of the Control menu let you move, size, and close the window, and switch to another Windows application or to another window in 1-2-3. The Control menu in a dialog box lets you close and move the dialog box.

### Displaying a Control Menu

You display a Control menu by opening the Control menu box. With a mouse, click the Control menu box to display the Control menu. The following table explains how to display a Control menu using the keyboard:

<b>Control menu for</b>	<b>Displays when you press</b>
1-2-3 window	ALT+ space bar
Worksheet window	ALT+ - (hyphen)
Graph window	ALT+ - (hyphen)
Transcript window	ALT+ - (hyphen)
SmartHelp window	ALT+ space bar
Dialog box	ALT+ space bar

The list of commands in a Control menu varies slightly, depending on the window. The only commands in the Control menu of a dialog box are Close and Move.

#### Close

Closes the window.

- \* With a mouse, double-clicking the Control menu box is equivalent to choosing Close.
- \* In the 1-2-3 or Help window, Close is equivalent to File Exit.
- \* In the Worksheet, Graph, or Transcript window, Close is equivalent to File Close.
- \* In a dialog box, Close is equivalent to Cancel.

#### Hide Toggle/Show Toggle

In the Show Me Player window, lets you hide and unhide the Toggle.

#### Maximize

Enlarges a window to its maximum size.

- \* With a mouse, clicking the Maximize button is equivalent to choosing Maximize.
- \* When you maximize the 1-2-3 or Help window, it fills the whole screen.
- \* When you maximize a Worksheet, Graph, or Transcript window, it fills the whole work area of the 1-2-3 window.

#### Minimize

Reduces the window to an icon. When a window is an icon, it is still open and can also be active.

With a mouse, clicking the Minimize button is equivalent to choosing Minimize.

#### Move

Repositions the window or dialog box. When you choose Move, the mouse pointer changes to a four-headed arrow and a gray frame appears around the window or dialog box. Use the

pointer-movement keys to move the window or dialog box. Press ENTER to complete the move.

With a mouse, pointing to the title bar of the window or dialog box and dragging it to a new position is equivalent to choosing Move.

### **Next**

Makes the next open Worksheet, Graph, or Transcript window the active window.

With a mouse, clicking a window makes it active

### **Restore**

Returns a minimized or maximized window to its previous size and position.

- \* With a mouse, clicking the Restore button is equivalent to choosing Restore when the window is maximized. Double-clicking the icon is equivalent to choosing Restore when the window is minimized.
- \* To restore a minimized 1-2-3 or Help window, press ALT+ESC repeatedly until the icon is selected, and then press ALT+ space bar to display the Control menu. Choose Restore.
- \* To restore a minimized Worksheet, Graph, or Transcript window, press CTRL+F6 repeatedly until the icon is selected, and then press ALT+ - (hyphen) to display the Control menu. Choose Restore.

### **Size**

Adjusts the dimensions of the window. When you choose Size, the mouse pointer changes to a four-headed arrow and a gray frame appears around the window. Use the pointer-movement keys to size the window. Press ENTER when the window reaches the size you want.

With the mouse, dragging the window border is equivalent to choosing Size.

### **Switch To**

Lets you switch to another application by using the Windows Task List.

See also:

Control Menu Keys

## **Files in 1-2-3 for Windows**

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

[Deleting a 1-2-3 for Windows File](#)

[File Commands](#)

[File Navigation Keys](#)

[File Password Protection](#)

[Linking Files](#)

[Naming a 1-2-3 File](#)

[Protecting Data and Files](#)

[Reserving a File](#)

[Printing Data](#)

[Specifying a File](#)

[Working with Multiple Files](#)

[Working with Multiple Worksheets in a File](#)

## **Colors in 1-2-3 for Windows**

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

To change the palette of colors used in the worksheets and graphs of all [active files](#)  
-- see [Window Display Options Palette](#)

### **Colors in a Worksheet**

To assign colors to parts of a worksheet  
-- see [Window Display Options Colors](#)

To assign colors to ranges  
-- see [Style Color](#)  
-- see [Style Shading](#)

### **Colors in a Graph**

To assign colors to each value in a data range of a graph  
-- see [Chart Options Advanced Styles \(Graph Window\)](#)

To assign colors to objects in a graph  
-- see [Style Color \(Graph Window\)](#)

To assign colors to parts of a graph  
-- see [Chart Options Colors \(Graph Window\)](#)

To assign colors to slices of a pie chart  
-- see [Setting Up a Colors Range](#)

## **Lines and Borders in 1-2-3 for Windows**

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **Lines and Borders in a Worksheet**

To change the display of the worksheet frame, or turn it off  
-- see [Window Display Options Frame](#)

To draw a drop shadow to a range  
-- see [Style Border](#)

To draw lines or an outline around a range  
-- see [Style Border](#)

To turn grid lines on or off in the worksheet  
-- see [Window Display Options Options](#)

To underline text in a cell  
-- see [Style Font](#)

### **Lines and Borders in a Graph**

To add borders or grid lines to a graph  
-- see [Chart Borders/Grids \(Graph Window\)](#)

To control the appearance of lines and outlines in the Graph window  
-- see [Style Lines \(Graph Window\)](#)

To draw arrows in the Graph window  
-- see [Draw Arrow \(Graph Window\)](#)

To draw lines in the Graph window  
-- see [Draw Line \(Graph Window\)](#)

To set the display of lines representing data ranges  
-- see [Chart Options Lines \(Graph Window\)](#)

## **Fonts in 1-2-3 for Windows**

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

To change the font set used in the worksheets and graphs of a file

-- see [Style Font Replace](#)

### **Fonts in a Worksheet**

To apply bold, italics, or underlining

-- see [Style Font](#)

To apply a font to a range

-- see [Style Font](#)

To create a named font set

-- see [Style Font Replace Save](#)

To make the current font set the default font set

-- see [Style Font Replace](#)

To replace a font in the current font set

-- see [Style Font Replace](#)

To use a named font set

-- see [Style Font Replace Retrieve](#)

### **Fonts in a Graph**

To apply a font to text in a graph

-- see [Chart Options Fonts \(Graph Window\)](#)

To apply a font to text in a graph created with Draw Text

-- see [Style Font \(Graph Window\)](#)

To change the size of text in a graph

-- see [Style Font \(Graph Window\)](#)

## **DDE in 1-2-3 for Windows**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Dynamic Data Exchange Macro Commands Category

Edit Link Options

































Edit Paste Link

Link Macro Commands Category

Linking Files with DDE



Should've ported. Gee.

- Calculating**
  -  About Calculations (2:30)
  -  About Cell References (4:10)
  -  Creating Formulas (1:20)
  -  Using @Functions to Calculate (1:25)
  
- Columns & Rows**
  -  Changing Column Width (1:45)
  -  Changing Row Height (1:55)
  -  Freezing Rows and Columns (1:45)
  
- Copying**
  -  About Copying (3:00)
  -  Copying a Range of Data (1:20)
  
- Deleting**
  -  About Deleting (2:25)
  
- Files**
  -  Creating a New File (0:50)
  -  Opening an Existing File (0:45)
  
- Graphing**
  -  About Graphing (4:15)
  -  About Choosing Graph Types (5:00)
  -  Creating a Graph (1:55)
  -  Graphing Nonadjacent Ranges (1:55)
  -  Graphing Rows of Data (1:55)
  -  Printing a Graph (2:35)
  
- Moving**
  -  About Moving (2:40)
  -  Moving a Range of Data (1:10)
  
- Printing**
  -  About Printing (2:55)
  -  About Printing a Large Range (3:20)
  -  Printing Data (1:25)
  -  Printing Headers and Footers (1:45)
  -  Printing Several Ranges (1:55)
  
- Saving**
  -  About Saving (3:30)
  -  Saving Worksheets (1:30)
  
- Setting Formats**
  -  About the Appearance of Data (3:25)
  -  About Date and Time (5:15)
  -  Formatting a Range of Numbers (1:50)
  
- SmartIcons**
  -  About SmartIcons (2:35)
  -  Changing the SmartIcon Palette (1:20)

## Styling

-  [About Styling \(4:30\)](#)
-  [Aligning Labels \(1:50\)](#)
-  [Changing Font Sets \(1:30\)](#)

## 3-D Ranges

-  [About Multiple Worksheets \(3:55\)](#)
-  [Managing Multiple Worksheets \(3:50\)](#)

## Using SmartHelp

SmartHelp is a combination of text, sound, pictures, and movies that you can use to learn about 1-2-3 features and activities. SmartHelp consists of the Guided Tour, online Help, Show Me movies, and Online Books.

### Guided Tour

Explains and demonstrates 1-2-3 features and lets you work with some of these features in interactive Try It activities. You access the Guided Tour from the 1-2-3 for Windows Help menu or by selecting the Guided Tour desktop icon.

The Tour provides information about 1-2-3 basics, compatibility of 1-2-3 for Windows with other versions of 1-2-3, hot features, and SmartHelp.

### Online Help

Provides information about all aspects of 1-2-3 for Windows and lets you select and view Show Me movies related to 1-2-3 activities. You access online Help anywhere in 1-2-3 for Windows by pressing F1 (HELP) or by choosing Help from the 1-2-3 for Windows main menu.

You can keep Help visible while you work in 1-2-3.

### Show Me Movies

Describe what you can do with 1-2-3 and explain how to do it. Conceptual movies introduce and discuss 1-2-3 features. Procedural movies give step-by-step instructions for performing tasks.

Show Me movies are part of the online Help system. You access them by selecting a movie icon in a Help topic that contains movie icons, by selecting the Movie Guide topic from 1-2-3 for Windows Help Contents, by selecting the Movie icon from the SmartIcon bar, or by choosing Help from the 1-2-3 for Windows main menu and then choosing Movie Guide.

While you are playing a Show Me movie, you can stop the movie to do some work in 1-2-3 and then continue playing the movie.

### Online Books

Contains the complete set of Lotus 1-2-3 for Windows documentation: *User's Guide*, *Solver Guide*, *Quick Start for 1-2-3 Upgraders*, *DataLens Drivers for 1-2-3*, and *Adobe Type Manager User Guide*.

You can access Online Books by selecting the Online Books desktop icon, by choosing Help from the 1-2-3 for Windows main menu and then choosing Online Books, or -- if you are already in the Help system -- by selecting Books in the Help window button bar.

You can keep a book open while you work in 1-2-3.

See also:

[Playing a Show Me Movie](#)  
[SmartHelp Troubleshooting](#)  
[Taking the Guided Tour](#)  
[Using Help](#)  
[Using Online Books](#)

## **Help About SmartHelp**

Displays the release number and copyright notice of Multimedia SmartHelp.

See also:

[Help Commands](#)

## SmartHelpTroubleshooting

Because multimedia is an emerging technology, new combinations of hardware and software can present a wide variety of potential configuration problems. Here are some tips on system configuration issues that you'll want to check if you have any problem running 1-2-3 for Windows.

**Note:** 1-2-3 for Windows with Multimedia SmartHelp requires at least 4MB of RAM.

### Sound Problems

#### If this happens:

No sound

#### Make sure that:

A sound board is installed.

A speaker is plugged in to the sound board and is turned on.

The volume is set to a comfortable level at the board and at the speaker.

#### And try this:

Select the Sound option from the Windows Control Panel. If the Test button is gray, and you have a sound card installed, there is an address or interrupt conflict with your sound card or the sound drivers are not properly installed. Check the sound card documentation for information about the I/O address and the interrupt vector. Make respective changes to the system .INI file, run Windows, and check the sound again.

Sound is broken and animations are very slow

At least 4MB of RAM is available on your computer.

To free up memory, save and close worksheets you are not using, close some Windows applications, or upgrade to Windows 3.1, which has better memory management.

Sound plays in a Show Me movie but not in other Windows applications

Quit the Show Me movie before you switch to another application. Otherwise, the other application may not be able to play any sound.

Everything stops while sound is playing

Turn sound off. Your sound driver is not designed to play sound along with animations.

### Other Problems

#### If this happens:

CDROM doesn't show as

#### Make sure that:

The CD-ROM drive is:

#### And try this:

Check connections.

a drive in Windows

\* Plugged into a power source

\* Plugged into the PC

\* Turned on

The CD-ROM disc is in the drive print side up and -- if appropriate -- is in the caddy.

MSCDEX is installed.

Turn the CD-ROM drive on before you turn the PC on.

Try another disc in the drive.

### **Improving Performance**

To improve system performance:

\* Add more extended memory to your system.

\* Run 1-2-3 for Windows without the SmartDrive device driver that Windows may have installed on your system, or cut down the size of any RAM drive you have set up.

To disable SmartDrive, remove the DEVICE=SMARTDRV.SYS line from your CONFIG.SYS file. For more information, see the Windows documentation.

\* Set up a permanent Windows SwapFile on your hard drive (if you are running on a 386).

Normally, Windows creates its own temporary SwapFile, but if your hard disk is full or fragmented, this temporary file occasionally become unavailable. Make this SwapFile at least 2048 Kb.

\* Use a 16-color driver for your display, even if you have a 256-color card, when running on a 20 MHz or slower system.

To change the display driver, run the Microsoft Windows Setup program from DOS or Windows and select the standard VGA driver.

\* Defragment (clean up) your hard disk by running a disk defragmentation program (available in some third-party utility and disk optimization programs).

See also:

[Show Me Player Controls](#)

[Taking the Guided Tour](#)

[Using SmartHelp](#)

## **Playing a Show Me Movie**

Show Me movies describe what you can do with 1-2-3 and explain how to do it. Conceptual movies introduce and discuss 1-2-3 features. Procedural movies give step-by-step instructions for performing tasks.

These movies are part of the 1-2-3 for Windows Help system. You can access movies from Help topics that contain movie icons. You can also access a movie by selecting the Movie icon from the SmartIcon bar or by choosing Help from the 1-2-3 for Windows main menu and then choosing Movie Guide. If you are already in Help, select Movie Guide from 1-2-3 for Windows Contents.

You can control a movie while it's playing. You can turn sound off and captions on. You can stop a movie at any point and replay all or part of it. And you can stop a movie, go to a 1-2-3 worksheet, graph, or other window to perform a task, and then return to the movie.

### **Selecting a Movie**

To play a Show Me movie, select the movie from a Help topic that contains the movie icon or select the movie from the Movie Guide. You can select the movie icon or the movie title.

When you select the movie, the Show Me Player opens and begins playing the movie.

### **Viewing a Movie**

You can skip to another part of a movie, replay a section as many times as you like, and view captions instead of listening to the narration.

To go to another part of the movie, click Go To in the Player control panel and, from the list of movie sections, select a section to play. Or use the Slider, Skip, and other Player controls to move around the movie, turn sound off and captions on, and close the movie.

You can also use HOME, END, and other keyboard keys to move around in a movie.

### **Stopping a Movie to Work in a 1-2-3 Window**

When you want to stop playing a movie and work in a worksheet, graph, or other 1-2-3 window select the Toggle, which is displayed on the screen near the Player, or press T on the keyboard. To return to the movie, select the Toggle again.

See also:

[Show Me Player Controls](#)

[Show Me Player Keys](#)

[Toggling Between a Movie and a 1-2-3 Window](#)



## **Toggling Between a Movie and a 1-2-3 Window**

You can stop playing a Show Me movie to do some work in a 1-2-3 window, and then continue playing the movie, in one of two ways:

- \* Click the Toggle or press  $\tau$  to go to the active 1-2-3 window; click the Toggle again to return to the movie.
- \* Click the 1-2-3 window you want to work in; click the Player to return to the movie.

You can also stop playing a movie and go to another Windows application by clicking the application window. To return to the movie, click the Player.

### **Controlling the Toggle**

By default, the Toggle is active when you play a movie. To deactivate the Toggle, choose Hide Toggle in the Player Control menu.

To reactivate the Toggle, choose Show Toggle.

See also:

[Playing a Show Me Movie](#)

## Show Me Player Controls

The following controls are available in the Show Me Player.

### Slider

The slider indicates the current position in a movie. You can use the slider to move to another point in the movie while the movie is playing or paused.

To move to another point in the movie, click the slider or drag the slider thumb.

### Play/Pause

Click Play/Pause to play or stop playing a movie.

### Skip

Click the Skip backward button to move backward to the last concept or step in a movie.

Click the Skip forward button to move forward to the next concept or step in a movie.

### Begin/End

When you hold down **SHIFT**, Begin replaces the Skip backward button in the control panel, and End replaces the Skip forward button. Click Begin to go to the beginning of a movie; click End to go to the end of a movie.

### Go To

Click Go To to display a list of movie sections and select a section to play.

### Sound

Click Sound to turn sound on and off. When sound is off, captions display at the bottom of the movie.

### Close

Click Close to close the movie and exit the Show Me Player.

See also:

[Playing a Movie](#)

[Show Me Player Keys](#)

## Show Me Player Keys

You can use the following keys to play and pause a movie, turn sound on and off, move forward and backward in a movie, and close a movie.

Space bar

Plays or pauses the movie.

T

Toggles from the Show Me Player to the 1-2-3 window.

HOME or SHIFT+LEFT

Moves to the beginning of a movie.

END or SHIFT+RIGHT

Moves to the end of a movie.

LEFT

Skips backward to the last concept or step in a movie.

RIGHT

Skips forward to the next concept or step in a movie.

PG UP

Moves to the beginning of the current section of a movie.

PG DN

Moves to the next section of a movie.

G

Displays a list of movie sections.

S

Turns sound off and on.

UP

When the list of movie sections is displayed, moves up through items in the list.

DOWN

When the list of movie sections is displayed, moves down through items in the list.

ENTER

When the list of movie sections is displayed, plays the selected section of a movie.

ESC

Closes the Show Me Player or, when the list of movie sections is displayed, closes the list.

See also:

[Playing a Movie](#)

[Show Me Player Controls](#)

## Using Online Books

Online Books is the complete set of Lotus 1-2-3 for Windows documentation presented online. The Online Books set contains the following manuals:

### *User's Guide*

Describes how to use 1-2-3 for Windows and includes step-by-step instructions for 1-2-3 activities.

### *Solver Guide*

Explains how to use the Solver to solve what-if problems in your worksheets and describes the sample applications included with 1-2-3 for Windows.

### *Quick Start for 1-2-3 Upgraders*

Provides information designed to help users upgrade quickly from a previous release of 1-2-3 to 1-2-3 for Windows.

### *DataLens Drivers for 1-2-3*

Describes what DataLens is, provides information about the three drivers included with 1-2-3 for Windows, and tells you how to use the drivers with 1-2-3.

### *Adobe Type Manager User Guide*

Explains how to install and run the Adobe Type Manager -- Windows Version on your personal computer.

## Accessing Online Books, Opening a Book, and Using the Tables of Contents

You can access Online Books by selecting the Online Books desktop icon or by choosing Help from the 1-2-3 for Windows main menu and then choosing Online Books. If you are in 1-2-3 for Windows Help, access Online Books by selecting Books in the Help window button bar.

1-2-3 displays a list of Online Books.

To open a book, select it from the list. 1-2-3 displays the main table of contents for the book; this table of contents lists the chapters in the book. Select the chapter you want to go to.

1-2-3 then displays the first page of the chapter; this page contains an overview of the chapter and a chapter table of contents, which lists the main topics in the chapter. If the main topics contain subtopics, a Subtopics + button is displayed at the top of the page; you can press this button to display the subtopics.

To go to a main topic or a subtopic, select it from the chapter table of contents.

To display the book table of contents at any time, press Contents in the window button bar.

## Using Search to Find Information in a Book

You can also find and go to information in a book by using Online Books Search. Press Search in the window button bar to display an alphabetized index of keywords for the currently open book. Select a keyword and, when Online Books displays a list of topics for the keyword, select the topic to go to.

## Browsing in a Chapter

To browse backward and forward through topics in a chapter, use the << Topics >> buttons. Browsing lets you view topics in the order of their appearance in a chapter.

## Finding Related Information in Another Book or in 1-2-3 for Windows Help

When information related to a topic is available in another book, a cross-reference to the other book appears in purple text. When related information is available in online Help, the

cross-reference to Help appears in green text. To access the related topic, select the colored cross-reference.

To return to the topic from which you selected the cross-reference, select Back in the Online Books or Help window button bar.

### **Printing a Book Topic**

You can print the book topic currently displayed in Online Books by choosing File Print Topic from the command menu in the Online Books window. To print another topic, select the topic and choose File Print Topic again.

### **Ordering Books**

To order printed 1-2-3 for Windows books, use the book coupon included in your CD-ROM package.

See also:

[Help and Online Books Window Commands](#)

[Online Books Buttons](#)

[Online Books Keys](#)

## Online Books Buttons

Online Books has buttons that you can use to move around in a book and locate and access topics. These buttons are located in the button bar of the Online Books window and in the topic area at the top of an Online Books page.

### Button Bar

Online Books has six buttons, located in the button bar, that let you move around easily in Online Books. If a feature is not available, its button is dimmed.

To choose a button, click it or press the underlined letter in the button name.

### Contents

Lists the chapters in the current book.

### Search

Lists all the keywords (index entries) for the current book. By typing or selecting a keyword, you can search for and go to a specific topic in the book.

### Back

Displays the last topic you viewed in Online Books or Help. You can move back one topic at a time in the order you viewed each topic until you return to the first topic you viewed. Then the button is dimmed. The record of which topics you have viewed is erased each time you minimize or close the Online Books window.

### History

Displays the last 40 Help and Online Books topics selected during the Windows session. The record of which topics you have selected is erased each time you minimize or close the Online Books window.

To view a topic listed in History, double-click the topic.

### Books

Displays the list of online books. You can open a book by selecting it from this list.

### 1-2-3 Help

Displays 1-2-3 for Windows Help Contents.

### Topic Area of the Book Page

Online Books also has buttons in the topic area at the top of a page. These buttons let you control the level of detail in a chapter table of contents and let you browse through topics in a chapter.

#### Subtopics +/-

Shows or hide subtopics in a table of contents page.

Subtopics + appears at the top of a chapter table of contents page when topics contain subtopics. Click Subtopics + to display the subtopics.

Subtopics - appears when table of contents topics and subtopics are displayed. Click Subtopics - to hide subtopics and view main topics only.

#### << Topics >>

Browses through topics in a chapter. << Topics >> appears on all pages of a book except table of contents pages.

Click << to browse backward through topics in the chapter.

Click >> to browse forward through topics in the chapter.

See also:

Help and Online Books Window Commands

Online Books Keys

Using Search

## Online Books Keys

The following is a list of the keys you can use in 1-2-3 for Windows Online Books.

ALT+F4

Closes the Online Books window, saves any annotations or bookmarks you created, and saves the current size and position of the Online Books window.

ALT+ space bar

Opens the Control menu for the Online Books window.

CTRL+END

Scrolls to the end of the Online Books topic.

CTRL+HOME

Scrolls to the beginning of the Online Books topic.

CTRL+INS

Copies an Online Books topic onto the Clipboard so you can paste it into a worksheet file or another Windows application.

F1 (HELP)

Closes Online Books and opens How to Use Online Books.

See also:

[Online Books Buttons](#)

[Help and Online Books Window Commands](#)

[Using Online Books](#)



## **Taking the Guided Tour**

The Guided Tour is an animated, narrated introduction to 1-2-3 for Windows with Multimedia SmartHelp. The Tour explains and demonstrates 1-2-3 features and lets you work with some of these features in interactive Try It activities. If you watched every topic, it would take about 50 minutes.

### **Accessing the Guided Tour**

You can access the Guided Tour from the 1-2-3 for Windows Help menu or from the Guided Tour desktop icon.

### **Viewing and Controlling the Guided Tour**

The Guided Tour is divided into sections that you play and control through the Guided Tour control panel.

#### **1-2-3 Basics**

Explains what 1-2-3 does, describes basic 1-2-3 features, and provides other information to help a new user get started in 1-2-3 for Windows. 1-2-3 Basics contains Try It activities.

#### **Compatibility**

Provides information designed to help users switch quickly and easily from another version of 1-2-3 to 1-2-3 for Windows.

#### **Hot Features**

Introduces Solver, DataLens, SmartIcons, Graphing, and other special features of 1-2-3 for Windows.

#### **Multimedia**

Explains how to use Show Me movies and Online Books. Multimedia contains Try It activities.

You can also get helpful information about using the control panel by pressing Help; you can toggle sound and bubble text on and off by pressing Sound On/Off; and you can pause, skip back or ahead, and quit the Tour by using other buttons in the panel.

See also:

[Using SmartHelp](#)

## Data Distribution

Creates a frequency distribution of the values in a range.

A frequency distribution counts the number of values in a specified range (the values range) that fall within specified numeric intervals (the bin range). The numbers you enter in the bin range are the intervals that determine the frequency distribution.

Use Data Distribution to identify patterns and trends in a range of data.

1. Decide on a column for the bin range. The bin range is the range in a single worksheet in which you enter the intervals, or bins. The column to the right of the bin range must be blank.
2. Enter the intervals for the bin range in ascending order. Do not include labels or blank cells in the bin range.
3. Select the range that contains the values to analyze (the values range).
4. Choose Data Distribution.
5. To change the range displayed in the Values text box, specify a new range.
6. Specify the bin range in the Bin text box.
7. Select OK.

1-2-3 enters the frequency distribution in the column to the right of the bin range. The numbers in the column to the right of the bin range represent how many entries in the values range are less than or equal to the adjacent value in the bin range. The last number in this column is the number of values that exceed the largest bin value. 1-2-3 ignores blank cells and labels in the values range.

### Example

For example, suppose you entered a list of sales for the month of June in a worksheet and you want to see how the sales are distributed. You can use Data Distribution with the following bin range (F2..F5) to determine how many sales fall within the defined intervals.

When you specify the values range (containing the sales data) and the bin range (F2..F5 ), 1-2-3 enters the results next to the bin range in column G. The results might look like this:

A: --	F -----	G -----
1	Sales	Number
2	2000	1
3	3000	6
4	4000	4
5	5000	2
6		1

The numbers in column G (the frequency distribution) indicate how many sales are less than or equal to the numbers in column F (the bin range). In this example, the values range contains one sale less than or equal to \$2,000, six sales between \$2,000 and \$3,000, four sales between \$3,000 and \$4,000, 2 sales between \$4,000 and \$5,000, and 1 sale over \$5,000.

See also:

[Data Commands](#)

## Data Fill

Enters a sequence of numbers, dates, times, or percentages in a range.

1. Select the range you want to fill.

**Caution** 1-2-3 writes over any existing data in the fill range, so make sure the range does not contain data you need.

2. Choose Data Fill.
3. To change the range displayed in the Fill range text box, specify a new range.
4. Enter numbers, dates, times, formulas, range names, or cell addresses for the start, step, and stop values.

### *Start*

Specifies the first value 1-2-3 enters in the fill range.

### *Step*

Specifies the increment between each of the values in the range.

### *Stop*

Specifies the limit of the sequence. If you specify a negative step value, you must specify a stop value that is less than the start value.

5. Select OK.

1-2-3 fills the cells in the range from top to bottom in a column and from left to right. If you specify a multiple-sheet fill range, 1-2-3 fills the first worksheet in the range, continues the sequence on the second worksheet, and so on until 1-2-3 reaches the stop value or the end of the range.

## Using Date and Time Start and Stop Values

Enter dates or times as start or stop values using any 1-2-3 Date or Time format except Short International (D5). For example, 11-May-88 and 10:30 AM are valid start and stop values.

**Note** When entering a time for a stop value, specify a time slightly greater than the desired last value by an amount less than the step value.

## Using Date Step Values

Enter a number followed by the letter d, w, m, q, or y to specify an increment of days, weeks, months, quarters, or years. For example, enter 6w to specify a step value of 6 weeks.

## Using Time Step Values

Enter a number followed by s, min, or h to specify an increment of seconds, minutes, or hours. For example, enter 10min to specify a step value of 10 minutes.

See also:

[Data Commands](#)

[Data Fill Notes](#)

## Data Fill Notes

- \* You can use the contents of a range as a start, step, or stop value. Type + (plus sign) or - (minus sign) in the text box and specify the range. For example, if cell B2 contains the number 30 and you enter +B2 for the start value, 1-2-3 will fill the range beginning with the number 30.
- \* You can specify an @function as a start, step, or stop value. For example, to enter a series of dates starting with today's date, type @today as the start value.
- \* You can format the fill range before you use Data Fill to enter dates or times. Use Range Format and choose Automatic. Choose Data Fill and enter a date or time in the Start text box. When you select OK, 1-2-3 fills the range with date or time numbers formatted to match the date or time you entered as the start value.

For example, if you format A1..A10 with Range Format Automatic, choose Data Fill, specify A1..A10 as the fill range, and enter 5/6/91 as the start value, 1-2-3 fills the range with dates in the format month/day/year.

See also:

[Data Commands](#)

[Data Fill](#)

## **Data Matrix**

Inverts or multiplies matrices formed by rows and columns of entries.

### Invert

Creates the inverse of a square matrix.

### Multiply

Multiplies the columns of one matrix by the rows of a second matrix and creates a third matrix that contains the results of the multiplication.

See also:

[Data Commands](#)

## Data Matrix Invert

Creates the inverse of a square matrix.

**Note** Matrix inversion algorithms by their nature propagate small errors. Inverting an ill-conditioned matrix (a matrix that contains numbers differing widely in magnitude) may result in large errors.

1. Select the matrix range you want to invert.

The matrix range must have the same number of columns as rows and can contain up to 80 columns and 80 rows.

2. Choose Data Matrix Invert.

3. To change the range displayed in the From range text box, specify a new range.

4. Specify the range for the inverted matrix in the To range text box.

Specify either the entire range or only the first cell.

**Caution** 1-2-3 writes over any existing data in the To range, so make sure the range does not contain data you need.

5. Select OK.

### Using 3-D Ranges with Data Matrix Invert

If you specified a 3-D range to invert, 1-2-3 inverts the matrix in the first worksheet of the range and enters the results in the first worksheet in the To range; inverts the matrix in the second worksheet of the range and enters the results in the second worksheet in the To range; and so on.

For example, if you specify A:A1..C:D4 as the From range and A:A10 as the To range, 1-2-3 inverts A:A1..A:D4 and enters the results beginning in A:A10; inverts B:A1..B:D4 and enters the results beginning in B:A10, and inverts C:A1..C:D4 and enters the results beginning in C:A10.

See also:

[Data Commands](#)

## Data Matrix Multiply

Multiplies the columns of one matrix with the rows of a second matrix and creates a third matrix that contains the results of the multiplication.

The number of columns in the first matrix must equal the number of rows in the second matrix, and the matrix can contain up to 80 columns and 80 rows.

1. Choose Data Matrix Multiply.
2. Specify the first matrix in the First matrix text box.
3. Specify the second matrix in the Second matrix text box.
4. Specify the range where you want 1-2-3 to enter the results in the Output matrix text box.

Specify either the entire range or only the first cell.

**Caution** 1-2-3 writes over any existing data in the Output matrix range, so make sure the range does not contain data you need.

5. Select OK.

1-2-3 creates a matrix that contains the number of rows in the first matrix and the number of columns in the second matrix.

### Using 3-D Ranges with Data Matrix Multiply

If you specified a 3-D range to multiply, 1-2-3 multiplies the first and second matrixes in the first worksheet together and enters the results in the first worksheet in the output matrix range; multiplies the first and second matrixes in the second worksheet together and enters the results in the second worksheet in the output matrix range, and so on.

See also:

[Data Commands](#)

[Solving Simultaneous Equations](#)

## Solving Simultaneous Equations

You can use Data Matrix Invert and Data Matrix Multiply to solve simultaneous equations in 1-2-3. For example, use the following procedure to solve these equations:

$$3x + 7y = 17$$

$$7x - 3y = 1$$

1. Create two matrixes -- one that corresponds to the x and y coefficients in your equations (the numbers 3 and 7 in both equations above), and one that corresponds to the constants (17 and 1 in the equations above).

In this example, the first matrix is in A4..B5 and the second matrix is in D4..D5.

A:	A	B	C	D
1	3x + 7y = 17			
2	7x - 3y = 1			
3				
4	3	7		17
5	7	-3		1
6				

2. Select A4..B5 as the matrix range you want to invert.
3. Choose Data Matrix Invert.
4. Specify A8 as the range for the inverted matrix.
5. Select OK.

1-2-3 performs a matrix inversion and enters the results in A8..B9.

A:	A	B	C	D
1	3x + 7y = 17			
2	7x - 3y = 1			
3				
4	3	7		17
5	7	-3		1
6				
7				
8	0.051724	0.12069		
9	0.12069	-0.05127		
10				

6. Choose Data Matrix Multiply.
7. Specify the inverted matrix (A8..B9) as the first matrix.
8. Specify D4..D5 as the second matrix.
9. Specify D8 as the range where you want 1-2-3 to enter the results.
10. Select OK.

The result of the matrix multiplication in D8..D9 is the solution to the equations: x = 1 and y = 2.

A:	A	B	C	D
1	3x + 7y = 17			
2	7x - 3y = 1			
3				
4	3	7		17
5	7	-3		1
6				
7				
8	0.051724	0.12069		1
9	0.12069	-0.05127		2
10				



See also:

[Data Commands](#)

[Data Matrix](#)

## Data Parse

Converts long labels from an imported text file into separate columns of data of one or more types (values, dates, times, and labels).

When you import data with File Import From Text, 1-2-3 enters the data as long labels in one column of the worksheet. You can view or print imported data, but you cannot calculate with the numbers.

Use Data Parse to enter data in long labels into separate worksheet columns.

1. Select the Input column, the range that contains the long labels you want to parse.
2. Choose Data Parse.

**Note** If the first cell of the input range already contains a format line when you choose Data Parse, this format line will appear in the Format line text box. You can edit this format line in the Format line text box. 1-2-3 will overwrite the existing format line with the one you edited when you select OK. 1-2-3 creates only one Format line for each Input range.

3. To change the range displayed in the Input column text box, specify a new range.
4. Select Create.  
1-2-3 enters the format line in the Format line text box and displays up to five lines of long labels below it. The symbols in the format line reflect the type of data and the width of each block of data in the first cell of the Input column.
5. Use the scroll bar below the text box to scroll horizontally and compare the format line to the data. If the format line does not accurately represent the type of data or length of entries in a data block located in the lines below it, edit the format line.
6. In the Output range text box, specify the range in which you want 1-2-3 to enter the parsed data. Specify either the entire range or only the first cell.

**Caution** 1-2-3 writes over any existing data in the Output range, so make sure the range does not contain data you need.

7. Select OK.

1-2-3 inserts a row, enters the format line in the worksheet above the Input column, and enters the parsed data in the Output range. If 1-2-3 cannot parse an entry using the format specified, 1-2-3 parses the entry as a label.

### To Clear the Input and Output Range Settings

1. Choose Data Parse.
2. Select Reset.

See also:

Data Commands  
Format Line (Data Parse)

## Format Line (Data Parse)

The format line tells 1-2-3 how to parse, or separate, data and enter it in a worksheet.

When 1-2-3 creates the format line for Data Parse, it enters a symbol in the format line for each data block in the first line of the Input range.

The format line begins with a | (vertical bar) label-prefix character, and can contain the following symbols:

- L Represents the beginning of a label block.
- V Represents the beginning of a value block.
- D Represents the beginning of a date block.
- T Represents the beginning of a time block.
- S Tells 1-2-3 to ignore the data block below the S when it parses the data. You enter this symbol when you edit a format line.
- > Represents any character in a data block after the first character.
- \* Represents a blank space that can become part of a data block if that block requires extra characters.

### Example

The format line below divides a long label into two labels and a date. The format line has a sufficient number of undefined spaces (> and \*) to accommodate the width of data entered in the rows below the format line.

1-2-3 creates the format line in the Format line text box. You can edit the format line if it does not accurately represent the type of data or length of entries in a data block.

---

```
L>>>>*>>>>***D>>>>>
```

Smith Arthur 5/23/89  
Aubry Lisa 4/12/87  
Howard Janet 2/6/84  
Mosley Liz 6/7/90  
McAfee Kathy 11/3/88

---

1-2-3 enters the parsed data in separate columns in the Output range.

```
A: ---- A ----- B ----- C ----  
11 Smith      Arthur    32651  
12 Aubry      Lisa      31879  
13 Howard    Janet     30718  
14 Mosley    Liz       33031  
15 McAfee,   Kathy     32450
```

**Note** When 1-2-3 parses dates, it enters date numbers in the worksheet. Use Range Format to display the dates in a date format.

See also:

Data Commands

Data Parse

Editing a Format Line (Data Parse)

## Editing a Format Line (Data Parse)

You can edit the format line before you parse the data if the format line does not accurately represent the type of data or length of entries in a data block

1. After you have created a format line in the Data Parse dialog box, select the Format line text box.
2. Use the mouse or the editing keys to move the insertion point to the part of the format line you want to change.
  - \* To change a symbol for a data block, delete the symbol and enter a new one. For example, to change a value to a label, change the V to an L.
  - \* To increase the width of a data block (for example, to parse entries that may be longer than the entry immediately below the format line), enter > or \* symbols.
  - \* To join data blocks, delete the intervening letter symbols and enter extra > or \* symbols to match the length of the joined data blocks.
3. Select OK to parse the data using the format line you edited.

See also:

[Data Commands](#)

[Data Parse](#)

[Format Line \(Data Parse\)](#)

## **Data Query**

Finds, copies, deletes, calculates, or changes specific records in a [database table](#).

You must create and specify an input range and a criteria range before you use Data Query commands. You must also create and specify an output range if you want to extract records from a database table.

For an overview of Help available for Data Query, see [Data Query Help Overview](#).

### Input range

Specifies the range that contains a database table. With Data Query Extract, you can specify more than one database table.

### Criteria range

Specifies the range that contains the criteria used to select records from the database table.

### Output range

Specifies the range where you want 1-2-3 to copy the selected records or perform calculations on them.

### Find

Searches a 1-2-3 database table for specific records.

### Delete

Removes selected records from a 1-2-3 database table or external table.

### Extract

Copies specific records or only unique records from one or more database tables to a 1-2-3 worksheet or to an external table.

### Modify

Copies records from a 1-2-3 database table or external table, allowing you to change and replace records or insert new records in the table.

### Reset

Clears the settings for the input, criteria, and output ranges in the current file.

See also:

[Data Commands](#)

[Data Query Basics](#)

[Performing Database Calculations](#)

## Data Query Help Overview

This overview lists all Help topics related to Data Query.

### General Information

Use Data Query commands to find, copy, delete, calculate, or change specific records in a [database table](#).

[Data Query Basics](#)  
[Querying Multiple Database Tables](#)  
[Performing Database Calculations](#)  
[Aggregate Columns](#)  
[Computed Columns](#)  
Example: [Aggregate Column](#)  
Example: [Computed Column](#)

### The Input Range

The input range specifies the range that contains a database table.

[Creating a 1-2-3 Database Table](#)  
[Specifying the Input Range](#)  
[The Input Range and Multiple Tables](#)  
Example: [1-2-3 Database Table](#)  
Example: [Two Database Tables](#)

### The Criteria Range

The criteria range specifies the range that contains criteria used to select records from the database table.

[Creating the Criteria Range](#)  
[Label Criteria](#),  
[Formula Criteria](#)  
[Multiple Criteria](#)  
[Value Criteria](#)  
[The Criteria Range and Multiple Tables](#)  
Example: [Formula Criteria](#)  
Example: [Label Criteria](#)  
Example: [Value Criteria](#)  
Example: [Join Formula Criteria](#)

### The Output Range

The output range specifies the range where you want 1-2-3 to copy the selected records or perform calculations on them.

[Creating the Output range](#)  
[The Output Range and Multiple Tables](#)  
Example: [Calculating Data in the Output Range](#)

### [Data Query Find](#)

Searches a 1-2-3 database table for specific records.

### [Data Query Delete](#)

Removes selected records from a 1-2-3 database table or external table.

### [Data Query Extract](#)

Copies specific records or only unique records from one or more database tables to a 1-2-3 worksheet or to an external table.

### Data Query Modify

Copies records from a 1-2-3 database table or external table, allowing you to change and replace records or insert new records in the table.

Data Query Modify Extract

Data Query Modify Insert

Data Query Modify Replace

### Data Query Reset

Clears the settings for the input, criteria, and output ranges in the current file.

See also:

Data Commands

Data Query Basics

Performing Database Calculations

## Data Query Basics

Use Data Query commands to find, copy, delete, calculate, or change specific records in a [database table](#).

### Example

[1-2-3 Database Table](#)

### Definitions

A database table consists of [records](#) and [fields](#). A database table may be located in a 1-2-3 worksheet or an [external database](#).

All Data Query commands require an [input range](#) and most require a [criteria range](#). To copy or modify records, you must also create an [output range](#). Once you have set up and specified these ranges, you can use Data Query commands to locate or change database information.

For example, suppose you have a sales database table that contains information listed by salesperson, month, account, and the amount of each sale. You can use Data Query commands to identify sales greater than \$2,000, all sales made by each person, or all sales made to each account.

**Note** When you use Data Query, if your file contains a range name that matches a field name in the database table and you use the field name in a criteria formula, you may get unexpected results. When 1-2-3 calculates a criteria formula, it uses data from a named range before the field name. Therefore, you should avoid using range names that match field names in criteria formulas.

See also:

[Data Commands](#)

[Data Query](#)

[Data Query Help Overview](#)

[Performing Database Calculations](#)



## Creating a 1-2-3 Database Table

After you create a [database table](#), you can use it as the [input range](#) for Data Query commands.

### Example

#### [1-2-3 Database Table](#)

1. Before you create a database table in a worksheet, you may want to name the fields and plan the organization of the table on paper.
2. In a blank area of a worksheet, enter the [field names](#) in the first row of the database table. Each field name must be unique within a database table.
3. Enter data for each [record](#) in the rows below the field names. The entries in each field should be all labels or all values. Use consistent formats and capitalization when you enter data in each field.

**Note** Use a [date @function](#) to enter dates in a database table if you want to sort and query the table by dates.

4. (Optional) Use [Range Name Create](#) to name the 1-2-3 database table, but do not use a range name that matches a field name in the table. The row that contains the field names must be part of the named range. Naming a table makes referring to it easier when you specify different ranges for Data Query.

See also:

[Data Commands](#)

[Data Query](#)

[Specifying the Input Range](#)

## Specifying the Input Range

When you use Data Query, you must indicate where the database table is located. The input range must contain the entire database table, including the row that contains the field names.

1. Choose Data Query.
2. Specify the database table in the Input range text box.

If the table is in the current file, enter the address or range name of the table.

If the table is not in the current file, enter the file name before the table name in the format <<*filename*>>*table*.

For example, <<ACCOUNTS.WK3>>NORTH specifies a table named NORTH in a file named ACCOUNTS.WK3.

To specify an external database table, you must first use Data Connect to External to establish a connection to the external table and assign a range name to the table. Then you can specify the input range as the range name you assigned to the external table.

**Note** You can specify more than one database table as the input range when you use Data Query Extract. For more information, see Querying Multiple Database Tables.

See also:

Creating a 1-2-3 Database Table

Data Commands

Data Query

### Example: 1-2-3 Database Table

The following information is organized as a 1-2-3 database table. The database table is in A:A1..A:D8; the range name for the table is Q2SALES. Row 1 contains the field names and rows 2 to 8 contain the records.

A	B	C	D	
1	Name	Month	Account	Sales <-- field names
2	Kaplan	April	Theater Inc	1950
3	Mintz	April	Dance Corp	1800
4	Morse	May	Art Etc	2100 <-- record
5	Smith	May	Photo Show	1850
6	Mintz	June	Dance Corp	1750
7	Kaplan	June	Theater Inc	2200
8	Morse	June	Art Etc	2050

## Creating the Criteria Range

The criteria range includes field names from the database table and criteria. The criteria, entered in one or more rows under the field headings in the criteria range, tell 1-2-3 which records to select from the database table when you use Data Query.

For example, suppose you were using a database table containing sales records and you wanted to identify all sales greater than \$2,000. If you entered the criteria +Sales>2000 under Sales in the criteria range, 1-2-3 would select all records where the sales is greater than \$2,000.

1. Identify a blank range large enough to contain all the criteria you want to include.
2. In the first row of the criteria range, copy all the field names, or only those field names you plan to use with criteria. Field names in the criteria range must be identical in spelling and capitalization to those in the database table.
3. Enter criteria in one or more rows under the field names. If you do not enter any criteria, 1-2-3 selects all records when you use Data Query.

**Note** If you specify more than one database table as the input range, you must enter a special type of formula called a join formula in the criteria range. For more information, see Querying Multiple Database Tables.

4. (Optional) Use Range Name Create to name the criteria range. Use a range name that does not match a field name in the database table.

After you create a criteria range, you can use it with any Data Query command.

### Types of Criteria

#### Label criteria

Select records that contain label entries in a specific field.

#### Value criteria

Select records that contain value entries in a specific field.

#### Formula criteria

Select records that contain label, value, or date entries in a specific field.

#### Multiple criteria

Select records that meet more than one condition.

**Note** Some formula criteria will evaluate to ERR when you enter them in the worksheet; however, they are still valid for a Data Query operations. Use Range Format Text to display the formula criteria instead of ERR.

See also:

Data Commands

Data Query

## Label Criteria

Label criteria select records that contain label entries in a specific field.

**Note** By default, 1-2-3 does not distinguish between uppercase and lowercase letters. For example, the label SMITH matches the entries Smith and smith. To make 1-2-3 case-sensitive, for Data Query, use the [Install program](#) and change the [collating sequence](#) to ASCII.

### Example

[Label Criteria](#)

#### Matching an Exact Label

Enter a label exactly as it appears in the database table, or enter a label prefix (' " or ^) and = (equal sign) before the label.

For example, enter Boston or '=Boston in the criteria range to match all entries that are Boston.

#### Matching Similar Labels

Use [wildcard characters](#) to match similar labels.

For example, enter Q? in the criteria range to match all two-character entries beginning with Q such as Q1, Q2, Q3, and Q4. Enter A\* to match all entries beginning with A.

#### Matching a Specific Condition

Enter a label prefix (' " or ^) and one of the [logical operators](#) before a label.

For example, enter '>Howard to match all entries that come after Howard in alphabetical order.

#### Matching All Labels Except a Specific One

Precede a label with ~ (tilde) to match all label entries except that one. Precede a label with '<>' (not equal to) to match all entries, except that one, including blank cells and values.

For example, enter ~Mosley to match all label entries that are not Mosley. Enter '<>Boston to match all entries that are not Boston.

#### Combining Symbols

You can combine symbols.

For example, enter ~B\* to match all label entries that do not begin with B. Enter '<>B\* to match all entries, including blank cells and values, that do not begin with B.

See also:

[Creating the Criteria Range](#)

[Data Commands](#)

[Data Query](#)

[Formula Criteria](#)

[Multiple Criteria](#)

[Value Criteria](#)

### Example: Label Criteria

The input range is A1..D5. If the criteria range is G1..G2, 1-2-3 selects all records with Kaplan entered under Name.

A	B	C	D	
1	Name	Month	Account	Sales
2	Kaplan	May	Theater Inc	1950
3	Mintz	May	Dance Corp	1800
4	Morse	June	Art Etc	2100
5	Smith	June	Photo Show	1850

G	H
1	Name
2	Kaplan

## Value Criteria

Value criteria select records that contain value entries in a specific field.

### Example

[Value Criteria](#)

#### Matching the Exact Value

Enter a number exactly as it appears in the database table, or enter a label prefix (' " or ^) and = (equal sign) before the value.

For example, enter 25000 or '=25000 to match all values that are 25000.

#### Matching a Specific Condition

Enter a label prefix (' " or ^) and one of the [logical operators](#) before a value.

For example, enter '<=1800 to match all values that are less than or equal to 1800. Enter '>1800 to match all values greater than 1800.

#### Matching a Date Value

When a field contains date entries, enter a label prefix (' " or ^), one of the logical operators, and a date.

For example, enter '>2/6/84 to match dates after February 6, 1984.

See also:

[Creating the Criteria Range](#)

[Data Commands](#)

[Data Query](#)

[Formula Criteria](#)

[Label Criteria](#)

[Multiple Criteria](#)

### Example: Value Criteria

The input range is A1..D5. If the criteria range is G1..G2, 1-2-3 selects records with Sales equal to 2100.

A	B	C	D	
1	Name	Month	Account	Sales
2	Kaplan	May	Theater Inc	1950
3	Mintz	May	Dance Corp	1800
4	Morse	June	Art Etc	2100
5	Smith	June	Photo Show	1850

	G
1	Sales
2	2100



## Formula Criteria

Formula criteria select records that contain label, value, or date entries in a specific field.

A formula criteria consists of at least four parts:

- \* A + (plus sign)
- \* The field name or the cell address of the first cell in the field you want to query
- \* A logical operator
- \* A value, label, or date, or a reference to a cell containing one

When you write formula criteria, use relative cell references or range names to refer to values, labels, or dates in the input range. Use absolute references or field names to refer to data outside the input range.

**Note** Some formula criteria will evaluate to ERR when you enter them in the worksheet; however, they are still valid. Use Range Format Text to display the formula criteria instead of ERR.

### Example

Formula Criteria

#### Matching Label Entries

Enter a label enclosed in " (quotation marks) in a formula criteria.

For example, enter +City="Boston" to match entries in a field named City that are Boston.

#### Matching Value Entries in the Database Table

Enter values as they appear in the database table.

For example, enter +E2>500 to match values in column E that are greater than 500.

Enter +Sales>1800#AND#Sales<2100 to match entries in a field named Sales that are values between 1800 and 2100.

Enter +Sales>Cost to match values in Sales when the Sales entry is greater than Cost for the same record.

#### Matching Entries Outside the Database Table

Use absolute references to match entries outside of the database table.

For example, enter +Totals<=\$D\$25 to match entries in a field named Totals that are less than or equal to the value in cell D25.

#### Matching Date Entries

Enter a date @function in the formula criteria.

For example, enter +Date<=@today to match entries where the date is on or before today's date.

Enter +DOH>@date(91,1,1) to match entries where the date is after January 1, 1991.

Enter +Date>@date(91,9,30)#AND#Date<@date(91,11,1) to match entries that fall between September 30, 1991, and November 1, 1991. This criteria matches all date entries for the month of October, 1991.

As a shortcut, you can also match date entries by entering a label prefix (' " or ^), one of the logical operators, and a date. For example, enter '<6/1/90 to match dates before June 1,

1990.

See also:

[Creating the Criteria Range](#)

[Data Commands](#)

[Data Query](#)

[Label Criteria](#)

[Multiple Criteria](#)

[Value Criteria](#)

### Example: Formula Criteria

The input range is A1..D5. If the criteria range is G23..G24, 1-2-3 selects all records with Sales greater than 1900.

A	B	C	D	
1	Name	Month	Account	Sales
2	Kaplan	May	Theater Inc	1950
3	Mintz	May	Dance Corp	1800
4	Morse	June	Art Etc	2100
5	Smith	June	Photo Show	1850

G	H
23	Sales
24	+D2>1900

## Multiple Criteria

You can enter criteria in the criteria range in one or more rows and fields to select records that meet more than one condition. For example, you might want to see records for sales in May that were greater than \$2,000, or you might want to see sales records for May and June.

### Example

#### 1-2-3 Database Table

#### Meeting All Conditions (#AND#)

Enter criteria in the same row under different fields to select records in which all conditions are true. For example, the following criteria select only records in which the Month is May and the Sales value is greater than 2000.

```
----- A ----- B -----  
26  Month          Sales  
27  May            +Sales>2000
```

#### Meeting at Least One Condition (#OR#)

Enter criteria in two or more rows in different fields to select records in which at least one of two or more conditions is true. For example, the following criteria select records in which the Month is May or the Sales value is greater than 2000.

```
----- A ----- B -----  
22  Month          Sales  
23  May  
24                      +Sales>2000
```

#### Meeting Different Conditions in the Same Field (#OR#)

Enter criteria in the same field in separate rows to select records in which one of the conditions is true. For example, the following criteria select all records in which entries for the Month are May or June.

```
----- A ----- B -----  
29  Month  
30  May  
31  June
```

#### Using Logical Operators #AND#, #NOT#, or #OR#

Use logical operators in criteria to create compound conditions. A compound condition restricts matching entries to a specific range. For example, the following criterion select records in which Sales is a value greater than 1500 but less than 2200.

```
----- A ----- B ----- C ----  
29  Sales  
30  +SALES>1500#AND#SALES<2200
```

See also:

[Creating the Criteria Range](#)

[Data Commands](#)

[Data Query](#)

[Formula Criteria](#)

[Label Criteria](#)

[Value Criteria](#)

## Creating the Output Range

The output range specifies where 1-2-3 will copy records from the database table(s) when you use Data Query [Extract or Modify]. It also specifies the records 1-2-3 will insert into a database table when you use Data Query Modify Insert. The top row of the output range can contain field names or formulas that calculate data as 1-2-3 enters it into the output range.

1. Choose an area in the current file that does not overlap the input or criteria ranges and has enough blank rows to hold all the records that 1-2-3 will copy.
2. In the top row of the output range, enter field names or formulas.

Field names tell 1-2-3 which entries to copy from the database table(s) to the output range. Formulas tell 1-2-3 to perform calculations in the output range on data copied from the database table(s).

After you set up the output range, use Data Query to specify where the output range is located. The output range can be in a 1-2-3 worksheet or an external database table. To use an external table for the output range you must first connect to the table you want to use. See Data Connect to External.

### Using Field Names

Enter some or all of the field names from the database table in the first row of the output range. 1-2-3 copies data from a field in the database table to the output range only if the field name is in the output range.

Field names in the output range should be identical in spelling and capitalization to those in the database table. You can enter the field names in the output range in any order.

### Using Formulas

Enter formulas in the output range to produce two kinds of results, computed and aggregate columns. 1-2-3 uses these formulas to perform different calculations on data from the selected database table and then enters the results in the output range.

See also:

Data Commands  
Data Query

## Performing Database Calculations

1-2-3 offers several methods for performing calculations on data from a database table.

In the following example, a 1-2-3 database table shows company sales by salesperson, month of sale, account, and dollar amount for each sale.

### Example

#### 1-2-3 Database Table

1-2-3 can perform the following calculations with data from this database table:

- \* Sum the sales by person or month or both.
- \* Count the sales by person or month or both.
- \* Average the sales by person or month or both.
- \* Identify the largest (maximum) or smallest (minimum) sale for each person or month.
- \* Multiply each sale times a commission rate.

You can use one of the following methods to perform calculations on data in a database table.

### Using Statistical @Functions

Use statistical @functions to calculate data using all the values in a field. For example, use @SUM to total all the values in the field named Sales.

### Using Database @Functions

Use database @functions to select and calculate only those values in a field that meet specific criteria you enter in the criteria range.

For example, use @DSUM to total the sales for a specific person by entering a name from the database table in the criteria range. To total sales for four people, you could enter four @DSUM formulas and create four criteria ranges or use Data Query Extract to create an aggregate column.

### Using Data Query Extract

Use Data Query Extract to create aggregate or computed columns.

To create an aggregate column, enter a statistical @function in the output range. For example, you create an aggregate column to sum the sales for all people by entering Name in the criteria range and @SUM in the output range.

To create a computed column, enter a formula in the output range. For example, you can create a computed column to multiply the sales times a commission rate.

When you use Data Query Extract with formulas in the output range, 1-2-3 performs calculations on data it copies from a database table and enters the results in the output range.

For more information, see aggregate columns and computed columns.

### Using Data What-if Tables

Use a Data what-if table to perform one or more calculations on one or more fields in a database table. Data what-if tables use database @functions to calculate data based on criteria you enter in the criteria range.

For example, you can use a 1-way what-if table to sum, count, or average all sales for all

names in the database table, or you can use a [2-way what-if table](#) to sum sales for each person by month.

**Note** Using Data Query Extract to create aggregate columns is quicker and more efficient than using Data What-if Table with database @functions for analyzing data in database tables.

See also:

[Data Commands](#)

[Database @Functions](#)

[Guidelines for Using Database @Functions](#)

[Statistical @Functions](#)

## Computed Columns

A computed column is a column in the output range where 1-2-3 calculates values for a group of records during Data Query Extract. You create a computed column by entering a formula in the output range. The formula can refer to other fields in the output range and can include most @functions.

Use computed columns to extract and calculate data quickly from a database table.

### Example

#### Computed Column

For example, suppose you have a database that tracks sales transactions. You can use a computed column to calculate each sales commission automatically each time you generate a sales report. The formula  $+Sales*.07$  in the output range multiplies values entered in Sales by 7%.

You can use any type of @function except @@, @CELL, @COLS, @HLOOKUP, @INDEX, @INFO, @IRR, @N, @NPV, @ROWS, @S, @SHEETS, @STD, @STDS, @VAR, @VARS, @VLOOKUP, and the database @functions in computed columns.

See also:

Aggregate Columns

Data Query Extract

Performing Database Calculations

Entering Formulas



### Example: Computed Column

The input range is A1..C5. The criteria range is E1..E2, and the output range is K1..L1. When you use Data Query Extract, the formula  $+Sales*0.07$  creates a computed column in the output range by multiplying entries in Sales by 7%.

A:	A	B	C	D	E
1	Name	Month	Sales		Name
2	Mintz	May	2800		
3	Smith	May	2100		
4	Smith	June	1400.		
5	Mintz	June	1500.		

A:	K	L
1	Name	$+Sales*0.07$
2	Mintz	196.00
3	Smith	147.00
4	Smith	98.00
5	Mintz	105.00

## Aggregate Columns

An aggregate column is a column in the output range where 1-2-3 calculates (cross-tabulates) data from a database table during Data Query Extract. You create an aggregate column by entering a [statistical @function](#) in the output range.

Use aggregate columns to extract and calculate data quickly from a database table.

### Example

#### [Aggregate Column](#)

For example, suppose a database table shows company sales by salesperson, month of sale, account, and dollar amount for each sale. You want to see total sales for each person.

Enter Name in the criteria range and Name and @sum(Sales) in the output range. When you use Data Query Extract, 1-2-3 will sum the sales for each person in the output range.

**Note** Using [Data Query Extract](#) to create aggregate columns is quicker and more efficient than using [Data What-if Table](#) with database @functions for analyzing data in database tables.

See also:

[Computed Columns](#)

[Data Query Extract](#)

[Performing Database Calculations](#)

[Statistical @Functions](#)

### Example: Aggregate Column

The input range is A1..C6. The criteria range is E1..E2, and the output range is K1..L1. When you use Data Query Extract, the formula @sum(Sales) in the output range totals the sales for each name in the database table.

A: ----	A -----	B -----	C -----	D -----	E ----
1	Name	Month	Sales		Name
2	Mintz	May	2800		
3	Smith	May	2100		
4	Smith	June	1400		
5	Mintz	June	1500		
6	Smith	June	1600		

A:----	K -----	L -----
1	Name	@sum(Sales)
2	Mintz	4300.00
3	Smith	5100.00

## Querying Multiple Database Tables

You can specify more than one database table as the input range with Data Query Extract. When you specify more than one table, you can

- \* Join fields from two or more tables to create a new database table
- \* Calculate data entered in fields in different database tables

For example, you can multiply sales information in a field in one table by commission rates in another table to create a new table that lists names and the amount of commission earned by each person.

To use more than one database table with Data Query, you must follow some specific rules when you create and specify the input, criteria, and output ranges. Follow the guidelines in the topics listed below to learn how to set up and specify these ranges for multiple tables:

[The Input Range and Multiple Tables](#)

[The Criteria Range and Multiple Tables](#)

[The Output Range and Multiple Tables](#)

**Note** 1-2-3 can join information from database tables that contain a common field. However, 1-2-3 cannot create a union between two database tables that have no fields in common.

See also:

[Data Commands](#)

[Data Query](#)

## The Input Range and Multiple Tables

You can specify more than one database table as the input range with Data Query Extract. When you specify more than one table, you can

- \* Join fields from two or more tables to create a new database table
- \* Calculate data entered in fields in different database tables

**Note** 1-2-3 can join information from database tables that contain a common field. However, 1-2-3 cannot create a union between two database tables that have no fields in common.

To use more than one database table as the input range, the tables must meet these conditions:

- \* The tables must have at least one common field that contains similar entries, but the field names can be different.
- \* If you want to join two or more database tables, one database table may contain duplicate entries in the common field. The common fields in the other table(s) should not contain duplicate entries.

### Example

#### Two Database Tables

For example, the SALES database table contains three fields: the items, the month the sale was made, and the number of items ordered. In the SALES table, each item is listed many times, once for each sale.

The PRICE database table contains two fields: the items and the price for each item. In the PRICE table, each item is listed only once. Although both tables contain a common field listing items, entries for items in PRICE table contain no duplicates.

### To Specify the Input Range

1. Choose Data Query.
2. Specify two or more database tables in the Input range text box.

Enter the range names of all database tables separated by commas. The database tables can be in open files or in files on disk.

To specify an external database table, you must first use Data Connect to External to establish a connection to the external table and assign a range name to the table. Then you can specify the input range as the range name you assigned to the external table.

For example, if TABLE1 and TABLE2 are in the current file, enter the table names using the format *table1,table2*.

If the tables are in different files, use the format  
<<file1.wk3>>table1,<<file2.wk3>>table2.

**Note** Use the current argument separator for macros and @functions between table names. The default is a comma. For more information, see Tools User Setup International.

See also:

Data Commands

Data Query

## The Criteria Range and Multiple Tables

If you specify more than one database table as the input range with Data Query Extract, you must create a criteria range that contains a join formula. The join formula tells 1-2-3 where the common data is located in both database tables.

### Example

#### Two Database Tables Join Formula Criteria

1. Enter one of the tables' names and the name of the field they have in common, separated by a . (period), in the first row of the criteria range. For example, SALES.Item tells 1-2-3 that the table named SALES contains a field named Item.
2. Enter a join formula in the second row of the criteria range.

A join formula has the format *+table1.field1=table2.field2*.

*table1* and *table2* are range names for two database tables you specified in the input range.

*field1* and *field2* are the names of fields that contain similar entries in both tables.

When you use a join formula,

- \* Enter field names exactly as they appear in the database tables.
- \* The field names do not have to match, but the two fields must contain the same type of data.
- \* Entries in one field must match entries in the other field, and one field should not contain duplicate entries.

For example, the join formula *+SALES.Item=PRICE.Item\_Name* tells 1-2-3 that the fields named Item and Item\_Name are located in different tables but contain similar data. Each entry in PRICE.Item\_Name is listed only once but may be listed many times in SALES.Item.

**Note** 1-2-3 can join information from database tables that contain a common field. However, 1-2-3 cannot create a union between two database tables that have no fields in common.

See also:

#### Data Commands Data Query

### Example: Two Database Tables

These two database tables can be joined because each has a field that contains similar data. Each item is listed only once in PRICE.Item\_Name but may be listed many times in SALES.Item.

#### SALES Table

A: ---	A -----	B -----	C ---
1	Month	Item	Orders
2	Jan	monitors	30
3	Jan	computers	35
4	Feb	disk drives	25
5	Feb	monitors	15
6	Feb	computers	20
7	Mar	disk drives	10
8	Mar	computers	15

#### PRICE Table

B: ---	A -----	B ---
1	Item_Name	Unitprice
2	computer	3000.00
3	monitor	250.00
4	disk drive	150.00

### Example: Join Formula Criteria

The input range is two database tables named SALES and PRICE. Each database has a field that contains the names of items for sale.

The first row of the criteria range (A1) contains a label, which identifies one of the fields you want to join. You need to enter only one of the fields in the first row of the criteria range.

The join formula (A2) tells 1-2-3 that the fields named Item and Item\_Name in two database tables (SALES and PRICE) contain the same type of data.

```
C: ----- A ----- B -----  
1      PRICE.Item_Name  
2      +SALES.Item=PRICE.Item_Name
```



## The Output Range and Multiple Tables

You can specify more than one database table as the input range with Data Query Extract. When you specify more than one database table, you can use the output range to

- \* Join fields from two or more tables to create a new database table
- \* Calculate data entered in fields in different database tables

You must specify more than one database table as the input range and enter a join formula in the criteria range. Then use the following guidelines to set up an output range.

**Note** 1-2-3 can join information from database tables that contain a common field. However, 1-2-3 cannot create a union between two database tables that have no fields in common.

### Joining Fields

For each field you want to copy into the output range, enter the table name and the field name separated by a . (period) in the first row of the output range.

For example, the output range (A1..B1) contains the names of two tables (SALES and INVENTORY) and two fields (Item and Code).

```
C: ----- A ----- B -----  
1  SALES.Item    INVENTORY.Code  
2  
3
```

When 1-2-3 completes the Data Query Extract, it enters data from both database tables in the output range.

### Calculating Data

You can use formulas in the output range with Data Query Extract to produce two kinds of results, computed and aggregate columns. In both cases, 1-2-3 uses a formula to perform calculations on data from database tables and enters the results in the output range.

The formulas must contain table and field names separated by a . (period) so 1-2-3 can locate the data to use. Enter the formula in the first row of the output range.

For example, the formula +SALES.Order\*PRICE.Unitprice in the output range multiplies values in the field named Order by values in the field named Unitprice from two different tables.

### Example

#### Calculating Data in the Output Range

See also:

Data Commands

Data Query

The Criteria Range and Multiple Tables

The Input Range and Multiple Tables

### Example: Calculating Data in the Output Range

The output range, A1..B8, shows the results of Data Query Extract using two database tables with a computed column.

Column A contains entries from a field named Item in the PRICE table. Column B is a computed column that multiplies the orders for each item in the SALES table by the item's unitprice in the PRICE table.

D:-----	A -----	B -----
1	PRICE.Item_Name	+SALES.Order*PRICE.Unitprice
2	computers	105000
3	computers	60000
4	computers	45000
5	disk drives	3750
6	disk drives	1500
7	monitors	7500
8	monitors	2500

## Data Query Delete

Deletes records from a database table that meet the criteria in the criteria range, and removes the blank rows from the table.

Before you use this command to delete records, you may want to check that the criteria selects the correct records. To check the criteria, use Data Query Find with a 1-2-3 database table; use Data Query Extract with an external database table.

Before you use Data Query Delete, you must create an input range and a criteria range.

1. Choose Data Query.

2. In the Input range text box, specify one database table.

To specify an external database table, you must first use Data Connect to External to establish a connection to the external table and assign a range name to the table. Then you can specify the input range as the range name you assigned to the external table.

3. In the Criteria range text box, specify the criteria range.

**Note** If there are no criteria under any field names, 1-2-3 selects all records.

4. Select Delete.

1-2-3 displays a message box before it deletes any records.

Select Delete to delete all the records in the input range that meet the criteria.

Select Cancel to cancel the command and return to the Data Query dialog box.

See also:

Creating a 1-2-3 Database Table

Creating the Criteria Range

Data Commands

Data Query

## **Data Query Delete (Delete/Cancel)**

Cancels or completes Data Query Delete.

1. Select one of the following options:

*Delete*

Deletes all records in the database table that match the criteria in the criteria range.

*Cancel*

Redisplays the Data Query dialog box without deleting any records.

See also:

[Data Commands](#)

[Data Query](#)

[Data Query Delete](#)

## Data Query Extract

Performs the following tasks using data from one or more database tables:

- \* Copies to the output range all records that meet the criteria you specified in the criteria range
- \* Performs calculations on data extracted from one or more database tables using formulas entered in the output range
- \* Extracts only unique records from a database table

1-2-3 can join fields from two or more database tables if the databases contain at least one field with common data. However, 1-2-3 cannot create a union between two database tables that have no fields in common.

### Setting Up

Before you use Data Query Extract, you must create an input range, a criteria range, and an output range. The way you set up the criteria and output ranges controls the results of Data Query Extract.

For more information, see Creating the Criteria Range and Creating the Output Range.

### To Extract Data

1. Choose Data Query.

2. In the Input range text box, specify the database table(s).

To work with more than one database table, enter all database table names in the input range text box separated by commas. For more information, see The Input Range and Multiple Tables.

To specify an external database table, you must first use Data Connect to External to establish a connection to the external table and assign a range name to the table. Then you can specify the input range as the range name you assigned to the external table.

3. In the Criteria range text box, specify the criteria range.

To work with more than one database table, the criteria range must contain a join formula. For more information on joining database tables, see The Criteria Range and Multiple Tables.

**Note** If there are no criteria under any field names, 1-2-3 extracts all records.

4. In the Output range text box, specify the output range.

Either specify just the first row of the output range or a range large enough to hold all the extracted data.

**Caution** If you specify one row as the output range, 1-2-3 erases all data in the worksheet below that row before it completes Data Query.

If you specify an output range larger than one row, 1-2-3 copies the selected records to that range without erasing the area below the range. 1-2-3 displays a message if you specify an output range that is too small to hold all the extracted records.

5. Select Extract.

### Extracting Unique Records

Unique records are records that contain no duplicate entries. To extract unique records, select the Extract unique only checkbox before you select Extract.

When you extract unique records, the results depend on how you set up the output range.

- \* If you enter all of the field names from the database table(s) in the output range, 1-2-3 will extract all unique records.
- \* If you enter only one field name from the database table(s) in the output range, 1-2-3 will extract a list of unique entries from that field. For example, you could enter the field name City from an employee database in the output range to extract a list of cities from a database table.

### **Results of Data Query Extract**

If the input and output ranges are in a 1-2-3 file, 1-2-3 copies records to the output range with the same formats the records had in the input range. If a field in the input range contains formulas, 1-2-3 converts the formulas to values in the output range.

If the input range is an external database table and the output range is in a 1-2-3 worksheet, 1-2-3 formats cells containing dates and times with Date and Time formats.

If the output range is an external table, the database driver formats the records using formats that the external table supports.

### **Calculating Extracted Data**

If the output range contains formulas instead of field names when you extract data, 1-2-3 creates computed or aggregate columns. In these columns, 1-2-3 performs calculations on the data and then enters the results in the output range.

See also:

[Creating a 1-2-3 Database Table](#)

[Data Commands](#)

[Data Query](#)

[Querying Multiple Database Tables](#)

## Data Query Find

Locates records in a 1-2-3 database table that meet the criteria in the criteria range. The file that contains the database table must be open.

Use Data Query Find to locate and edit records in a 1-2-3 database table and to test the criteria you specified before you use Data Query Extract or Data Query Delete.

Before you use Data Query Find, you must create an input range and a criteria range.

1. Choose Data Query.
2. In the Input range text box, specify one 1-2-3 database table.
3. In the Criteria range text box, specify the criteria range.

**Note** If there are no criteria under any field names, 1-2-3 selects all records.

4. Select Find.

The mode indicator changes to FIND and 1-2-3 highlights the first record that meets the criteria.

## Viewing and Editing Selected Records

When 1-2-3 is in FIND mode, use the following keys to move between records and edit entries in different fields.

DOWN, UP

Highlights a record that matches the criteria.

ESC, ENTER

Ends Data Query Find and returns 1-2-3 to the Data Query dialog box.

F2 (EDIT)

Puts 1-2-3 in EDIT mode so you can edit data in the highlighted record.

F7 (QUERY)

When you are in FIND mode, pressing F7 (QUERY) ends Data Query Find, leaves the cell pointer in the highlighted record, and redisplay the Data Query dialog box. Pressing F7 (QUERY) again repeats Data Query Find.

HOME, END

Highlights the first or last record in the database table that matches the criteria.

LEFT, RIGHT

Moves between fields within the highlighted record and displays the cell contents in the edit line so you can change it.

## To Edit Records in FIND Mode

1. Press UP or DOWN to highlight a record.
2. Press LEFT and RIGHT to display the entry you want to edit in the edit line.
3. Type a new entry or use the standard editing keys to edit the current entry.
4. Press UP, DOWN, or ENTER to complete editing and return 1-2-3 to FIND mode.
5. Press ESC or ENTER to end FIND and return to the Data Query dialog box.

See also:

[Creating a 1-2-3 Database Table](#)

[Creating the Criteria Range](#)

[Data Commands](#)

[Data Query](#)





## Data Query Modify

Changes records in or adds records to a [database table](#). The database table must be in either an open 1-2-3 file or an [external database table](#).

**Note** With some external databases, using Data Query Modify Extract locks the database until you use Data Query Modify Replace or Data Query Modify Finish to complete the procedure.

### Extract

Copies to the output range the records in the database table that meet the criteria in the criteria range. Unlike Data Query Extract, this command remembers the location in the database table of the extracted records. Use this command with Data Query Modify Replace to extract records from database table, edit them, and put them back into the table.

### Replace

Used after Data Query Modify Extract, replaces the original records in the database table with copies of the records you edited in the output range.

### Insert

Adds new records you entered in the output range to the bottom of the database table.

### **Finish**

Use Data Query Modify Finish if you used Data Query Modify Extract and decided not to replace records in the database table. You cannot use Data Query Modify Replace after you use Data Query Modify Finish.

See also:

[Creating a 1-2-3 Database Table](#)

[Creating the Criteria Range](#)[Creating the Output Range](#)

[Data Commands](#)[Data Query](#)

## Data Query Modify Extract

Copies records in an open 1-2-3 [database table](#) or an [external database table](#) to the output range so you can edit the records and then replace them in the database table. Unlike Data Query Extract, this command remembers the location of the records in the database table.

Use this command with Data Query Modify Replace to extract records from a database table, edit them, and put them back in the table at their original locations.

### Setting Up

Before you use Data Query Modify Extract, you must create an [input range](#), a [criteria range](#), and an [output range](#).

Once you specify these ranges, do not change them before you use Data Query Modify Replace. 1-2-3 cannot replace records properly if you change the input, criteria, or output ranges, or if you use another Data Query command before you use Data Query Modify Replace.

**Caution** To avoid writing over formulas in the database table, do not use names of fields that contain formulas in the output range. Data Query Modify Extract copies the results of formulas or @functions to the output range, not the actual formulas or @functions.

### To Extract Data

1. Choose Data Query.
2. In the Input range [text box](#), specify one database table.  
To specify an [external database table](#), you must first use [Data Connect to External](#) to establish a connection to the external table and assign a range name to the table. Then you can specify the input range as the range name you assigned to the external table.

3. In the Criteria range text box, specify the criteria range.

**Note** If there are no criteria under any field names, 1-2-3 selects all records.

4. In the Output range text box, specify the output range.

Either specify just the first row of the output range or a range large enough to hold all the extracted data.

**Caution** If you specify one row as the output range, 1-2-3 erases all data in the worksheet below that row before it completes Data Query.

If you specify an output range larger than one row, 1-2-3 copies the selected records to that range without erasing the area below the range. 1-2-3 displays a message if you specify an output range that is too small to hold all the extracted records.

5. Select Modify to display the Data Query Modify dialog box.
6. Select Extract.

1-2-3 extracts the records and closes the Data Query Modify dialog box.

7. Select Cancel to close the Data Query dialog box.

1-2-3 copies records to the output range so you can edit them. Change the records in the output range as necessary, and then use [Data Query Modify Replace](#) to replace the original records in the database table with the edited ones.

See also:

[Creating a 1-2-3 Database Table](#)  
[Creating the Criteria Range](#)

Creating the Output Range

Data Commands

Data Query

## Data Query Modify Insert

Adds new records from the output range to the bottom of a database table you specified as the input range. The database table must be in either an open 1-2-3 file or an external database table.

### Setting Up

Before you can use Data Query Modify Insert, you must create an output range.

**Caution** Do not create the output range below the input range. When 1-2-3 adds the new records, it expands the input range and will write over existing data.

The first row of the output range must contain field names that match those in the database table in the input range. In the remaining rows, enter the records you want to add to the database table.

**Note** If you include formulas in the output range, 1-2-3 will not copy them to the database table. When you use Data Query Modify Insert, 1-2-3 copies only the displayed values to the database table, not the actual formulas.

### To Insert Data

1. Choose Data Query.

2. In the Input range text box, specify one database table.

To specify an external database table, you must first use Data Connect to External to establish a connection to the external table and assign a range name to the table. Then you can specify the input range as the range name you assigned to the external table.

3. In the Output range text box, specify the output range.

Make sure that the output range includes the field names and all the records you want to add to the database table.

4. Select Modify to display the Data Query Modify dialog box.

5. Select Insert.

1-2-3 inserts the records and closes the Data Query Modify dialog box.

6. Select Cancel to close the Data Query dialog box.

1-2-3 copies the records from the output range to the database table, adding the new records to the bottom of the database table. 1-2-3 also expands the input range to include the new records.

See also:

[Creating a 1-2-3 Database Table](#)

[Creating the Output Range](#)

[Data CommandsData Query](#)

## Data Query Modify Replace

Replaces the original records in an open 1-2-3 [database table](#) or an [external database table](#) with edited records from the output range. Use Data Query Modify Replace after you edited records you extracted with [Data Query Modify Extract](#).

After you use Data Query Modify Extract, do not change the input, criteria, or output ranges or use another Data Query command before you use Data Query Modify Replace. 1-2-3 cannot replace records properly if you change the the specified ranges.

**Caution** To avoid writing over formulas in the database table, do not replace data in fields that contain formulas. 1-2-3 copies only the values, not the formulas, when you use Data Query Modify Replace.

1. Choose Data Query.
2. Select Modify to display the Data Query Modify dialog box.
3. Select Replace.

1-2-3 copies records from the output range to the database table and closes the Data Query Modify dialog box.

4. Select Cancel to close the Data Query dialog box.

See also:

[Creating a 1-2-3 Database Table](#)  
[Creating the Criteria Range](#)  
[Creating the Output Range](#)  
[Data CommandsData Query](#)

## **Data Query Reset**

Clears the settings for the input, criteria, and output ranges in the current file.

1. Make sure the cell pointer is in the file containing the settings you want to clear.
2. Choose Data Query Reset.

See also:

[Data Commands](#)

[Data Query](#)

## Data Regression

Performs multiple linear regression analysis.

Data Regression produces statistics that describe the association between two or more sets of data. This command also calculates the slope of the line that best illustrates the data. If there is a high association or correlation between sets of data, these statistics can be used to predict future trends.

Use Data Regression to analyze financial, marketing, or research data.

1. Choose Data Regression.

2. Specify the X -range, the independent variables.

The X-range can contain up to 75 columns, each of which represents an independent variable. The columns must be adjacent to one another. The X-range must contain the same number of rows as the Y-range.

3. Specify the Y-range, the set of values for the dependent variable.

The Y-range must be in a single column and must contain the same number of rows as the X-range.

4. (Optional) Under Y-intercept, select one of the following options to determine whether 1-2-3 calculates the y-axis intercept or uses zero as the intercept.

*Compute*

Causes 1-2-3 to calculate the y-axis intercept.

*Set to zero*

Causes 1-2-3 to use zero as the y-axis intercept. Do not select Set to zero unless your data is such that if all the independent variables equaled zero, the dependent variable would also equal zero.

5. Specify the output range, the range in which 1-2-3 places the results of the regression analysis. You can specify either the entire range or only the first cell in the range.

**Caution** 1-2-3 writes over any existing data in the output range, so make sure the range does not contain data you need.

6. Select OK.

### Results of Data Regression

1-2-3 enters the following statistics in the output range:

Constant

The y-axis intercept.

Degrees of freedom

The number of observations, minus the number of independent variables, minus 1 (calculated intercept); or the number of observations, minus the number of independent variables (zero intercept).

Number of observations

The number of rows of data in the X and Y ranges.

R<sup>2</sup> value

The reliability of the regression. Values closer to 1 indicate a stronger correlation.

**Note** If 1-2-3 displays a value less than zero, you specified a zero intercept when it was not appropriate to do so. Use Data Regression Intercept Compute and select OK to recalculate the regression and adjust this value accordingly.

Standard error of the x coefficients

The standard error of each of the x coefficients.

Standard error of the y estimate

The standard error of the estimated y value.

X coefficients

The slope for each independent variable.

See also:

[Data Commands](#)



## Data Sort

Arranges the data in a range in the order you specify. For example, use Data Sort to alphabetize the records in a [database table](#) or entries in a column.

1. Select the range you want to sort.

**Note** If you are sorting records in a database table, include all the [records](#) in the range but do not include the [field names](#).

2. Choose Data Sort.
3. To change the range displayed in the Data range [text box](#), specify a new range.
4. In the Primary key text box, specify one cell in the column by which you want to sort data.

For example, if you want to sort records by last names, specify one cell in the column that contains last names.

5. Under Primary key, select ascending or descending sort order:

*Ascending*

(sorts A - Z, and smallest to largest values)

*Descending*

(sorts Z - A, and largest to smallest values)

6. (Optional) If two or more records have the same entry for the primary sort key, specify a secondary sort key. Select Secondary key and repeat steps 4 and 5.

For example, if the Last\_Name field is the primary sort key, select the First\_Name field as the secondary sort key. 1-2-3 sorts records with the same last name by the first name.

7. (Optional) Select [Extra keys](#) to sort by more than two columns. You can specify up to 253 extra sort keys.

8. Select OK.

1-2-3 sorts the data in ascending or descending order.

The order in which 1-2-3 sorts different types of labels is determined by the [collating sequence](#) specified when you installed 1-2-3. For more information on collating sequences, see [Sort Order \(Collating Sequences\)](#).

## Restoring Data to the Original Order

Before you sort the data, use Worksheet Insert to insert a column next to the data. Then use [Data Fill](#) to enter numbers in sequential order in the column next to your data.

When you sort the data, include the column of numbers in the range you want to sort. After you use Data Sort, you can put the data back in its original order by using Data Sort again and specifying the column of numbers as the primary sort key.

## To Clear All Sort Ranges and Keys

1. Choose Data Sort.
2. Select Reset.

See also:

[Changing the Sort Keys](#)  
[Data Commands](#)

## Data Sort Extra Keys

Specifies up to 253 additional sort keys after the primary and secondary sort keys, or changes the settings for an extra sort key.

### To Specify Extra Sort Keys

1. Choose Data Sort.
2. After you specify the Primary and Secondary sort keys, select Extra keys.  
If you have already specified extra sort keys, 1-2-3 displays a list in the Key list box.
3. 1-2-3 displays a number for the next available sort key. Next to the number in the Key range text box, specify one cell in a column by which you want to sort data.
4. Under Sort Direction, select ascending or descending sort order:  
*Ascending*  
(sorts A - Z, and smallest to largest values)  
*Descending*  
(sorts Z - A, and largest to smallest values)
5. Select Accept to add the sort key to the list.  
1-2-3 adds the sort key to the list box and enters A or D after the cell address to indicate the sort direction (ascending or descending).
6. (Optional) Repeat steps 3, 4, and 5 for each sort key you want to specify.
7. Select OK.  
1-2-3 returns to the Data Sort dialog box.

### To Clear Extra Sort Keys

Note To clear all sort keys, choose Data Sort and select Reset.

1. Choose Data Sort.
  2. Select Extra keys.
  3. Specify the number of the extra sort key you want to clear. For example, if you have six extra sort keys and you want to remove the sixth key, select 6.
  4. Specify the cell address that matches the preceding extra sort key. For example, if you are removing the sixth extra sort key, specify the same cell you defined for the fifth extra sort key.
  5. Specify the sort order you specified for the preceding extra sort key. For example, if you are removing the sixth extra sort key and the sort order for the fifth extra sort key is ascending, specify ascending sort order.
  6. Select Accept.
  7. Select OK to return to the Data Sort dialog box.
- 1-2-3 ignores duplicate sort keys when you sort data.

See also:

[Changing the Sort Keys](#)  
[Data Commands](#)

## Changing the Sort Keys

### To Change the Primary or Secondary Sort Key

1. Choose Data Sort.
2. Select Primary key or Secondary key.
3. Specify a cell in a different column to sort by in the Primary or Secondary key text box.
4. Specify the sort order (ascending or descending) for the sort key.
5. Select OK to sort the range.

### To Change Extra Sort Keys

1. Choose Data Sort.
2. Select Extra keys.
3. Select the key you want to change from the list box.  
1-2-3 displays the range for that sort key in the Key range text box.
4. In the Key range text box specify a cell in a different column.
5. Specify the sort order (ascending or descending).
6. Select Accept
7. Repeat steps 3 through 6 for each extra sort key you want to change.
8. Select OK to return to the Data Sort dialog box.

See also:

Data Commands

Data SortData Sort Extra keys

## **Sort Order (Collating Sequences)**

The collating sequence determines the order in which 1-2-3 sorts different types of labels when you use Data Sort.

1-2-3 has three collating sequences:

ASCII

Numbers First

Numbers Last

1-2-3 uses the Numbers First collating sequence if you do not select a different one when you install 1-2-3. If you want to change the collating sequence, use the 1-2-3 Install program.

See also:

Data Commands

Data Sort

## **ASCII Collating Sequence**

ASCII sorts data in ascending order in the following way when you use Data Sort. If you use descending order, the sequence shown here is reversed.

1. Blank cells
2. Labels -- all characters evaluated in LMBCS code order
3. Values in numerical order

See also:

Numbers First

Numbers Last

Sort Order

## Numbers First Collating Sequence

Numbers First sorts data in ascending order in the following way when you use Data Sort. If you use descending order, the sequence shown here is reversed.

1. Blank cells
2. Labels beginning with a space
3. Labels beginning with numbers in numerical order
4. Labels beginning with letters in alphabetical order, lowercase letters before uppercase
5. Labels beginning with other characters in LMBCS code order
6. Values in numerical order

1-2-3 ignores apostrophes and hyphens when these characters appear in entries. For example, 1-2-3 places Olden before O'Leary.

See also:

[ASCII](#)

[Numbers Last](#)

[Sort Order](#)

## Numbers Last Collating Sequence

Numbers Last sorts data in ascending order in the following way when you use Data Sort. If you use descending order, the sequence shown here is reversed.

1. Blank cells
2. Labels beginning with a space
3. Labels beginning with letters in alphabetical order, lowercase letters before uppercase
4. Labels beginning with numbers in numerical order
5. Labels beginning with other characters in LMBCS code order
6. Values in numerical order

1-2-3 ignores apostrophes and hyphens when these characters appear in entries. For example, 1-2-3 places Olden before O'Leary.

See also:

[ASCII](#)

[Numbers First](#)

[Sort Order](#)

## Data What-if Table

Calculates one or more formulas many times, each time substituting different values in the formula(s). 1-2-3 enters one value in the what-if table for each solution to the formula.

The type of what-if table you create depends on the data you want to analyze and number of formulas and variables you want to use.

### 1-Way

Substitutes values for one variable in one or more formulas.

### 2-Way

Substitutes values for two variables in one formula.

### 3-Way

Substitutes values for three variables in one formula.

### Reset

Clears the ranges and input-cell settings for all what-if tables in the current file.

## Uses

With each what-if table (1-way, 2-way, or 3-way), you can perform two kinds of data analysis, sensitivity analysis (using worksheet data) and cross-tabulation (using data in a database table).

### Sensitivity Analysis

1-2-3 substitutes different values in one or more formulas, and calculates multiple solutions to a problem. For example, you can use a what-if table to calculate different monthly payments on a loan by changing the values of the principal, interest rate, and/or term.

### Cross-Tabulation

1-2-3 substitutes different values in one or more database @functions to analyze data in a database table. For example, using a sales database table, you can use a what-if table to total, average, or count sales by person, region, or date.

**Note** 1-2-3 for Windows offers two other ways to analyze both simple and complex what-if problems in a worksheet. Backsolver calculates one formula to produce a given value by changing one of the values in the formula. Solver analyzes data in a worksheet and shows you a variety of possible solutions to a problem you define.

See also:

Data Commands

Performing Database Calculations

What-if Table Basics



## Data What-if Table Basics

A what-if problem can be question that requires the analysis of one or more variables to arrive at an answer. For example, if you use a what-if table to calculate the effects of different interest rates on a loan, you can find the answer to the question, what will the monthly payments be if the interest rate is 12% or 12.5%?

You can also find answers to questions based on data in database tables. For example, in a sales database table, you might want to know the total sales for each person or the total sales by month.

1-2-3 creates a what-if table by calculating one or more formulas many times, each time substituting different values in the formula(s). 1-2-3 enters one value in the what-if table for each solution to the formula. 1-2-3 can create 1-way, 2-way, and 3-way what-if tables, depending on the number of variables you want to use.

Before 1-2-3 can calculate the results of a what-if table, you need to set up the table in the worksheet. A what-if table has four basic parts: formula(s), input cell(s), input values, and the table range.

### Formula(s)

1-2-3 use formulas to create what-if tables. 1-2-3 creates the table by substituting input values in the formula. The type and location of formulas depends on the type of what-if table you create.

### Input Cell(s)

1-2-3 uses input cells to temporarily store input values while it performs calculations for a what-if table. You need to define one input cell for each variable in a formula. A 1-way table has one variable and one input cell, a 2-way table has two variables and two input cells, and a 3-way table has three variables and three input cells. The input cell(s) can be any cells in a worksheet as long as they are located outside of the range you define as the table range.

### Input Values

1-2-3 replaces the variables in the formula(s) with the input values you supply. Input values can be numbers or labels. Input values are always located in the table range.

### Table Range

1-2-3 uses the table range to display the results of a what-if table. The table range always contains the input values. Depending on the type of what-if table you create, this range may also contain the formula(s).

### Using Formulas in What-if Tables

- \* Formulas in a what-if table can contain values, labels, cell addresses, or range names.
- \* Formulas in a what-if table evaluate to 0 or ERR if the input cell is blank. This will not affect the results of the what-if table. To display the actual formula instead of 0 or ERR, format the formula cell with Range Format Text.
- \* If you use logical formulas in what-if tables, all the resulting values will equal 0 or 1 because logical formulas always produce the value 0 or 1.

### Graphing Results of What-if Tables

You can create an XY graph using information from a what-if table.

- \* For a 1-way table, use the values in the first column as the X range; use other columns in the result area of the table as the A - F data ranges. Do not include the formulas in any

of the graph ranges.

- \* For a 2-way table, use the values in either the first column or the top row as the X range; use other columns or rows in the results area of the table as the A - F data ranges. Do not include the formula in any of the graph ranges.
- \* For a 3-way table, use the values in the first column, the top row, or the top left cell of the table range in each worksheet as the X range; use other columns, rows, or 3-D ranges in the results area of the what-if table as the A - F ranges.

**Note** 1-2-3 for Windows offers two other ways to analyze both simple and complex what-if problems in a worksheet. Backsolver calculates one formula to produce a given value by changing one of the values in the formula. Solver analyzes data in a worksheet and shows you a variety of possible solutions to a problem you define.

See also:

About Graph Types

Data Commands

Data What-If Table

Performing Database Calculations

## Data What-if Table 1-Way

Substitutes values for one variable in one or more formulas and enters the results in a table.

You can use a what-if table to perform two kinds of data analysis, sensitivity analysis and cross-tabulation.

### 1-Way Sensitivity Analysis

Use Data What-if Table 1-Way to calculate a 1-way table by substituting one set of values in one or more formulas when all the formulas share the same variable. For example, you can calculate three formulas,  $5+X$ ,  $6+X$ , and  $7+X$ , in a 1-way table by using the same set of values for  $X$ .

### 1- Way Cross-Tabulation

Use Data What-if Table 1-Way to calculate a 1-way table by substituting one set of values from a database table in one or more database @functions. For example, you can use @DSUM, @DAVG, and @DCOUNT in a 1-way table to perform different calculations on data in one field.

**Note** Using Data Query Extract to create aggregate columns is quicker and more efficient than using Data What-if Table for cross-tabulating data in database tables.

## Example

1-Way Sensitivity Analysis

1-Way Cross-Tabulation

See also:

Aggregate Columns

Data Commands

Database @Functions

Data What-if Table

## 1-Way Sensitivity Analysis

Use Data What-if Table 1-Way to calculate a 1-way table by substituting one set of values in one or more formulas.

Before you can calculate a 1-way table, you must set up the table range by entering formulas and input values in the worksheet.

### Example

Setting Up a 1-Way Table  
1-Way Sensitivity Analysis

#### To Set Up a 1-Way Table

1. Decide on a location for the table range.
2. Label one cell outside the table range as the input cell to make it easy to locate. The input cell can be any cell in a worksheet as long as it is located outside of the table range.
3. Set up the table range.
  - a. Enter one or more formulas in the first row of the table range. Make sure each formula refers to the input cell. For example, if the input cell is B1, the formula must contain a reference to B1.  
  
The input cell always represents the input values you enter in the first column of the table range.
  - b. In the first column of the table range, beginning in the second cell, enter the input values you want 1-2-3 to use in the formula(s). Leave the cell in the upper left corner of the table blank.

#### To Calculate a 1-Way Table

1. Choose Data What-if Table 1-Way.
  2. Specify the table range in the Table range text box.  
  
Include only the the formulas and input values in the table range. Do not include the input cells.
  3. Specify the input cell in the Input cell text box.
  4. Select OK.
- 1-2-3 calculates the 1-way table by substituting the input values in the input cell, one at a time. 1-2-3 calculates the formula with each value and enters the results in the table range.

See also:

Data Commands  
Data What-if Table

### Example: Setting Up a 1-Way Table

The table range is A3..C6. The input cell is B1. The input values are in A4..A6. The formulas are in B3..C3. The top left corner cell of the table range (A3) is blank.

A:	-----	A -----	B -----	C -----	D -----
1		Input cell -->			
2					
3	blank		formula	formula	
4	value				
5	value				
6	value				

### Example: 1-Way Sensitivity Analysis

Use Data What-if Table 1-Way with @PMT to calculate the monthly payments on a 30 year loan at 12% interest with different loan amounts.

The table range is A3..B7. The @PMT formula (in B3) refers to the input cell (B1). The input values (the loan amounts) are in A4..A7.

A:	----	A	-----	B	-----
1		Loan -->		[input]	
2					
3			@PMT(B1, .12/12,30*12)		
4		<b>\$100,000</b>			1028.61
5		<b>\$110,000</b>			1131.47
6		<b>\$120,000</b>			1234.34
7		<b>\$130,000</b>			1337.20

The results in B4..B7 show the monthly payments on the loan. For example, the monthly payment on a \$120,000 loan for 30 years at 12% interest is \$1,234.34.

## 1-Way Cross-Tabulation

Use Data What-if Table 1-Way to calculate a 1-way table by substituting one set of values from a [database table](#) in one or more [database @functions](#).

Before you can calculate a 1-way table, you must set up the table range by entering one or more database @functions and the [input values](#).

**Note** Using Data Query Extract to create aggregate columns is quicker and more efficient than using what-if tables for cross-tabulating data in database tables.

### Example

#### [1-Way Cross-Tabulation](#)

#### To Set Up a 1-Way Table

1. Identify the database table you want to use.
2. Decide on a location for the 1-way table range.
3. Set up the [criteria range](#) by copying one [field name](#) from the database table to a blank row. Label the cell below the field name as the [input cell](#).
4. Set up the table range separate from the criteria range.

- a. Enter one or more database @functions in the first row of the table range.

The database @function must refer to the database table as the [input range](#), a field name enclosed in " " (quotation marks) for the values you want to calculate, and the criteria range (two rows deep).

To use an [external database table](#), specify the range name of the external table as the [input range](#) in the database @function.

- b. In the first column of the table range, beginning in the second cell, enter the input values you want 1-2-3 to use in the formula(s).

The input values are labels or values from the fields you used in the criteria range. For example, if the criteria range contains a field called Name, the input values must be entries from the database under Name.

Leave the cell in the upper left corner of the table range blank.

#### To Calculate a 1-Way Table

1. Choose Data What-if Table 1-Way.
2. Specify the table range in the Table range [text box](#).  
Include only the the formulas and input values in the table range. Do not include the criteria range.
3. Specify the [input cell](#) in the Input cell text box.  
The input cell must be located below the field name in the criteria range.
4. Select OK.

1-2-3 calculates the 1-way table by substituting the input values in the input cell, one at a time. 1-2-3 then calculates the formula with each value and enters the results in the table range.

See also:

[Aggregate Columns](#)  
[Data Commands](#)

Data What-If Table  
Database @Functions



### Example: 1-Way Cross-Tabulation

Use Data What-if Table 1-Way with @DSUM to sum the sales for Smith and Mintz from the database table named Q2SALES in A1..C6.

A: ---	A -----	B -----	C -----	D -----	E ----
1	Name	Month	Sales		Name
2	Mintz	May	2800		[input]
3	Smith	May	2100		
4	Smith	June	1400		
5	Mintz	June	1500		
6.	Smith	June	1600		

The 1-way table is in K1..L3. The @DSUM formula in L1 refers to the database table (Q2SALES), a field (Sales) in the database table, and the criteria range (E1..E2). The input cell is E2.

A: ---	K -----	L -----
1		@DSUM(Q2SALES,"Sales",E1..E2)
2	<b>Mintz</b>	4300
3	<b>Smith</b>	5100

## Data What-if Table 2-Way

Substitutes values for two variables in one formula and enters the results in a table.

You can use a what-if table to perform two kinds of data analysis, sensitivity analysis and cross-tabulation.

### 2-Way Sensitivity Analysis

Use Data What-if Table 2-Way to calculate a 2-way table by substituting two different sets of values in one formula. For example, a 2-way table calculates a formula like  $5+X+Y$  by substituting different values for X and Y.

### 2-Way Cross-Tabulation

Use Data What-if Table 2-Way to calculate a 2-way table by substituting two different sets of values from a database table in one database @function. For example, using @DSUM in a 2-way table, you can sum values for two fields in a database table.

**Note** Using Data Query Extract to create aggregate columns is quicker and more efficient than using Data What-if Tables for cross-tabulating data in database tables.

## Example

2-Way Sensitivity Analysis

2-Way Cross-Tabulation

See also:

Aggregate Columns

Data Commands

Data What-If Table

Database @Functions

## 2-Way Sensitivity Analysis

Use Data What-if Table 2-Way to calculate a 2-way table by substituting two different sets of values in one formula. Before you can calculate a 2-way table, you must set up the table range by entering a formula and two sets of input values in the worksheet.

### Example

Setting Up a 2-Way Table  
2-Way Sensitivity Analysis

#### To Set Up a 2-Way Table

1. Decide on a location for the table range.
2. Label two cells outside the table range as the input cells to make them easy to locate. The input cells can be any cells in a worksheet as long as they are located outside of the table range.
3. Set up the table range.
  - a. Enter the formula in the upper left corner cell of the table range. The formula must refer to both input cells.
  - b. In the column under the formula, enter the input values associated with input cell 1.
  - c. In the cells to the right of the formula, enter the input values associated with input cell 2.

#### To Calculate a 2-Way Table

1. Choose Data What-if Table 2-Way.
  2. Specify the table range in the Table range text box.

Include only the the formulas and input values in the table range. Do not include the input cells.
  3. Specify input cell 1 in the Input cell 1 text box.

Input cell 1 always represents the input values you entered in the first column of the table range.
  4. Specify input cell 2 in the Input cell 2 text box.

Input cell 2 always represents the input values you entered in the first row of the table range.
  5. Select OK.
- 1-2-3 calculates the 2-way table by substituting pairs of input values in the input cells. 1-2-3 then calculates the formula with each pair of values and enters the results in the table range.

See also:

Data Commands  
Data What-If Table

### Example: Setting Up a 2-Way Table

This 2-way table uses a formula in cell A4 to calculate two sets of values.

The table range is A4..D7. Input cell 1 is B1 and input cell 2 is B2. The formula must contain references to the two input cells.

When 1-2-3 calculates the 2-way table, it substitutes values from A5..A7 in input cell 1 and the values from B4..D4 in input cell 2 and enters the results in the table range.

A:	-----	A -----	B -----	C -----	D -----
1		Input cell 1-->			
2		Input cell 2-->			
3					
4	formula	value	value	value	
5	value				
6	value				
7	value				

### Example: 2-Way Sensitivity Analysis

Use Data What-if Table 2-Way with @PMT to calculate the monthly payments on a 30-year loan with different loan amounts and interest rates.

The table range is A4..C8. The @PMT formula (in A4) refers to the input cells (B1 and B2). The input values (loan amounts and interests rates) are in A5..A8 and B4..C4. 1-2-3 calculates the 2-way table by substituting pairs of input values in the formula.

A:	-----	A	-----	B	-----	C	----
1		Loan	-->			[input 1]	
2		Interest	-->			[input 2]	
3							
4		@PMT(B1,B2/12,30*12)		12.0%		12.5%	
5		\$100,000			1028.61		1067.26
6		\$110,000			1131.47		1173.98
7		\$120,000			1234.34		1280.71
8		\$130,000			1337.20		1387.44

The result of each calculation is located at the intersection of a column and row. For example, the monthly payment on a \$120,000 loan for 30 years at 12.5% interest is \$1,280.71.

## 2-Way Cross-Tabulation

Use Data What-if Table 2-Way to calculate a 2-way table by substituting two different sets of values from a database table in one database @function.

Before you can calculate a 2-way table, you must set up the table range by entering a database @function and two sets of input values in the worksheet.

**Note** Using Data Query Extract to create aggregate columns is quicker and more efficient than using what-if tables for cross-tabulating data in database tables.

### Example

#### 2-Way Cross-Tabulation

#### To Set Up a 2-Way Table

1. Identify the database table you want to use.
2. Decide on a location for the 2-way table range.
3. Set up the criteria range by copying two field names from the database table to a blank row. Label the cells below the field names as the input cells.
4. Set up the table range separate from the criteria range.

- a. Enter one database @function in the upper left corner of the table range.

The database @function must refer to the database table as the input range, a field name enclosed in " " (quotation marks) for the values you want to calculate, and the criteria range (two rows deep).

To use an external database table, specify the range name of the external table as the input range in the database @function.

- b. In the column under the database @function, enter the input values. The input values are labels or values from a field in the database table.

For example, if the criteria range contains a field called Name, the input values must be entries from the database table under Name.

- c. In the cells to the right of the database @function, enter the input values from another field in the database table.

For example, if the criteria range contains a field named Month, the input values must be entries from the database table under Month.

#### To Calculate a 2-Way Table

1. Choose Data What-if Table 2-Way.
2. Specify the table range in the Table range text box.

Do not include the criteria range in the table range.

3. Specify input cell 1 in the Input cell 1 text box.

Input cell 1 must be located in the criteria range below a field name. The entries in the first column of the table range must be from this field in the database table.

4. Specify input cell 2 in the Input cell 2 text box.

Input cell 2 must be located in the criteria range below a different field name. The entries in the first row of the table range must be from this field in the database table.

5. Select OK.

1-2-3 calculates the 2-way table by substituting pairs of input values in the input cells. 1-2-3

then calculates the formula with each pair of values and enters the results in the table range.

See also:

[Aggregate Columns](#)

[Data Commands](#)

[Data What-If Table](#)

[Database @Functions](#)

### Example: 2-Way Cross-Tabulation

Use Data What-if Table 2-Way with @DSUM to sum the sales for Smith and Mintz for May and June from a database table named Q2SALES (in A1..C6).

A: ---	B -----	C -----	D -----	E -----	F -----
1	Name	Month	Sales	Name	Month
2	Mintz	May	2800	[input1]	[input2]
3	Smith	May	2100		
4	Smith	June	1400		
5	Mintz	June	1500		
6	Smith	June	1600		

This 2-way table is in K1..M3. The @DSUM formula in K1 refers to the database table (Q2SALES), a field (Sales) in the database table, and the criteria range (E1..F2). The input cells are E2 and F2.

A:-----	K -----	L -----	M -----
1	@DSUM(Q2SALES,"Sales",E1..F2)	May	June
2	Mintz	2800	1500
3	Smith	2100	3000



## Data What-if Table 3-Way

Substitutes values for three variables in one formula and enters the results in a table. A 3-way table is similar to a 2-way table except you enter the formula outside the table range and you use more than one worksheet for the table range.

You can use a what-if table to perform two kinds of data analysis, sensitivity analysis and cross-tabulation.

### 3-Way Sensitivity Analysis

Use Data What-if Table 3-Way to calculate a 3-way table by substituting three different sets of values in one formula. For example, a 3-way table calculates a formula like  $X+Y+Z$  by substituting different values for X, Y, and Z.

### 3-Way Cross-Tabulation

Use Data What-if Table 3-Way to calculate a 3-way table by substituting three different sets of values from a database table in one database @function. For example, using @DSUM in a 3-way table, you can sum sales entered in a database table by name, month, and account.

**Note** Using Data Query Extract to create aggregate columns is quicker and more efficient than using Data What-if Tables for cross-tabulating data in database tables.

### **Example:**

[3-Way Sensitivity Analysis](#)

[3-Way Cross-Tabulation](#)

See also:

[Aggregate Columns](#)

[Data Commands](#)

[Data What-If Table](#)

[Database @Functions](#)

## 3-Way Sensitivity Analysis

Use Data What-if Table 3-Way to calculate a 3-way table by substituting three different sets of values in one formula. A 3-way table extends across two or more worksheets.

Before you calculate a 3-way table, you must set up a 3-D table range by entering one formula and three sets of input values in two or more worksheets. The number of worksheets you use depends on the number of input values you use for the third variable.

### Example

#### 3-Way Sensitivity Analysis

#### **To Set Up a 3-Way Table**

1. Decide on locations for the table range in contiguous worksheets. The table range will span two or more worksheets depending on the number of input values you use for the third variable.
2. Label three cells outside the table range as the input cells to make them easy to locate. The input cells can be any cells in a worksheet as long as they are located outside of the table range.
3. In a cell outside of the table range, enter the formula you want to analyze. The formula must refer to all three input cells.
4. Enter input values in the table range.
  - a. In the first column of the table range in the first worksheet, enter the values related to input cell 1. 1-2-3 will use these values in the formula for input cell 1. Copy these values to all worksheets in the table range.
  - b. In the first row of the table range in the first worksheet, enter the values related to input cell 2. 1-2-3 will use these values in the formula for input cell 2. Copy these values to all worksheets in the table range.
  - c. In the upper left corner cell of the table range in each worksheet, enter different values related to input cell 3. 1-2-3 will use these values in the formula for input cell 3. The number of input values for this variable determines the number of worksheets you will need for the table range.

#### **To Calculate a 3-Way Table**

1. Choose Data What-if Table 3-Way.
2. Specify the table range in the Table range text box.

Do not include the formula or input cells in the table range.
3. Specify the cell that contains the formula for the 3-way table in the Formula cell text box.
4. Specify input cell 1 in the Input cell 1 text box.

Input cell 1 always represents the input values you entered in the first column of the table range.
5. Specify input cell 2 in the Input cell 2 text box.

Input cell 2 always represents the input values you entered in the first row of the table range.
6. Specify input cell 3 in the Input cell 3 text box.

Input cell 3 always represents the input values you entered in the upper left corner of the table range.

7. Select OK.

1-2-3 calculates the 3-way table by substituting values from the first column, top row, and upper left cell in the input cells. 1-2-3 then calculates the formula using each set of values and enters the result of each calculation at the intersection of the appropriate rows and columns in the table range.

See also:

[Data Commands](#)

[Data What-If Table](#)

### Example: 3-Way Sensitivity Analysis

Use Data What-if Table 3-Way with @PMT to calculate the monthly payments on a loan with three variables, the loan amount, the interest rate, and the term.

Sheet A contains the three input cells (B1, B2, B3) and the @PMT formula (B5). Sheets B, C, and D contain the table range (B:A2..D:C6) with the input values. The input values in the first column (loan amounts) and row (interest rates) are the same in each worksheet. The input values in the upper left corner cell of the table range (term of the loan) are different in each sheet.

#### Sheet A:

```
A: ----- A ----- B ----- C ----
1  Loan          -->  [input 1]
2  Interest      -->  [input 2]
3  Term (years) -->  [input 3]
4
5  Formula      -->  @PMT(B1,B2/12,B3*12)
```

#### Sheet B:

```
B: ----- A ----- B ----- C ----
1
2          15          12.0%          12.5%
3  $100,000      1200.17      1232.52
4  $110,000      1320.18      1355.77
5  $120,000      1440.20      1479.03
6  $130,000      1560.22      1602.28
```

#### Sheet C:

```
C: ----- A ----- B ----- C ----
1
2          20          12.0%          12.5%
3  $100,000      1101.09      1136.14
4  $110,000      1211.19      1249.75
5  $120,000      1321.30      1363.37
6  $130,000      1431.41      1476.98
```

#### Sheet D:

```
D: ----- A ----- B ----- C ----
1
2          30          12.0%          12.5%
3  $100,000      1028.61      1067.26
4  $110,000      1131.47      1173.98
5  $120,000      1234.34      1280.71
6  $130,000      1337.20      1387.44
```

1-2-3 calculates the 3-way table by substituting three sets of input values in the formula and entering the results in the table. For example, the monthly payment on a 20-year loan of \$120,000 at 12% interest is \$1,321.30.

See also:

- [Data Commands](#)
- [Data What-If Table](#)

## 3-Way Cross-Tabulation

Use Data What-if Table 3-Way to calculate a 3-way table by substituting three sets of values from a database table in one database @function. A 3-way table extends across two or more worksheets.

A 3-way table is similar to a 2-way table except you enter the formula outside the table range, you use three input cells in the criteria range, and you use two or more worksheets for the table range. The number of worksheets you use depends on the number of input values you use for the third variable.

Before you can calculate a 3-way table, you must set up a criteria range, enter a database @function, and set up the table range with three sets of input values.

### Example

#### 3-Way Cross-Tabulation

#### To Set Up a 3-Way Table

1. Identify the database table you want to use.
2. Decide on locations for the 3-way table range in contiguous worksheets. The table range will span two or more worksheets depending on the number of input values you use for the third variable.
3. Set up the criteria range by copying three field names from the database table to a blank row. Label the cells below the field names as the input cells.
4. In a cell outside the table range and the criteria range, enter a database @function.

The database @function must refer to the database table as the input range, a field name enclosed in " " (quotation marks) for the values you want to calculate, and the criteria range (two rows deep).

To use an external database table, specify the range name of the external table as the input range in the database @function.

5. Set up the table range.

Enter input values in the table range. The input values are labels or values from fields in the database table.

- a. In the first column of the table range in the first worksheet, enter the values related to input cell 1. Copy these values to all worksheets in the table range.
- b. In the first row of the table range in the first worksheet, enter the values related to input cell 2. Copy these values to all worksheets in the table range.
- c. In the upper left corner cell of the table range in each worksheet, enter different values related to input cell 3. The number of input values for this third variable determines the number of worksheets you need for the table range.

#### To Calculate a 3-Way Table

1. Choose Data What-if Table 3-Way.
2. Specify the table range in the Table range text box.  
Do not include the formula or criteria range in the table range.
3. Specify the cell that contains the formula for the 3-way table in the Formula cell text box.
4. Specify input cell 1 in the Input cell 1 text box.

Input cell 1 must be located in the criteria range below a field name. The entries in the

first column of the table range must be from this field in the database table.

5. Specify input cell 2 in the Input cell 2 text box.

Input cell 2 must be located in the criteria range below a field name. The entries in the first row of the table range must be from this field in the database table.

6. Specify input cell 3 in the Input cell 3 text box.

Input cell 3 must be located in the criteria range below a field name. The entries in the upper left corner of the table range must be from this field in the database table.

7. Select OK.

1-2-3 calculates the 3-way table by substituting values in the first column, top row, and upper left cell in the input cells. 1-2-3 then calculates the formula using each set of values and enters the result of each calculation at the intersection of the appropriate rows and columns in the table range.

See also:

[Aggregate Columns](#)

[Data Commands](#)

[Database @Functions](#)

[Data What-If Table](#)

### Example: 3-Way Cross-Tabulation

Use Data What-if Table 3-Way with @DSUM to sum the sales for Smith and Mintz for May and June for three different accounts in a database table.

Sheet A contains the database table named Q2SALES (A:A1..A:D9), the criteria range (A:J1..A:L2), and the @DSUM formula (A:K4). The three input cells are in the criteria range.

The 3-way table range in Sheets B, C, and D (B:A2..D:C4) contains the input values. The input values in the first row and column are the same in each worksheet. The input values in the upper left corner cell of the table range are different in each sheet.

#### Sheet A:

A:-----	A -----	B -----	C -----	D -----
1	Name	Month	Sales	Accounts
2	Mintz	May	2200	Art Etc
3	Mintz	May	1400	Dance Corp
4	Smith	May	2100	Photo Show
5	Mintz	May	1200	Photo Show
6	Mintz	June	1450	Art Etc
7	Smith	June	1400	Dance Corp
8	Smith	June	2400	Photo Show
9	Mintz	June	1700	Dance Corp

A:-----	J -----	K -----	L -----
1	Name	Month	Accounts
2	[input 1]	[input 2]	[input 3]
3			
4	Formula -->@dsum(Q2SALES,"SALES",A:J1..A:L2)		
5			

#### Sheet B:

B:-----	A -----	B -----	C -----
1			
2	<b>Art Etc</b>	<b>May</b>	<b>June</b>
3	<b>Mintz</b>	2200	1450
4	<b>Smith</b>	0	0

#### Sheet C:

C:-----	A -----	B -----	C -----
1			
2	<b>Dance Corp</b>	<b>May</b>	<b>June</b>
3	<b>Mintz</b>	1400	1700
4	<b>Smith</b>	0	1400

#### Sheet D:

D:-----	A -----	B -----	C -----
1			
2	<b>Photo Show</b>	<b>May</b>	<b>June</b>
3	<b>Mintz</b>	1200	0
4	<b>Smith</b>	2100	2400

1-2-3 calculates this 3-way table by substituting three input values in the criteria range and entering the results in the table range. Each sheet sums sales for a different account for Mintz and Smith in May and June. The results are at the intersection of a column and a row. For example, in sheet D, sales June sales to Photo Show for Smith were \$2,400.

See also:

- [Data Commands](#)
- [Data What-If Table](#)

## **Data What-if Table Reset**

Clears the settings for the table range and input cell ranges for all what-if tables in the current file.

1. Make sure the [cell pointer](#) is in the file containing the table and input cells settings you want to clear.
2. Choose Data What-if Table Reset.

See also:

[Data Commands](#)

[Data What-If Table](#)



## Data Connect to External

Establishes a connection to an external database table so you can use the table with other 1-2-3 commands.

1-2-3 uses DataLens drivers to connect to external database tables. DataLens drivers are programs that allow 1-2-3 to read data from and send data to an external database. Use the 1-2-3 Install program to install the DataLens drivers that come with 1-2-3 for Windows.

**Note** Depending on the DataLens driver you select and how it is configured, 1-2-3 may prompt you for a driver or database user ID and password when you connect to an external database. If so, enter the user ID and password in the appropriate text boxes and select OK. If you are connecting to a driver and are prompted for a user ID and password but do not need one to connect to the driver, select OK.

1. Choose Data Connect to External.

If you know the names of the driver, the external database, and the external table, you can combine steps 2 through 4 by entering all of these names, separated by spaces in the text box. For example, enter DBASE\_IV C:\123W\SAMPLE EMPLOYEE to use the dBASE IV driver, a database named C:\123W\SAMPLE, and a table named EMPLOYEE.

2. Specify the driver you want to use and select Connect.

If the list box does not display the name of a driver you want to use, you need to use the Install program to install the driver.

After you connect to the driver, the prompt above the text box changes to Connect to database.

3. Specify the external database you want to use and select Connect.

If 1-2-3 can locate the external databases, it will display the names in the list box. If 1-2-3 does not display the name of the external database you want to use, type it in the text box.

To display the database names in the list box automatically, you can add a database record to the registration file, LOTUS.BCF. For more information on this file, see the [appendix for your driver](#) in *DataLens Drivers for 1-2-3*.

After you connect to the external database, the prompt above the text box changes to Connect to table.

4. Specify the external database table you want to use and select Connect.

After you connect to the external table, the prompt above the text box changes to Enter range name for table.

5. Specify a range name for the table and select Connect.

The range name is the name you use in 1-2-3 to refer to this table in Data Query commands, Data External Options commands, and database @functions.

1-2-3 displays the table name as the default range name. If you already used that range name in the current worksheet, 1-2-3 displays ??? (question marks). You can type a new name of up to 15 characters in the text box.

After you enter the range name, the prompt above the text box changes to Connect to table.

6. (Optional) To connect to another table in the same database, repeat steps 4 and 5. To connect to a table in a different database, select (Show Databases) in the list box, and repeat steps 3 through 5.

7. Select OK.

After 1-2-3 is connected to the external table, you can use [Data Query](#) commands and [database @functions](#) to analyze, add to, or change data in the table.

**Note** The 1-2-3 Classic menu contains additional commands for using 1-2-3 with external database tables. For more complete information on using 1-2-3 with external databases, see [DataLens Drivers for 1-2-3](#).

See also:

[Data Commands](#)

[Data External Basics](#)

[Data External Options](#)

## Data External Basics

The Data External commands use DataLens drivers to exchange data between an external database table and a 1-2-3 worksheet file. DataLens drivers are programs that 1-2-3 uses when reading data from and sending data to an external database table.

To use an external database table with 1-2-3, you must have a database driver for the external database. Use the 1-2-3 Install program to install DataLens drivers that come with 1-2-3 for Windows. The external table can be on a personal computer, a network server, a corporate mainframe, or a CD-ROM.

When you use Data Connect to External and Data External Options, 1-2-3 lists database drivers that you have installed and external databases located in the default worksheet directory. 1-2-3 also lists drivers and external databases entered in the registration file, LOTUS.BCF. For more information on this file, see the appendix for your driver in *DataLens Drivers for 1-2-3*.

### Connecting to an External Database

To use an external database table with 1-2-3, you must first connect to the external database using Data Connect to External. 1-2-3 needs the following information:

- \* The DataLens driver name
- \* The external database name
- \* The name of the table within the external database
- \* The range name you want to use to refer to the external table

### Using an External DatabaseTable

Once you have established a connection between 1-2-3 and the external table, you can use 1-2-3 commands to complete different tasks, depending on the specific features of the DataLens driver you are using.

#### Data External Options

- Creates an external table
- Disconnects from an external table
- Lists information about fields in an external table
- Sends a command to an external database

#### Data Query Delete

- Deletes records

#### Data Query Extract

- Copies records to a 1-2-3 worksheet
- Joins data copied from two or more database tables
- Performs calculations on extracted data

#### Data Query Modify

- Inserts new records
- Updates records

#### Database @functions

- Perform statistical analysis on data

**Note** The 1-2-3 Classic menu contains additional commands for using 1-2-3 with external database tables. For more information on using 1-2-3 with external databases, see [DataLens Drivers for 1-2-3](#).

See also:

[Data Commands](#)

## Data External Options

After you have used [Data Connect to External](#) to connect 1-2-3 to an [external database table](#), use these commands to perform the following tasks:

### [Paste Fields](#)

Lists information about the fields in an external database table.

### [Send Command](#)

Sends a command to an external database.

### [Create Table](#)

Creates a new table in an external database.

### [Disconnect](#)

Ends the connection to an external table.

**Note** The 1-2-3 Classic menu contains additional commands for using 1-2-3 with external database tables. For complete information on using 1-2-3 with external databases, see [DataLens Drivers for 1-2-3](#).

See also:

[Data Commands](#)

[Data External Basics](#)

## Data External Options Paste Fields

Lists information about the fields in an [external database table](#) to which 1-2-3 is connected. This information defines the kind of data contained in the external table and includes the field names, data types, and field widths.

You can use this information to set up criteria and output ranges for Data Query operations and to create a new external table.

1. If you have not already done so, use [Data Connect to External](#) to connect to the external table.
2. Chose Data External Options Paste Fields.
3. In the Table name [text box](#), specify a table name.

The [list box](#) contains the range names you gave to all connected external tables.

4. In the Range text box, specify the range in which you want 1-2-3 to place the field information. You need to specify only the first cell of the range.

**Caution** The field information is six columns wide and contains one row more than the number of fields in the table. 1-2-3 writes over any existing data in this range, so make sure the range does not contain data you need.

5. Select OK.

1-2-3 enters the field information in the specified range. An NA in a column to the right of a field name indicates that information of a particular type -- for example, a field description -- is not available for that particular field.

See also:

[Data Commands](#)

[Data External Basics](#)

## Data External Options Send Command

Sends a command to an external database.

Depending on the driver you are using, you may be able to send driver-specific commands directly to the DataLens driver or external database. For specific information about the commands you can send, see "[Sending driver-specific commands to the driver](#)" in Chapter 5 of *DataLens Drivers for 1-2-3*.

1. If you have not already done so, use [Data Connect to External](#) to connect to an external table in the database to which you want to send a command.
2. Select Data External Options.
3. Select Send Command.  
1-2-3 displays names of database drivers in the [list box](#).
4. In the Connect to driver [text box](#), specify the driver name and select Connect.
5. In the Connect to database text box, specify the name of the database to which 1-2-3 is already connected.
6. In the Command string text box, enter the command you want to send.
7. Select OK.

See also:

[Data Commands](#)

[Data External Basics](#)

## Data External Options Create Table

Sets up the structure for a new table in an [external database](#).

In order to create an external table, 1-2-3 needs a table definition that provides some specific information about the content and structure of the new table. The [table definition](#) is a six-column range of data that contains the field names, field widths, data types, and other information about the database table you want to create.

To learn how to use a model to create an external table, see [Using a Model to Create an External Table](#). This procedure creates a table definition in a 1-2-3 worksheet and creates a new external table.

To learn how to modify an existing table definition to create a new table, see ["Creating external tables"](#) in Chapter 5 of *DataLens Drivers for 1-2-3*.

See also:

[Data Commands](#)

[Data External Basics](#)



## Using a Model to Create an External Table

You can use a 1-2-3 database table or an external database table as a model for creating a new external table.

**Note** Depending on the DataLens driver you select and how it is configured, 1-2-3 may prompt you for a driver or database user ID and password when you connect to an external database. If so, enter the user ID and password in the appropriate text boxes and select OK. If you are connecting to a driver and are prompted for a user ID and password but do not need one to connect to the driver, select OK.

1. If you want to use a 1-2-3 database table as a model, open the file that contains the database table or enter a new database table in the worksheet. To use an external table as a model, use [Data Connect to External](#) to connect to the external table.

2. Choose Data External Options Create Table.

If you know the names of the driver, the external database, and the external table, you can combine steps 3 through 5 by entering all of these names, separated by spaces, in the text box. For example, enter DBASE\_IV C:\123W\WORK BUDGET to use the dBASE IV driver to create a new table named BUDGET in an external database named C:\123W\WORK.

3. Specify the driver you want to use and select Connect.

After you connect to the driver, the prompt above the text box changes to Connect to database.

4. Specify the external database you want to use and select Connect.

If 1-2-3 can locate the external databases, it will display the names in the list box. If 1-2-3 does not display the name of the external database you want to use, type it in the text box.

To display the database names in the list box automatically, you can add a database record to the registration file, LOTUS.BCF. For more information on this file, see the [appendix for your driver](#) in *DataLens Drivers for 1-2-3*.

After you connect to the external database, the prompt above the text box changes to Connect to table.

5. In the text box, type a name for the new table and select Connect.

After you enter the new name, the prompt above the text box changes to Enter name for table.

6. In the text box, type a range name for the new table and press Connect.

The range name is the name you use in 1-2-3 to refer to this table in Data Query commands, Data External Options commands, and database @functions.

1-2-3 displays the table name as the default range name. If you already used that range name in the current worksheet, 1-2-3 displays ??? (question marks). You can type a new name of up to 15 characters in the text box.

7. (Optional) Specify a table creation string, if one is supported or required by your DataLens driver.

A table creation string specifies additional information about the table. For example, the Paradox driver lets you use a table creation string to specify a sort order for the table.

8. Specify the model range in the Model range text box.

If you are using a 1-2-3 database table as a model, the model range is the range that contains that table. If you are using an external table as a model, the model range is the

range name you gave the external table when you connected to it.

9. Specify the output range in the Output range text box.

The output range is the range in the current worksheet in which the driver creates the table definition. You can enter the entire range or just the first cell of the range.

**Caution** The table definition is six columns wide and contains one row more than the number of fields in the table. 1-2-3 writes over any existing data in this range, so make sure the range does not contain data you need.

10. Select OK.

1-2-3 creates the table definition in the current file and a new external table in the external database. To add records to the new table, use Data Query Modify Insert.

See also:

Data Commands

Data External Basics

## Table Definition

The table definition sends information to the driver about how to set up the external table. Each column in a table definition corresponds to a column generated when you use Data External Options Paste Fields.

### Example

#### Table Definition

A table definition is a six-column range that contains the following information describing an external table:

#### Column 1 -- Field Names

Name the fields as you want them to appear in the external table.

#### Column 2 -- Data Types

Identify the type of data in a field.

#### Column 3 -- Field Widths

Specify the widths of fields. Many data types have a fixed field width and ignore the field width in the table definition.

#### Column 4 -- Field Labels

Specify an alternate version of a field name.

#### Column 5 -- Field Descriptions

Describe the contents of a field.

#### Column 6 -- Field creation strings

Use a field creation string with the SQL Server driver to specify whether a field allows null entries; use a field creation string with the dBASE IV driver to specify the number of decimal places in a float field. You do not use field creation strings with the Paradox driver.

**Note** Although columns 4 and 5 must be present in the table definition, the dBASE IV, Paradox, and SQL Server drivers ignore entries in these columns when you create a new table. For information about creating a table definition with a specific driver, see the [chapter about your driver](#) in *DataLens Drivers for 1-2-3*.

See also:

[Data Commands](#)

[Data External Basics](#)

[Data External Options Create Table](#)

### Example: Table Definition

A table definition for a dBASE IV table:

A:	A	B	C	D	E	F	G
1	EMPID	Numeric	5,0	NA	NA	NA	
2	LAST	Characters	12	NA	NA	NA	
3	FIRST	Characters	12	NA	NA	NA	
4	DOH	Date		8	NA	NA	NA
5	SALARIED	Logical	1	NA	NA	NA	
6	DEPTNUM	Numeric	5,0	NA	NA	NA	
7							

Each row in the table definition gives information about one field. For example, the field named LAST is a character field that has a width of 12.

## **Data External Options Disconnect**

Disconnects an external table, ending all data exchange between 1-2-3 and the external table. After you use this command, any data queries or database @functions that refer to the table may result in errors. 1-2-3 will not update these queries or @functions until you connect to the table again using Data Connect to External.

1. Choose Data External Options Disconnect.
  2. Specify the range name of the external database table you want to stop using.
- 1-2-3 disconnects from the database table you specified.

See also:

[Data Commands](#)

## **Data External Password**

Depending on the DataLens driver you select and how it is configured, 1-2-3 may prompt you for a driver or database user ID and password when you connect to an external database.

If so, enter the user ID and password in the appropriate text boxes and select OK.

If you are connecting to a driver and are prompted for a user ID and password but do not need one to connect to the driver, select OK.

See also:

[Data Connect to External](#)

[Data External Basics](#)

[Data External Options Create Table](#)

## **Edit Undo**

Reverses the effects of the most recently executed, undoable command or action.

Edit Undo is off when you install 1-2-3. To enable Edit Undo, use [Tools User Setup](#).

1. Choose Edit Undo, or press ALT+BACKSPACE.

You cannot undo the following:

- \* A previous use of Edit Undo or ALT+BACKSPACE
- \* Printer activity
- \* Cell-pointer movement caused by pressing a [pointer-movement key](#)
- \* F5 (GOTO)
- \* F6 (PANE)
- \* Formula recalculation caused by pressing F9 (CALC) or using File Administration Update Links
- \* Changes to data and settings in inactive worksheets
- \* Changes to files on disk

For more information about the activities you can perform with Edit Undo and about the effect of Edit Undo on memory, see [Using Edit Undo](#).

See also:

[Edit Commands](#)

## Using Edit Undo

You can reverse the effects of the last undoable command or action you performed in 1-2-3, restoring whatever worksheet data and settings existed before you performed the activity, by using Edit Undo (ALT+BACKSPACE).

When Edit Undo is enabled and you perform an activity that can be undone, 1-2-3 creates an undo history -- a temporary backup copy of all data and settings affected by the activity -- so you can restore your work to its previous state.

For example, if you accidentally write over a complicated formula by entering a number in the same cell as the formula, you can use Edit Undo immediately after you enter the number to erase the number and restore the formula in the cell. Or if you use Edit Clear and mistakenly delete data from a range, you can use Edit Undo to replace the data in the range.

### Enabling Edit Undo

Edit Undo is off when you install 1-2-3. To enable Edit Undo, use [Tools User Setup](#).

### Undoing Edit Undo

Edit Undo is not a toggle key. Using Edit Undo twice in a row does not restore the changes you undid the first time you used it.

### Undoing Selections in a Dialog Box

You cannot undo any dialog box selections when a dialog box is open.

You must complete all the dialog box selections before you use Edit Undo. Edit Undo then resets all the selections you specified in the dialog box, not just the final change.

For example, if you choose Range Name Delete, delete two range names, undefine one range name, select OK to close the Range Name Delete dialog box, and then choose Edit Undo, 1-2-3 undoes the deletions and the undefine.

### Undoing a Macro

If you use Edit Undo after running a macro that changes worksheet data and settings, 1-2-3 restores the data and settings to the state they were in before the macro ran, regardless of how many changes the macro made.

### Undoing Commands That Use the Clipboard

When you undo Edit Cut, data that was cut from the worksheet is restored; when you undo Edit Paste, data pasted into the worksheet is removed. Data stored on the [Clipboard](#), however, is not removed or restored.

When you undo Edit Paste Link, data brought into the worksheet through the link is removed from the worksheet, but the link is not undone.

### Using Edit Undo After Actions That Do Not Change Data or Settings

If you use Edit Undo after an action that makes no changes to worksheet data or settings -- for example, after File Extract To or after a macro that moves the cell pointer -- 1-2-3 undoes the effects of the last activity that changed worksheet data or settings.

For example, if you use File New to open two new windows in 1-2-3, choose Window Tile to display all windows side by side, click on the newest window to make it current, and then choose Edit Undo, 1-2-3 closes the last-opened window and leaves the remaining windows tiled, and the window that was current before you opened the new windows becomes the active window again.



## **Using Edit Undo After ESC or CTRL+BREAK**

The effect of using Edit Undo after you press ESC or CTRL+BREAK to escape a command or macro depends on whether the command or macro changed any worksheet data or settings before you escaped. If it did, 1-2-3 undoes the changes. If it did not, 1-2-3 undoes the latest undoable command or action.

## **Effects of Edit Undo on Available Memory**

If 1-2-3 runs out of available memory during an activity, 1-2-3 displays a message indicating that memory is full and erases the current undo history. Edit Undo remains enabled, but you cannot use it to cancel an activity you performed before the message was displayed.




When 1-2-3 runs out of available memory during an activity for which it creates an undo history, try disabling Edit Undo with Tools User Setup. Disabling Edit Undo increases the amount of memory available to 1-2-3 as it performs the activity. For other ways to increase available memory, see [Increasing Available Memory](#).

See also:

[Edit Commands](#)

[Edit Undo](#)

## Edit Cut

-  [About Deleting \(2:25\)](#)
-  [About Moving \(2:40\)](#)
-  [Moving a Range of Data \(1:10\)](#)

Cuts data (text, values, formulas, cell format, and graphs) and related formatting from the worksheet to the Clipboard. The cut data remains on the Clipboard until you use Edit Copy or Edit Cut again in 1-2-3 for Windows or in another Windows application.

1. Select the range to cut.
2. Choose Edit Cut, or press SHIFT+DEL.

Use Edit Paste to insert cut data in a worksheet file or in another Windows application.

Use Edit Move Cells to move data within a worksheet without using the Clipboard.

To delete data from the worksheet without moving it to the Clipboard, use Edit Clear or Edit Clear Special.

### Cutting a Multi-Cell Range

When you cut a multi-cell range, 1-2-3 cuts everything that is fully enclosed in the range, including graphs and any text, values, formulas, cell format, and formatting that are underneath a graph, whether the graph is transparent (set to let worksheet data that is underneath the graph show through) or opaque (set to hide worksheet data that is underneath).

If only part of a graph is in the selected multi-cell range, 1-2-3 does not cut the graph.

### Cutting a Single-Cell Range

When you cut a single-cell range that contains part of a graph, 1-2-3 cuts the topmost graph and the data that is underneath the graph whether the graph is transparent or opaque.

See also:

- [Copying Data in 1-2-3](#)
- [Edit Commands](#)
- [Edit Copy](#)
- [Style Display Options \(Graph Window\)](#)

## Edit Copy



[About Copying \(3:00\)](#)

[Copying a Range of Data \(1:20\)](#)

Copies data (text, values, formulas, cell format, and graphs) and related formatting from the worksheet to the Clipboard. The copied data remains on the Clipboard until you use Edit Cut or Edit Copy again in 1-2-3 for Windows or in another Windows application.

1. Select the range to copy.
2. Choose Edit Copy, or press CTRL+INS.

Use Edit Paste to insert copied data in a worksheet file or in another Windows application.

Use Edit Quick Copy to copy data without using the Clipboard.

To copy the contents of entire files, large sections of data, or data from a text file to a worksheet file, use File Combine From, File Extract To, and File Import From, respectively.

### Copying a Multi-Cell Range

When you copy a multi-cell range, 1-2-3 copies everything that is fully enclosed in the range, including graphs and any text, values, formulas, cell format, and formatting that are underneath a graph, whether the graph is transparent (set to let worksheet data that is underneath the graph show through) or opaque (set to hide worksheet data that is underneath).

If only part of a graph is in the selected multi-cell range, 1-2-3 does not copy the graph.

### Copying a Single-Cell Range

When you copy a single-cell range that contains part of a graph, 1-2-3 copies the topmost graph and the data that is underneath the graph whether the graph is transparent or opaque.

See also:

[Copying Data in 1-2-3](#)

[Edit Commands](#)

[Edit Cut](#)

[Style Display Options \(Graph Window\)](#)

## Copying Data in 1-2-3



About Copying (3:00)

In 1-2-3, you can copy a range of data to the [Clipboard](#) or directly to another range in the same file or in a different 1-2-3 file.

To copy a range of data to the Clipboard, you use [Edit Copy](#). 1-2-3 copies the [cell format](#), protection status, contents (including text, values, formulas, and graphs), and related [formatting](#) of each cell in the range.

To copy a range of data to another range, you use [Edit Quick Copy](#). By default, 1-2-3 copies cell format, protection status, contents, and related [formatting](#), but you can indicate that you want 1-2-3 to copy formatting only or convert formulas to values and copy the values.

### Copying Text and Values

When you copy text and values, 1-2-3 makes exact duplicates of them.

### Copying Formulas in the Same File

When you copy a formula in the same file, 1-2-3 adjusts [relative references](#) to reflect the new location of the formula. For example, when you copy the formula +B1+B2 from B4 to C4, 1-2-3 changes the formula in C4 to +C1+C2.

1-2-3 does not adjust [absolute references](#), and 1-2-3 adjusts only the relative part of [mixed references](#).

### Copying Formulas to Another File

When you copy a formula that contains a relative, mixed, or absolute range address to another file, the range address refers to the range in the new file.

For example, when you include the formula @SUM(A1..B5) in JULY.WK3, the formula uses data from the specified range in JULY.WK3. When you copy the formula to SUMMARY.WK3, the formula uses data from the specified range in SUMMARY.WK3.

However, if you copy a formula that contains an absolute range name, 1-2-3 links the two files.

For example, if you copy the formula @SUM(\$TOTALS) from JULY.WK3 to SUMMARY.WK3, 1-2-3 automatically adds the path and file name to the formula. That is, if JULY.WK3 is in a directory named BUDGET on drive C, 1-2-3 copies the formula to SUMMARY.WK3 as

@SUM(<<C:\BUDGET\JULY.WK3>>\$TOTALS).

For more information, see [Types of Cell and Range References](#).

### Copying Formulas with 3-D Ranges

Copying a formula with [3-D ranges](#) to a file that contains fewer worksheets than are in the 3-D ranges may produce unexpected results. For example, if you copy @SUM(A:A1..D:A5) to a file that contains one worksheet, the copied formula will refer to data in worksheet A only.

### Copying Graphs

When you copy a graph from one range to another in a worksheet, 1-2-3 adds the graph to the second range and assigns the name GRAPH $n$  (where  $n$  is the next available number) to the new copy of the graph. For example, if the original graph is MYGRAPH and 1-2-3 hasn't created any graph names for the worksheet, 1-2-3 names the first copy GRAPH1, the next copy GRAPH2, and so on. 1-2-3 does not link the copied graph to the original graph.

When you copy a graph from one worksheet file to another, 1-2-3 creates a new graph for the second worksheet file, adds the graph, assigns the name GRAPH $n$  to the copy, and

assigns the same data ranges to the new graph. 1-2-3 does not link the copied graph to the original graph.

If the graph you copy contains cell references, the references remain unchanged. For example, if you specify the graph subtitle by entering \a1 in the Subtitle text box of the Chart Headings (Graph window) dialog box, and you copy the graph to another range in the same worksheet, 1-2-3 also uses data in cell a1 for the subtitle of the second graph. If you copy the graph to another worksheet file, 1-2-3 continues to use data in cell a1 of the original worksheet file for the subtitle of the copied graph.

1-2-3 copies drawings and other objects that are attached to a graph when it copies the graph. To copy objects within graphs or from one graph to another, use the Edit commands in the Graph window.





See also:

Edit Copy

Edit Paste

Edit Quick Copy

## Edit Paste

-  [About Copying \(3:00\)](#)
-  [About Moving \(2:40\)](#)
-  [Copying a Range of Data \(1:20\)](#)
-  [Moving a Range of Data \(1:10\)](#)

Copies data and related formatting from the Clipboard into the current worksheet file, starting at a cell you select. You cannot paste data into protected cells.

1. Select the range in which to paste the Clipboard data.

You need to select only the top left cell of the range.

2. Choose Edit Paste, or press SHIFT+INS.

**Caution** 1-2-3 writes over any existing data when it pastes data from the Clipboard into the range, so make sure the range does not contain data you need.

If the source and destination files are worksheet files, 1-2-3 adjusts relative and mixed cell references. 1-2-3 does not adjust absolute references.

### Pasting Data and Graphs in a Worksheet

When the destination range is a single cell, 1-2-3 uses the cell as an anchor cell and pastes the contents of the Clipboard in its original size and layout.

When the Clipboard contains data and the destination range is larger than the contents of the Clipboard, 1-2-3 uses the top left cell of the destination range as the anchor cell and pastes the contents of the Clipboard in its original size and layout. When the Clipboard contains a single cell, row, or column of data and the destination range is larger than the Clipboard contents, 1-2-3 replicates the Clipboard contents to fill the destination range.

When the Clipboard contains a graph, bitmap, or link to a .CGM or .PIC file and the destination range is a multi-cell range, 1-2-3 resizes the graph or bitmap or the contents of the .CGM or .PIC file to fit the range.

When the destination range is smaller than the contents of the Clipboard, 1-2-3 clips the contents of the Clipboard at the bottom and right. Clipping affects text, values, and formulas differently from graphs:

- \* 1-2-3 does not copy text, values, and formulas that are in cells that do not fit into the destination range.
- \* 1-2-3 resizes a graph that only partially fits into the destination range.

### Example

Pasted Data

See also:

Copying Data in 1-2-3

Edit Commands

Edit Copy

Edit Cut

### Example: Pasted Data

The following range contains four columns and four rows of data. The top left cells contain a graph represented by h, and the bottom right cells contain a graph represented by c. The numbered cells contain text, values, or formulas.

h	h	1	1
h	h	1	1
1	1	c	c
1	1	c	c

If you paste this range into a destination range that contains three columns and three rows, 1-2-3 clips the bottom and right cells that contain text, values, and formulas and resizes the graph at the bottom right to fit into a single cell.

h	h	1
h	h	1
1	1	c

## Edit Clear



[About Deleting \(2:25\)](#)

Deletes cell contents from the worksheet without using the Clipboard. Edit Clear does not clear protected cells or change their format and does not affect the contents of the Clipboard.

1. Select the range to delete.

If the range includes a graph or part of a graph, 1-2-3 will delete the contents of cells that are underneath the graph, but not the graph itself.

2. Choose Edit Clear, or press DEL.

To restore the data to the same location, use Edit Undo.

Use Edit Clear Special to delete selected types of data (cell contents, cell format, or graphs) or related formatting from a range.

See also:

Edit Commands

Edit Cut



## Edit Clear Special



[About Deleting \(2:25\)](#)

Deletes selected types of data (cell contents, cell format, or graphs) or related formatting from a range without moving it to the Clipboard. Edit Clear Special does not clear protected cells or change their format and does not affect the contents of the Clipboard.

1. Select the range containing the data or formatting you want to delete from the worksheet.
2. Choose Edit Clear Special.
3. Select the check box of one or more of the following options:

### *Cell contents*

Deletes the contents of all cells in the selected range but leaves the range format intact.

### *Number format*

Deletes cell formats created with Range Format for the selected range and resets the cell format to the default set for the worksheet with Worksheet Global Settings Format.

### *Style*

Deletes all formatting done with the Style commands (except left, center, and right label alignment) for the selected range; returns the font settings to the default font set for the worksheet file with Style Font; and returns the color settings to the defaults set for the worksheet window with Window Display Options.

### *Graph*

Deletes a graph from the selected range, but does not delete the graph from memory or from disk, and does not affect the data on which the graph is based.

4. To change the range displayed in the Range text box, specify a new range.
5. Select OK.

To restore the data to the same location, use Edit Undo.

Use Edit Clear to delete only the cell contents from the cells in a range.

See also:

Edit Commands

Edit Cut

## Edit Paste Link

Using link information on the Clipboard, creates a link between the current worksheet file and the file referred to on the Clipboard.

Edit Paste Link is available only when the Clipboard contains link information for a valid source file -- that is, a file created with another Windows application that supports DDE as a server.

1. Select the range in which to paste the DDE-supplied data.

**Caution** When the destination range is not big enough to hold the incoming data, 1-2-3 clips the incoming data that does not fit into the destination range and resizes a graph that only partially fits into the destination range.

2. Choose Edit Paste Link.

When you copy data from a valid source file to the Clipboard, the link (including, for example, the application name, topic name, and item name) is stored on the Clipboard. When you choose Edit Paste Link, 1-2-3 links the current worksheet file to the source file from which you copied the data.

Depending on the DDE format supported by the source file, 1-2-3 initially creates this new link with the update mode set to Automatic or to Manual. When the update mode is Automatic, 1-2-3 updates the link automatically whenever the source file changes. When the update mode is Manual, you must update the link by using Edit Link Options Update.

To change a link created with Edit Paste Link, use the Edit Link Options commands.

See also:

Edit Commands  
Linking Files

## **Edit Link Options**

Creates and maintains a DDE link between the current worksheet file and a file created with another Windows application that supports DDE as a server.

### Create

Creates a link and specifies an update mode for the link.

### Edit

Changes a link or the update mode of a link.

### Update

Updates a manual link or reactivates and updates a deactivated link.

### Deactivate

Deactivates a link.

### Delete

Deletes a link.

See also:

[Edit Commands](#)

[Linking Files](#)

## Edit Link Options Create

Creates a link between the current worksheet file and a file created with another Windows application that supports DDE as a server. Edit Link Options Create also specifies an update mode for the link.

1. Select the range to link to (the destination range).

**Caution** When the destination range is not big enough to hold the incoming data, 1-2-3 clips the incoming data that does not fit into the destination range and resizes a graph that only partially fits into the destination range.

2. Choose Edit Link Options.

In the Edit Link Options dialog box, 1-2-3 displays the link names of all links associated with the current worksheet file and -- in the Format information boxes -- information about the currently selected link.

3. Select Create.

The Edit Link Options Create dialog box is displayed.

4. To change the default link name displayed in the Link name text box, enter a new link name (see conventions below).

If you do not enter a new name, 1-2-3 assigns the default name to the link. The first default link name is LINK1, the next default link name is LINK2, and so on.

5. In the Application text box, specify the application to link to (the source application).

The list box under the Application text box contains a list of active Windows applications. You can specify an active application, or you can enter the name of an inactive application.

6. In the Topic name text box, specify the source file to link to.

When there is information on the Clipboard about a file in an application that supports DDE as a server, 1-2-3 displays the file name in the Topic name text box. If you do not specify another worksheet or file, 1-2-3 links the current worksheet file to the file displayed in the text box.

7. In the Item name text box, specify the source item to link to. This is the data item in the source file that you want transferred through the link to the destination range.

8. In the Format name text box, specify a format for the transferred data. If you do not specify a format, 1-2-3 transfers data in TEXT format.

9. Under Update mode, select one of the following options:

*Automatic*

Updates data in the destination range each time the source item is updated.

*Manual*

Updates data in the destination range only when you choose Edit Link Options Update.

**Note** If the source file does not support the requested mode, data is updated in the mode supported by the source file.

10. To change the destination range displayed in the Range text box, specify another range.

11. Select OK.

## Link Name Conventions

Link names can be up to 15 characters long. 1-2-3 does not distinguish between uppercase and lowercase letters in link names.

Do not start a link name with ! (exclamation point), and do not include spaces, commas, semicolons, periods, or any of the following characters in a link name:

+ \* - / & > < @ # { ?

Do not create names that look like cell addresses, such as P12 or EX100, or names that begin with numbers, such as 20DEC. Do not use @function names, key names, or macro command keywords as link names.

See also:

[Edit Commands](#)

[Edit Link Options](#)

[Edit Paste Link](#)

[Linking Files](#)

[Sample DDE Macros](#) (See Example 3)

## Edit Link Options Edit

Changes a DDE link by changing the source application, topic, item, or format, or the link update mode.

1. Choose Edit Link Options.

In the Edit Link Options dialog box, 1-2-3 displays the link names of all links associated with the current worksheet file and -- in the Format information boxes -- information about the currently selected link.

2. In the Links text box, specify the link to edit.

3. Select Edit.

The Edit Link Options Edit dialog box is displayed.

4. To change the source application, specify another application in the Application text box. The application you specify must support DDE as a server.

The list box under the Application text box contains a list of active Windows applications. You can specify an active application, or you can enter the name of an inactive application.

5. To change the source file, specify another file in the Topic name text box.

6. To change the data item in the source file whose data is transferred to the destination range, specify another item in the Item name text box.

7. To change the format for the transferred data, specify another format in the Format name text box.

8. To change the update mode, select one of the following options under Update mode:

*Automatic*

Updates data in the destination range each time the source item is updated.

*Manual*

Updates data in the destination range only when you choose Edit Link Options Update.

9. To change the destination range displayed in the Range text box, specify another range.

10. Select OK.

See also:

[Edit Commands](#)

[Edit Link Options](#)

[Edit Paste Link](#)

[Linking Files](#)

## **Edit Link Options Update**

Updates a DDE link when the link update mode is Manual, or activates and updates a link deactivated with Edit Link Options Deactivate. When you choose Edit Link Options Update, 1-2-3 updates the destination range with current information from the source file.

1. Choose Edit Link Options.

In the Edit Link Options dialog box, 1-2-3 displays the link names of all links associated with the current worksheet file and -- in the Format information boxes -- information about the currently selected link.

2. In the Links text box, specify the link to update.

3. Select Update.

See also:

Edit Commands

Edit Link Options

Edit Paste Link

Linking Files

## **Edit Link Options Deactivate**

Deactivates a link, but leaves the link intact. When a link is inactive, 1-2-3 does not update values in the destination range.

1. Choose Edit Link Options.

In the Edit Link Options dialog box, 1-2-3 displays the link names of all links associated with the current worksheet file and -- in the Format information boxes -- information about the currently selected link.

2. In the Links text box, specify the link to deactivate.

3. Select Deactivate.

To reactivate and update values in the link's destination range, use Edit Link Options Update.

See also:

Edit Commands

Edit Link Options

Linking Files



## **Edit Link Options Delete**

Deletes a link, but leaves the values obtained through the link in the destination range.

1. Choose Edit Link Options.

In the Edit Link Options dialog box, 1-2-3 displays the link names of all links associated with the current worksheet file and -- in the Format information boxes -- information about the currently selected link.

2. In the Links text box, specify the link to delete.

3. Select Delete.

See also:

[Edit Commands](#)

[Edit Link Options](#)

[Linking Files](#)

## **Edit Find**

Finds or replaces specified characters in labels, formulas, or both in a range. 1-2-3 searches for the characters in cells formatted as Hidden, but not in columns or worksheets hidden with Worksheet Hide.

### **To Find Specified Characters**

1. Select the range you want to search.
2. Choose Edit Find.
3. In the Search for text box, enter the characters you want to find. You can specify up to 512 characters.
4. Under Action, select Find.
5. Under Search through, select one of the following options:
  - Labels*  
Searches for the characters only in labels.
  - Formulas*  
Searches for the characters only in formulas.
  - Both*  
Searches for the characters in formulas and labels.
6. To change the range displayed in the Range text box, specify a new range.
7. Select Find Next.
  - 1-2-3 highlights the first occurrence of the search characters.
8. To find the next occurrence of the search characters, select Find Next again.
9. To stop the search and return 1-2-3 to READY mode, select Cancel.

When 1-2-3 cannot find another occurrence of the search characters, 1-2-3 displays a message. Select Help to display information about the message, or select OK to return to READY mode.

### **To Replace Specified Characters**

1. Select the range you want to search.
2. Choose Edit Find.
3. In the Search for text box, enter the characters you want to find. You can specify up to 512 characters.
4. Under Action, select Replace with; then enter the replacement characters in the Replace with text box. You can specify up to 512 characters.
5. Under Search through, select one of the following options:
  - Labels*  
Searches for the characters only in labels.
  - Formulas*  
Searches for the characters only in formulas.
  - Both*  
Searches for the characters in formulas and labels.
6. To change the range displayed in the Range text box, specify a new range.
7. (Optional) To highlight the first occurrence of the search characters before you start

replacing the characters, select Find Next.

8. Select one of the following:

*Replace*

Replaces the highlighted characters with the replacement characters and highlights the next occurrence of the characters.

*Replace All*

Replaces, but does not display, all remaining occurrences of the search characters with the replacement characters.

9. If you selected Replace in step 8 and want to replace the next highlighted occurrence of the search characters, select Replace again.

If you don't want to replace a highlighted occurrence of the search characters, but move to another occurrence, select Find Next.

10. To stop the search and return 1-2-3 to READY mode, select Cancel.

When 1-2-3 cannot find another occurrence of the search characters, 1-2-3 displays a message. Select Help to display information about the message, or select OK to return to READY mode.

See also:

[Edit Commands](#)

[Worksheet Hide](#)

## Edit Move Cells



[About Moving \(2:40\)](#)

Transfers a range of data, including cell formats, protection status, and formatting, to another range in the same file; optionally, moves only formatting.

Edit Move Cells does not use the Clipboard.

1. Select the range to move.
2. Choose Edit Move Cells.
3. To change the range displayed in the From text box, specify a new range.
4. In the To text box, specify the range you want to move to. You need to specify only the first cell in the To range.

**Caution** 1-2-3 writes over existing data in the To range, so make sure the range does not contain data you need. Moving data into or out of the first or last cell of a range that is named or referred to in a formula changes the range definition.

5. (Optional) To move only formatting, select the Styles only check box.
6. Select OK.

Use Edit Cut to move data to the Clipboard and Edit Paste to copy data from the Clipboard to the current worksheet.

See also:

[Edit Commands](#)

## Edit Quick Copy



Copies a range of data, including cell formats, protection status, and formatting, to a range in the same file or to a range in a different file; optionally, copies values instead of formulas, copies only formatting, or copies only values and formatting.

Edit Quick Copy does not use the Clipboard.

**Note** If you want to copy values instead of formulas and the CALC indicator appears in the status line, press F9 (CALC) to update the values before you use Edit Quick Copy. If there are linked formulas in the range you want to copy, you also need to use File Administration Update Links to update the values.

1. Select the range to copy.
2. Choose Edit Quick Copy.
3. To change the range displayed in the From text box, specify a new range.
4. In the To text box, specify the range you want to copy to.

You need to select only the top left cell of the range.

**Caution** 1-2-3 writes over existing data in the To range, so make sure the range does not contain data you need.

5. (Optional) To copy only formatting, select the Styles only check box.
6. (Optional) To copy values instead of formulas, select the Convert to values check box.
7. Select OK.

Use Edit Copy to copy data to the Clipboard and Edit Paste to copy data from the Clipboard to the current worksheet.

### Copying Data

When the destination range is a single cell, 1-2-3 uses the cell as an anchor cell and copies the data from the source range in its original size and layout.

When the source range is a single cell, row, or column of data and the destination range is larger than the source range, 1-2-3 replicates the source-range contents to fill the destination range.

See also:

[Copying Data in 1-2-3 Edit Commands](#)

## File New



Creating a New File (0:50)

Creates a new worksheet file on disk and in memory, associates a format file (.FM3) with the worksheet file, places the new worksheet file in a window, makes the window current, and displays a blank worksheet with the cell pointer in cell A1.

**Caution** If you want to keep a copy of the new worksheet file on disk, you must save the new file before you close it or end the session.

1. Choose File New.

1-2-3 supplies a default file name for the current path when you select OK. The first default worksheet file name is FILE0001.WK3, the next default worksheet file name is FILE0002.WK3, and so on. 1-2-3 also assigns the default name and the .FM3 file extension to the format file associated with the worksheet file (for example, FILE0002.FM3). To assign another name (and, optionally, a password) to the worksheet file when you save it, use File Save As.

To save the file without changing the default file name, use File Save.

See also:

File Commands

Naming a 1-2-3 File

## File Open



[Opening an Existing File \(0:45\)](#)

Reads a worksheet file and its associated format file (.FM3) on disk into memory, places the worksheet file in a window, makes the window current, and moves the cell pointer to the cell it was in when you last saved the file.

You can also use File Open to open an Excel Version 2.2 worksheet or macro sheet file in 1-2-3 for Windows.

1. Choose File Open.
2. Specify the name of the file you want to open.

You can edit the file name in the File name text box, or you can use the Files and Directories list boxes and the Drives drop-down box to select the file you want. For more information about using these boxes, see Specifying a File.

3. Select OK.

If, in step 2, you specified the name of a file that is password protected, 1-2-3 asks you to enter the password.

If someone else is using the file and has the file reservation, 1-2-3 asks whether you want to open the file with read-only access.

### Opening a File Created with 1-2-3 Release 1A or Symphony

When you open a file created with 1-2-3 Release 1A (.WKS) or Symphony (.WRK or .WR1), 1-2-3 creates a copy of the file in .WK3 format in memory and leaves the original file unchanged on disk. When you save the file, 1-2-3 saves the data in .WK3 file format.

### Opening a File Containing Linked Formulas

When you open a file, 1-2-3 automatically updates formulas that are linked to other files. If Tools User Setup Recalculation is set to Manual, 1-2-3 displays the CALC indicator after you open the file. Press F9 (CALC) to display updated values for linked formulas in the current file.

See also:

[File Commands](#)

[File Open \(OK/Cancel\)](#)

[File Open \(Password\)](#)

[File Password Protection](#)

[Saving Files in 1-2-3 Release 2 \(.WK1\) Format](#)

[Working with Excel Version 2.2 Files in 1-2-3 for Windows](#)

[Working with Multiple Files](#)

## **File Open (Password)**

Prompts you for the password required to open a file.

1. Enter the password in the Password text box.
2. Select OK.

See also:

[File Commands](#)

[File Open](#)

[File Password Protection](#)



## **File Open (OK/Cancel)**

Indicates that the file you tried to open is already open and reserved by another user, and asks whether you want to open the file with read-only access.

**Note** If you open the file, 1-2-3 displays the RO (read-only) indicator in the title bar next to the file name. You cannot save changes to the file using the same file name since you do not have the reservation.

1. Select one of the following options:

*OK*

Opens the file with read-only access.

*Cancel*

Does not open the file.

To make changes to the file, use File Administration Network Reserve to try to get the reservation, or try to use the file again later when the reservation may be available. You can also make changes to your read-only copy of the file and use File Save As to save the changed file with another name.

See also:

File Commands

File Open

## **File Close**

Closes the current worksheet file and its associated format file (.FM3) and moves the cell pointer to the next open file. When you close a file, 1-2-3 removes the file from memory but does not delete the file from disk. To delete a file from disk, use the Windows File Manager.

1. Make sure that the cell pointer is in the file you want to close and that you save the changes you want to make to the file.
2. Choose File Close.
3. If 1-2-3 indicates that the file changed and asks whether you want to save the changes, select one of the following options:

*Yes*

Saves the changes and closes the file.

*No*

Closes the file without saving the changes.

*Cancel*

Does not close the file.

## **Closing the Only Open File**

If only one file is open and you choose File Close, 1-2-3 closes the file and displays a blank untitled worksheet.

See also:

[Closing a Window in 1-2-3](#)

[Deleting a 1-2-3 for Windows File](#)

[Exiting and Ending 1-2-3 for Windows](#)

[File Commands](#)

[Working with Multiple Files](#)

## File Save

 [About Saving \(3:30\)](#)

 [Saving Worksheets \(1:30\)](#)

Saves the current worksheet file and its associated format file (.FM3) on disk. If you are saving a new file, 1-2-3 uses the default file name as the name of the worksheet file on disk and the default file name with the .FM3 file extension as the name of the associated format file. If you are saving an existing file, 1-2-3 updates the contents of the file on disk.

1. Make sure the cell pointer is in the file you want to save.
2. Choose File Save.

Save your files frequently so you have a recent copy on disk if there is a power failure.

Use File Save As to assign a different file name to a worksheet file and save it on disk; to assign, change, or delete a password for a file; or to save all modified open files simultaneously.

See also:

[File Commands](#)

## File Save As

-  [About Saving \(3:30\)](#)
-  [Saving Worksheets \(1:30\)](#)

Saves a worksheet file on disk with the name you specify; saves the associated format file (.FM3); optionally, assigns a password to the worksheet file; or saves all modified active files on disk.

1-2-3 for Windows saves your files with the .WK3 extension unless you specify a different extension. 1-2-3 saves the formatting in a file with the .FM3 extension. When you open the .WK3 file, 1-2-3 automatically opens the .FM3 file associated with it.

If you want to save a file in 1-2-3 Release 2 (.WK1) format, see [Saving Files in 1-2-3 Release 2 \(.WK1\) Format](#) before you use File Save As.

### To Save a Worksheet File with a New File Name

1. Make sure the cell pointer is in the file you want to save.
2. Choose File Save As.

1-2-3 displays the current file name in the File name text box.

3. Specify a new name in the File name text box.

You can edit the file name in the File name text box, or you can use the Files and Directories list boxes and the Drives drop-down box to select the file you want. For more information about using these boxes, see [Specifying a File](#).

4. (Optional) To assign a password to the file, select the Password protect check box.
5. Select OK.

If, in step 3, you specify a file name that already exists, 1-2-3 asks whether you want to cancel saving the new file, replace the data in the existing file with the data in the new file, or create a backup of the existing file before replacing data in it.

If you select the Password protect check box, 1-2-3 prompts for the password.

### To Save All Modified Files

1. Choose File Save As.
2. Select Save All.

**Note** You cannot assign passwords when you select Save All.

### Deleting and Changing a Password

When a file is password protected, the Password protect check box contains an X. To remove password protection, you select the Password protect check box to erase the X and delete the password.

To change a password, you delete the password as described above, choose File Save As again, and select the Password protect check box. You then specify the new password when 1-2-3 prompts you for it.

See also:

- [File Commands](#)
- [File Password Protection](#)
- [File Save As \(Replace/Backup/Cancel\)](#)
- [File Save As \(Password Protect\)](#)

Naming a 1-2-3 File

## File Save As (Password Protect)



[About Saving \(3:30\)](#)

Assigns a password to the current file.

1. Enter a password in the Password text box.

You can enter a password that contains up to 15 characters, and you can use uppercase and lowercase letters. 1-2-3 is case-sensitive for passwords, so you must remember the exact combination of uppercase and lowercase letters you use when you create the password.

**Caution** Remember your password. If you forget the password, you cannot open or combine data from the file.

2. Enter the same password again in the Verify text box.
3. Select OK.

**Note** 1-2-3 does not assign the password to the format file (.FM3) associated with the worksheet file.

See also:

[File Commands](#)

[File Password Protection](#)

[File Save As](#)

## File Save As (Replace/Backup/Cancel)



About Saving (3:30)

Cancels or completes the File Save As command for each file you are updating on disk.

1. Select one of the following options:

*Replace*

Writes over the file on disk with a copy of the current file.

*Backup*

Assigns the extension .BAK to the worksheet file on disk, assigns the extension .FMB to the format file associated with the worksheet file, and saves the worksheet and format files (with their existing file names) to disk.

*Cancel*

Returns 1-2-3 to READY mode without updating any file on disk.

2. Select OK.

**Caution** When you select Replace, 1-2-3 erases the file on disk before it saves the current version of the file. If 1-2-3 displays a message indicating that the disk is full, save the current file on another disk.

See also:

[File Commands](#)

[File Save As](#)

## Saving Files in 1-2-3 Release 2 (.WK1) Format



To save a 1-2-3 for Windows file in Release 2 (.WK1) format, specify .WK1 as the extension when you save the file. You cannot save a file as a .WK1 file, however, if the file is sealed or if it contains more than one worksheet. To save these files in .WK1 format, you must do the following:

- \* If the 1-2-3 for Windows file contains more than one worksheet, use the Translate utility to convert the file to .WK1 format.
- \* If the 1-2-3 for Windows file is sealed, unseal it with File Administration Seal File before you try to save it.

### Effects of Saving a 1-2-3 for Windows File as a Release 2 (.WK1) File

- \* Labels that contain more than 240 characters (the limit for labels in a .WK1 file) are truncated after the 240th character.
- \* Formulas that contain more than 240 characters are saved in their entirety. However, if you try to edit such a formula in Release 2, Release 2 truncates the formula after the 240th character.
- \* @Functions that are not available in Release 2 and @functions with arguments that are not available in Release 2 are treated as add-in @functions: they are saved as @?, with a list of arguments (if the original formula had arguments) following the ?. Cells that contain these @functions evaluate to NA. If you read a file that contains these @functions back into 1-2-3 for Windows, the original @functions are restored.

Before you use Release 2 to read a .WK1 file that contains @functions saved as @?, you must remove from memory any add-in programs you use with Release 2. In addition, if you save the file in Release 2 and read the file in 1-2-3 for Windows, 1-2-3 for Windows will no longer evaluate the @functions correctly.

- \* If the file contains formulas linked to other files, the links are converted to @@("<<filename>>range").
- \* Formulas that contain undefined range names evaluate to ERR.
- \* Formula annotations are lost.
- \* Any settings created with 1-2-3 for Windows features that do not exist in Release 2 are lost entirely. When you save the file, 1-2-3 for Windows displays a message that warns you of possible data loss. If you do not want to lose the information permanently, save the file as a 1-2-3 for Windows file.
- \* Formats that do not exist in Release 2 are changed to default Release 2 formats.
- \* Formatting is saved in a format file with an .FMT file extension.

See also:

File Commands



## File Combine From



[Managing Multiple Worksheets \(3:50\)](#)

Incorporates data and cell formats (but not formatting) from a worksheet file on disk into the current file. File Combine From does not affect column widths, worksheet settings, or range names in the current file.

File Combine From changes data in the current file beginning at the current cell; as a precaution, save the file before using this command.

Combining formulas with 3-D ranges into a file that contains fewer worksheets than are in the 3-D ranges may produce unexpected results.

1. Select the cell at which you want 1-2-3 to start combining data.
2. Choose File Combine From.
3. In the File name text box, specify the name of the file on disk to combine data from.

You can edit the file name in the File name text box, or you can use the Files and Directories list boxes and the Drives drop-down box to select the file you want. For more information about using these boxes, see Specifying a File.

4. Under Action, select one of the following options:

### *Copy*

Copies specified data from a worksheet file on disk to the current file, beginning at the current cell.

**Note** Blank cells from the worksheet file on disk will not replace corresponding cells in the current file.

### *Add*

Adds numeric data from a worksheet file on disk to values or blank cells in the current file, beginning at the current cell.

Add adds numeric data to other numeric data only; when the incoming value will overlay a label or formula in the current file, 1-2-3 discards the incoming value and retains the label or formula.

Do not use Add to add date or time numbers because the results will not be meaningful.

### *Subtract*

Subtracts numeric data in a worksheet file on disk from numbers or blank cells in the current file, beginning at the current cell.

Subtract subtracts numeric data from other numeric data only; when the incoming value will overlay a label or formula in the current file, 1-2-3 discards the incoming value and retains the label or formula.

Do not use Subtract to subtract date or time numbers because the results will not be meaningful. If you subtract a positive number from a blank cell, the result is a negative number because a blank cell evaluates to zero.

5. Under Source, select one of the following options:

### *Entire file*

Combines all data from a file on disk.

### *Range*

Combines a range of data from a file on disk.

6. If you select Range, specify a range name or address for the file on disk in the Range text box.
7. Select OK.

If, in step 3, you specify the name of a file on disk that is password protected, 1-2-3 asks you to enter the password.

See also:

[File Combine From \(Password\)](#)

[File Commands](#)

[File Password Protection](#)

## **File Combine From (Password)**

Prompts you for the password required to access data in the file on disk.

1. Enter the password in the Password text box.
2. Select OK.

See also:

[File Combine From](#)

[File Commands](#)

[File Password Protection](#)

## **File Import From**

Reads data from a text file or delimited text file on disk into the current worksheet, beginning at the current cell.

### File Import From Text

Imports text and numbers from a text file that is not delimited, and enters each line of data as a long label in one cell in the worksheet.

### File Import From Numbers

From a delimited text file, imports text and numbers and enters them in separate cells in the worksheet; from a text file that is not delimited, imports only numbers.

### File Import From Styles

Imports the named styles, font set, or graphics from a 1-2-3 (.FM3), Impress (.FMT), or Allways (.ALL) format file on disk to the current file.

See also:

File Commands

## File Import From Text

Imports each line of data from a [text file](#) as a [long label](#) and enters it in one cell in the worksheet. 1-2-3 enters each successive line of data in the same column below the cell pointer. If a line of text is longer than 512 characters, 1-2-3 truncates the line. Use File Import From Text to import both text and numbers from a text file that is not [delimited](#).

**Caution** Save the current file before using File Import From Text.

1. Move the [cell pointer](#) to an area of the worksheet large enough to hold all of the imported data.
2. Choose File Import From Text.
3. Specify the name of the text file to import data from.

You can edit the file name in the File name [text box](#), or you can use the Files and Directories [list boxes](#) and the Drives [drop-down box](#) to select the file you want. For more information about using these boxes, see [Specifying a File](#).

4. Select OK.

1-2-3 imports data from a text file as text or as text and numbers, depending on the contents of the text file you select.

**Note** Numbers in a text file can contain decimal points but cannot contain commas because commas act as delimiters.

To reorganize the long labels of imported data into separate cells, use [Data Parse](#).

See also:

[File Commands](#)  
[File Import From](#)

## File Import From Numbers

Imports text and numbers from a delimited text file and enters them in separate cells in the worksheet. If a line of text or numbers is longer than 512 characters, 1-2-3 truncates the line.

When a text file is not delimited, File Import From Numbers imports only numbers.

**Caution** Save the current file before using File Import From Numbers.

1. Move the cell pointer to an area of the worksheet large enough to hold all of the imported data.
2. Choose File Import From Numbers.
3. Specify the name of the text file to import data from.

You can edit the file name in the File name text box, or you can use the Files and Directories list boxes and the Drives drop-down box to select the file you want. For more information about using these boxes, see Specifying a File.

4. Select OK.

**Note** Numbers in a text file can contain decimal points but cannot contain commas because commas act as delimiters.

See also:

File Commands  
File Import From

## File Import From Styles

Imports the named styles, font set, or graphics from a 1-2-3 (.FM3), Impress (.FMT), or Allways (.ALL) format file on disk to the current file.

**Caution** Save the current file before using File Import From Styles.

1. Make sure the cell pointer is in the file you want to import styles to.
2. Choose File Import From Styles.
3. Specify the name of the format file to import data from.

You can edit the file name in the File name text box, or you can use the Files and Directories list boxes and the Drives drop-down box to select the file you want. For more information about using these boxes, see Specifying a File.

4. Under Import, select one of the following options:

*All*

Replaces all formats, fonts, named styles, and graphics in the current file with those from a format file on disk.

*Named styles*

Replaces named styles in the current file with the named styles from a format file on disk.

*Fonts*

Replaces the font set in the current file with the font set from a format file on disk.

*Graphics*

Copies graphics, including their positions in the worksheet and all enhancements added with Graph commands, from a format file on disk to the current file (but does not delete graphics in the current file).

5. Select OK.

The formats you import appear in exactly the same locations in the current file as they appear in the file you import from. If the two files are not identically organized, formats may appear in unexpected places. Use Edit Move Cells to transfer formats to the correct cells.

When you import graphs, 1-2-3 imports only their positions in the worksheet and enhancements made with Graph commands, not the graphs themselves.

See also:

File Commands

File Import From

## File Extract To

Extracts a range of data from the current file and saves it in a text file on disk; or extracts a range of data, including formulas or their values, and saves it in a worksheet file on disk. File Extract To also copies to the file on disk all settings associated with the source file's worksheets, but does not copy formatting.

If the file to which the data is extracted does not exist, 1-2-3 creates the file on disk and saves the extracted data in it.

1. Select the range to extract data from.
2. Choose File Extract To.
3. In the File name text box, specify the file to extract data to.

You can edit the file name in the File name text box, or you can use the Files and Directories list boxes and the Drives drop-down box to select the file you want. For more information about using these boxes, see Specifying a File.

4. To change the range displayed in the Range text box, specify a new range to extract data from.
5. Under Save as, select one of the following options:

### *Formulas*

Extracts data, including formulas and all worksheet settings, to the new file.

### *Values*

Converts formulas into values and extracts data, including only labels and values and all worksheet settings, to the new file.

### *Text*

Extracts data to a text file.

6. Select OK.

If, in step 3, you specified a file name that already exists, 1-2-3 asks whether you want to cancel extracting data to the file, replace data already in the file with the extracted data, or create a backup of the file before replacing data in it.

**Note** If you specify the name of a text file (.PRN) that already exists, 1-2-3 replaces the data in the file on disk with the extracted data when you select either Replace or Backup.

To assign a password to a worksheet file, use File Save As.

## Restrictions on Files

- \* You cannot create a 1-2-3 Release 2 (.WK1) file by extracting data from a .WK3 file if the .WK3 file contains more than one worksheet. For more information, see Saving Files in 1-2-3 Release 2 (.WK1) Format.
- \* You cannot extract data from a file sealed with File Administration Seal File.
- \* If you want to extract data to an active file for which you have the reservation, use File Administration Network Reserve to release the reservation before you use File Extract To.

## Extracting Formulas or Their Values

- \* If you extract formulas, be sure to extract all the data that is referred to by the formulas. If you extract data in a named range, be sure to extract the entire named range.
- \* Extracting formulas with 3-D ranges to a file that contains fewer worksheets than are in the 3-D ranges may produce unexpected results.
- \* If you want to extract formula values and the CALC indicator appears in the status line,



press F9 (CALC) to update formulas before you use File Extract To.

- \* If any formulas are linked to other files, use [File Administration Update Links](#) before you use File Extract To.

### **Extracting Data to a Text File**

- \* You cannot extract a graph to a text file. If the range of data you extract contains a graph, 1-2-3 leaves blank lines in the text file where the graph would have appeared.
- \* 1-2-3 uses the column width set in [Worksheet Global Settings](#) or in [Worksheet Column Width](#) to determine how much data in each column of the specified range is extracted.

For example, if 9 is the column width set for the worksheet and a 12-character label is displayed in column A of the specified range, 1-2-3 extracts only the first nine characters of the label to the text file.

Similarly, if 9 is the column width and the 12-character label entered in column A is displayed as seven characters in column A and five characters extending into column B, 1-2-3 extracts the first nine characters of the label -- the seven characters displayed in column A and the first two characters extending into column B.

See also:

[File Commands](#)

[File Extract To \(Replace/Backup/Cancel\)](#)

[Naming a 1-2-3 File](#)

## **File Extract To (Replace/Backup/Cancel)**

Cancels or completes the File Extract To command when the file you are extracting data to already exists on disk.

1. Select one of the following options:

*Replace*

Replaces the data in the file on disk with the extracted data.

*Backup*

Renames the file on disk with the extension .BAK and replaces the data in the original file on disk with the extracted data.

**Note** If you specify the name of a text file (.PRN) and select Backup, 1-2-3 replaces the data in the file on disk with the extracted data rather than creating a backup version of the file.

*Cancel*

Returns 1-2-3 to READY mode without updating the file on disk.

2. Select OK.

**Caution** When you select Replace, 1-2-3 erases the file you are replacing on disk before it saves the extracted data in the file. If 1-2-3 displays a message indicating that the disk is full, save the file on another disk.

See also:

[File Commands](#)

[File Extract To](#)

## **File Administration**

Controls reservations for sharing worksheet files; seals some settings in worksheet files; recalculates all formulas in active files; and creates a table of information about files.

### Network Reserve

Gets and releases the current file reservation and changes the reservation setting. Use this command when you share worksheet files on a network or in another multi-user environment.

### Seal File

Prevents changes to the file reservation status and to some Graph, Range, Style, and Worksheet settings.

### Update Links

Recalculates formulas in active files that refer to data in other active files or to data in files on disk.

### Paste Table

Creates a table of information in the current worksheet about active files or about files linked to the current file.

See also:

File Commands

## **File Administration Network Reserve**

Gets and releases the current file [reservation](#) and turns automatic reservation on and off for the file. Use this command when you share a file on a network or in another multi-user environment and need to control how a user gets the file reservation.

### **To Get the Reservation**

1. Choose File Administration Network Reserve.
2. Under File reservation, select Get.
3. Select OK.

This gets the reservation for the current file if it is available and no one saved the file since you read it into memory. When you get the reservation, you are the only person who can save changes to the file.

### **To Release the Reservation**

Before you release the reservation, be sure you use File Save if you want to save changes you made to the file.

1. Choose File Administration Network Reserve.
2. Under File reservation, select Release.
3. Select OK.

### **To Turn Automatic Reservation On and Off**

When automatic reservation is turned on for a file, the first user who reads the file into memory gets the file reservation. No one else can get the reservation until the first user releases it.

The file reservation is automatically released when the user closes the file.

1. Choose File Administration Network Reserve.
2. Select the Get reservation automatically [check box](#).
3. Select OK.

To save the automatic reservation setting, use [File Save](#).

To seal the automatic reservation setting so no one can change it, use [File Administration Seal File](#).

See also:

[File Administration](#)  
[File Commands](#)  
[File Open](#)  
[Reserving a File](#)

## Reserving a File

A 1-2-3 file can be reserved so that only one person can save changes to the file even though several people may have the file open at the same time.

When you have the file reservation, you are the only user allowed to save changes to the file. Other users can open the file at the same time you are using it, but 1-2-3 does not let them save the file as long as you have the reservation.

When you try to open a file that is reserved by someone else, 1-2-3 asks whether you want to open the file with read-only access. If you open the file, 1-2-3 displays the RO (read-only) indicator in the title bar next to the file name. You can use the file, but you cannot save changes to the file with its current name. To save the changes, you must save the file under a different name with File Save As.

After you open a file with read-only access, you can try to get the file reservation by using File Administration Network Reserve. If no one else has the reservation and no one saved the file since you read it into memory, you can get the file reservation. If someone saved the file since you read it into memory, you need to open the file again to get the reservation for the most up-to-date version.

## Getting the File Reservation

The file reservation setting determines how a user gets the file reservation. The reservation setting can be automatic or manual and is controlled through File Administration Network Reserve. The setting can also be sealed through File Administration Seal File so that no one can change it.

- \* When the setting is automatic, the first person to read the file into memory gets the file reservation.
- \* When the setting is manual, no one automatically gets the reservation. To get the reservation, you must use File Administration Network Reserve while the file is current.

1-2-3 determines whether the file reservation is available before reading the file into memory and takes different actions depending on what the file reservation setting is and whether the reservation is available:

- \* If the reservation setting is automatic and the reservation is available, 1-2-3 reads the file into memory with its reservation.
- \* If the reservation setting is automatic but the reservation is not available, 1-2-3 displays a prompt asking if you want to read the file into memory without a reservation. If you do, 1-2-3 reads the file into memory with read-only access.
- \* If the reservation setting is manual, 1-2-3 reads the file into memory without the reservation regardless of its reservation status. You can then use File Administration Network Reserve while the file is current to try to get the reservation.

## Releasing the File Reservation

1-2-3 releases the file reservation when you do any of the following:

- \* Use File Administration Network Reserve to manually release the reservation.
- \* Close the file.
- \* End the 1-2-3 session.

## Events Affecting File Reservation

- \* If a power outage or server failure temporarily severs your connection to the file server, some network software may reconnect you to the file automatically. 1-2-3 may not

display the RO (read-only) indicator, even though you may have lost the reservation. To see if you still have the reservation, try to use File Save.

- \* A network user can assign a file read-only status with the operating system ATTRIB command, or a file can be in a read-only network directory. Operating system and network commands take precedence over the 1-2-3 reservation status. For example, you cannot get the reservation of a file that has been given read-only status through the operating system ATTRIB command, even if no other user has the reservation.

See also:

[File Commands](#)

[File Open](#)

[File Save As](#)

[Naming a 1-2-3 File](#)

## File Administration Seal File

Seals and unseals the current file or just the file reservation setting, and password protects the seal.

When you seal a file, you cannot change the file reservation setting, and you cannot change some Graph, Range, Style, and Worksheet settings.

1. Choose File Administration Seal File.
2. Under Limit changes to, select one of the following options:

*File and network reservation status*

Seals the current file and the file reservation setting.

*Reservation status only*

Seals only the reservation setting for the current file.

*Disable all restrictions*

Unseals the current file and the file reservation setting.

3. Select OK.

If, in step 2, you select File and network reservation status or Reservation status only, 1-2-3 prompts you to supply a password for the seal.

If you select Disable all restrictions, 1-2-3 prompts you for the password associated with the seal.

## Changing the Seal Password

To change a seal password, you disable all restrictions as described above, choose File Administration Seal File again, and select File and network reservation status or Reservation status only. You then specify the new password when 1-2-3 prompts you for it.

## Effects of Sealing a File

When you seal a file, you cannot use the following commands to change the file:

- \* File Administration Network Reserve Get reservation automatically
- \* Graph Name Delete
- \* Graph New
- \* Range [Format, Protect, Unprotect]
- \* Range Name [Create, Delete, Label Create]
- \* Style Alignment
- \* Worksheet [Column Width, Hide, Unhide]
- \* Worksheet Global Settings

See also:

[File Administration](#)

[File Administration Seal File \(Password Disable\)](#)

[File Administration Seal File \(Password Protect\)](#)

[File Commands](#)

[File Password Protection](#)

## File Administration Seal File (Password Protect)

Assigns a password to the file seal.

1. Enter a password in the Password text box.

You can enter a password that contains up to 15 characters, and you can use uppercase and lowercase letters. 1-2-3 is case-sensitive for passwords, so you must remember the exact combination of uppercase and lowercase letters you use when you create the password.

**Caution** Remember your password. If you forget the password, you cannot seal and unseal the file or its reservation setting.

2. Enter the same password again in the Verify text box.
3. Select OK.

Password protecting the seal is different from password protecting the file. To password protect the file, use File Save As.

See also:

[File Administration Seal File](#)

[File Commands](#)

[File Password Protection](#)



## **File Administration Seal File (Password Disable)**

Prompts you for the password required to unseal the current file and the file [reservation](#) setting.

1. Enter the password in the Password [text box](#).
2. Select OK.

1-2-3 disables all restrictions on the file.

See also:

[File Administration Seal File](#)

[File Commands](#)

[File Password Protection](#)

## **File Administration Update Links**

Recalculates formulas in active files that refer to data in other active files or to data in files on disk. When you open a 1-2-3 for Windows file that contains formulas linked to other files, 1-2-3 automatically updates the formulas.

Use File Administration Update Links to update linked formulas during a 1-2-3 session.

1. Choose File Administration Update Links.

If Tools User Setup Recalculation is set to Manual, 1-2-3 does not update links but displays the CALC indicator after you select File Administration Update Links. Press F9 (CALC) to update the linked formulas in the current file.

See also:

[File Administration](#)

[File Commands](#)

[File Open](#)

[Linking Files with Formulas](#)

## File Administration Paste Table

Creates a table of information about [active files](#) or files [linked](#) to the current file.

1. Select the range to contain the table of file information.

**Caution** 1-2-3 writes over any existing data in the range, so make sure the range does not contain data you need.

The table occupies as many rows as the number of files you are listing plus one blank row. Tables of linked files occupy four columns. Tables of active files occupy seven columns.

2. Choose File Administration Paste Table.
3. To change the range displayed in the Range [text box](#), specify a new range.
4. Select one of the following options:

### *Active files*

Creates a table of all active worksheet files and lists the following information: file name; date and time the file was last saved; size, in bytes, of the file on disk; number of worksheets in the worksheet file that contain data; modification status (1 if you have modified the active file; 0 if you have not); and file [reservation](#) status (1 if you have the file's reservation; 0 if you do not).

### *Linked files*

Creates a table of all files that are linked by formulas to the current file and, for each linked file, lists the following information: file name (including the [path](#)); date and time the file was last saved; and size, in bytes, of the file on disk.

5. Select OK.



See also:

[File Administration](#)

[File Commands](#)

[Linking Files](#)

## File Preview

-  [About Printing \(2:55\)](#)
-  [About Printing a Large Range \(3:20\)](#)

Displays the print range as 1-2-3 will format it for printing.

1. Select a range to preview.
2. Choose File Preview.
3. To change the range displayed In the Range(s) text box, specify a new range to preview. To preview multiple ranges, specify the ranges in the Range(s) text box.
  - \* To specify multiple ranges, enter range addresses or range names, separated by argument separators.  
For example, specify D:D1..F12,SUMMARY,A:A1..C:B5 to preview the range D1..F12 from worksheet D, then the range SUMMARY from the current worksheet, and then the 3-D range A:A1..C:B5.
  - \* If the print range contains a long label, include in the print range the cells the long label overlaps.  
For example, to print a long label entered in A1 that overlaps B1 and C1, be sure to include cells A1, B1, and C1 in the print range.
4. (Optional) To change page settings, select Page Setup.
5. (Optional) Under Pages, specify the pages to preview:
  - From page*  
Enter a number from 1 through 9999 to specify the page number of the first page.
  - To*  
Enter a number from 1 through 9999 to specify the page number of the last page.
6. (Optional) Under Pages, in the Starting page number text box, enter a number from 1 through 9999 to specify the page number to assign to the first page in the print range.
7. Select OK.

1-2-3 displays the first page on the Preview screen. A solid line outlines the margin settings. 1-2-3 also displays layout enhancements such as footers and page numbers.

## Displaying Pages

To display the next page, press PG DN. To display the previous page, press PG UP.

While you are previewing a worksheet, you can enlarge and reduce the display using the keys listed in the following table.

<b>Press</b>	<b>To</b>
+ (plus sign)	Enlarge the size of the contents of the preview screen. You can press + (plus sign) up to 5 times to continue enlarging the screen.
- (minus sign)	Reduce the size of the contents of the preview screen. Press - (minus sign) once for each time you press + (plus sign); if you press + two times, and then press - once, the display is still enlarged.
* (asterisk)	Reduce the contents of the preview screen to the original size.
LEFT, RIGHT, UP, DOWN	Move within the enlarged preview screen.

To redisplay the worksheet, press ESC. To finish previewing the last page and redisplay the worksheet, press any key. When 1-2-3 redisplay the worksheet, a dotted gray line outlines the print range in the worksheet.

See also:

[File Commands](#)

[File Print](#)

## File Page Setup



[About Printing \(2:55\)](#)

[About Printing a Large Range \(3:20\)](#)

Sets the layout for a printed page and supplies header and footer text.

### Header

Creates the header, which is printed at the top of each page.

### Footer

Creates the footer, which is printed at the bottom of each page.

### Margins

Sets margins for the printed page.

### Borders

Specifies the columns of worksheet data to print at the left of every page and print range and the rows of worksheet data to print at the top of every page and above every print range.

### Compression

Compresses a print range so printed data is smaller and more data fits on a printed page, or expands a print range so printed data is larger and less data fits on a printed page.

### Options

Prints a range with or without the worksheet frame and with or without the worksheet grid lines.

### Orientation

Determines whether 1-2-3 prints in portrait mode or landscape mode, if landscape mode is available for your printer.

### Update

Makes the current Header, Footer, Margins, Borders, Options, and Orientation settings the default page settings for all pages printed from the file.

### Restore

Replaces the currently selected Header, Footer, Margins, Borders, Options, and Orientation settings with the default page settings for the file.

### Save

Saves the current page settings as named page settings in a file on disk.

### Retrieve

Retrieves named page settings from a file on disk and makes them the page settings for the current file.

See also:

[File Commands](#)

## **File Page Setup Header/Footer**

Creates the header and footer for a print range.

1-2-3 leaves two blank lines (measured in the current print font) between the header and the printed data and between the printed data and the footer.

1. Choose File Page Setup.
2. Enter header text in the Header text box, footer text in the Footer text box.

For information about creating and aligning header and footer text, see [Specifying Header and Footer Text](#).

3. Select OK.

### **Default Settings**

- \* To make current page settings the default page settings, select [File Page Setup Update](#).
- \* To replace the currently selected page settings with the default page settings, select [File Page Setup Restore](#).
- \* If you do not specify File Page Setup Update or Restore, the selected settings are in effect until you change them again or you end the current 1-2-3 session.

### **Named Settings**

- \* To save the current page settings as named page settings, select [File Page Setup Save](#).
- \* To make named page settings the current page settings, select [File Page Setup Retrieve](#).

See also:

[File Commands](#)  
[File Page Setup](#)  
[File Print](#)

## Specifying Header and Footer Text

You can enter up to 512 bytes (most characters and symbols are one byte) for header text and for footer text, but 1-2-3 will not print any characters that extend beyond the right margin of the printed page.

You can enter special characters to include a page number, the current date, or cell contents in the header and footer text, and to align header and footer text.

1-2-3 leaves two blank lines (measured in the current print font) between the header and the printed data and between the printed data and the footer.

### Including a Page Number, Date, and Cell Contents

To include a page number, the current date, or the contents of a cell in a header or footer, you enter the following symbols in the header or footer text:

# (pound sign)

Enter # to include a page number on every printed page. 1-2-3 numbers the pages in the print range consecutively, starting with the number you specify in File Print.

@ (at sign)

Enter @ to include the current date on every printed page. 1-2-3 uses the date supplied by your computer's internal clock. The format of the date is always day-month-year.

\ (backslash)

Enter \ followed by a cell address or range name to include the contents of a cell that the address or range name refers to. For example, \C:B1 includes the contents of cell C:B1 in the header or footer.

If you specify a range as the address, 1-2-3 uses the contents of the first cell of the range only.

When you use \ followed by a cell address or range name to specify header or footer text, you cannot enter any other symbols, numbers, or letters as part of the header or footer. The \ followed by a cell address or range name must be used by itself.

### Aligning Header and Footer Text

To left-align, right-align, or center header or footer text, use | (vertical bar). The | (vertical bar) may appear as either a split or solid vertical bar on your keyboard and screen.

<b>To</b>	<b>Position the vertical bar</b>
-----------	----------------------------------

Left-align text	Text
-----------------	------

Right-align text	Text
------------------	------

Center text	Text
-------------	------

### Examples

Sample Header

Sample Footer

See also:

File Page Setup Header/Footer

File Preview

File Print



**Example: Sample Header**

To print a header with BUDGET at the left, INCOME in the center, and MAY at the right:

BUDGET      INCOME      MAY

enter the following in the Header text box:

BUDGET|INCOME|MAY

**Example: Sample Footer**

To print a footer with the current date at the left and the page number at the right:

10-Jun-91

Page 1

enter the following in the Footer text box:

@||Page #

where @ creates the current date using the day-month-year format, Page is right-aligned text you enter in the Footer text box, and # creates the current page number.

## File Page Setup Margins

Sets the top, bottom, left, and right margins for the printed page.

1. Choose File Page Setup.
2. Under Margins, enter margin settings in the Top, Bottom, Left, and Right text boxes:
  - \* To specify a margin in inches, type **in** after you enter the margin setting.
  - \* To specify a margin in millimeters, type **mm** after you enter the margin setting. You can also type **cm** to specify a margin in centimeters. 1-2-3 automatically converts the setting to millimeters.
3. Select OK

Combined Left and Right margin settings cannot be greater than the width of the paper.  
Combined Top and Bottom margin settings cannot be greater than the length of the paper.

### Default Settings

- \* To make current page settings the default page settings, select File Page Setup Update.
- \* To replace the currently selected page settings with the default page settings, select File Page Setup Restore.
- \* If you do not specify File Page Setup Update or Restore, the selected settings are in effect until you change them again or you end the current 1-2-3 session.

### Named Settings

- \* To save the current page settings as named page settings, select File Page Setup Save.
- \* To make named page settings the current page settings, select File Page Setup Retrieve.

See also:

[File Commands](#)  
[File Page Setup](#)  
[File Print](#)

## File Page Setup Borders

Specifies the columns to print as a vertical heading at the left of every page and print range, and the rows to print as a horizontal heading at the top of every page and above every print range.

1. Choose File Page Setup.
2. Under Borders, enter ranges in the Columns and Rows text boxes:

### *Columns*

Specifies the range of columns to print as the vertical heading.

The Column range needs to include only one cell from each of the columns you want to use in the vertical heading.

### *Rows*

Specifies the range of rows to print as the horizontal heading.

The Row range needs to include only one cell from each of the rows you want to use in the horizontal heading.

3. Select OK.

**Note** Do not include in your print range the rows and columns you specified as borders or 1-2-3 will print them twice.

## Creating Borders

1-2-3 prints borders that correspond only to the rows and columns in your print range. For example, if you specify D3..D15 as your print range and column A as your border, 1-2-3 prints the contents of cells A3 through A15 as the border.

1-2-3 takes the border columns and rows from the worksheets that contain the print range. For example, if you specify A:D3..C:D15 as your print range and column A as your border, 1-2-3 prints A:A3..A:A15 as the border for the range A:D3..A:D15, B:A3..B:A15 as the border for the range B:D3..B:D15, and C:A3..C:A15 as the border for the range C:D3..C:D15.

## Deleting Borders

To remove border columns or rows, delete the range specification from the Columns or Rows text box.

## Default Settings

- \* To make current page settings the default page settings, select File Page Setup Update.
- \* To replace the currently selected page settings with the default page settings, select File Page Setup Restore.
- \* If you do not specify File Page Setup Update or Restore, the selected settings are in effect until you change them again or you end the current 1-2-3 session.

## Named Settings

- \* To save the current page settings as named page settings, select File Page Setup Save.
- \* To make named page settings the current page settings, select File Page Setup Retrieve.

See also:

File Commands  
File Page Setup  
File Print



## File Page Setup Compression

Compresses a print range so printed data is smaller and more data fits on a printed page, or expands a print range so printed data is larger and less data fits on a printed page. Page-break settings are not affected by compression or expansion of printed data.

1. Choose File Page Setup.
2. Under Compression, select one of the following options:

*Automatically fit to page*

Automatically compresses a print range, by up to a factor of seven, with the goal of fitting the range on one printed page whenever possible.

*Manually size*

Compresses or expands the print range, depending on the percentage you specify.

*None*

Removes compression or expansion settings from a print range.

3. If you select Manually size, enter a percentage in the Manually size text box:

- \* To compress the print range, enter a percentage from 15 through 99.
- \* To expand the print range, enter a percentage from 101 through 1000.

For example, to compress the print range to 75% of its normal size, enter 75.

4. Select OK.

1-2-3 uses the closest installed type size for expanded and compressed printing. If you try to print expanded characters in type sizes that are larger than you installed, your printer may distort the characters.

### Default Settings

- \* To make current page settings the default page settings, select File Page Setup Update.
- \* To replace the currently selected page settings with the default page settings, select File Page Setup Restore.
- \* If you do not specify File Page Setup Update or Restore, the selected settings are in effect until you change them again or you end the current 1-2-3 session.

### Named Settings

- \* To save the current page settings as named page settings, select File Page Setup Save.
- \* To make named page settings the current page settings, select File Page Setup Retrieve.

See also:

File Commands

File Page Setup

File Print

## File Page Setup Options

Prints the results of formulas or the formulas themselves, and prints the range with or without the worksheet frame and with or without the grid lines.

1. Choose File Page Setup.
2. Under Options, select the check box of one or more of the following:

*Show worksheet frame*

Prints the worksheet frame.

*Show grid lines*

Prints the print range with grid lines.

3. Select OK.

### Default Settings

- \* To make current page settings the default page settings, select File Page Setup Update.
- \* To replace the currently selected page settings with the default page settings, select File Page Setup Restore.
- \* If you do not specify File Page Setup Update or Restore, the selected settings are in effect until you change them again or you end the current 1-2-3 session.

### Named Settings

- \* To save the current page settings as named page settings, select File Page Setup Save.
- \* To make named page settings the current page settings, select File Page Setup Retrieve.

See also:

File Commands

File Page Setup

File Print

## **File Page Setup Orientation**

Determines whether 1-2-3 prints in portrait mode or in landscape mode, if landscape mode is available on your printer.

1. Choose File Page Setup.
2. Under Orientation, select one of the following options:

*Landscape*

Prints across the length of the paper.

*Portrait*

Prints across the width of the paper.

3. Select OK.

## **Default Settings**

- \* To make current page settings the default page settings, select File Page Setup Update.
- \* To replace the currently selected page settings with the default page settings, select File Page Setup Restore.
- \* If you do not specify File Page Setup Update or Restore, the selected settings are in effect until you change them again or you end the current 1-2-3 session.

## **Named Settings**

- \* To save the current page settings as named page settings, select File Page Setup Save.
- \* To make named page settings the current page settings, select File Page Setup Retrieve.

See also:

File Commands

File Page Setup

File Print



## **File Page Setup Update**

Makes the current Header, Footer, Margins, Borders, Options, and Orientation settings the default page settings for all pages printed from the file.

1. Choose File Page Setup.
2. Under Default settings, select Update.  
1-2-3 saves the current settings as the default page settings.
3. Select OK.

See also:

[File Commands](#)

[File Page Setup](#)

[File Print](#)

## **File Page Setup Restore**

Replaces the currently selected Header, Footer, Margins, Borders, Options, and Orientation settings with the default page settings for the file.

1. Choose File Page Setup.
2. Under Default settings, select Restore.  
1-2-3 replaces the current settings with the default page settings.
3. Select OK.

See also:

[File Commands](#)

[File Page Setup](#)

[File Print](#)

## File Page Setup Save

Saves the current page settings as named page settings in a file on disk.

1. Choose File Page Setup.

2. Under Named settings, select Save.

The File Page Setup Named Save dialog box is displayed.

3. In the File name text box, specify the name of the file to save the settings to. 1-2-3 automatically adds the extension .AL3 to a file containing named page settings unless you enter a different extension.

You can edit the file name in the File name text box, or you can use the Files and Directories list boxes and the Drives drop-down box to select the file you want. For more information about using these boxes, see Specifying a File.

4. Select OK.

The File Page Setup dialog box is redisplayed.

5. Select OK.

If, in step 3, you specify a file name that already exists, 1-2-3 asks whether you want to cancel saving the named settings in the existing file or replace the data in the existing file with the new named settings data.

See also:

[File Commands](#)

[File Page Setup](#)

[File Page Setup Save \(Replace/Cancel\)](#)

[File Page Setup Retrieve](#)

[File Print](#)

## **File Page Setup Save (Replace/Cancel)**

Cancels or completes the File Page Setup Save command when the file you are saving named settings to already exists on disk.

1. Select one of the following options:

*Replace*

Replaces data in the file on disk with the new named settings.

*Cancel*

Returns 1-2-3 to READY mode without updating the file on disk.

2. Select OK.

See also:

[File Commands](#)

[File Page Setup Save](#)

## **File Page Setup Retrieve**

Retrieves named page settings from a file on disk and makes the retrieved settings the current settings for the file.

1. Choose File Page Setup.
2. Under Named settings, select Retrieve.

The File Page Setup Named Retrieve dialog box is displayed.

3. In the File name text box, specify the name of the file that contains the named page settings you want to use.

You can edit the file name in the File name text box, or you can use the Files and Directories list boxes and the Drives drop-down box to select the file you want. For more information about using these boxes, see Specifying a File.

4. Select OK.

The File Page Setup dialog box is redisplayed, and 1-2-3 updates the current page settings.

5. Select OK.

See also:

[File Commands](#)

[File Page Setup](#)

[File Page Setup Save](#)

[File Print](#)

## File Print

▶	About Printing (2:55)
▶	About Printing a Large Range (3:20)
▶	Printing Data (1:25)
▶	Printing a Graph (2:35)
▶	Printing Headers and Footers (1:45)
▶	Printing Several Ranges (1:55)

Specifies the data to print and the page numbers to use, and sends the data to the printer. File Print also allows you to review and change page settings and to preview pages you select for printing.

1. Choose File Print.
2. To change the range displayed in the Range(s) text box, specify a new range to print. To print multiple ranges, specify the ranges in the Range(s) text box.
  - \* To specify multiple ranges, enter range addresses or range names, separated by argument separators.  
For example, specify D:D1..F12,SUMMARY,A:A1..C:B5 to print the range D1..F12 from worksheet D, then the range SUMMARY from the current worksheet, and then the 3-D range A:A1..C:B5.
  - \* If the print range contains a long label, include in the print range the cells the long label overlaps.  
For example, to print a long label entered in A1 that overlaps B1 and C1, be sure to include cells A1, B1, and C1 in the print range.
3. Under Pages, specify the pages to print:
  - From page*  
Enter a number from 1 through 9999 to specify the page number of the first page to print.
  - To*  
Enter a number from 1 through 9999 to specify the page number of the last page to print.
4. Under Pages, in the Starting page number text box, enter a number from 1 through 9999 to specify the page number to assign to the first page in the print range.
5. (Optional) To review or change the current page settings, select Page Setup.
6. (Optional) To see how the specified pages will look when they are printed, select Preview.
7. Select OK.

See also:

File Commands  
File Preview  
Printing Data

## **File Print Cancel**

Indicates that data sent to the printer through 1-2-3 for Windows is currently printing, and asks whether you want to cancel printing.

1. To cancel printing, select Cancel.

See also:

[File Commands](#)

[File Print](#)

## Printing Data

- ▶ Moving a Range of Data (1:10)
- ▶ Moving a Range of Data (1:10)
- ▶ Printing Data (1:25)
- ▶ Printing a Graph (2:35)
- ▶ Printing Headers and Footers (1:45)
- ▶ Printing Several Ranges (1:55)

You can print the contents of a worksheet file and the text of a Help topic in 1-2-3 for Windows. You must, however, first install printers through Windows. If you want to print with installable fonts supported by 1-2-3, Windows, or your printer, you must also first install the fonts.

After printers and fonts are installed, you can use 1-2-3 commands to specify the ones you want to use.

### Printing Worksheet Contents

Before you print the contents of a worksheet, you can divide the worksheet into pages by using [Worksheet Page Break](#), and you can set the layout and header and footer text for printed pages by using [File Page Setup](#). You can also specify fonts by using [Style Font](#) and [Style Font Replace](#).

If the printer you select cannot use the page settings and options you specify with File Page Setup, 1-2-3 uses the printer settings that are closest to the specified settings. You can see how the selected printer will print a page by using [File Preview](#).

To select a printer and printer settings and options, you use [File Printer Setup](#). You can print multiple copies, and you can print the worksheet contents to an encoded file, if the printer you select supports these options.

To specify the pages to print, and to begin printing, you use [File Print](#).

### Printing a Graph

You can print a graph, the contents of a .CGM or .PIC file, or a bitmap that is added to a worksheet. If you want to enlarge the graph, .CGM or .PIC item, or bitmap in the worksheet before you print it, you can use [Graph Size](#).

### Printing a Help Topic

You can print any 1-2-3 for Windows Help topic, or a Help topic in any other Windows Help (.HLP) file. To print a Help topic, you display the topic in the Help window and choose [File Print Topic](#) from the Help window File commands.

You can use the printer currently selected in Windows or select another printer from the list of installed printers. You can also change printer settings and print options if other settings and options are available for the printer. To select a printer and printer settings and options, choose [File Printer Setup](#) from the Help window File commands.

### Postscript Printing

1-2-3 does some of the work related to PostScript printing so that a print job runs quickly. If you want the Windows PostScript driver to do all of the work so that PostScript output from all Windows applications looks the same, you must change the **postscript=** statement in the PRINTER section of the 1-2-3 for Windows 123W.INI file to read **postscript=system**.

See also:



File Commands

Graph Commands

Using Help

Worksheet Commands

## File Printer Setup



[About Printing \(2:55\)](#)

Selects a default printer from the list of printers installed in Windows and, optionally, changes the printer settings.

1. Choose File Printer Setup.
2. In the Printers list box, select the printer you want to use.
3. (Optional) Select Setup to change the printer settings.  
A Windows dialog box containing settings for the printer is displayed.
4. (Optional) Change the settings for the selected printer.
5. Select OK.  
The 1-2-3 File Printer Setup dialog box is redisplayed.
6. Select OK.

See also:

[File Commands](#)

[Printing Data](#)

## **File Exit**

Ends the 1-2-3 for Windows session. When you end a session, 1-2-3 removes all active files from memory, but does not delete the files from disk. The 1-2-3 window closes, and the Windows Program Manager screen is redisplayed.

1. Choose File Exit.
2. If 1-2-3 indicates that active files changed and asks whether you want to save the changes, select one of the following options:

*Yes*

Saves the changes and ends the session.

If the file already exists on disk, 1-2-3 asks whether you want to replace data already in the file with the updated data, create a backup of the file before replacing data in it, or cancel ending the session.

*No*

Ends the session without saving the changes.

*Cancel*

Does not end the session.

See also:

[Closing a Window in 1-2-3](#)

[Exiting and Ending 1-2-3 for Windows](#)

[File Commands](#)

[File Exit \(Replace/Backup/Cancel\)](#)

[Working with Multiple Files](#)

## **File Exit (Replace/Backup/Cancel)**

Cancels or completes the File Exit command when one or more files changed during the 1-2-3 for Windows session already exist on disk.

1. Select one of the following options:

*Replace*

For all changed files, replaces the data in the files on disk with the updated data.

*Backup*

For all changed files, renames the files on disk with the extension .BAK and replaces the data in the original files on disk with the updated data.

*Cancel*

Returns 1-2-3 to READY mode without updating any file on disk.

2. Select OK.

See also:

[File Commands](#)

[File Exit](#)

## Specifying a File

When you use a 1-2-3 command that requires you to specify a file, you must specify the file path and the file name. To do this, you can enter the path and file name in the File name text box, select the path and file name from the Files, Directories, and Drives list boxes, or use the File name text box in combination with one or more of the list boxes.

### The File Path

The file path consists of the drive and directory in which the file is located. The file name is the unique name, including the file extension, assigned to the file.

For example, in the following file specification

C:\123\BUDGET.WK3

C:\123 is the path. It identifies C: as the drive and 123 as the directory in which the file named BUDGET.WK3 is located. The file extension is .WK3.

If the file you are specifying is in a subdirectory, the path includes more than one directory name.

For example, in the following file specification

C:\123\FY91\BUDGET.WK3

FY91 is a subdirectory in the directory named 123.

A \ (backslash) must separate one directory from another.

If you do not specify a path for a file, 1-2-3 searches the current directory for the file.

### The File Name Text Box and the List Boxes

By default, the File name text box displays the drive and directory in which the current file is located and the name of the file. The list boxes display information as follows:

<b>List box</b>	<b>Displays</b>
Directories	All directories in the current drive, with the current directory highlighted.
Drives	The currently specified drive or the default drive defined in Tools User Setup, and (in the <u>drop-down box</u> ) all available drives, including drives on the network that you are connected to.
Files	All files in the current directory, with the current file or the first file in the list highlighted.

The current directory or subdirectory is represented in the Directories list box by .. (two dots). Subdirectories belonging to the current directory are listed under the .. (two dots).

To display all directories for a drive in the Directories list box, select the drive from the Drives drop-down box.

### Using Wildcard Characters to List Files

You can see a list of files with similar names or extensions in the Files list box by including the wildcard characters \* (asterisk) and ? (question mark) in the file name you enter in the File name text box.

For example, to have 1-2-3 list all files with the characters MARCH9 (such as MARCH9.WK3, MARCH90.WK3, and MARCH91.WK3) in the Files list box, type **march9\*.\*** in the File name

text box and press ENTER.

The \* wildcard character represents any number of consecutive characters in a file name or extension. For example, to have 1-2-3 list all files with the extension .WK3, type **\*.wk3** in the File name text box and press ENTER. To have 1-2-3 list all files that begin with B and have the extension .CGM, type **b\*.cgm** and press ENTER. To have 1-2-3 list all files in a directory, type **\*.\*** and press ENTER.

The ? wildcard character represents any single character in a file name or extension. For example, to have 1-2-3 list all files with a three-character extension that begins with .W, type **\*.w??** as the file name in the File name text box and press ENTER.

See also:

[Editing Keys](#)

[File Commands](#)

[Naming a 1-2-3 File](#)

[Tools User Setup](#)

## Naming a 1-2-3 File

Every file in a directory has a unique name. When you create a new 1-2-3 file in memory through File New, 1-2-3 assigns a default name to the file. The first default file name is FILE0001.WK3; the next default file name is FILE0002.WK3, and so on. You can save the file on disk with this default name or with another name that you create.

A file name can contain up to eight characters. You can use any combination of letters, numbers, \_ (underscores), and - (hyphens), and you can use uppercase and lowercase letters (they are equivalent in file names).

## Using Spaces in a File Name

Although 1-2-3 for Windows allows spaces in file names, you should not use spaces for the following reasons:

- \* Some operating systems do not support spaces in file names, so a 1-2-3 file whose name contains spaces will not be usable in all operating systems.
- \* Some of your operating system's file management commands, such as COPY and DELETE, may not work with a file whose name contains spaces.
- \* You may not be able to use a 1-2-3 file whose name contains spaces with other software programs.
- \* A .WK1 file created in 1-2-3 for Windows is not portable to releases of 1-2-3 earlier than Release 3.1 if its name contains spaces.

Instead of spaces, you can use \_ (underscores); for example, MY\_WORK.WK3.

## Using File Extensions

When 1-2-3 creates a worksheet, format, or backup file, or a file for a named font set or named page settings, it adds a three-character extension to the file name to identify the file type:

<b>Extension</b>	<b>File Type</b>
.AF3	Named font set; a file created when you save the current font set as a named font set with Style Font Replace Save.
.AL3	Named page settings; a file created when you save the current page settings as named page settings with File Page Setup Save.
.BAK	Backup version of a .WK3 file; created when you save a 1-2-3 for Windows file as a backup file with File Save As or File Extract To.
.FM3	Formatting; created when you save a 1-2-3 for Windows file.
.FMB	Backup version of an .FM3 file; created when you save a 1-2-3 for Windows file as a backup file with File Save As.
.MAC	Macro for a customized icon; a file created with Tools Icon Palette Customize Assign Macro.
.WK3	Worksheet; created when you save a file as a 1-2-3 for Windows worksheet file with File Save, File Save As, or File Extract To.

You can assign another extension to a file by specifying the extension when you save the file. The extension must begin with a . (period) and contain up to three characters. For example, you can save a 1-2-3 for Windows (.WK3) worksheet file in Release 2 format by using File Save As and changing the extension in the file name to .WK1.

See also:

[File Commands](#)

[Saving Files in 1-2-3 Release 2 \(.WK1\) Format](#)

[Specifying a File](#)



## Protecting Data and Files

To protect a file you create, you can do any of the following:

- \* Assign a password to a file when you save it with [File Save As](#). When a file is password protected, you must supply the password to open the file or combine data from the file.
- \* Seal a file's worksheet and reservation settings with [File Administration Seal File](#). When a file is sealed, you can read the file into memory, but you cannot change the settings that were sealed in the file.

When a file is sealed, the seal is password protected. You must supply the password to unseal, change, and reseal the file's worksheet and reservation settings.

- \* Globally protect worksheet data with [Worksheet Global Settings](#). When the worksheet is globally protected, you cannot change data except in cells you explicitly unprotect with [Range Unprotect](#).
- \* Hide worksheet data with [Worksheet Hide](#). When data is hidden, you cannot display or print it.
- \* Get the file reservation. To prevent other users from updating a shared file you open on a network, you can get the file reservation with [File Administration Network Reserve](#). When you get a file reservation, other users can open the file with read-only access, but you are the only user who can save changes to the file.

See also:

[File Commands](#)

[File Password Protection](#)

[Hiding Data](#)

[Layout Lock \(Graph Window\)](#)

[Reserving a File](#)

## File Password Protection

If a file contains sensitive or confidential data, you can protect it with a password. When you protect a worksheet file with a password, only a user who knows the password can open the file or combine data from it into another file. No operating system command can display the contents of the worksheet file.

You can also seal a file's worksheet and reservation settings. When you seal a file, you protect the seal with a password so that only users who know the password can unseal, change, and reseal the settings.

### Assigning a Password

You can assign a password to a file, and change or delete the password, when you save the file with File Save As.

**Note** 1-2-3 does not assign a password to the format file (.FM3) associated with the worksheet file.

You password protect a seal on a file's worksheet and reservation settings when you seal the settings with File Administration Seal File.

### Accessing Password-Protected Data

When you use File Open or File Combine From and specify a file that is password protected, or when you use File Administration Seal File and try to unseal a sealed file, 1-2-3 prompts you to enter the password.

You must enter the correct password. 1-2-3 cannot tell you the password for a file.

1-2-3 is case-sensitive for passwords, so you must remember the exact combination of uppercase and lowercase letters you used when you created the password. If you forget the password, you cannot open or combine data from the file.

See also:

File Commands

Protecting Data and Files

## Graph New

- ▶ About Graphing (4:15)
- ▶ Creating a Graph (1:55)
- ▶ Graphing Nonadjacent Ranges (1:55)
- ▶ Graphing Rows of Data (1:55)

Creates a graph for a range of data in a worksheet and links the graph and the range so that the graph automatically reflects changes to data in the range.

1-2-3 sets the first column of the selected range as the X data range and each succeeding column as the A - F data ranges. If you select a single-column range, 1-2-3 sets the column as the A data range.

For information about the way 1-2-3 uses the X and A - F data ranges in graphs, see About Graph Types.

1. Select the range of data to graph.
2. Choose Graph New.
3. To change the range displayed in the Range text box, specify a new range.
4. To change the default graph name displayed in the Graph name text box, enter a new graph name (see conventions below).

If you do not enter a new name, 1-2-3 assigns the displayed default name to the graph. The first default graph name is GRAPH1, the next default graph name is GRAPH2, and so on.

5. Select OK.

1-2-3 displays the graph in the Graph window, and the menu bar changes to display the Graph window commands so that you can customize the graph and create and position objects in the graph.

To add objects to a range in a worksheet, use Range Annotate.

### Graph Naming Conventions

Graph names can be up to 15 characters long. 1-2-3 does not distinguish between uppercase and lowercase letters in graph names.

Do not start a graph name with ! (exclamation point), and do not include spaces, commas, semicolons, periods, or any of the following characters in a graph name:

+ \* - / & > < @ # { ?

Do not create names that look like cell addresses, such as P12 or EX100, or names that begin with numbers, such as 20DEC. Do not use @function names, key names, or macro command keywords as graph names.

See also:

- Creating Graphs
- Graph Commands
- Graph Name Delete
- Graph Window Commands

## **Graph View**

Displays a graph in the Graph window.

1. Choose Graph View.
2. In the Graph name text box, specify the graph to view.
3. Select OK.

1-2-3 displays the graph in the Graph window, and the menu bar changes to display the Graph window commands.

If 1-2-3 displays an empty Graph window when you try to view a graph, one of the following conditions exists: you erased the data or file on which the graph is based; your monitor cannot display graphs; you selected a screen display driver in Install that cannot display graphs; you specified incorrect scale settings for the graph.

### **Displaying a Graph Added to a Worksheet**

To display a graph that is added to a worksheet, you can use Graph View as described above or you can double-click the range in which the graph is stored. When you double-click the range, 1-2-3 displays the graph in the Graph window.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

## Graph Add to Sheet



[About Graphing \(4:15\)](#)

[Moving a Range of Data \(1:10\)](#)

Adds a graph to a worksheet.

1. Select the range to add the graph to.
2. Choose Graph Add to Sheet.
3. In the Graph name text box, specify the graph to add.
4. To change the range displayed in the Range text box, specify another range.
5. Select OK.

1-2-3 automatically sizes the graph to fit in the specified range.

If you specify a 3-D range, 1-2-3 places the graph in all worksheets of the range.

To add an object to a range in a worksheet, use Range Annotate.

See also:

[Graph Commands](#)

[Graph Name Delete](#)

## **Graph Name**

Deletes graphs, or lists the graphs created for a file.

### Delete

Deletes a graph or range annotation from a file.

### Paste Table

Creates a table that lists graphs in a file.

See also:

[Graph Commands](#)

## Graph Name Delete

Deletes a graph and objects associated with the graph, or deletes a range annotation and the blank graph associated with the annotation, from a file.

When you delete a graph, 1-2-3 closes the associated graph window if the window is open, erases the graph from the file, and makes the graph name available for use with another graph. If the graph is added to a worksheet, 1-2-3 also removes the graph from the worksheet.

Graph Name Delete does not affect the data on which the graph is based.

### To Delete One Graph or Range Annotation

1. Choose Graph Name Delete.
2. In the Graph name text box, specify the name of the graph or the name of the blank graph associated with the range annotation you want to delete.
3. Select Delete.
4. To delete another graph name or range annotation, repeat steps 2 and 3.
5. Select OK.

To remove graphs, objects, and range annotations from a worksheet without affecting the open Graph window, use Edit Clear.

### To Delete All Graphs and Range Annotations in a File

1. Choose Graph Name Delete.
2. Select Delete All.

**Note** When you select Delete All, 1-2-3 immediately deletes all graphs and range annotations in the file without prompting you for confirmation. You can use Edit Undo to undo the deletion.

See also:

[Graph Commands](#)  
[Graph Name](#)

## Graph Name Paste Table

Creates a three-column alphabetical list of graphs in a file, including their names, types, and titles.

Graph Name Paste Table does not list blank graphs created with Range Annotate, or the contents of .CGM or .PIC files imported into the file.

**Note** If you select a multi-cell range before you choose Graph Name Paste Table, the command executes immediately from the pulldown menu, without displaying the Graph Name Paste Table dialog box.

1. Move the cell pointer to the top left corner of the range to receive the table.

The table occupies three columns and as many rows as there are graphs plus one blank row.

**Caution** 1-2-3 writes over existing data in the range, so make sure the range does not contain data you need.

2. Choose Graph Name Paste Table.

If you selected a multi-cell range, the command executes now. If you selected a single-cell range, the Graph Name Paste Table dialog box is displayed.

3. To change the range displayed in the Range text box, specify a new range.

You need to specify only the first cell of the table's location.

4. Select OK.

See also:

Graph Commands

Graph Name



## Graph Import

Adds to a worksheet the contents of a .PIC file or a .CGM file on disk, and links the worksheet and the .PIC or .CGM file.

1. Select the range to import to.
2. Choose Graph Import.
3. Specify the name of the .PIC or .CGM file to import from.

You can edit the file name in the File name text box, or you can use the Files, Directories, and Drives list boxes to select the file you want. For more information about using these list boxes, see Specifying a File.

4. Under File type, select CGM or PIC.
5. To change the range displayed in the Range text box, specify a new range.
6. Select OK.

1-2-3 displays the imported graph or object in the specified range in the worksheet.

See also:

[Creating Graphs](#)  
[Graph Commands](#)

## Graph Size

Resizes a graph in a worksheet by changing the range the graph occupies.

1. Position the cell pointer in the range that contains the graph to resize.
2. Choose Graph Size.
3. In the Graph name text box, specify the graph to resize.
4. In the Range text box, specify a new range that is larger or smaller than the current range.
5. Select OK.

When you change the size of the range, 1-2-3 automatically adjusts the dimensions of the graph to fit the new space.

1-2-3 also adjusts the dimensions of the graph when you use Worksheet Column Width or Worksheet Row Height to change column width or row height in the worksheet.

To resize an object in a graph, use Graph View to display the graph in the Graph window, and then use Rearrange Adjust Size.

To move a graph to another range in the worksheet, use Edit Move Cells.

See also:

Graph Commands

## Graph Refresh

Updates all graphs in a file to reflect recalculation of worksheet data on which the graphs are based, to reflect changes to graph settings, and to indicate the addition and deletion of graphs in file worksheets.

**Note** Use Graph Refresh to update graphs only when automatic recalculation of a graph is turned off with Style Display Options (Graph window). When automatic recalculation of a graph is turned on, 1-2-3 automatically updates the graph each time you change the worksheet data on which the graph is based.

1. Make sure the current file contains the graphs you want to refresh.
2. Choose Graph Refresh.

1-2-3 updates all graphs in the file.

See also:

Graph Commands

## **Graph Go To**

Moves the cell pointer to the upper left cell in the range that contains the graph you specify.

1. Choose Graph Go To.
2. In the Graph name text box, specify the graph to go to.
3. Select OK.

See also:

[Graph Commands](#)

## Creating Graphs

- ▶ About Graphing (4:15)
- ▶ About Choosing Graph Types (5:00)
- ▶ Creating a Graph (1:55)
- ▶ Graphing Nonadjacent Ranges (1:55)
- ▶ Graphing Rows of Data (1:55)
- ▶ Moving a Range of Data (1:10)

You create a 1-2-3 for Windows graph by selecting data from one or more worksheets and by specifying the type of graph you want. 1-2-3 associates the graph with the current worksheet file.

After you create a graph, you can customize the way data is displayed in the graph, and you can enhance the graph with text and drawings you create in 1-2-3 for Windows.

You can also add the graph to a worksheet and save the graph in a worksheet file.

### Selecting Data to Graph and Creating the Graph

You use Graph New to specify a range of data to graph and to assign a name to the graph. The range you specify can contain up to seven columns of data:

- \* 1-2-3 uses the data in the first column as labels for the x-axis of the graph or as labels for the slices of a pie chart, so the first column usually contains text, or date or time numbers formatted with a Date or Time format. This column is the X data range.
- \* 1-2-3 uses the data in the remaining columns as the values that are graphed. These columns are the A - F data ranges.

In a pie chart, 1-2-3 uses only the values in the A data range to create the pie slices.

- \* If you specify only one column, 1-2-3 uses the data as the A data range.

After you use Graph New to create the graph, 1-2-3 automatically opens a Graph window and displays the graph as a line graph in the window. When the Graph window is open, you can use the Graph window commands to customize and enhance the graph.

To graph data in ranges from different parts of a worksheet or from different worksheets, you create and name the graph with Graph New and, after 1-2-3 opens the Graph window, you specify data ranges with Chart Ranges (Graph window).

### Selecting a Graph Type

When a Graph window is the active window, you can change the graph type. To select the graph type, you use Chart Type (Graph window).

1-2-3 offers seven basic graph types: area, bar, HLCO, line, mixed, pie, and XY. You can vary these basic types, however, by selecting a number of options:

- \* 3-D effect
- \* Stacked or unstacked data ranges
- \* Vertical or horizontal orientation
- \* Table of values

For more information about graph types, see About Graph Types.

### Customizing a Graph

After you create a graph, you can use Graph window Chart commands to control the way data is displayed. For example, you can specify the format in which numbers are displayed along the x-, y-, and 2nd y-axes in a line chart, and you can include or exclude the display of percent labels for slices in a pie chart.

Some other ways you can customize a graph are listed below:

- \* Add titles, data labels, footnotes, and legends.
- \* Add borders and grid lines.
- \* Assign colors and hatch patterns to ranges and values in a range.
- \* Assign fonts to text.

### **Enhancing a Graph with Text and Drawings**

To enhance a graph by adding an object such as a block of text or an arrow or circle, you use Draw (Graph window).

To change the appearance and placement of objects in a graph, you use Layout (Graph window), Rearrange (Graph window), and Style (Graph window).

### **Adding a Graph to a Worksheet and Saving a Graph to Disk**

When you create a graph, 1-2-3 associates the graph with the current worksheet file. You can add the graph to the current worksheet or to another worksheet, or you can let the graph remain associated with the current worksheet file without adding it to any worksheet.

1-2-3 automatically saves a graph with the worksheet file when you close or save the file.

To add a graph and its enhancements to a range in a worksheet, you use Graph Add to Sheet. The graph is displayed in the range each time you open the worksheet.

To see a graph saved in a file as an unadded graph the next time you open the file, you use Graph View.

See also:

Graph Commands  
Graph Name Delete  
Printing Data

## Range Format

-  [About the Appearance of Data \(3:25\)](#)
-  [About Date and Time \(5:15\)](#)
-  [Formatting a Range of Numbers \(1:50\)](#)

Sets the cell format. Changing the cell format affects only the display of data, not the data itself. Range Format overrides the global cell format set with Worksheet Global Settings Format.

1. Select the range to format.
2. Choose Range Format.
3. Select a numeric, date, time, or other format from the Format list box.
4. If you select any numeric format except General, specify in the Decimal places text box the number of decimal places (0 through 15) you want 1-2-3 to display.
5. To display numeric values enclosed in parentheses, select the Parentheses check box.
6. To change the range displayed in the Range text box, specify a new range.
7. To reset a range's format to the current global cell format, select Reset.
8. Select OK.

If a column is not wide enough to display a value in the format you selected, 1-2-3 fills the cell with \*\*\* (asterisks). Use Worksheet Column Width to widen the column and redisplay the value.

If a column is not wide enough to display a label, 1-2-3 left-aligns the label in the cell no matter what alignment is set in Worksheet Global Settings or in Style Alignment.

See also:

[Range Basics](#)

[Range Commands](#)

## Numeric Formats



[Formatting a Range of Numbers \(1:50\)](#)

For [Range Format](#), [Worksheet Global Settings Format](#), and Graph window [Chart Axis X Format](#), [Chart Axis Y Format](#), and [Chart Axis 2nd Y Format](#).

Fixed

Displays numbers with up to 15 decimal places, a - (minus sign) for negatives, and a leading zero for decimal values.

Scientific

Displays numbers in scientific (exponential) notation.

Currency

Displays numbers with a currency symbol and thousands separators.

, Comma

Displays numbers with thousands separators.

General

Displays numbers with no thousands separators.

Percent

Displays numbers as percentages (that is, multiplied by 100) with a percent sign.

**Note** Use [Tools User Setup International](#) if you want to change the settings for the currency symbol and its position, the thousands separator, and the decimal point symbol.

### Examples of Numeric Formats

1-2-3 displays a rounded-off version of the value but stores the actual value in the file. For example, when you use different numeric formats for the value 1200.427, 1-2-3 displays it in the following ways:

<b>Format</b>	<b>Display</b>
Fixed, 1 decimal	1200.4
Scientific, 5 decimals	1.20043E+03
Currency, 2 decimals	\$1,200.43
, Comma, 2 decimals	1,200.43
General	1200.427
Percent, 1 decimal	120042.7%

Use the [@ROUND](#) function to round off the actual value in a worksheet.

See also:

[Date Formats](#)

[Formats](#)

[Time Formats](#)



## Date Formats



[About Date and Time \(5:15\)](#)

[Formatting a Range of Numbers \(1:50\)](#)

For [Range Format](#), [Worksheet Global Settings Format](#), and Graph window [Chart Axis X Format](#), [Chart Axis Y Format](#), and [Chart Axis 2nd Y Format](#).

In 1-2-3, dates are represented by values from 1 (the [date number](#) for January 1, 1900) through 73050 (the date number for December 31, 2099). A date number doesn't look like a date unless you format the cell where it appears. After you format the cell, the date appears in the cell; the date number continues to appear in the [edit line](#).

To display a value as a date, enter a date number in the worksheet, or enter an @function that calculates a date number, such as [@DATE](#), [@NOW](#), or [@TODAY](#). Then format the cell to display the date.

<b>Date</b>	<b>Format</b>
31-Dec-90	Day-month-year
31-Dec	Day-month
Dec-90	Month-year
12/31/90	Long Intl Date -- month/day/year; day/month/year; day.month.year; year-month-day
12/31	Short Intl Date -- month/day; day/month; day.month; month-year

Use [Tools User Setup International](#) to change the Long Intl (long international) and Short Intl (short international) date formats.

If the cell format is [Automatic](#) and you enter a date that resembles day-month-year, day-month, or Long Intl Date format, 1-2-3 automatically formats the cell in the format used for the entered date. For example, if you enter 31-Dec-90, 1-2-3 stores the entry as the date number 33238 and formats the cell as day-month-year.

See also:

[Formats](#)

[Numeric Formats](#)

[Time Formats](#)

## Time Formats



[About Date and Time \(5:15\)](#)

[Formatting a Range of Numbers \(1:50\)](#)

For [Range Format](#), [Worksheet Global Settings Format](#), and Graph window [Chart Axis X Format](#), [Chart Axis Y Format](#), and [Chart Axis 2nd Y Format](#).

In 1-2-3, time is represented by a decimal value from .00000000 (the time number for 12:00 midnight) through .99998843 (the time number for 11:59:59 PM). A time number doesn't look like a time unless you format the cell where it appears. After you format the cell, the time appears in the cell; the time number continues to appear in the edit line.

To display a value as time, enter a time number in the worksheet, or enter an @function that calculates a time number, such as [@NOW](#) or [@TIME](#). Then format the cell to display the time.

<b>Time</b>	<b>Format</b>
11:59:59 PM	Hour:minutes:seconds AM/PM
11:59 PM	Hour:minutes
23:59:59	Long Intl Time -- hour:minutes:seconds; hour.minutes.seconds; hour <b>h</b> minutes <b>m</b> seconds <b>s</b> (for example, 23h59m59s); hour,minutes,seconds
23:59	Short Intl Time -- hour:minutes; hour.minutes; hour, minutes; hour <b>h</b> minutes <b>m</b> (for example, 23h59m)

Use [Tools User Setup International](#) to change the Long Intl (long international) and Short Intl (short international) time formats.

If the cell format is [Automatic](#) and you enter a time that resembles any format except Short Intl Time hour.minutes, 1-2-3 automatically formats the cell in the format used for the entered time. For example, if you enter 11:59 PM, 1-2-3 stores the entry as the time number .99930556 and formats the cell as hour:minutes.

See also:

[Date Formats](#)

[Formats](#)

[Numeric Formats](#)

## Formats



[Formatting a Range of Numbers \(1:50\)](#)

For [Range Format](#), [Worksheet Global Settings Format](#), and Graph window [Chart Axis X Format](#), [Chart Axis Y Format](#), and [Chart Axis 2nd Y Format](#).

### **Formats for Range Format, Worksheet Global Settings Format, and Chart Axis [X, Y, 2nd Y] Format**

+/-

Displays a bar of + (plus) or - (minus) signs equal to the integer value of the entry (for example, displays 5.9 as +++++).

Displays a . (period) for any value between -1 and 1.

Hidden

Makes data invisible. When the [cell pointer](#) is on a hidden cell and the cell is unprotected, the data appears in the [edit line](#); if the cell is protected, the data does not appear in the edit line. To make hidden data visible again, select Reset in the Range Format dialog box.

To hide entire columns in the worksheet, select [Worksheet Hide](#).

### **Formats for Range Format and Worksheet Global Settings Format**

Automatic

Formats the cell according to the appearance of the entry, in a numeric, date, time, or label format. For example, if you enter 31-Dec-90, 1-2-3 stores the entry as the [date number](#) 33238 and formats the cell as day-month-year.

Label

Stores new entries as labels by automatically adding a label prefix (except for entries you create using Data commands); displays existing numbers in [General](#) format.

Use [Style Color](#) to set the display color to red for negative values.

Text

Displays actual formulas rather than their calculated values; displays values in General format.

See also:

[Date Formats](#)

[Numeric Formats](#)

[Time Formats](#)

## **Range Name**

Range names are names of up to 15 characters that you use instead of range addresses in commands and formulas. The following commands create and maintain range names:

### Create

Creates defined range names.

### Label Create

Creates defined range names for single-cell ranges, using labels in adjacent cells as the range names.

### Delete

Deletes defined range names in the current file, or undefines range names in the file by dissociating each range name from its range address.

### Paste Table

Creates a table of range names and addresses.

See also:

[Defined Range Names](#)

[Range Basics](#)

[Range Commands](#)

[Undefined Range Names](#)

## Defined Range Names

You define a range name when you associate it with a range address. Use Range Name Create or Range Name Label Create to define a range name.

Use defined range names to label data and parts of a worksheet so you can easily refer to the ranges in commands and formulas and easily locate data on large worksheets.

For example, if you assign the range name SALES to A5..D9, you can move the cell pointer to A5 by choosing Range Go To and selecting SALES from the list box; by pressing F5 (GOTO) and entering SALES; or by pressing F3 (NAME) and selecting SALES from the list box.

You can total the values in A5..D9 with the formula @SUM(SALES), and you can print the data in A5..D9 by specifying SALES as the print range.

See also:

Range Basics

Range Commands

Range Name

Undefined Range Names

## Undefined Range Names

Undefined range names are range names that are not associated with [range addresses](#). You can use undefined range names only in formulas, not in commands.

You can create an undefined range name in the following ways:

- \* Enter a formula that contains a range name you have not yet defined.  
The formula evaluates to [ERR](#) until you define the range name with [Range Name Create](#) or [Range Name Label Create](#).
- \* Use [Range Name Delete](#) to undefine a currently defined range name. Any formulas using the undefined range name evaluate to ERR until you define the range name again.

See also:

[Defined Range Names](#)

[Range Basics](#)

[Range Commands](#)

[Range Name](#)

## Range Name Create

Assigns a range name to a range address.

1. Select the range to name.
2. Choose Range Name Create.
3. Specify a name in the Range name text box (see conventions below).
4. To change the range displayed in the Range text box, specify a new range.
5. Select Create.
6. To create another range name, repeat steps 3 through 5.
7. Select OK.

If you select an existing range name, 1-2-3 displays the range address to which the name is currently assigned in the Range text box.. To assign the name to a different range, enter the new range in the Range text box.

When you save a file or extract data to a new file, 1-2-3 saves the range names with the file.

## Range Name Conventions

Range names can be up to 15 characters long.

1-2-3 does not distinguish between uppercase and lowercase letters in range names. Do not start a range name with ! (exclamation point), and do not include spaces, commas, semicolons, periods, or any of the following characters in a range name:

+ \* - / & > < @ # { ?

Do not create names that look like cell addresses, such as P12 or EX100, or names that begin with numbers, such as 20DEC. Do not use @function names, key names, or macro command keywords as range names.

## Range Names in Formulas

In any formulas that use a range address (for example, B5..B5 as opposed to the cell address B5) to refer to a cell you named with Range Name Create, 1-2-3 replaces the range address with the corresponding range name. For example, when you assign the name APRIL to B5, 1-2-3 changes the formula @MAX(B5..B5) to @MAX(APRIL), but 1-2-3 does not change the formula +B5/30.

To have 1-2-3 treat a range name in a formula as an absolute reference, precede the range name with a \$ (dollar sign).

See also:

[Defined Range Names](#)

[Naming a Macro](#)

[Range Basics](#)

[Range Commands](#)

[Range Name](#)

## Range Name Label Create

Assigns range names to single-cell ranges, using the labels (up to 15 characters) in adjacent cells as the range names.

Use Range Name Label Create to assign an existing label as the range name for the cell immediately above, below, to the right of, or to the left of the label.

1. Select the range that contains the labels you want to use as range names.
2. Choose Range Name Label Create.
3. Select a direction (from labels to cells):

### *Left*

Names cells to the left of the labels (for example, labels in column B become names for adjacent cells in column A).

### *Right*

Names cells to the right of the labels (for example, labels in column A become names for adjacent cells in column B).

### *Up*

Names cells above the labels (for example, labels in row 2 become names for cells in row 1).

### *Down*

Names cells below the labels (for example, labels in row 1 become names for cells in row 2).

4. To use labels contained in a range other than the one displayed in the Range text box, specify a new range.
5. Select OK.

In any formulas that use a range address (for example, B5..B5 as opposed to the cell address B5) to refer to a cell you named with Range Name Label Create, 1-2-3 replaces the range address with the corresponding range name. For example, when you assign the name APRIL to B5, 1-2-3 changes the formula @MAX(B5..B5) to @MAX(APRIL), but 1-2-3 does not change the formula +B5/30.

See also:

[Defined Range Names](#)

[Range Basics](#)

[Range Commands](#)

[Range Name](#)

[Range Name Create](#) for rules on range names



## Range Name Delete

Deletes defined range names in the current file, but leaves the data in each range unchanged; or undefines range names in the file by dissociating each range name from its range address.

### To Delete One Defined Range Name

1. Choose Range Name Delete.
2. In the Range name text box, specify the range name to delete.
3. Select Delete.
4. To delete another range name, repeat steps 2 and 3.
5. Select OK.

In formulas that use the deleted range name, 1-2-3 replaces the deleted range name with its range address. For example, if SALES is defined as B14..H14 and you delete SALES, 1-2-3 changes the formula @SUM(SALES)to @SUM(B14..H14).

### To Delete All Defined Range Names

1. Choose Range Name Delete.
2. Select Delete All.

1-2-3 deletes all defined range names in the current file and closes the dialog box. In formulas that use a deleted range name, 1-2-3 replaces the deleted range name with its range address (see example above).

### To Undefine a Range Name

1. Choose Range Name Delete.
2. In the Range name text box, specify the range name to undefine.
3. Select Undefine.
4. To undefine another range name, repeat steps 2 and 3.
5. Select OK.

An undefined range name continues to exist, but it is no longer associated with a range, and 1-2-3 does not include it in range name tables.

Formulas that use the undefined range name now evaluate to ERR. When you redefine the range name with Range Name Create or Range Name Label Create, 1-2-3 evaluates formulas that use the range name according to the data in the new location.

See also:

[Defined Range Names](#)  
[Range Basics](#)  
[Range Commands](#)  
[Range Name](#)  
[Undefined Range Names](#)

## Range Name Paste Table

Creates a two-column alphabetical list of defined range names and their addresses.

If the file whose range names you are listing contains only one worksheet, 1-2-3 omits the worksheet letters of the range addresses in the table. If the file contains two or more worksheets, 1-2-3 uses full range addresses in the table.

**Note** If you select a multi-cell range before you choose Range Name Paste Table, the command executes immediately from the pulldown menu, without displaying the Range Name Paste Table dialog box.

1. Move the cell pointer to the top left corner of the range to receive the table.

The table will occupy two columns and as many rows as there are range names plus one blank row.

**Caution** 1-2-3 writes over any existing data when it creates the table, so make sure the range does not contain data you need.

2. Choose Range Name Paste Table.
3. To change the table location displayed in the Range text box, specify a new range.  
You need to specify only the first cell of the table's location.
4. Select OK.

See also:

Range Commands  
Range Name

## Range Justify

Rearranges a column of labels so the labels fit within a width you specify. Range Justify justifies only one column of labels at a time. A blank cell or numeric value marks the end of a column of labels.

Use Range Justify to equalize the length of a series of labels, to fit text into a specific width for viewing or printing, to create a paragraph in a worksheet, or to justify an edited paragraph.

To use this command, global protection must be off for the worksheet that contains the column of labels.

**Note** If you select a multi-cell range before you choose Range Justify, the command executes immediately from the pulldown menu, without displaying the Range Justify dialog box.

1. Select the range to justify.

Be sure to include the first cell in the column of labels you want to justify.

2. Choose Range Justify.

If you selected a multi-cell range, the command executes now. If you selected a single-cell range, the Range Justify dialog box is displayed.

3. To change the range displayed in the Range text box, specify a new range.

4. Select OK.

### Specifying the Justify Range

The width and length of the justify range control the way 1-2-3 performs the justification.

The total width of the columns in the justify range determines the maximum width of the justified labels (to a limit of 512 characters).

The total number of rows in the justify range affects the result of Range Justify as follows:

- \* If you specify a single-row justify range, 1-2-3 justifies the entire column of labels to fill the width of the justify range. If the justified labels occupy more rows than the original labels, 1-2-3 moves subsequent data in the column (data below the justified labels) down. If the justified labels occupy fewer rows than the original labels, 1-2-3 moves subsequent data up. Use a single-row justify range only if all cells below the labels you are justifying are blank or if movement of data below the labels is acceptable.
- \* If you specify a multiple-row justify range, 1-2-3 limits the justification to the specified range and does not move data below the justify range. If you use a multiple-row justify range, be sure the range is wide and deep enough to hold the entire series of justified labels.

When 1-2-3 performs the justification, it left-aligns all the justified labels and assigns the entire column of justified labels the cell format and protection status of the first cell in the column.

If you specify a 3-D range, 1-2-3 justifies the column of labels in each worksheet separately.

See also:

[Range Basics](#)

[Range Commands](#)

[Worksheet Global Settings](#)

## Range Protect

Prevents changes to cells in a range when the worksheet or worksheets the range occupies are globally protected. When the cell pointer is on a protected cell in a worksheet that is globally protected, 1-2-3 displays PR in the format line.

Use Range Protect only if global protection has been turned on through Worksheet Global Settings Protection and if you previously unprotected the range with Range Unprotect.

**Note** If you select a multi-cell range before you choose Range Protect, the command executes immediately from the pulldown menu, without displaying the Range Protect dialog box.

1. Select the range to protect.
2. Choose Range Protect.

If you selected a multi-cell range, the command executes now. If you selected a single-cell range, the Range Protect dialog box is displayed.

3. To change the range displayed in the Range text box, specify a new range.
4. Select OK.

See also:

Range Basics

Range Commands

## Range Unprotect

Allows changes to a range when the worksheet or worksheets containing the range are globally protected with [Worksheet Global Settings Protection](#). You can also use Range Unprotect with the macro command `{FORM}` to create a data-input range in a worksheet or in a data-entry form set up in the worksheet.

When the [cell pointer](#) is on an unprotected cell, 1-2-3 displays U in the [format line](#) and displays data in the cell in the color set with [Window Display Options](#).

**Note** If you select a multi-cell range before you choose Range Unprotect, the command executes immediately from the pulldown menu, without displaying the Range Unprotect dialog box. You can select a multi-cell range only if global protection is not yet turned on.

1. Choose Range Unprotect.

If you selected a multi-cell range, the command executes now. If you selected a single-cell range, the Range Unprotect dialog box is displayed.

2. To change the range displayed in the Range [text box](#), specify a new range.
3. Select OK.

To prevent changes to cells you have unprotected with Range Unprotect, protect the cells with [Range Protect](#).

See also:

[Range Basics](#)

[Range Commands](#)

[Setting Up an Entry Form](#)

## Setting Up an Entry Form

1. Plan the entry form so that the blanks the user will fill in form a single range.
2. Enter text that makes clear what information you want the user to enter in each blank.  
Be sure to format blanks in which the user will enter dates with a Date format or with the Automatic format.
3. Include instructions for filling in the blanks, for moving the cell pointer from blank to blank, and for exiting from the form when the user finishes entering information.
4. (Optional) After you complete the form, choose Range Name Create and name the entry form.
5. Select the range of blanks.
6. Choose Range Unprotect.  
Because you preselected the range, the command executes immediately, without displaying the Range Unprotect dialog box.
7. When you want to use the entry form, move the cell pointer to the unprotected data-input range.

### Example

Entry Form

See also:

Range Commands  
{FORM}

### Example: Entry Form

Cells in the range K25..K28 are left blank and unprotected so that a user can enter information about a new employee.

```
A ----- I ----- J ----- K ----- L ----- M ----- N
19          NEW EMPLOYEE INFORMATION
20          =====
21          Use arrow keys to move between entries.
22          Press ESC when done.
23          =====
24
25          Name:
26          Job Title:
27          Salary:
28          Start Date:
```

## Range Transpose

Copies data in a range, transposing the copied data and replacing any copied formulas with their current values.

When you transpose data to a single-sheet range, 1-2-3 changes the data from a horizontal arrangement to a vertical arrangement or vice versa.

1. If the CALC indicator appears in the status line, press F9 (CALC) to update formulas. If there are linked formulas in the range you want to transpose, you also need to use File Administration Update Links to make sure the values are up to date.
2. Select the range to transpose.
3. Choose Range Transpose.
4. To change the range displayed in the From text box, specify a new range.
5. In the To text box, specify the range you want to copy the transposed data to. You need to specify only the first cell of the To range. If you are transposing a 3-D range, be sure there are enough worksheets in the To range to fit the transposed data.

**Caution** 1-2-3 writes over any existing data in the To range, so make sure the range does not contain data you need. Specifying overlapping From and To ranges may result in data loss.

6. Select OK.

If you specify a 3-D range in the From or To text box, 1-2-3 displays the Range Transpose (Options) dialog box so you can indicate how you want the data transposed.

To copy a range without transposing data or converting formulas to values, use Edit Copy.

To copy a range and convert formulas to values without transposing data, use Edit Quick Copy.

See also:

Range Commands



## Range Transpose (Options)

After you choose Range Transpose and select a 3-D range to transpose from or to, indicates how you want data transposed.

1. Select one of the following options:

*Rows/Columns*

Worksheet by worksheet, transposes the data in the From range from a horizontal arrangement to a vertical arrangement or vice versa.

*Columns/Worksheets*

Copies the first column in each worksheet of the From range to the first worksheet in the To range, the second column in each worksheet of the From range to the second worksheet in the To range, and so on.

*Worksheets/Rows*

Copies the first row in each worksheet of the From range to the first worksheet in the To range, the second row in each worksheet of the From range to the second worksheet in the To range, and so on.

2. Select OK.

See also:

[Range Commands](#)

[Range Transpose](#)

## Range Annotate

Adds a line, arrow, shape, freehand drawing, text, or other object to a range in the current worksheet.

1. Select the range to annotate.
2. Choose Range Annotate.

Range Annotate displays a blank Graph window and associates it with the range you selected in the worksheet. You can draw an object in the Graph window and use any of the Graph window commands except the Chart commands to customize the object.

When you save the worksheet file, 1-2-3 saves the blank graph with the worksheet. You can then open the worksheet at a later time, click the range containing the blank graph to display it in the Graph window, draw an object in the blank Graph window, and display the object in the range.

To draw an object in the blank Graph window, use the Draw (Graph window) commands.

To erase the object from the range, use Edit Delete (Graph window).

To display the object in the worksheet range, click the window containing the worksheet.

See also:

[Range Basics](#)

[Range Commands](#)

## **Range Go To**

Moves the cell pointer to a specified range.

1. Choose Range Go To.
2. In the Range text box, specify the range to go to.
3. Select OK.

1-2-3 moves the cell pointer to the top left corner of the range.

To go to a range in another active file, precede the range name or range address with a file reference. For example:

<<SALES89.WK3>>A:A1..A:C5

See also:

F5 (GOTO)

Range Commands

## **Range Basics**

A range is any rectangular block of adjacent cells. A range can be a single cell (A1..A1), part of a row (A2..C2) or column (B1..B3), or a block of cells in several rows and columns (A1..C3). A range can be 3-D, spanning adjacent worksheets (A:A1..C:C3), as long as the worksheets are in the same file.

A range address consists of the cell addresses of any two diagonally opposite corners of a range, separated by one or two periods. For example, A1..A1 is the range address of a range consisting of one cell, and A:A1..A:C3 is the range address of a range consisting of a block of cells.

See also:

[Highlighting a Range](#)

[Range Commands](#)

[Specifying a Range](#)

## Specifying a Range

Many 1-2-3 commands and formulas require you to specify a range of data. You can specify a range by using one of the following methods.

### Highlighting a Range

You can highlight a range

- \* Before you choose a command, when 1-2-3 is in READY mode
- \* After you choose a command, when 1-2-3 is in POINT mode
- \* While you are entering a formula, when 1-2-3 is in POINT mode

Move the cell pointer to the first cell of the range and expand the highlight to cover the whole range. For more information, see Highlighting a Range.

### Entering a Range Address

You can enter a range address in either a text box or a formula that requires a range.

In a text box, when you begin to type, 1-2-3 changes from POINT mode to EDIT mode. (To return 1-2-3 to POINT mode, press F2 (EDIT).)

Enter the cell addresses of any two diagonally opposite corners of a range, separating the cell addresses by one or two periods (for example, A:A1..A:C5). If the range is in another file, precede the range address with the file reference. For example:

```
<<SALES89.WK3>>A:A1..A:C5
```

### Entering a Range Name or Using F3 (NAME)

You can enter a range name in either a text box or a formula that requires a range.

In a text box, when you begin to type, 1-2-3 changes from POINT mode to EDIT mode. (To return 1-2-3 to POINT mode, press F2 (EDIT).)

Enter the name you assigned to the range. For information on creating range names, see Range Name Create or Range Name Label Create.

If the range is in another file, precede the range name with the file reference. For example:

```
<<SALES89.WK3>>JAN
```

Instead of entering the range name, you can press F3 (NAME) to see a list of all range names in all active files. Select the name of a range in the current file, or select the name of another active file.

When you select the name of another active file, 1-2-3 displays a list of all range names in the file. When you select the name of a range in a file that is not the current file, 1-2-3 automatically inserts a file reference before the range name.

### Specifying Multiple Ranges

Most 1-2-3 commands and @functions that require ranges operate on only one range at a time. However, you can specify multiple ranges with File Print and all database and statistical @functions, and with Data Query when specifying an input range.

You can specify the ranges by entering range addresses or using range names. Separate the ranges with the punctuation mark defined as the argument separator in Tools User Setup International, but do not include spaces after the argument separator.

In the following multiple-range list, range addresses and a range name are used to specify ranges, and the semicolon is used as the argument separator:

A:A1..C:D4;EXPENSES;M22..M22

See also:

[Linking Files with Formulas](#)

[Range Basics](#)

[Range Commands](#)

## Highlighting a Range

You can highlight a range either before you choose the command, when 1-2-3 is in READY mode, or after you choose the command, when 1-2-3 is in POINT mode. You can also highlight a range while you are entering a formula, after you put 1-2-3 in POINT mode.

You can highlight a range in a single worksheet, or you can highlight a range across two or more worksheets in the same file (3-D range).

- \* If you highlight a range before you choose a command (that is, preselect the range), the range remains highlighted after the command is completed. You can then continue to work with that range without respecifying the range each time you choose a command.
- \* If you highlight a range after you choose a command, the range does not remain highlighted after the command is complete. 1-2-3 redisplay the selection that was current before you chose the command.

### Dialog-Box Behavior During Highlighting

In a dialog box, 1-2-3 goes into POINT mode when you select the text box that requires a range. As soon as you begin highlighting the range in the worksheet, the dialog box disappears, and the address of the range you are highlighting appears in the contents box.

When you confirm the range by releasing the mouse button or pressing ENTER, the dialog box reappears, and the address of the range you highlighted is in the text box.



#### To Highlight a Range in a Worksheet

1. In READY mode or POINT mode, move the mouse pointer to one corner of the range, and then press and hold the mouse button to anchor the cell pointer.

Some commands, such as Range Format, begin with the cell pointer anchored in the current cell.

2. Drag the mouse to expand the range.

The cell address in the address box changes as you highlight the range to show the address of the free cell.



#### To Highlight a Range in a Worksheet

1. In POINT mode, use the pointer-movement keys to leave the dialog box and activate the worksheet.

In a formula, 1-2-3 goes into POINT mode if you press a pointer-movement key after typing an operator, for example, after typing + > ( or &.

2. Use the pointer-movement keys to move the cell pointer to one corner of the range.
3. Anchor the cell pointer in one of the following ways:
  - \* In READY mode, press F4.
  - \* In POINT mode, press . (period).

Some commands, such as Range Format, begin with the cell pointer anchored in the current cell.

To anchor the cell pointer somewhere else, press ESC to reduce the range address to a cell address. Then move the cell pointer to the cell you want and anchor the cell pointer by pressing . (period).

4. Use the pointer-movement keys to expand the highlight across the range.
5. When you have highlighted the entire range, press ENTER.

To anchor a different corner of the range you just highlighted, press . (period) before

confirming the range. You can then change the range using the new anchor cell.



### **To Highlight a 3-D Range**

1. Using the keyboard in one of the ways described above, highlight a range on the first or last worksheet of the 3-D range you want to create.
2. Press CTRL+PG UP or CTRL+PG DN to expand the range to other worksheets.
3. When you have highlighted the entire range, press ENTER.

See also:

[Range Basics](#)

[Range Commands](#)

[Specifying a Range](#)



## Style Font

-  About Styling (4:30)
-  Moving a Range of Data (1:10)
-  Changing Font Sets (1:30)

Applies a font in the current font set to a range and adds bold, italics, and underlining to data in a range.

1. Select the range to format.
2. Choose Style Font.
3. Select a font from the Fonts list box.  
The first font in the list is the default font for the current worksheet file.
4. To add boldface, italics, or underlining to the range, select the Bold, Italics, or Underline check box.
5. If you select Underline, select a line style from the drop-down box.
6. To change the range displayed in the Range text box, specify a new range.
7. Select OK.

### To Work with Font Sets

1. To replace fonts in the current font set, update and restore the default font set, and save and retrieve named font sets, select Replace.

See also:

Style Commands

## Style Font Replace



[About Styling \(4:30\)](#)

[Changing Font Sets \(1:30\)](#)

Replaces fonts in the current font set, updates and restores the default font set, and saves and retrieves named font sets.

### To Replace a Font in the Current Font Set

1. Choose Style Font.
2. Select Replace.
3. Select the font to replace from the Current fonts list box.
4. Specify a font in the Available fonts text box.
5. In the Size text box, specify a point size to associate with the font specified in step 4.
6. Select Replace.

### Working with the Default Font Set

- \* To make the current font set the default font set, select Update.
- \* To replace the current font set with the default font set, select Restore.

### Working with a Named Font Set

- \* To save the current font set as a named font set, select Save.
- \* To make a named font set the current font set, select Retrieve.

See also:

[Style Commands](#)  
[Style Font](#)

## Style Font Replace Update



[Changing Font Sets \(1:30\)](#)

Makes the current font set the default font set.

1. Choose Style Font.
2. Select Replace.
3. Under Default font set, select Update.  
1-2-3 saves the current font set as the default font set.
4. Select OK.

See also:

[Style Commands](#)

[Style Font](#)

## **Style Font Replace Restore**

Replaces the current font set with the [default font set](#).

1. Choose Style Font.
2. Select Replace.
3. Under Default font set, select Restore.

1-2-3 replaces the current font set with the default font set.

4. Select OK.

1-2-3 reformats data in the current file using the default font set.

See also:

[Style Commands](#)

[Style Font](#)

## Style Font Replace Save



[Changing Font Sets \(1:30\)](#)

Saves the current font set in a named font set on disk.

1. Choose Style Font.
2. Select Replace.
3. Under Named font set, select Save.

The Style Font Replace Save dialog box is displayed.

4. Enter a name for the current font set in the File name text box. 1-2-3 automatically adds the extension .AF3 to a file containing a named font set unless you type a different extension.

You can edit the file name in the File name text box, or you can use the Files, Directories, and Drives list boxes to select a file name you want. For more information about using these list boxes, see [Specifying a File](#).

5. Select OK.

The Style Font Replace dialog box is redisplayed.

7. Select OK.

If, in step 4, you specify a file name that already exists, 1-2-3 asks whether you want to cancel saving the new file or replace the data in the existing file with the data in the new file.

See also:

[Style Commands](#)

[Style Font](#)

## **Style Font Save (Replace/Cancel)**

Cancels or completes the Style Font Replace Save command for the named font set you are updating on disk.

1. Select one of the following options:

*Replace*

Writes over the file on disk with a copy of the current file.

*Cancel*

Returns 1-2-3 to READY mode without updating any file on disk.

2. Select OK.

**Caution** When you select Replace, 1-2-3 erases the file on disk before it saves the current version of the file. If 1-2-3 displays a message indicating that the disk is full, save the current file on another disk.

See also:

[Style Commands](#)

[Style Font](#)

## **Style Font Replace Retrieve**

Makes a named font set the current font set.

1. Choose Style Font.
2. Select Replace.
3. Under Named font set, select Retrieve.

The Style Font Replace Retrieve dialog box is displayed.

4. Specify the name of the named font set to retrieve.

You can edit the file name in the File name text box, or you can use the Files, Directories, and Drives list boxes to select the file name you want. For more information about using these list boxes, see Specifying a File.

5. Select OK.

The Style Font Replace dialog box is redisplayed, and 1-2-3 updates the current font set and reformats data in the current file with those fonts.

6. Select OK.

See also:

[Style Commands](#)  
[Style Font](#)

## Style Alignment

-  About Styling (4:30)
-  Moving a Range of Data (1:10)
-  Aligning Labels (1:50)

Changes the alignment of labels in a range by changing their label prefix-characters. You can align a label within a cell or across the columns of a range.

### To Align Labels in Individual Cells

1. Select the range that contains the labels you want to align.
2. Choose Style Alignment.
3. Under Align labels, select one of the following options:

*Left*

Aligns labels with the left edge of cells.

*Center*

Centers labels in cells.

*Right*

Aligns labels with the right edge of cells.

4. To change the range displayed in the Range text box, specify a new range.
5. Select OK.

Long labels appear left-aligned regardless of the label prefix.

If the current file is in GROUP mode, Style Alignment affects the same range in all worksheets in the file.

### To Align Labels Across the Columns of a Range

1. Select the range in which you want to align labels.

Make sure there are labels in only the leftmost column of the range. This procedure causes labels in any other columns of the range to be hidden by the labels in the leftmost column.

2. Choose Style Alignment.
3. Select the Align over columns check box.
4. Under Align labels, select one of the following options:

*Left*

Aligns labels with the left edge of the range.

*Center*

Centers labels in the range.

*Right*

Aligns labels with the right edge of the range.

*Even*

Stretches labels over a wider space by expanding the space between words and between the letters in words. Even has no effect on labels that end with a . (period), ! (exclamation point), ? (question mark), or : (colon).

5. To change the range displayed in the Range text box, specify a new range.
6. Select OK.



Labels that exceed the width of the range appear left-aligned regardless of the label prefix. If the current file is in GROUP mode, Style Alignment affects the same range in all worksheets in the file.

See also:

[Style Commands](#)

## Style Border



[About Styling \(4:30\)](#)

Draws horizontal and vertical lines along the edges of cells, outlines around cells and ranges, and drop shadows around ranges.

1. Select the range to apply borders to.
2. Choose Style Border.
3. To draw borders around each cell in a range, select the check box of one of the following options:

*All edges*

Draws an outline around each cell in a range.

*Top*

Draws a line along the top edge of each cell in a range.

*Bottom*

Draws a line along the bottom edge of each cell in a range.

*Left*

Draws a line along the left edge of each cell in a range.

*Right*

Draws a line along the right edge of each cell in a range.

4. Select a line style from the drop-down box next to the option.
5. Repeat steps 3 and 4 as necessary.
6. To draw a border around the range as a whole, select Outline.  
Select a line style from the drop-down box.
7. To draw a drop shadow around the range, select Drop shadow.
8. To change the range displayed in the Range text box, specify a new range.
9. Select OK.

See also:

[Style Commands](#)

[Style Font](#) for underlining data in a cell

## Style Color

 [Moving a Range of Data \(1:10\)](#)

 [Moving a Range of Data \(1:10\)](#)

On color monitors and printers, displays and prints ranges in color, and displays negative values in red instead of the default color set with Window Display Options.

1. Select the range whose color you want to change.
2. Choose Style Color.
3. To specify a color for the data in a range, select a color from the Cell contents drop-down box.
4. To specify a color for the background of a range, select a color from the Background drop-down box.
5. To display negative values in red, select the Negative values in red check box.
6. To change the range displayed in the Range text box, specify a new range.
7. Select OK.

See also:

[Style Commands](#)

## Style Shading



[About Styling \(4:30\)](#)

Adds light, dark, or solid shading to a range and removes shading from a range. The shading is the same color as the global color for cell contents set with [Window Display Options](#).

1. Select the range in which to add or remove shading.
2. Choose Style Shading.
3. Select one of the following options:
  - Light*  
Adds light shading to a range.
  - Dark*  
Adds dark shading to a range.
  - Solid*  
Adds solid shading to a range.
  - Clear*  
Removes shading from a range.
4. To change the range displayed in the Range text box, specify a new range.
5. Select OK.

See also:

[Style Commands](#)

## Style Name

Defines a cell's formatting as a named style.

1. Select a cell whose format you want to define as a named style.

2. Choose Style Name.

3. Select a named style: 1, 2, 3, 4, 5, 6, 7, or 8.

4. Enter a name of up to six characters for the named style.

The name will appear in the Style pulldown menu next to its corresponding number the next time you choose Style.

5. Enter a description of up to 36 characters for the named style.

The description will appear in the title bar the next time the menu pointer is on the corresponding named-style number; it will also appear in the corresponding dialog box.

6. To change the range displayed in the Range text box, specify a new range.

7. Select OK.

See also:

[Style Commands](#)

[Style Font Replace](#)

## Style (Named Style)

Formats a range with a named style you defined with Style Name.

**Note** If you select a multi-cell range before you choose a named style, the command executes immediately from the pulldown menu, without displaying the Style (Named Style) dialog box.

1. Select the range to format.
2. Choose Style and the number of the named style you want to use.

If you selected a multi-cell range, the command executes now. If you selected a single-cell range, the Style (Named Style) dialog box is displayed.

3. Select OK.

See also:

[Style Commands](#)



## Tools SmartIcons



[About SmartIcons \(2:35\)](#)

Changes the position of the icon palette in the 1-2-3 window, hides the icon palette, and lets you customize the icon palette.

1. Choose Tools SmartIcons.
2. To change the position of the icon palette, under Palette position, select one of the following options:

*Left*

Places the icon palette at the left edge of the work area.

*Right*

Places the icon palette at the right edge of the work area.

*Top*

Places the icon palette at the top edge of the work area.

*Bottom*

Places the icon palette at the bottom edge of the work area.

*Floating*

Lets you use the mouse to move the icon palette by dragging it. You can also use the mouse to resize the icon palette.

3. To hide the icon palette, select the Hide palette check box.
4. Select OK.

### To Customize the Icon Palette

1. To add or remove icons, and to assign macros to custom icons, select Customize.

See also:

[Tools Commands](#)  
[Using SmartIcons](#)



## Tools SmartIcons Customize



[About SmartIcons \(2:35\)](#)

[Changing the SmartIcon Palette \(1:20\)](#)

Adds and removes icons from the current icon palette and assigns macros to custom icons.

### To Add Icons to the End of the Icon Palette

1. Choose Tools SmartIcons.
2. Select Customize.

The Tools SmartIcons Customize dialog box is displayed.

3. Under Standard icons or Custom icons, select an icon to add to the icon palette.
4. Select Add.

**Note** You can also add icons to the icon palette by double-clicking them.

5. Repeat steps 3 and 4 to add more icons to the icon palette.
6. Select OK.

The Tools SmartIcons dialog box is redisplayed.

7. Select OK.

**Note** Depending on the position of the icon palette, you may not be able to see all the icons you added. If you cannot see icons you added to the icon palette, use Tools SmartIcons Floating so you can use the mouse to resize the icon palette.

### To Add Icons Elsewhere on the Icon Palette

1. Choose Tools SmartIcons.
2. Select Customize.

The Tools SmartIcons Customize dialog box is displayed.

3. Under Current palette, select the icon that will follow the new icon.
4. Under Standard icons or Custom icons, select an icon to add to the icon palette.
5. Select Add.

**Note** You can also add icons to the icon palette by double-clicking them.

6. Repeat steps 3 through 5 to add more icons to the icon palette.
7. Select OK.

The Tools SmartIcons dialog box is redisplayed.

8. Select OK.

**Note** Depending on the position of the icon palette, you may not be able to see all the icons you added. If you cannot see icons you added, use Tools SmartIcons Floating so you can use the mouse to resize the icon palette.

### To Remove Icons from the Icon Palette

1. Choose Tools SmartIcons.
2. Select Customize.

The Tools SmartIcons Customize dialog box is displayed.

3. Under Current palette, select the icon to remove.

4. Select Remove.

**Note** You can also remove icons from the icon palette by double-clicking them.

5. Repeat steps 3 and 4 to remove more icons from the icon palette.

6. Select OK.

The Tools SmartIcons dialog box is redisplayed.

7. Select OK.

### **To Assign Macros to Custom Icons**

1. Choose Tools SmartIcons.

2. Select Customize.

The Tools SmartIcons Customize dialog box is displayed.

3. Under Custom icons, select one of the custom icons.

4. Select Assign macro.

See also:

Macro Basics

Tools Commands

Using SmartIcons

## Tools SmartIcons Customize Assign Macro



### About SmartIcons (2:35)

Assigns macros that you write to custom icons.

1. Add an image to the sample (blank) custom icon as described below in "Creating a Custom Icon."
2. In a worksheet, write, test, and debug, the macro you want to assign to a custom icon. See "Writing Macros for Custom Icons" below to learn rules for writing macros you assign to custom icons.
3. Choose Tools SmartIcons.
4. Select Customize.  
The Tools SmartIcons Customize dialog box is displayed.
5. Under Custom icons, select the icon you created in step 1.
6. Select Assign macro.  
The Tools SmartIcons Customize Assign Macro dialog box is displayed.
7. Specify the range that contains the macro in the Range text box.  
**Note** When specifying the range, you must include all the cells that contain the macro instructions; you cannot specify only the first cell of the macro.
8. Select Get macro.  
1-2-3 copies the macro from the worksheet to the Macro text box.
9. Select OK.  
The Tools SmartIcons Customize dialog box is redisplayed.
10. Once you assign a macro to an icon, you can add it to the icon palette as described in Tools SmartIcons Customize.

## Creating Custom Icons

Custom Icons are stored in bitmap files (.BMP). Bitmap files for Worksheet window icons are stored in a subdirectory of the 1-2-3 for Windows program directory named \SHEETICO; bitmap files for Graph window icons are stored in a subdirectory named \GRAPHICO.

You can create custom icons using any drawing or painting program that runs under Windows 3.0 and creates .BMP files, such as Paintbrush.

To create custom icons, follow these steps:

1. Start your drawing or painting program.
2. To create Worksheet window icons, open the file named SAMPLE.BMP that is stored in the \SHEETICO subdirectory of the 1-2-3 for Windows program directory.  
To create Graph window icons, open the file named SAMPLE.BMP that is stored in the \GRAPHICO subdirectory of the 1-2-3 for Windows program directory.
3. Create the icon.
4. Save the file as a .BMP file.

Save the file in the \SHEETICO subdirectory if you created a Worksheet window icon or in the \GRAPHICO subdirectory if you created a Graph window icon.

When you save the file, specify a new name so that SAMPLE.BMP remains unchanged. This lets you use the original file to create more custom icons.

The next time you choose Tools SmartIcons Customize, the new icons will appear in the Custom icons list box.

**Note** When you select icons in the Custom icons list box, the description "macro button" appears in the information box. Similarly, when you use the right mouse button to display a description of a custom icon in the Worksheet window or Graph window, the description "macro button" appears in the title bar.

### Writing Macros for Custom Icons

When you write macros for custom Icons, keep the following in mind:

- \* Macro instructions you copy to the Macro text box cannot exceed 512 characters. If you want custom icons to run longer macros, have the macro instructions in the Macro text box branch to macros in the worksheet.
- \* Except for the macro commands listed below, all macro commands and macro keys work the same way when executed from an icon as they do when executed from the worksheet.

**{subroutine}** Subroutine calls can only be made to macros in the worksheet; they cannot be made to macro instructions you copy to the Macro text box.

**{BRANCH}**, **{DISPATCH}**, and **{MENUBRANCH}** Macro instructions you copy to the Macro text box can only branch to macro routines in the worksheet; they cannot branch to macro instructions you copy to the Macro text box.

**{ONERROR}** Both *branch-location* and *message-location* must be located in the worksheet; they cannot be part of any macro instructions you copy to the Macro text box.

See also:

Macro Basics  
Tools Commands  
Using SmartIcons

## Using SmartIcons



[About SmartIcons \(2:35\)](#)

You can select commonly used commands and macros by clicking icons on the icon palette. SmartIcons provide immediate and easy access to 1-2-3 functionality.

To display a description of an icon, position the mouse pointer on the icon and press the right mouse button. The description appears in the title bar.

### To Use SmartIcons

1. If the icon acts on a range or an object, select the range or object.
2. Click the icon.

See also:

[Tools SmartIcons](#)

## Tools User Setup

Changes settings that affect the display and behavior of 1-2-3. Except for Recalculation, these settings can be stored in the file 123W.INI so that they become default settings and take effect automatically whenever you start 1-2-3.

1. Choose Tools User Setup.
2. Select the check box of one or more of the following options:
  - Beep on error*  
Sets the computer's bell to sound when errors occur and when {BEEP} commands occur in a macro.
  - Enable Edit Undo*  
Turns Edit Undo on.
  - Run autoexecute macros*  
Tells 1-2-3 to run autoexecute macros when you open files that contain the macros.
3. Enter the default directory in the Worksheet directory text box.
4. Under Clock display, select one of the following options for the date and time in the status line:
  - Standard*  
Displays the date in day-month-year format and the time in hour:minutes (AM/PM) format.
  - International*  
Displays the date in Long International format and the time in Short International format.
  - None*  
Removes the date and time from the status line.
5. Select International to set the punctuation for numbers, the argument separators for @functions and macro commands, the currency symbol and its position, the international date and time formats, the display of negative numbers in Comma and Currency formats, the way 1-2-3 reads and saves characters in Release 2 files, and the way 1-2-3 translates characters in text files.
6. Select Recalculation to set when and in what order 1-2-3 recalculates formulas and how many recalculation passes it performs each time it recalculates formulas in active files.
7. (Optional) Select Update to store the new default settings in 123W.INI for use in future sessions.  
If you don't select Update, the changes you make affect the current session only.
8. Select OK.

See also:

Tools Commands

## Tools User Setup Recalculation

Controls when and in what order 1-2-3 recalculates formulas and how many recalculation passes it performs each time it recalculates formulas in active files.

1. Choose Tools User Setup.

2. Select Recalculation.

The Tools User Setup Recalculation dialog box is displayed.

3. Under Order of Recalculation, select one of the following options:

### *Natural*

Before recalculating a formula, 1-2-3 recalculates any other formulas that the formula depends on.

### *Columnwise*

Starting in A:A1 of the first active file, 1-2-3 moves column by column through each worksheet in each active file, recalculating all formulas.

### *Rowwise*

Starting in A:A1 of the first active file, 1-2-3 moves row by row through each worksheet in each active file, recalculating all formulas.

4. Enter a number from 1 to 50 in the Iterations text box.

Iterations sets the number of recalculation passes 1-2-3 makes when the order is Columnwise or Rowwise, or when the order is Natural and a circular reference exists.

5. Under Recalculation, select one of the following options:

### *Automatic*

Each time you change the contents of a cell, 1-2-3 recalculates formulas affected by the change in all active files. Automatic recalculation occurs in the background, so you can continue working while 1-2-3 performs the recalculation.

### *Manual*

1-2-3 recalculates formulas only when you press F9 (CALC). Manual recalculation occurs in the foreground, so you must wait for 1-2-3 to complete it before continuing your work.

6. Select OK.

The Tools User Setup dialog box is redisplayed.

7. Select OK.

8. 1-2-3 stores recalculation settings with the worksheet file. To save the recalculation settings, use File Save.

The recalculation settings affect all active files. When you use File Open to read a file into memory, 1-2-3 uses the new file's recalculation settings for all active files during that session.

When a worksheet contains formulas that link to data in active files or files on disk, use File Administration Update Links to update those formulas.

See also:

Tools Commands

## **Tools User Setup International**

Changes settings that affect the display and behavior of 1-2-3. These settings can be stored in the file 123W.INI so that they become default settings and take effect automatically whenever you start 1-2-3.

### Style

Sets the appearance of decimal points, thousands separators, argument separators, and negative numbers.

### Currency

Sets the currency symbol and its position.

### Format

Sets the Long and Short Intl (international) Date formats and the Long and Short Intl Time formats.

### File translation

Sets the way 1-2-3 reads and saves characters in Release 2 (.WK1) files and sets the character translation table that 1-2-3 uses when importing and creating text files.

See also:

[Tools Commands](#)



## Tools User Setup International Style

Sets the appearance of decimal points, thousands separators, argument separators, and negative numbers.

1. Choose Tools User Setup.
2. Select International.

The Tools User Setup International dialog box is displayed.

3. Under Style, select a setting from the drop-down box of one or both of the following options:

### *Punctuation*

Sets the characters 1-2-3 uses as the decimal point and thousands separator for numbers, and the argument separator for @functions and macro commands.

### *Negative values*

Sets whether 1-2-3 uses ( ) (parentheses) or - (minus sign) for negative values in Currency and Comma formats.

4. Select OK.

The Tools User Setup dialog box is redisplayed.

5. (Optional) Select Update to store the new default settings in 123W.INI for use in future sessions.

If you don't select Update, the changes you make affect the current session only.

6. Select OK.

See also:

[Range Format](#)

[Tools Commands](#)

[Tools User Setup](#)

## Tools User Setup International Currency

Sets the currency symbol and its position.

1. Choose Tools User Setup.
2. Select International.

The Tools User Setup International dialog box is displayed.

3. Under Currency, enter a currency symbol in the text box and select a position for the symbol from the drop-down box.

### *Symbol for currency*

Specifies the currency symbol 1-2-3 uses with Currency format. You can use compose sequences to enter a currency symbol.

### *Position of symbol*

Sets whether the currency symbol appears before (Prefix) or after (Suffix) the value.

4. Select OK.

The Tools User Setup dialog box is redisplayed.

5. (Optional) Select Update to store the new default settings in 123W.INI for use in future sessions.

If you don't select Update, the changes you make affect the current session only.

6. Select OK.

See also:

ALT+F1 (COMPOSE)

Range Format

Tools Commands

Tools User Setup

## Tools User Setup International Format

Sets the Long and Short Intl (international) Date formats and Time formats that appear as options in Range Format and Worksheet Global Settings Format.

1. Choose Tools User Setup.

2. Select International.

The Tools User Setup International dialog box is displayed.

3. Under Format, select a setting from the drop-down box of one or both of the following options:

### *Date*

Sets the international Date formats. You select the Long Intl Date format; 1-2-3 creates the Short Intl Date format by eliminating the year portion of your selection.

### *Time*

Sets the international Time formats. You select the Long Intl Time format; 1-2-3 creates the Short Intl Time format by eliminating the seconds portion of your selection.

4. Select OK.

The Tools User Setup dialog box is redisplayed.

5. (Optional) Select Update to store the new default settings in 123W.INI for use in future sessions.

If you don't select Update, the changes you make affect the current session only.

6. Select OK.

<b>If the Long form is</b>	<b>The Short form is</b>
12/31/90	12/31
31/12/90	31/12
31.12.90	31.12
90-12-31	12-31
23:59:59	23:59
23.59.59	23.59
23,59,59	23,59
23h59m59s	23h59m

See also:

Tools Commands  
Tools User Setup

## Tools User Setup International File Translation

Sets the way 1-2-3 reads and saves characters in Release 2 (.WK1) files and sets the character translation table that 1-2-3 uses when importing and creating text files.

1. Choose Tools User Setup.
2. Select International.

The Tools User Setup International dialog box is displayed.

3. Under File translation, select a setting from the drop-down box of one or both of the following options:

### *1-2-3 Rel 2*

Sets the way 1-2-3 for Windows reads and saves characters in Release 2 (.WK1) worksheet files (ASCII or LICS).

**Note** Select ASCII if you are reading or saving Release 2 files that were created with, or will be used with, the Universal Text Display - ASCII - No LICS text-display driver (available in Release 2.01 and later). Otherwise, select LICS.

### *Text file*

Sets the character translation table that 1-2-3 uses when importing and creating text files (Country or International).

**Note** Select Country to have 1-2-3 use the IBM character set supported for your country (for example, Code Page 437 [Extended ASCII] for the U.S.) when translating characters in text files. Select International only if you have configured your system to run the IBM Code Page 850 character set and you want 1-2-3 to translate characters using that character set.

4. Select OK.

The Tools User Setup dialog box is redisplayed.

5. (Optional) Select Update to store the new default settings in 123W.INI for use in future sessions.

If you don't select Update, the changes you make affect the current session only.

6. Select OK.

See also:

[Range Format](#)

[Saving Files in 1-2-3 Release 2 \(.WK1\) Format](#)

[Tools Commands](#)

[Tools User Setup](#)

## **Tools Macro**

Starts [macros](#), starts STEP mode and opens the Macro Trace window so you can [debug](#) a macro, and records and plays back keystrokes and mouse actions.

### Run

Starts a macro.

### Debug

Starts STEP mode and opens the Macro Trace window so you can find errors in a macro.

### Show Transcript

Opens the Transcript window so you can edit, delete, or play back recorded keystrokes and mouse actions.

See also:

[Macro Basics](#)

[Tools Commands](#)

## **Tools Macro Run**

Runs a macro.

1. Choose Tools Macro Run.
2. Select a macro from the Macro name list box, type the macro name or address in the Macro name text box, or click the first cell of the macro.

The list box displays all range names in the current file and the names of other active files.

If the macro is in another active file, select the name of that file to see the range names from that file. Then select the macro name from the list.

3. Select OK.

See also:

Running a Macro

Tools Commands

## Tools Macro Debug

Starts STEP mode and opens the Macro Trace window so you can find errors in a macro.

1. Choose Tools Macro Debug.
2. Select the check box of one or both of the following options:

*Single step*

Starts STEP mode.

*Trace*

Displays the Macro Trace window, which displays the current location and the macro instruction 1-2-3 is currently executing.

3. Select OK.

**Note** You can also press ALT+F2 (STEP) to start STEP mode.

### To End STEP Mode and Close the Macro Trace Window

1. Choose Tools Macro Debug.
2. Remove the X from Single step to end STEP mode.
3. Remove the X from Trace to close the Macro Trace window.

**Note** You can also press ALT+F2 (STEP) to end STEP mode.

See also:

[Debugging a Macro](#)

[Tools Commands](#)

## **Tools Macro Show Transcript**

Opens the Transcript window. You can use the following commands in the Transcript window:

### File

Closes the Transcript window or ends 1-2-3 for Windows session.

### Edit

Deletes, cuts, or copies recorded keystrokes in the Transcript window, or pastes the contents of the Clipboard to the Transcript window.

### Macro

Runs keystrokes from the Transcript window as a macro, controls macro recording, helps you debug macros, and sets the behavior of the Transcript window during macro execution.

### Window

Tiles or cascades windows and lists open windows.

### Help

Provides access to broad categories of 1-2-3 for Windows Help topics.

See also:

Tools Commands

Using the Transcript Window



## **File Commands (Transcript Window)**

Close the Transcript window or end the 1-2-3 for Windows session.

### Close

Closes the Transcript window.

### Exit

Ends the 1-2-3 for Windows session.

See also:

Tools Commands

Tools Macro Show Transcript

Using the Transcript Window

## **File Close (Transcript Window)**

Closes the Transcript window.

1. Choose File Close.

See also:

[Tools Commands](#)

[Tools Macro Show Transcript](#)

[Using the Transcript Window](#)

## **File Exit (Transcript Window)**

Ends the 1-2-3 for Windows session. When you end a session, 1-2-3 removes all active files from memory, but does not delete the files from disk. The 1-2-3 window closes, and the Windows Program Manager screen is redisplayed.

1. Choose File Exit.
2. If 1-2-3 indicates that active files changed and asks whether you want to save the changes, select one of the following options:

*Yes*

Saves the changes and ends the session.

*No*

Ends the session without saving the changes.

*Cancel*

Does not end the session.

See also:

[Exiting and Ending 1-2-3 for Windows](#)

[Tools Commands](#)

[Tools Macro Show Transcript](#)

[Using the Transcript Window](#)

## **File Exit (Replace/Backup/Cancel)**

Cancels or completes the File Exit (Transcript window) command when one or more files changed during the 1-2-3 for Windows session already exist on disk.

1. Select one of the following options:

*Replace*

For all changed files, replaces the data in the files on disk with the updated data.

*Backup*

For all changed files, renames the files on disk with the extension .BAK and replaces the data in the original files on disk with the updated data.

*Cancel*

Returns 1-2-3 to READY mode without updating any file on disk.

2. Select OK.

See also:

[File Commands \(Transcript Window\)](#)

[File Exit \(Transcript Window\)](#)

## **Edit Commands (Transcript Window)**

Delete, cut, or copy recorded keystrokes in the Transcript window, or paste text from the [Clipboard](#) to the Transcript window.

### Cut

Cuts selected keystrokes from the Transcript window to the Clipboard.

### Copy

Copies selected keystrokes from the Transcript window to the Clipboard.

### Paste

Copies the contents of the Clipboard to the Transcript window.

### Clear

Deletes selected keystrokes from the Transcript window without moving them to the Clipboard.

### Clear All

Deletes all keystrokes from the Transcript window without moving them to the Clipboard.

See also:

[Tools Commands](#)

[Tools Macro Show Transcript](#)

[Using the Transcript Window](#)

## **Edit Cut (Transcript Window)**

Cuts selected keystrokes from the Transcript window to the [Clipboard](#). The cut keystrokes remain on the Clipboard until you use Edit Copy or Edit Cut again.

1. Select the keystrokes to cut.
2. Choose Edit Cut, or press SHIFT+DEL.

Use [Edit Paste](#) to insert cut keystrokes in a worksheet file.

To delete keystrokes from the Transcript window without moving them to the Clipboard, use [Edit Clear](#).

See also:

[Tools Commands](#)

[Tools Macro Show Transcript](#)

[Using the Transcript Window](#)

## **Edit Copy (Transcript Window)**

Copies selected keystrokes from the Transcript window to the [Clipboard](#). The copied keystrokes remain on the Clipboard until you use Edit Cut or Edit Copy again.

1. Select the keystrokes to copy.
2. Choose Edit Copy, or press CTRL+INS.

Use [Edit Paste](#) to insert copied keystrokes in a worksheet file.

See also:

[Tools Commands](#)

[Tools Macro Show Transcript](#)

[Using the Transcript Window](#)

## **Edit Paste (Transcript Window)**

Copies the contents of the Clipboard to the Transcript window, starting at the insertion point.

1. Move the insertion point to the position at which to start pasting the Clipboard contents.
2. Choose Edit Paste, or press SHIFT+INS.

1-2-3 inserts the pasted data without writing over existing data in the window.

See also:

[Edit Copy \(Transcript Window\)](#)

[Edit Cut \(Transcript Window\)](#)

[Tools Commands](#)

[Tools Macro Show Transcript](#)

[Using the Transcript Window](#)



## **Edit Clear (Transcript Window)**

Deletes selected keystrokes from the Transcript window without moving them to the [Clipboard](#).

1. Select the keystrokes you want to delete from the Transcript window.
2. Choose Edit Clear, or press DEL.

See also:

[Edit Cut \(Transcript Window\)](#)

[Tools Commands](#)

[Tools Macro Show Transcript](#)

[Using the Transcript Window](#)

## **Edit Clear All (Transcript Window)**

Deletes all keystrokes from the Transcript window without moving them to the [Clipboard](#).

1. Choose Edit Clear All.

See also:

[Edit Cut \(Transcript Window\)](#)

[Tools Commands](#)

[Tools Macro Show Transcript](#)

[Using the Transcript Window](#)

## **Macro Commands (Transcript Window)**

Control macro recording, help you debug macros, run a macro, and set the behavior of the Transcript window during macro execution.

### Run

Plays back keystrokes from the Transcript window as a macro.

### Pause Recording

Suspends keystroke recording, but does not close the Transcript window.

### Debug

Starts STEP mode and opens the Macro Trace window so you can find errors in a macro.

### Minimize on Run

Reduces the Transcript window to an icon and makes it inactive when you play back keystrokes with Run.

See also:

[Tools Commands](#)

[Tools Macro Show Transcript](#)

[Using the Transcript Window](#)

## **Macro Run (Transcript Window)**

Plays back keystrokes from the Transcript window as a macro.

Before you open the Transcript window, make sure the cell pointer is in a location that you want the keystrokes to affect.

1. Select the keystrokes in the Transcript window to play back.
2. Choose Macro Run

See also:

Tools Commands

Tools Macro Show Transcript

Using the Transcript Window

## **Macro Pause Recording (Transcript Window)**

Suspends keystroke recording, but does not close the Transcript window.

1. Choose Macro Pause Recording.

1-2-3 stops recording keystrokes.

After you choose this command the first time, a check mark appears next to the command in the menu. The Transcript window retains the current setting for this command until you turn it off or leave 1-2-3.

To resume keystroke recording, choose Macro Pause Recording again.

See also:

[Tools Commands](#)

[Tools Macro Show Transcript](#)

[Using the Transcript Window](#)

## Macro Debug (Transcript Window)

Starts STEP and mode and opens the Macro Trace window so you can find errors in a macro.

1. Choose Macro Debug.
2. Select the check box of one or both of the following options:

*Single step*

Starts STEP mode.

*Trace*

Opens the Macro Trace window, which displays the current location and the macro instruction 1-2-3 is currently executing.

3. Select OK.

**Note** You can also press ALT+F2 (STEP) to start STEP mode.

### To End STEP Mode and Close the Macro Trace Window

1. Choose Macro Debug.
2. Remove the check from Single step to end STEP mode.
3. Remove the check from Trace to close the Macro Trace window.

**Note** You can also press ALT+F2 (STEP) to end STEP mode.

See also:

[Debugging a Macro](#)

[Tools CommandsTools Macro Show Transcript](#)

[Using the Transcript Window](#)

## Macro Minimize on Run (Transcript Window)

Reduces the Transcript window to an icon and makes it inactive when you play back keystrokes with Macro Run Go.

1. Choose Macro Minimize on Run.

After you choose this command the first time, a check mark appears next to the command in the menu. The Transcript window retains the current setting for this command until you turn it off or leave 1-2-3.

To turn off Minimize on Run, choose Macro Minimize on Run again.

To restore the Transcript window to its original size, choose Restore from the Transcript window Control menu or double-click the Transcript window icon.

**Note** If you don't use Minimize on Run, the Transcript window becomes inactive when it plays back keystrokes as a macro, but it is not reduced to an icon.

See also:

[Tools Commands](#)

[Tools Macro Show Transcript](#)

[Using the Transcript Window](#)

## **Window Commands (Transcript Window)**

Control the display of windows open in 1-2-3, and list open 1-2-3 windows.

### Tile

Sizes all open windows and places them side by side in the 1-2-3 window.

### Cascade

Sizes all open windows and arranges them in the 1-2-3 window so they appear one on top of the other, with just the title bars showing.

See also:

Tools Commands

Tools Macro Show Transcript

Using the Transcript Window



## **Tools Add-in**

Reads [add-ins](#) into memory and removes add-ins from memory.

### Load

Reads an add-in into memory.

### Remove

Removes a specified add-in from memory.

### Remove All

Removes all open add-ins from memory.

See also:

[Add-in Files](#)

[Tools Commands](#)

[Using Add-in @Functions and Macro Commands](#)

## **Tools Add-in Load**

Reads an add-in into memory.

1. Choose Tools Add-in.
2. Select Load.

The Tools Add-in Load dialog box is displayed.

3. Specify the name of the add-in you want to read into memory.

You can edit the file name in the File name text box, or you can use the Files, Directories, and Drives list boxes to select the file you want. For more information about using these list boxes, see Specifying a File.

4. Select OK.

If the add-in contains an application, the name of the application appears in the Tools pulldown menu.

See also:

[Tools Add-in](#)

[Tools Commands](#)

## **Tools Add-in Remove**

Removes a specified add-in from memory.

1. Choose Tools Add-in.
2. Specify the add-in to remove in the Add-ins list box.
3. Select Remove.

Any formulas that contain @functions from a closed add-in file evaluate to ERR.

See also:

Tools Add-in

Tools Commands

## **Tools Add-in Remove All**

Removes all add-ins from memory.

1. Choose Tools Add-in.
3. Select Remove All.

Any formulas that contain @functions from a closed add-in file evaluate to ERR.

See also:

[Tools Add-in](#)

[Tools Commands](#)

## **Add-in Files**

1-2-3 add-in files can contain add-in applications, @functions, or macro commands.

### Add-in applications

Perform a specific task in 1-2-3. For example, an application in the add-in file MYFORM.ADW is called MYFORM.

### Add-in @functions

Work like the 1-2-3 @functions. You use add-in @functions in formulas in 1-2-3 just as you use 1-2-3 @functions.

### Add-in macro commands

Work like the 1-2-3 macro commands. You use add-in macro commands in macros just as you use 1-2-3 macro commands.

Each add-in file can contain any combination of @functions, macro commands, and an application.

See also:

[Tools Add-in](#)

[Using Add-in @Functions and Macro Commands](#)

## Using Add-in @Functions and Macro Commands

You use add-in @functions and macro commands just as you use 1-2-3 @functions and macro commands.

### Add-in @Function Format

Add-in @functions have the same format as any 1-2-3 @function:

**@FUNCTION**

or

**@FUNCTION(*arg1, arg2, ..., argn*)**

**@FUNCTION** represents the name of the @function. It tells 1-2-3 which calculation to perform.

***arg1, arg2, ..., argn*** represent arguments. Arguments supply the information 1-2-3 needs to complete the @function calculation. For example, when 1-2-3 encounters the function @SUM(B4..B25), the argument B4..B25 tells 1-2-3 to add the values in the range B4..B25.

### File References in Add-in @Functions

When you use an add-in @function, 1-2-3 automatically adds the name of the add-in file to the @function name.

For example, when you use the @function @MEDIAN from the file STATS.ADW, 1-2-3 displays the @function as @<<STATS>>MEDIAN.

However, if you use an add-in @function that has the same name as a 1-2-3 @function or an @function in another add-in file, you must precede the @function with the name of its add-in file enclosed in << >> (double angle brackets). If you do not, 1-2-3 may not choose the intended @function.

If you use more than one @function with the same name and do not precede the @function with a file name, 1-2-3 chooses the 1-2-3 @function with that name, if there is one, or the @function from the last add-in file you read into memory that contains that @function name.

### Add-in Macro Command Format

Add-in macro commands have the same format as any 1-2-3 macro command:

**{KEYWORD}**

or

**{KEYWORD *arg1, arg2, ..., argn*}**

**KEYWORD** represents the verb in the macro command. It tells 1-2-3 which action to perform.

***arg1, arg2, ..., argn*** represent arguments. Arguments supply the information 1-2-3 needs to complete the command.

### File References in Add-in Macro Commands

When you use an add-in macro command, 1-2-3 automatically adds the name of the add-in file to the macro command.

For example, when you use the macro command SAVE from the file SAVEMAC.ADW, 1-2-3 displays the macro command as <<SAVEMAC>>{SAVE *file*}.

However, if you use an add-in macro command that has the same name as a 1-2-3 macro

command or a macro command in another add-in file, you must precede the command with the name of its add-in file enclosed in << >> (double angle brackets). If you do not, 1-2-3 may not choose the intended macro command.

If you use more than one macro command with the same name and do not precede the command with a file name, 1-2-3 chooses the 1-2-3 macro command with that name, if there is one, or the macro command from the last add-in file you read into memory that contains that command name.

See also:

[@Function Basics](#)

[Macro Basics](#)

[Tools Add-in](#)

## **Solver Help Overview**

This overview lists Help topics related to the Solver.

### **Creating a Worksheet Model**

[Solver Basics](#)

[Setting Up a Solver Problem](#)

[Modifying a Solver Problem](#)

[@Functions in Solver Problems](#)

### **Solving a Problem**

[Solver Definition](#)

[Solver Progress](#)

[Solver Guess](#)

### **Viewing and Saving Solver Results**

[Solver Answer](#)

[Solver Report](#)

[Roundoff Messages in the Solver](#)

[Saving Solver Answers and Attempts](#)

[Saving a Solver Table Report](#)

[Restoring Original Values After Using the Solver](#)

### **Sample Worksheet Models**

Included with 1-2-3 for Windows are the following sample worksheet files, which you can use with the Solver:

- \* INVEST.WK3 contains a model for structuring an investment portfolio.
- \* PRODUCT.WK3 contains a model for planning production levels.
- \* SALES.WK3 contains a model for examining sales quotas.

The Install program transferred these files to the subdirectory SAMPLE in your 1-2-3 program directory. (If you are using the network version of 1-2-3, SAMPLE is a subdirectory in your personal directory. See your network administrator for more information.) [Chapters 2, 3, and 4](#) of the *Solver Guide* explain how to use the sample worksheet models.



## Solver Basics

The Solver analyzes data in a worksheet and shows you a variety of possible answers to a problem you define. An answer satisfies constraints you specify. You can start with any worksheet model that contains logical formulas and values you want to experiment with.

### The Worksheet Model

A simple worksheet model for profits and expenses can be represented by two formulas, one for profits (+SALES-EXPENSES) and one for expenses (+COMMISSION\*SALES). You can use the Solver to find answers for the problem of how to maximize profits given different values for SALES, EXPENSES, and COMMISSION.

You must specify two kinds of information to the Solver before it can find answers:

- \* Cells that may be adjusted. Examples of adjustable cells are SALES and COMMISSION.
- \* Cells containing logical formulas that are constraints for the problem. Examples of constraint formulas are +SALES<=250000, or +COMMISSION>=0.10. Each constraint should depend directly or indirectly on the value of one or more adjustable cells.

In addition, the Solver can find the maximum or minimum value for a single cell, called the optimal cell. Some problems do not require an optimization of this kind, so an optimal cell is optional. In the example above, you want to find the value that gives you the highest profit, so you specify the cell containing +SALES-EXPENSES as the optimal cell.

For more information about creating a worksheet model for the Solver, see Setting Up a Solver Problem or see the sample worksheet models provided with 1-2-3: SALES.WK3, PRODUCT.WK3, and INVEST.WK3.

The Install program transferred these files to the subdirectory SAMPLE in your 1-2-3 program directory. (If you are using the network version of 1-2-3, SAMPLE is a subdirectory in your personal directory. See your network administrator for more information.) Chapters 2, 3, and 4 of the *Solver Guide* explain how to use the sample worksheet models.

### Working with the Solver

When solving, the Solver finds sets of values for the adjustable cells that satisfy each of the constraints. Each set of such values is an answer. In the example above, the Solver adjusts the cells called SALES and COMMISSION to maximize profits and find other representative answers.

You work with the Solver through a series of dialog boxes, one dialog box leading to the next at each step of the procedure.

#### Solver Definition

Defines the problem for the Solver. You supply the addresses of adjustable and constraint cells, and an optional optimal cell.

#### Solver Progress

Shows the Solver's progress in analyzing and solving the problem.

#### Solver Answer

Shows the number of answers or attempts the Solver found and instructs the Solver to display the different solutions in the worksheet.

#### Solver Report

Displays information about answers or attempts the Solver found.

#### Solver Guess

Asks you to specify new values for adjustable cells if the Solver did not find answers to the problem as you defined it. The Solver uses these new values to try to find an answer to the

problem.

See also:

[Solver Help Overview](#)  
[Tools Commands](#)

## Solver Definition

Defines the problem for the Solver. Before you define the problem here, you must set up the problem in a worksheet.

1. Open the worksheet file that contains the problem you want to solve.

2. Choose Tools Solver.

The Solver Definition dialog box is displayed, with the name of the current worksheet file.

3. In the Adjustable cells text box, specify the addresses or range names of the cells containing values that the Solver can change.

Separate each address or range name with a valid argument separator.

4. In the Constraint cells text box, specify the addresses or range names of the cells containing the logical formulas that each answer must satisfy.

5. (Optional) In the Optimal cell text box, specify the address or range name of the cell for which you want the Solver to find the highest or lowest value.

The optimal cell must depend directly or indirectly on the value of one or more adjustable cells.

Select one of the following options:

*Max*

Finds the highest value for the optimal cell.

*Min*

Finds the lowest value for the optimal cell.

6. (Optional) Select Options to specify the number of answers you want the Solver to find. If you do not specify otherwise, the Solver will automatically find up to ten answers.

7. Select Solve.

**Note** The more complex the problem, the more time the Solver may need to solve it. Increasing the number of adjustable and/or constraint cells typically increases the number of answers the Solver will find and the time required to find all answers. You cannot do other tasks in 1-2-3 while the Solver is solving, so you may want to choose a time for solving when you do not need to do other work in 1-2-3.

The Solver displays the Solver Progress dialog box while it analyzes the problem and looks for answers. When the Solver finishes solving, it displays the Solver Answer dialog box.

See also:

Modifying a Problem

Solver Basics

Solver Help Overview

Tools Commands

## **Solver Options**

Specifies the number of answers you want the Solver to find.

1. In the Number of answers text box, enter a number between 1 and 999.

The number you specify is an estimate; the Solver may find fewer or more answers than you request.

2. Select OK.

The Solver Definition dialog box is redisplayed.

See also:

Solver Basics

## Solver Progress

Informs you of the Solver's progress in solving the problem and lets you cancel solving.

**Note** The more complex the problem, the more time the Solver may need to solve it. Increasing the number of adjustable and/or constraint cells typically increases the number of answers the Solver will find and the time required to find all answers. You cannot do other tasks in 1-2-3 while the Solver is solving, so you may want to choose a time for solving when you do not need to do other work in 1-2-3.

### To Cancel Solving

1. Select Cancel or press CTRL+BREAK to stop the Solver.

If the Solver has found one or more answers or attempts when you select Cancel, it displays the Solver Answer dialog box. If the Solver has not found any answers or attempts, it redisplays the Solver Definition dialog box.

### Progress Messages

#### Analyzing Problem

Indicates that the Solver is examining the worksheet to locate the values, formulas, and other information it needs to solve the problem.

#### Searching for Answer #

Displays which answer the Solver is looking for.

#### Elapsed Time

Displays the time elapsed since the Solver began to search for answers.

#### % Complete

Displays the percent complete (0-100%), representing the Solver's progress.

The Solver may find more than one answer to a problem. It stops searching for answers when it reaches the limit you specified in Solver Options, or when it finds all of the answers that satisfy the constraints.

The Solver displays the Solver Answer dialog box when it finishes solving.

See also:

[Solver Basics](#)

## Solver Answer

Provides information about the answers or attempts the Solver finds and displays the answers or attempts in the worksheet. You can scroll through the answers or attempts displayed in the worksheet, see a report, tell the Solver to look for more answers, or specify guess values.

### To View Answers

The Solver numbers the answers and then displays the first answer in the worksheet. If you specified an optimal cell, the first answer the Solver displays is always the optimal answer or the best answer found.

The information boxes display the number of the answer and what type of answer it is: "Optimal Answer" when the Solver finds the mathematical optimum; "Best Answer Found" when it is possible that there may be better results; and "Sample Answer #" for other answers the Solver found. The information box may also display a roundoff message.

1. To scroll through answers in the worksheet, select one of the following:

#### *Next*

Displays the next answer by changing the values in adjustable cells and cells containing dependent formulas.

#### *First*

Displays the optimal answer (if any) or the first answer by changing the values in adjustable cells and cells containing dependent formulas.

#### *Original*

Displays the values that were in the worksheet before you ran the Solver.

2. To search for more answers, select Solve.

The number of answers the Solver finds is equal to or less than the value you specified in the Solver Options dialog box. If there are no more answers when you select Solve, the Solver displays a message.

3. To display report information for the answers, select Report.

The Solver Report dialog box is displayed.

### To View Attempts

If the Solver cannot find answers to a problem, it produces attempts that satisfy some but not all constraints. The Solver numbers the attempts and displays the first attempt in the worksheet.

The information box displays "Inconsistent" for each attempt to remind you that there is at least one inconsistent constraint. If the Solver can pursue an attempt and possibly return an answer, the information box displays "Guesses required." If guesses are required, the Guess command button replaces the Solve command button.

1. To scroll through attempts in the worksheet, select one of the following:

#### *Next*

Displays the next attempt by changing the values in adjustable cells and cells containing dependent formulas.

#### *First*

Displays the first attempt in the sequence of attempts by changing the values in adjustable cells and cells containing dependent formulas.

#### *Original*

Displays the values that were in the worksheet before you ran the Solver.

2. To specify guess values for an attempt showing "Guesses required," select Guess.  
The Solver Guess dialog box is displayed.
3. To display report information for the attempts, select Report.  
The Solver Report dialog box is displayed.

See also:

[Saving Solver Answers and Attempts](#)

[Solver Basics](#)

[Solver Definition](#)

## **Solver Guess**

Prompts you to supply guess values for adjustable cells and uses these values to try to find an answer.

The Solver Guess dialog box displays the following information:

### Cell

Displays the cell address and name of the current adjustable cell that requires a guess value. For the cell name, the Solver uses either the range name, if it has one, or the labels to the left and above the cell.

### Initial guess

Displays the value you entered for the cell before you last solved the problem.

### Current value

Displays the value for the current attempt.

## **To Specify Guess Values**

1. In the Solver Answer dialog box, select Next until the attempt that most closely approximates a reasonable solution to the problem is displayed in the worksheet. The attempt you display must be an attempt for which the message "Requires guesses" appears.
2. Select Guess.  
The Solver Guess dialog box is displayed.
3. Accept the value provided in the New guess text box, or enter a new value for the current adjustable cell.
4. Select Next to move to the next adjustable cell that requires a guess value.
5. After entering all guess values, select Solve.

The Solver tries to solve the problem using the new guess values. The Solver looks for a single answer, not the number of answers specified in the Solver Options dialog box. If the Solver is successful, it discards all other attempts it previously found, displays the Solver Answer dialog box, and places the answer in the worksheet.

See also:

[Solver Basics](#)  
[Solver Definition](#)  
[Solver Progress](#)



## **Solver Report**

Displays options for reporting information about answers and attempts the Solver found. The Solver can create the following reports:

### Answer table

Lists all the answers or attempts the Solver found for a problem. The report includes the values of all the adjustable cells, the optimal cell (if any), and any other cells used to solve the problem.

### Cells used

Lists the adjustable, constraint, and optimal cells the Solver used to solve the problem.

### Differences

Compares two answers (or two attempts) and reports cells used whose values differ by at least the amount you specify.

### How solved

Lists the information the Solver used to find an answer or attempt.

### Inconsistent constraints

Lists the constraint cells that were not satisfied (returned a value of 0) for the current attempt.

### Unused constraints

Lists the constraint cells the Solver did not use to find the current answer or attempt.

### What-if limits

Lists the amount the adjustable cells can change and still satisfy all the constraints for the current answer.

See also:

[Saving a Solver Table Report](#)

[Solver Basics](#)

[Solver Definition](#)

## **Solver Report: Answer Table**

Creates a worksheet file that contains a Solver Table Report of all the answers or attempts the Solver found for a problem. The Solver gives the file a unique name beginning with ANSWER (for example, ANSWER01.WK3).

The report lists

- \* Highest and lowest values across all answers or attempts for all cells in the problem (except constraint cells)
- \* The value for the optimal cell (if specified) for each answer or attempt
- \* The values for the adjustable cells for each answer or attempt
- \* The values for all other cells, called supporting formula cells, that contain values or formulas required to compute the value of the optimal cell or one or more constraint cells

The Answer table report is available in table format only.

1. Select Report in the Solver Answer dialog box.

The Solver Report dialog box is displayed.

2. Under Type, select Answer table.
3. Under Format, select Table.
4. Select OK.

The Solver creates a new worksheet file containing a Solver Table Report.

See also:

[Saving a Solver Table Report](#)

[Saving Solver Answers and Attempts](#)

[Solver Basics](#)

[Solver Definition](#)

## Solver Report: Cells Used

Lists the adjustable and constraint cells, and the optimal cell (if any) the Solver used to solve the problem.

1. Select Report in the Solver Answer dialog box.

The Solver Report dialog box is displayed.

2. Under Type, select Cells used.

3. Under Format, select one of the following:

### *Cell*

Displays, one at a time, information about each adjustable and constraint cell, and the optimal cell (if any). The report is displayed in a Solver Cell Report dialog box.

### *Table*

Creates a Solver Table Report in a new worksheet file. The Solver gives the file a unique name beginning with CELLS (for example, CELLS001.WK3). The Solver Table Report lists all adjustable and constraint cells, the optimal cell (if any), and their names. For the cell name, the Solver uses either the range name, if it has one, or the labels to the left and above the cell.

4. Select OK.

The Solver displays the report in the format you selected.

See also:

[Saving a Solver Table Report](#)

[Solver Basics](#)

[Solver Definition](#)

## Solver Report: Differences

Compares the values found for a cell in two answers or two attempts and calculates the difference between the values.

To produce the Differences report, you must enter the number the Solver assigned to each answer or attempt. You can use the [Answer table](#) report to list these numbers.

1. Select Report in the [Solver Answer](#) dialog box.

The [Solver Report](#) dialog box is displayed.

2. Under Type, select Differences.

3. Under Format, select one of the following:

### *Cell*

Displays, one at a time, the amount and percentage by which the two answers or attempts differ for each cell used to solve the problem. The report is displayed in a [Solver Cell Report](#) dialog box.

### *Table*

Creates a Solver Table Report in a new worksheet file. The Solver gives the file a unique name beginning with DIFFS (for example, DIFFS001.WK3). The Solver Table Report lists the amount and percentage by which the two answers or attempts differ for each cell used to solve the problem.

4. Select OK.

The [Solver Report Differences](#) dialog box is displayed.

See also:

[Saving a Solver Table Report](#)

[Solver Basics](#)

[Solver Definition](#)

## **Solver Report Differences**

Specifies the numbers the Solver assigned to the two answers or attempts you want the Solver to compare, and the value for the comparison. You can use the [Answer table](#) report to list the numbers the Solver assigned.

1. In the Compare answers [text boxes](#), enter the numbers the Solver assigned to the two answers or attempts you want to compare.
2. In the For differences  $\geq$  text box, enter the number to use for the comparison value.  
For example, enter 25 to compare answers that differ by \$25.
3. Select OK.

The Solver displays the report in the format you selected in the [Solver Report](#) dialog box.

See also:

[Solver Basics](#)

[Solver Definition](#)

## **Solver Report: How Solved**

Creates a worksheet file that contains information about the currently displayed answer or attempt. The Solver gives the file a unique name beginning with HOW (for example, HOW00001.WK3).

The report lists the following for the current answer or attempt:

- \* The optimal cell (if any) and its value
- \* All adjustable cells and their values
- \* All binding constraints
- \* All unused constraints
- \* All inconsistent constraints (for attempts only)
- \* All cells that require guess values (for attempts that require guesses only)

The How solved report is available in table format only.

1. Select Report in the Solver Answer dialog box.

The Solver Report dialog box is displayed.

2. Under Type, select How solved.
3. Under Format, select Table.
4. Select OK.

The Solver creates a new worksheet file containing a Solver Table Report.

See also:

[Saving a Solver Table Report](#)  
[Solver Basics](#)  
[Solver Definition](#)

## **Solver Report: Inconsistent Constraints**

Lists the cells that contain inconsistent constraints for the current attempt. For each inconsistent constraint, the Solver also displays a revised logical formula that would return 1 (true).

1. Select Report in the Solver Answer dialog box.

The Solver Report dialog box is displayed.

2. Under Type, select Inconsistent constraints.

3. Under Format, select one of the following:

### *Cell*

Displays, one at a time, each inconsistent constraint found and the suggested revision of the formula in a Solver Cell Report dialog box.

### *Table*

Creates a Solver Table Report in a new worksheet file. The Solver gives the file a unique name beginning with INCONS (for example, INCONS01.WK3). The Solver Table Report lists all inconsistent constraints found and the suggested revisions of the formulas.

4. Select OK.

The Solver displays the report in the format you selected.

See also:

[Saving a Solver Table Report](#)

[Solver Basics](#)

[Solver Definition](#)

## Solver Report: Unused Constraints

Lists constraints the Solver did not use when finding the current answer or attempt and suggests a revision of the formula that would make it binding for the answer.

The Solver did not use the constraints because other constraint cells were more restrictive for the current answer or attempt. For example, if the problem has two constraints,  $+B1 \geq 10$  and  $+B1 \geq 12$ , the Solver uses only the second constraint.

For each unused constraint, the Solver reports how to change the logical formula so the constraint would become binding for the answer.

1. Select Report in the Solver Answer dialog box.

The Solver Report dialog box is displayed.

2. Under Type, select Unused constraints.

3. Under Format, select one of the following:

### *Cell*

Displays, one at a time, each unused constraint found and the suggested revision of the formula. The report appears in a Solver Cell Report dialog box.

### *Table*

Creates a Solver Table Report in a new worksheet file. The Solver gives the file a unique name beginning with UNUSED (for example, UNUSED01.WK3). The Solver Table Report lists all unused constraints found and the suggested revisions of the formulas.

4. Select OK.

The Solver displays the report in the format you selected.

See also:

[Saving a Solver Table Report](#)

[Solver Basics](#)

[Solver Definition](#)



## **Solver Report: What-if Limits**

Lists a range of the possible values an adjustable cell can have in the current answer and still satisfy all the constraints.

1. Select Report in the Solver Answer dialog box.

The Solver Report dialog box is displayed.

2. Under Type, select What-if limits.

3. Under Format, select one of the following:

### *Cell*

Displays, one at a time, the values for each adjustable cell in a Solver Cell Report. The report displays the highest and lowest values for the adjustable cell for all the answers, and the approximate range of values for the adjustable cell that would satisfy all the constraints for this answer, assuming no other adjustable cell values are changed.

### *Table*

Creates a Solver Table Report in a new worksheet file. The Solver gives the file a unique name beginning with LIMITS (for example, LIMITS01.WK3). The Solver Table Report displays the highest and lowest values for each adjustable cell for all the answers, and the approximate range of values for each adjustable cell that would satisfy all the constraints, assuming no other adjustable cell values are changed.

4. Select OK.

The Solver displays the report in the format you selected.

See also:

[Saving a Solver Table Report](#)

[Solver Basics](#)

[Solver Definition](#)

## **Solver Cell Report**

Displays the report information you requested in the [Solver Report](#) dialog box for each cell in the problem one at a time.

1. Select Next to display information about the next cell in the problem.
2. Select Cancel to return to the Solver Report dialog box.

See also:

[Solver Basics](#)

[Solver Definition](#)

## Roundoff Messages in the Solver

When "Roundoff error" or "Minor roundoff" appears in the Solver Answer dialog box, the Solver has found an answer, but one of the following conditions pertains to the current answer:

- \* One or more constraint cells return 0 (false) after rounding off the constraint to 5 decimal places (for "Roundoff error") or 16 decimal places (for "Minor roundoff"). In most cases, roundoff errors of this magnitude should not affect how you use the answer that the Solver found.
- \* A mathematically valid Solver answer recalculates to ERR when displayed in the worksheet. For example, the Solver can find both negative and positive values that satisfy odd-powered roots, but the worksheet only recognizes the positive values and displays ERR when the negative value is displayed in the worksheet.
- \* Tools User Setup Recalculation is set to either Columnwise or Rowwise. Reset the recalculation order to Natural and solve the problem again.

You can use the Inconsistent constraints report to see which constraint cells the message "Roundoff error" refers to.

See also:

[Solver Basics](#)  
[Solver Definition](#)

## Setting Up a Solver Problem

Before the Solver can solve a problem, you must set up the problem in a worksheet.

1. Build a worksheet model to describe a problem that you want to solve.

For example, a problem may involve an income worksheet model that lists, among other things, sales, various types of expenses, and net income. You want to see the effects of changes in sales and advertising expenses on your income statement.

2. Determine which cells contain values that the Solver may change when finding answers to the problem. The cells that contain these values are the adjustable cells.

For example, you can adjust the value in the cells named SALES and ADVERTEXP.

3. Determine the requirements you want each Solver answer to satisfy. These requirements become the constraints for the problem.

For example, you know that sales will probably not increase more than 15%. You specify 15% as the limit for the sales increase.

4. Create a series of logical formulas in the worksheet that describe the requirements. The cells that contain these formulas are the Solver constraint cells.

For example,  $+SALES\_YR2 \geq 0$  and  $+SALES\_YR2 \leq SALES\_YR1 * 1.15$ .

5. (Optional) Determine the single cell for which you want the Solver to find the highest or lowest value it can. This is the optimal cell.

For example, you want to see the maximum value for the cell named INCOME.

6. Choose Tools Solver to display the Solver Definition dialog box and specify the addresses or range names of the adjustable cells, constraint cells, and the optimal cell (if any).

Included with 1-2-3 for Windows are three sample worksheet models that you can use with the Solver: SALES.WK3, PRODUCT.WK3, and INVEST.WK3.

The Install program transferred these files to the subdirectory SAMPLE in your 1-2-3 program directory. (If you are using the network version of 1-2-3, SAMPLE is a subdirectory in your personal directory. See your network administrator for more information.) [Chapters 2, 3, and 4](#) of the *Solver Guide* explain how to use the sample worksheet models.

See also:

[@Functions in Solver Problems](#)

[Modifying a Solver Problem](#)

[Solver Basics](#)

[Solver Definition](#)

[Solver Help Overview](#)

## Modifying a Solver Problem

After you view [answers](#) or [attempts](#), you may want to modify the problem.

**Caution** When you make changes that cause 1-2-3 to recalculate a worksheet file containing the Solver problem, the Solver discards all answers or attempts it found and cannot reset the worksheet when you select Original in the [Solver Answer](#) dialog box. If you want to save the current Solver answer, use [File Save As](#) to save the worksheet file under another name. Do this for as many answers as you want to save.

1. Make the worksheet containing the model you want to modify current.
2. Make changes to the worksheet as necessary.
3. Choose Tools Solver.

The Solver displays the [Solver Definition](#) dialog box.

4. As necessary, add or modify the cell addresses in the Adjustable cells, Constraint cells, and Optimal cell [text boxes](#).
5. Select Solve.

The Solver displays the [Solver Progress](#) dialog box while it analyzes and solves the problem, and displays the [Solver Answer](#) dialog box when it finishes.

See also:

[Restoring Original Values After Using the Solver](#)

[Setting Up a Solver Problem](#)

[Solver Basics](#)

[Solver Definition](#)

## **Saving Solver Answers and Attempts**

You can save one of the Solver answers or attempts in the worksheet model, or you can save all answers or attempts in a Solver Table Report.

### **To Save Answers or Attempts in the Worksheet Model**

1. Display the answer or attempt to save in the worksheet by pressing Next in the Solver Answer dialog box.
2. Make the worksheet file containing the answer or attempt current.
3. Choose File Save As.
4. Accept the current worksheet file name or enter a new name in the File name text box.
5. Select OK.

### **To Save All Answers or Attempts**

1. Select Report in the Solver Answer dialog box.

The Solver Report dialog box is displayed.

2. Under Type, select Answer table.
3. Under Format, select Table.
4. Select OK.

The Solver creates a worksheet file containing a Solver Table Report of all the answers the Solver found for the problem. The Solver gives the file a unique name beginning with ANSWER (for example, ANSWER01.WK3).

5. Make the worksheet file containing the Solver Table Report current.
6. Choose File Save As.
7. Accept the current worksheet file name or enter a new name in the File name text box.
8. Select OK.

See also:

[Restoring Original Values After Using the Solver](#)  
[Solver Basics](#)  
[Solver Definition](#)

## **Saving a Solver Table Report**

A Solver Table Report appears in a worksheet file that the Solver creates. A worksheet file containing a Solver Table Report is like any other 1-2-3 worksheet file. You can print, graph, or edit the data it contains, or you can save the file for later use.

1. If necessary, select Cancel one or more times to close the Solver dialog boxes.
2. Make the worksheet containing the Solver Table Report the current worksheet.
3. Choose File Save As.
4. Accept the current worksheet file name or enter a new name in the File name text box.
5. Select OK.

See also:

Solver Basics  
Solver Definition  
Solver Report

## Restoring Original Values After Using the Solver

You can restore values that were in the worksheet before you last solved the problem.

1. Select Original in the Solver Answer dialog box.

**Caution** If you make changes that cause 1-2-3 to recalculate the worksheet file containing the Solver problem, the Solver discards all answers or attempts it found and cannot reset the worksheet when you select Original.

See also:

[Solver Basics](#)

[Solver Definition](#)



## **@Functions in Solver Problems**

The list below shows @functions you can always use in a formula in any Solver problem.

In addition, the Solver can solve problems containing formulas that use any other 1-2-3 for Windows @function, as long as that @function is not used to compute the result of a constraint cell or the optimal cell.

@Functions the Solver cannot use include @functions with *string* arguments, date and time @functions, database @functions, string @functions, and some special @functions.

If you are unsure whether a problem you define contains @functions the Solver cannot use, try solving the problem anyway. If the Solver detects an @function it cannot use, it displays a message indicating which cell contains the @function.

<u>@ABS</u>	<u>@MOD</u>
<u>@ACOS</u>	<u>@NPV</u>
<u>@ASIN</u>	<u>@PI</u>
<u>@ATAN</u>	<u>@PMT</u>
<u>@ATAN2</u>	<u>@PV</u>
<u>@AVG</u>	<u>@RATE</u>
<u>@CHOOSE</u>	<u>@ROUND</u>
<u>@COLS</u>	<u>@ROWS</u>
<u>@COS</u>	<u>@SHEETS</u>
<u>@COUNT</u>	<u>@SIN</u>
<u>@CTERM</u>	<u>@SLN</u>
<u>@DDB</u>	<u>@SQRT</u>
<u>@EXP</u>	<u>@STD</u>
<u>@FALSE</u>	<u>@STDS</u>
<u>@FV</u>	<u>@SUM</u>
<u>@HLOOKUP</u>	<u>@SUMPRODUCT</u>
<u>@IF</u>	<u>@SYD</u>
<u>@INDEX</u>	<u>@TAN</u>
<u>@INT</u>	<u>@TERM</u>
<u>@IRR</u>	<u>@TRUE</u>
<u>@ISNUMBER</u>	<u>@VAR</u>
<u>@LN</u>	<u>@VARS</u>
<u>@LOG</u>	<u>@VDB</u>
<u>@MAX</u>	<u>@VLOOKUP</u>
<u>@MIN</u>	

See also:

@Function Basics  
Setting Up a Solver Problem

Solver Basics  
Solver Definition

## Tools Backsolver

Finds a value for one cell that makes the result of a formula equal to a value you specify.

**Caution** Backsolver replaces the current value of one cell with the solved value, so you may want to save the worksheet before using the Backsolver or use [Edit Undo](#) to restore the original value in the worksheet.

1. Make the worksheet containing the problem you want to solve current.
2. Determine the formula for which you want to find a specific value. The cell containing the formula will be the Make cell.
3. Decide on the desired result value for the formula. This will be the Equal to value.
4. Determine the cell containing the value that the Backsolver can change. This will be the value for the By changing cell. The formula contained in the Make cell must depend directly or indirectly on the By changing cell; that is, when the value in the By changing cell changes, the result of the formula in the Make cell also changes.
5. Choose Tools Backsolver.
6. Enter the address of the cell containing the formula in the Make cell text box.
7. Enter the desired value for the formula in the Equal to value text box. The value must be a number or a formula that evaluates to a number.
8. Enter the address of the cell containing the value to be changed in the By changing cell text box.
9. Select Solve.

The Backsolver replaces the value in the By changing cell with the value that causes the Make cell to evaluate to the Equal to value.

### Example

[Backsolver](#)

See also:

[Solver Help Overview](#)  
[Tools Commands](#)

## Example: Backsolver

A worksheet has the following values and formulas, which calculate information about monthly mortgage payments on a house:

	A	B
1	House price	130,000
2	Down payment	26,000
3	Loan amount	104,000
4	Interest rate	12%
5	Term of loan (yrs.)	30
6	Monthly payment	1,069.76

Cell B2 contains the formula  $+B1*0.2$ .

Cell B3 contains the formula  $+B1-B2$ .

Cell B6 contains the @PMT formula  $@PMT(B3,B4/12,B5*12)$ .

The worksheet shows a purchase price of \$130,000 and a down payment of 20%. At an interest rate of 12% and a term of 30 years, the mortgage payment is \$1,069.76 per month.

Suppose you can afford a higher monthly payment -- \$1,250 for example. Using the Backsolver, you can find the loan amount that results in the monthly payment you want.

1. Choose Tools Backsolver.
2. Specify the following:

Make cell            B6  
Equal to value    1250  
By changing cell   B1

**Note** The formula in B6 does not use B1; it uses B3, which contains a reference to B1. The Backsolver can trace through multiple formulas when solving.

3. Select Solve.

Cell B1 contains the new house price: \$151,903.64. The Backsolver also adjusts cells that refer to B1, namely B2 and B3. The worksheet shows the following values:

	A	B
1	House price	151,903.64
2	Down payment	30,380.73
3	Loan amount	121,522.91
4	Interest rate	12%
5	Term of loan (yrs.)	30
6	Monthly payment	1,250.00

See also:

[Solver Help Overview](#)  
[Tools Backsolver](#)  
[Tools Commands](#)

## Window Split

 [Moving a Range of Data \(1:10\)](#)

 [Moving a Range of Data \(1:10\)](#)

Divides a Worksheet window horizontally or vertically into two panes, or displays three contiguous worksheets in perspective view.

1. Position the cell pointer in the row or column at which you want to split the window.
2. Choose Window Split.
3. Under Type, select one of the following options:
  - Horizontal*  
Creates two panes divided by the current row.
  - Vertical*  
Creates two panes divided by the current column.
  - Perspective*  
Displays the same area of three contiguous worksheets.
  - Clear*  
Turns off a horizontal, vertical, or perspective view and restores full worksheet display.
4. (Optional) Select the Synchronize check box to cause views to scroll together.
5. Select OK.

1-2-3 saves a file's window settings when you save the file. When you read the file into memory, 1-2-3 displays the file using the window settings saved for the file.



### Dividing a Window into Panes

You can use the mouse to divide a window horizontally or vertically into panes. To divide a window horizontally, move the mouse pointer to the horizontal splitter at the top of the right scroll bar. When the shape of the mouse pointer changes to a black two-headed vertical arrow, drag the mouse pointer to the row at which you want to horizontally divide the window.

To divide a window vertically, move the mouse pointer to the vertical splitter at the far left of the bottom scroll bar. When the shape of the mouse pointer changes to a black two-headed horizontal arrow, drag the mouse pointer to the column at which you want to vertically divide the window.

### Working in Panes

- \* To move the cell pointer between panes using the keyboard, press F6 (PANE) in READY or POINT mode.
- \* To move the cell pointer between panes using the mouse, click a cell in the pane you want to move to.
- \* To expand a pane to the full size of the window, press ALT+F6 (ZOOM). Press ALT+F6 (ZOOM) again to return a pane to its original size.
- \* When you create horizontal or vertical panes, you can change the column widths, hidden and displayed columns, and worksheet titles in one pane independently of the other.
- \* When you clear a horizontal or vertical view, 1-2-3 uses the settings from the top or left pane.

### Working in Perspective View

- \* To move between worksheets in perspective view, press F6 (PANE)

\* To move the previous or next worksheet into view, press CTRL+PG UP or CTRL+PG DN.

See also:

[Window Commands](#)

## Window Display Options



[About the Appearance of Data \(3:25\)](#)

Controls display settings for the current 1-2-3 session and, optionally, makes the settings the default settings for all active files. The settings of the most recently opened file become the display settings for all other active files during the 1-2-3 session.

### Colors

Assigns colors to worksheet frame, cell background, cell contents, negative values, drop shadows, grid lines, range borders, cell pointer, highlighted ranges, and unprotected cells.

### Options

Specifies whether the worksheet appears with page breaks, in draft or graphic display, in monochrome or color display, and with grid lines.

### Zoom

Changes the display size of worksheet cells.

### Frame

Hides or changes the appearance of the 1-2-3 worksheet frame.

### Palette

Sets the colors or shades of gray that can be used for displaying and printing worksheets and graphs.

### Update

Makes the current Colors, Options, Zoom, Frame, and Palette settings the default settings for all active files.

### Restore

Replaces the currently selected Colors, Options, Zoom, Frame, and Palette settings with the default settings that belong to the current file.

See also:

[Window Commands](#)

## Window Display Options Colors



[About the Appearance of Data \(3:25\)](#)

Assigns colors from the worksheet palette (set through [Window Display Options Palette](#)) to grid lines, cells, and other parts of the worksheet in all [active files](#). These colors are visible when a worksheet is displayed or printed on a color printer.

1. Choose Window Display Options.
2. Under Colors, select the [drop-down box](#) of one of the following options:

*Worksheet frame*

Sets the color for the [worksheet frame](#).

*Cell background*

Sets the color for the background in cells.

*Cell contents*

Sets the color for values and labels.

*Negative values*

Sets the color for negative values.

*Drop shadows*

Sets the color for [drop shadows](#).

*Grid lines*

Sets the color for [grid lines](#).

*Range borders*

Sets the color for outlines around and lines within ranges.

*Selected ranges*

Sets the color for the cell pointer and highlighted ranges.

*Unprotected cells*

Sets the color for unprotected ranges.

3. Select a color from the list.
4. Repeat steps 2 and 3 to assign colors to other parts of the worksheet.
5. Select OK.

### Default Settings

- \* To make current Colors, Options, Zoom, Frame, and Palette settings the [default settings](#) for all active files, select [Window Display Options Update](#).
- \* To replace the currently selected Colors, Options, Zoom, Frame, and Palette settings with the default settings that belong to the current file, select [Window Display Options Restore](#).
- \* If you do not specify Window Display Options Update or Restore, the selected settings are in effect until you change them again or you end the current 1-2-3 session.

See also:

[Range Unprotect](#)

[Style Border](#)

[Window Commands](#)

[Window Display Options](#)



## Window Display Options Options

Displays each worksheet in all active files in monochrome or color and in draft or graphic mode, and displays or hides grid lines and page breaks in each worksheet.

1. Choose Window Display Options.
2. Under Options, select the check box of one or more of the following options:

### *Page breaks*

Displays or hides the page breaks 1-2-3 inserts when you set a print range with the Range option of File Print and when you set page breaks with Worksheet Page Break.

### *Draft*

Sets worksheet display to draft or graphic mode.

In draft mode, 1-2-3 uses a monospace font and does not display borders and formatting on the screen; however, the format of the current cell is indicated in the format line, and printed output reflects formatting.

In graphic mode, the screen display closely resembles the printed output.

### *B&W*

Sets the screen display to monochrome or color.

If you do not have a color printer, use this option to see how colors will appear as shades of gray when printed.

### *Grid lines*

Displays grid lines that outline cells in the worksheet.

3. Select OK.

## Default Settings

- \* To make current Colors, Options, Zoom, Frame, and Palette settings the default settings for all active files, select Window Display Options Update.
- \* To replace the currently selected Colors, Options, Zoom, Frame, and Palette settings with the default settings that belong to the current file, select Window Display Options Restore.
- \* If you do not specify Window Display Options Update or Restore, the selected settings are in effect until you change them again or you end the current 1-2-3 session.

See also:

Window Commands

Window Display Options

## Window Display Options Zoom

Changes the display size of cells in each worksheet in all active files. You can set the display size of cells to as little as 25% or to as much 400% of the normal display size.

When you enlarge cells, the number of displayed rows and columns decreases. When you reduce cells, the number of displayed rows and columns increases.

1. Choose Window Display Options.
2. Enter a number from 25 through 400 in the Zoom text box.
3. Select OK.

### Default Settings

- \* To make current Colors, Options, Zoom, Frame, and Palette settings the default settings for all active files, select Window Display Options Update.
- \* To replace the currently selected Colors, Options, Zoom, Frame, and Palette settings with the default settings that belong to the current file, select Window Display Options Restore.
- \* If you do not specify Window Display Options Update or Restore, the selected settings are in effect until you change them again or you end the current 1-2-3 session.

See also:

Window Commands

Window Display Options

## Window Display Options Frame

Hides or changes the appearance of the 1-2-3 worksheet frame for each worksheet in all active files.

1. Choose Window Display Options.
2. Select one of the following options from the Frame drop-down box:

*Standard*

Displays a gray worksheet frame.

*Characters*

Displays the worksheet frame as rulers based on 10-point characters.

*Inches*

Displays the worksheet frame as rulers based on inches.

*Metric*

Displays the worksheet frame as rulers based on centimeters.

*Points/Picas*

Displays the worksheet frame as rulers based on points and picas.

*None*

Hides the worksheet frame.

3. Select OK.

### Default Settings

- \* To make current Colors, Options, Zoom, Frame, and Palette settings the default settings for all active files, select Window Display Options Update.
- \* To replace the currently selected Colors, Options, Zoom, Frame, and Palette settings with the default settings that belong to the current file, select Window Display Options Restore.
- \* If you do not specify Window Display Options Update or Restore, the selected settings are in effect until you change them again or you end the current 1-2-3 session.

See also:

Window Commands

Window Display Options

## Window Display Options Palette



[About the Appearance of Data \(3:25\)](#)

For all active files, sets the colors or shades of gray that can be used for displaying and printing worksheets, ranges, graphs, and graph objects.

1. Choose Window Display Options.

2. Select Palette.

The Window Display Options Palette dialog box is displayed.

3. From the Palette list box, select the box containing the color you want to replace.

4. Under Colors, select a color or shade of gray.

1-2-3 displays the new color or shade of gray in the selected Palette box.

5. Repeat steps 3 and 4 until the colors or shades of gray you want are displayed under Palette.

6. Select OK.

The Window Display Options dialog box is redisplayed.

7. Select OK.

### Default Settings

\* To make current Colors, Options, Zoom, Frame, and Palette settings the default settings for all active files, select Window Display Options Update.

\* To replace the currently selected Colors, Options, Zoom, Frame, and Palette settings with the default settings that belong to the current file, select Window Display Options Restore.

\* If you do not specify Window Display Options Update or Restore, the selected settings are in effect until you change them again or you end the current 1-2-3 session.

<b>To assign colors to</b>	<b>Use</b>
Parts of a worksheet	<u>Window Display Options Colors</u>
Data in a range	<u>Style Color</u>
Parts of a graph	<u>Chart Options Colors (Graph window)</u>
Graph objects	<u>Style Color (Graph window)</u>
Graphed values	<u>Chart Options Advanced Styles (Graph window)</u>

See also:

Window Commands

Window Display Options

## **Window Display Options Update**

Makes the current Colors, Options, Zoom, Frame, and Palette settings the default settings for all active files.

1. Choose Window Display Options.
2. Under Default settings, select Update.  
1-2-3 saves the current settings as the default display settings.
3. Select OK.

See also:

[Window Commands](#)

[Window Display Options](#)

## **Window Display Options Restore**

For all active files, replaces the currently selected Colors, Options, Zoom, Frame, and Palette settings with the default settings that belong to the current file.

1. Choose Window Display Options.
2. Under Default settings, select Restore.  
1-2-3 replaces the current settings with the default display settings.
3. Select OK.

See also:

[Window Commands](#)

[Window Display Options](#)

## **Window Tile**

Sizes open windows (Worksheet, Graph, and Transcript) and places them side by side in the 1-2-3 window.

1. Choose Window Tile.

1-2-3 places the active window in the upper left corner of the work space.

See also:

[Tools Macro Show Transcript](#)

[Window Cascade](#)

[Window Commands Window Commands \(Graph Window\)](#)

## **Window Cascade**

Sizes open windows (Worksheet, Graph, and Transcript) and arranges them in the 1-2-3 window so they appear one on top of the other, with just the title bars showing.

1. Choose Window Cascade.

1-2-3 places the active window in front.

See also:

[Tools Macro Show Transcript](#)

[Window Commands](#)

[Window Commands \(Graph Window\)](#)

[Window Tile](#)



## **Window (Window Name)**

Lists up to nine open windows (Worksheet, Graph, and Transcript), and displays a check mark next to the active window.

The listed names are the same as the names displayed in the title bar of each open window.

Use this list, or the More Windows list, to make a window active.

1. Select a window from the list.

## **Using the Mouse or Keyboard to Activate a Window**

You can make a window active by moving the mouse pointer to the window and clicking the window or by pressing CTRL+F6 to move the cell pointer to the window.

See also:

[Tools Macro Show Transcript](#)

[Window Cascade](#)

[Window Commands](#)

[Window Commands \(Graph Window\)](#)

[Window Tile](#)

## **Window More Windows**

Lists all windows that are open in 1-2-3. Window More Windows is available on the Window pulldown menu when more than nine windows are open in 1-2-3.

Use Window More Windows to make a window active.

1. Choose Window More Windows.
2. Specify a window in the Window list box.
3. Select OK.

See also:

[Tools Macro Show Transcript](#)

[Window Commands](#)

[Window Commands \(Graph Window\)](#)

[Window \(Window Name\)](#)

## Worksheet Global Settings



[About the Appearance of Data \(3:25\)](#)

Controls the following global settings for the current worksheet:

### Zero display

Sets the display for cells with a value of zero.

### Align labels

Sets the global label alignment.

### Group mode

Turns GROUP mode on and off.

When GROUP mode is turned on, other Worksheet Global Settings options (Zero display, Align labels, Protection, Column width, and Format), Range commands (Format, Protect, and Unprotect), and Style commands (Alignment, Color, Border, Shading, and Font) affect all worksheets in the file.

### Protection

Turns global protection on and off.

### Column width

Sets the global column width.

### Format

Sets the global cell format.

See also:

[Worksheet Commands](#)

## Worksheet Global Settings Zero Display

Determines whether 1-2-3 displays a zero, a label, or nothing in cells in the current worksheet that contain either the number zero or a formula that evaluates to zero.

If the current file is in GROUP mode, Worksheet Global Settings Zero display affects all worksheets in the current file.

1. Choose Worksheet Global Settings.
2. Under Zero display, select one of the following options:

*Display zeros*

Displays a zero in cells whose value is zero.

*Leave zeros blank*

Suppresses the display of zeros. Cells whose value is zero appear blank.

*Use label*

Displays a specified label in cells whose value is zero.

3. If you select Use label, enter a label for 1-2-3 to display instead of a zero.
4. Select OK.

See also:

[Worksheet Commands](#)

[Worksheet Global Settings](#)

## Worksheet Global Settings Align Labels



[About the Appearance of Data \(3:25\)](#)

Sets the global label alignment for the current worksheet. Worksheet Global Settings Align labels sets the label-prefix character 1-2-3 automatically adds when you enter a label in the worksheet. The label prefix controls the way 1-2-3 displays labels.

If the current file is in GROUP mode, Worksheet Global Settings Align labels affects all worksheets in the file.

1. Choose Worksheet Global Settings.
2. Under Align labels, select Left, Center, or Right.
3. Select OK.

To change the alignment of existing labels in a specific worksheet range, use Style Alignment.

See also:

[LABEL Mode](#)

[Worksheet Commands](#)

[Worksheet Global Settings](#)

## Worksheet Global Settings Group Mode

 [Moving a Range of Data \(1:10\)](#)

 [Moving a Range of Data \(1:10\)](#)

Turns GROUP mode on for the current file. Use GROUP mode when you want 1-2-3 to assign the current worksheet's cell formats and settings to all worksheets in the current file.

**Caution** Turning on GROUP mode makes permanent changes to the settings for all worksheets in the current file. Turning off GROUP mode does not reverse those changes.

1. Choose Worksheet Global Settings.
2. Select the Group mode check box.
3. Select OK.

1-2-3 displays the GROUP status indicator in the status line at the bottom of the 1-2-3 window.

While GROUP mode is on, changes you make to one worksheet with any of the following commands affect every worksheet in the current file:

Worksheet commands:

Column Width, Row Height, Delete [Column, Row], Global Settings, Insert [Column, Row], Page Break, Titles

Range commands:

Format, Protect, Unprotect

Style commands:

Font, Alignment, Border, Color, Shading

See also:

[Range Commands](#)

[Working with Multiple Worksheets in a File](#)

[Worksheet Commands](#)

[Worksheet Global Settings](#)

## **Worksheet Global Settings Protection**

Turns global protection on for the current worksheet.

If the current file is in GROUP mode, Worksheet Global Settings Protection affects all worksheets in the file.

1. Choose Worksheet Global Settings.
2. Select the Protection check box.
3. Select OK.

When protection is on and the cell pointer is on a protected cell, 1-2-3 displays PR in the format line. You cannot change data in the current worksheet except in cells you unprotect with Range Unprotect.

See also:

Protecting Data and Files

Worksheet Commands

Worksheet Global Settings

## Worksheet Global Settings Column Width



[About the Appearance of Data \(3:25\)](#)

Sets the width of all columns in the current worksheet except those columns whose widths you set individually with Worksheet Column Width.

If the current file is in GROUP mode, Worksheet Global Settings Column width affects all worksheets in the current file.

1. Choose Worksheet Global Settings.
2. Enter a number from 1 through 240 in the Column width text box.
3. Select OK.

### Effect of Fonts on Column Widths

1-2-3 measures the column width by the number of characters that fit in a column. When you install 1-2-3 for Windows, the default column width is set to 9. The 9 means that nine characters in the default font can be displayed across a column.

If you increase the column width but not the font size, you can display more characters across each column. If you decrease the column width but not the font size, you can display fewer characters across each column.

In 1-2-3 for Windows, you can make the column width as small as 1 or as large as 240. The number of characters you can display across a column depends on the font you select.

### Effect of Column Width on Values

When a column is too narrow to display an entire value as it is formatted, 1-2-3 displays \*\*\* (asterisks) instead of the value. To display the value, the column must be one character wider than the length of the value as formatted.

Use Worksheet Column Width to widen the column, or use Range Format to change the value's cell format to one requiring fewer characters.

### Effect of Column Width on Labels

If a label is longer than the cell it occupies and the cells to the right are blank, 1-2-3 displays the label across the blank cells. If the cells to the right contain data, 1-2-3 displays only the part of the label that fits in the cell where it is entered. Use Worksheet Column Width to widen the column.

See also:

[Worksheet Commands](#)

[Worksheet Global Settings](#)



## Worksheet Global Settings Format

 [Moving a Range of Data \(1:10\)](#)

 [Moving a Range of Data \(1:10\)](#)

Sets the global cell format for the current worksheet. Changing the cell format affects only the display of data, not the data itself.

If the current file is in GROUP mode, Worksheet Global Settings Format affects all worksheets in the file.

1. Choose Worksheet Global Settings.
2. Select Format.

The Worksheet Global Settings Format dialog box is displayed.

3. Select a numeric, date, time, or other format from the Format list box.
4. If you select any numeric format except General, specify in the Decimal places text box the number of decimal places (0 to 15) you want 1-2-3 to display.
5. To enclose negative values in parentheses, select the Parentheses check box.
6. Select OK.

The Worksheet Global Settings dialog box is redisplayed.

7. Select OK.

If a column is not wide enough to display a value in the format you select, 1-2-3 fills the cell with \*\*\* (asterisks). Use Worksheet Column Width to widen the column and redisplay the value.

To change the format of data for a range, use Range Format. Worksheet Global Settings Format does not affect cells formatted with Range Format.

See also:

[Worksheet Commands](#)

[Worksheet Global Settings](#)

## Worksheet Insert

-  [Moving a Range of Data \(1:10\)](#)
-  [Moving a Range of Data \(1:10\)](#)

Inserts one or more blank columns or rows in existing worksheets, or adds worksheets to a file.

**Caution** Worksheet Insert inserts entire columns, rows, and worksheets in a file, not just in the part you see on the screen. If the current file is in GROUP mode, inserting rows or columns in one worksheet inserts rows or columns in all worksheets in that file.

1. To insert columns or rows, select a range that includes at least one cell in each of the columns or rows you are inserting. For example:
  - \* If you want to insert three columns to the left of column A, select at least one cell in columns A, B, and C.
  - \* If you want to insert five rows above row 1, select at least one cell in rows 1, 2, 3, 4 and 5.
2. Choose Worksheet Insert.
3. Select one of the following options:

*Column*

Inserts new columns to the left of the selected columns and moves existing data to the right.

*Row*

Inserts new rows above the selected rows and moves existing data down.

*Sheet*

Inserts new worksheets.

Select Before or After to insert new worksheets before or after the current worksheet, and enter in the Quantity text box the number of worksheets to insert.

4. To change the range displayed in the Range text box, specify a new range.
5. Select OK.

When you insert columns, rows, or worksheets, 1-2-3 redefines named ranges and adjusts cell and range addresses in formulas. For example, if you enter the formula +E6\*100 and then insert two columns to the left of column E, 1-2-3 changes the formula to +G6\*100.

Use File New to insert a new blank file in memory.

See also:

[Working with Multiple Worksheets in a File](#)  
[Worksheet Commands](#)

## Worksheet Delete

Deletes one or more columns, rows, or worksheets in the current file, closing up the space left by the deletion. To remove a file from memory, use [File Close](#).

**Caution** Worksheet Delete deletes entire columns, rows, or worksheets, not just the part you see on the screen. If the current file is in GROUP mode, deleting rows or columns in one worksheet deletes the same rows or columns in all worksheets in that file.

1. Select the range of data to delete. The range must include at least one cell in each of the columns, rows, or worksheets to be deleted.
2. Choose Worksheet Delete.
3. Select one of the following options:

*Column*

Deletes all columns of data in the selected range.

*Row*

Deletes all rows of data in the selected range.

*Sheet*

Deletes all worksheets in the selected range.

4. To change the range displayed in the Range text box, specify a new range.
5. Select OK.

To restore the deleted columns, rows, or worksheets, use [Edit Undo](#) before you perform another activity or use another command.

When you delete columns, rows, or worksheets, 1-2-3 redefines named ranges and adjusts [cell addresses](#) and [range addresses](#) in formulas.

**Note** If you delete an entire range whose address is used in a formula, the formula evaluates to [ERR](#). If you delete an entire named range whose name is used in a formula, the range name stays in the formula, but 1-2-3 treats it as an [undefined range name](#), and the formula evaluates to ERR.

See also:

[Worksheet Commands](#)

## Worksheet Hide

Hides columns in a worksheet, or entire worksheets, to prevent display and printing of data.

1. Select the range of columns or worksheets to hide.

The range needs to include only one cell in each of the columns or worksheets to hide.

2. Choose Worksheet Hide.

3. Select one of the following options:

*Column*

Hides the selected columns.

*Sheet*

Hides the selected worksheets.

4. To change the range displayed in the Range text box, specify a new range.

5. Select OK.

## Effects of Worksheet Hide

After you hide columns or worksheets, you cannot move the cell pointer to them in READY mode, and you cannot enter data in them. Formulas in the hidden columns or worksheets and formulas that refer to data in the hidden columns and worksheets continue to work correctly, however.

Whenever 1-2-3 is in POINT mode, it displays hidden columns and worksheets with an \* (asterisk) next to the column or worksheet letter. This means you can perform 1-2-3 operations on cells in hidden columns or worksheets. For example, you can format, unprotect, or copy to or from cells in hidden columns or worksheets. When creating formulas, you can refer to cells in hidden columns or worksheets by entering POINT mode and highlighting those cells.

Use Range Format to hide data in a range without removing columns from view.

Use Worksheet Global Settings Format to hide all data in a worksheet without removing the worksheet from view.



### To Hide Columns

1. Move the mouse pointer to the right column border of the rightmost column you want to hide.

The mouse pointer changes to a black two-headed horizontal arrow.

2. Drag the mouse pointer to the left until the mouse pointer is on the left column border of the leftmost column you want to hide.

See also:

Worksheet Commands

Worksheet Unhide

## Worksheet Unhide

Redisplays columns or worksheets hidden with [Worksheet Hide](#).

1. Select the range of columns or worksheets to redisplay.

For example, to redisplay hidden columns C and D, select at least one cell in columns A and E.

2. Choose Worksheet Unhide.
3. Select one of the following options:

*Column*

Redisplays the selected columns.

*Sheet*

Redisplays the selected worksheets.

4. To change the range displayed in the Range text box, specify a new range.
5. Select OK.

To unhide data in a range whose cell format is Hidden, select another cell format in [Range Format](#).

To unhide data in a worksheet whose global cell format is Hidden, select another cell format in [Worksheet Global Settings Format](#).



### To Unhide Columns

1. Move the mouse pointer to the left column border of the column that is to the right of the hidden column.

The mouse pointer changes to a black two-headed horizontal arrow.

2. Drag the mouse pointer to the right until the hidden columns are redisplayed.

See also:

[Worksheet Commands](#)

## Worksheet Column Width

-  [Moving a Range of Data \(1:10\)](#)
-  [Changing Column Width \(1:45\)](#)

Sets the width of one or more columns in the worksheet or resets columns to the global column width.

If the current file is in GROUP mode, Worksheet Column Width affects all worksheets in the file.

1. Select the range of columns whose width you want to set or reset.
2. Choose Worksheet Column Width.
3. Select one of the following options:

*Set width to*

Adjusts column width.

Enter a number from 1 through 240 in the characters text box.

*Reset to global*

Resets the range of columns to the global width defined with Worksheet Global Settings.

4. To change the range displayed in the Range text box, specify a new range.
5. Select OK.

### Effect of Fonts on Column Widths

1-2-3 measures the column width by the number of numeric characters that fit in a column. When you install 1-2-3 for Windows, the default column width is set to 9. The 9 means that nine numeric characters in the default font can be displayed across a column.

If you increase the column width but not the font size, you can display more numeric characters across each column. If you decrease the column width but not the font size, you can display fewer numeric characters across each column.

In 1-2-3 for Windows, you can make the column width as small as 1 or as large as 240. The number of characters you can display across a column depends on the font you select.

### Effect of Column Width on Values

When a column is too narrow to display an entire value as it is formatted, 1-2-3 displays \*\*\* (asterisks) instead of the value. To display the value, the column must be one character wider than the length of the value as formatted.

Use Set width to widen the column, or use Range Format to change the value's cell format to one requiring fewer characters.

### Effect of Column Width on Labels

If a label is longer than the cell it occupies and the cells to the right are blank, 1-2-3 displays the label across the blank cells. If the cells to the right contain data, 1-2-3 displays only the part of the label that fits in the cell where it is entered. Use Set width to widen the column.



### To Set Column Widths

1. When 1-2-3 is in READY mode, move the mouse pointer to the right column border.  
The mouse pointer changes to a black two-headed horizontal arrow.
2. Drag the mouse pointer to the right until the column is the width you want.

See also:

Worksheet Commands

## Worksheet Row Height



[Moving a Range of Data \(1:10\)](#)

[Changing Row Height \(1:55\)](#)

Sets the height of one or more rows in the worksheet, or resets rows to the default row height for the current global font.

If the current file is in GROUP mode, Worksheet Row Height affects all worksheets in the file.

1. Select the range of rows whose height you want to set or reset.
2. Choose Worksheet Row.
3. Select one of the following options:

*Set height to*

Adjusts row height.

Enter a height in points in the points text box.

*Reset height*

Resets the range of rows to the default row height for the default font.

4. To change the range displayed in the Range text box, specify a new range.
5. Select OK.

### Effects of Fonts on Row Heights

In an unformatted worksheet, all rows are the same height. As you change fonts, however, row heights will no longer be the same. 1-2-3 automatically adjusts the height of a row to accommodate the largest font in the row.

If you format a range in a font smaller than the default font, row height will accommodate the height of the default font. The row height will become shorter only if you format the entire row in a smaller font.



### To Set Row Heights

1. When 1-2-3 is in READY mode, move the mouse pointer to the lower row border.  
The mouse pointer changes to a black two-headed vertical arrow.
2. Drag the mouse pointer down until the row is the height you want and release the button.  
You can make a row any height from 1 through 255 points, but you cannot hide a row.

See also:

[Worksheet Commands](#)



## Worksheet Titles



Freezes (or unfreezes) columns along the top of the current worksheet, rows along the left edge of the current worksheet, or both. These title columns and rows remain in view as you scroll through the worksheet.

If the current file is in GROUP mode, Worksheet Titles creates titles in all worksheets in that file.

1. Position the cell pointer one cell below the rows you want to freeze, one cell to the right of the columns you want to freeze, or, if you want to freeze both rows and columns, in the cell that is below the rows and to the right of the columns you want to freeze.
2. Choose Worksheet Titles.
3. Select one of the following options:

*Horizontal*

Freezes the rows above the cell pointer.

*Vertical*

Freezes the columns to the left of the cell pointer.

*Both*

Freezes the rows above and columns to the left of the cell pointer.

*Clear*

Unfreezes all title rows and columns.

4. Select OK.

### Moving the Cell Pointer into the Title Area

If 1-2-3 is in READY mode, you cannot use the pointer-movement keys to move the cell pointer to a cell that contains a worksheet title. To move the cell pointer into the titles area, use F5 (GOTO).

When you press F5 (GOTO) and specify a cell in a title row or column, 1-2-3 displays a second set of titles immediately below or to the right of the titles. You can use this second set to edit your titles. To clear the second set of titles, press PG DN and then PG UP (for rows), or CTRL+RIGHT and then CTRL+LEFT (for columns).

If you move the cell pointer into the titles area when you specify a range during a command or while entering a formula (in POINT mode), 1-2-3 temporarily displays a second set of titles. When you return 1-2-3 to READY mode, however, the second set disappears.

See also:

F5 (GOTO)

Worksheet Commands

## Worksheet Page Break

Inserts or removes horizontal and vertical page breaks that tell 1-2-3 to begin a new page when printing the worksheet.

If the current file is in GROUP mode, Worksheet Page Break affects all worksheets in the file.

1. Position the cell pointer in the column you want to be the leftmost column of the new page, in the row you want to be the top row of the new page, or at the intersection of the row and the column you want to be the topmost row and the leftmost column in the new page.

2. Choose Worksheet Page Break.

3. Select one of the following options:

*Horizontal*

Inserts a horizontal page break, using the row with the selected cell as the top row of the new page.

*Vertical*

Inserts a vertical page break, using the column with the selected cell as the leftmost column of the new page.

*Both*

Inserts a page break, using the selected cell as the cell that marks both the top row and the leftmost column of the new page.

*Clear*

Removes the page break associated with the selected cell.

4. Select OK.

When you create a page break, 1-2-3 displays a dashed line along the left of the column for a vertical page break, along the top of the row for a horizontal page break, or along the left of the column and the top of the row for a page break in both directions. Page-break lines are displayed only when the Page breaks option of Window Display Options Options is selected.

When you print your data, 1-2-3 starts a new page at the row, column, or intersection you select.

A page break overrides page lengths set through File Print or File Page Setup.

See also:

Worksheet Commands

## **Graph Window Commands**

Specify graph types, enhance and manipulate graphs, and control the Graph window.

### File

Closes the current Graph window or ends the current 1-2-3 session.

### Edit

Selects, replicates, and deletes objects in the Graph window, and copies the graph to the Clipboard.

### Chart

Sets the data ranges to be graphed, selects graph types, and adds titles, legend, and other enhancements to the graph in the Graph window.

### Draw

Adds text, arrows, lines, shapes, and freehand drawings to the Graph window.

### Layout

Positions graph objects in front of or behind others, and prevents changes to graph objects.

### Rearrange

Modifies the size and the spatial orientation of objects.

### Style

Controls the appearance of text and objects in the Graph window, and the appearance of a graph in a worksheet.

### Tools

Gives you access to the icon palette so you can position or hide the icon palette, add or remove SmartIcons, and create custom SmartIcons.

### Window

Controls the display of the Graph window, and the display of all open windows.

### Help

Provides access to broad categories of 1-2-3 for Windows Help topics.

See also:

[Graph Commands](#)

## **File Commands (Graph Window)**

Close the current file and end the current 1-2-3 session.

### Close

Closes the Graph window.

### Exit

Ends the 1-2-3 session.

See also:

Graph Commands

Graph Window Commands

## **Edit Commands (Graph Window)**

Select, replicate, and delete objects in the Graph window, and copy the graph to the Clipboard.

### Copy

Copies the entire graph to the Clipboard.

### Delete

Deletes selected objects or the entire graph.

### Undelete

Restores to the Graph window the object or graph most recently deleted with Edit Delete.

### Replicate

Creates a copy of an object or the entire graph.

### Select

Selects or deselects an object or the entire graph.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

## **Chart Commands (Graph Window)**

Set the data ranges to be graphed, select graph types, and add the titles, legend, and other enhancements to the graph in the Graph window.

### Ranges

Sets the X and A - F data ranges for line, area, bar, XY HLCO, and mixed graphs; for pie charts, sets the X and A data ranges, colors, and other display options.

### Type

Selects a graph type, sets the graph orientation, and creates a table of data ranges.

### Data Labels

Creates labels for data points or bars.

### Headings

Adds graph titles and footnotes.

### Legend

Creates a key that identifies the colors, symbols, or hatch patterns of the graph's data ranges.

### Axis

Sets axis scaling, the format of numbers that appear along an axis, axis titles, axis-unit names, and other options for the x-axis, y-axis, and 2nd y-axis. Chart Axis does not apply to pie charts.

### Borders/Grids

Adds borders and grid lines to the current graph. Chart Borders/Grids does not apply to pie charts.

### Options

Controls the colors, hatch patterns, fonts, and lines used display text and data in a graph.

### Clear

Resets all or selected settings for the current graph to 1-2-3 default settings.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

## **Draw Commands (Graph Window)**

Add text, arrows, lines, shapes, and freehand drawings to the Graph window.

### Text

Adds text.

### Line

Adds a single straight line or connected line segments.

### Arrow

Adds a line or connected line segments with an arrowhead at the point you stop drawing.

### Rectangle

Adds a rectangle or square.

### Polygon

Adds a multi-sided object.

### Ellipse

Adds an ellipse or circle.

### Freehand

Adds a freehand drawing.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

## **Layout Commands (Graph Window)**

Position graph objects in front of or behind others, and prevent changes to graph objects.

### Send Forward

Places selected objects in front of all other objects.

### Fall Back

Places selected objects behind all other objects.

### Lock

Prevents changes to objects.

### Unlock

Removes the lock on objects set with Layout Lock.

See also:

[Graph Commands](#)

[Graph Window Commands](#)



## **Rearrange Commands (Graph Window)**

Modify the size and the spatial orientation of objects.

### Flip

Flips an object or the entire graph so that it appears upside down or backwards.

### Quarter-Turn

Rotates an object or the entire graph around its center in 90-degree increments.

### Skew

Adjusts the slant and size of an object or the entire graph by making its horizontal or vertical axis a hinge on which you can rotate the object or graph.

### Turn

Rotates an object or the entire graph around its center at any angle.

### Adjust Size

Changes the size of an object or the entire graph.

### Clear

Cancels the effects of all Rearrange commands, returning an object or the entire graph to its original state.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

## **Style Commands (Graph Window)**

Control the appearance of text and objects in the Graph window, and the appearance of a graph in a worksheet.

### Font

Applies a font in the current font set to text you add to a graph with Draw Text (Graph window) and changes the size of any text in a graph.

### Color

Assigns colors to parts of a graph.

### Lines

Controls the appearance of lines or the outlines of objects.

### Alignment

Aligns text added to a graph with Draw Text (Graph window).

### Display Options

Makes graphs in the worksheet transparent or opaque, turns the display of graphs in the worksheet on or off, automatically updates a graph in the worksheet, and displays grid lines in the range the graph occupies.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

## **Tools Command (Graph Window)**

Gives you access to the icon palette.

### SmartIcons

Positions or hides the icon palette, adds or removes SmartIcons, and creates custom SmartIcons.

See also:

Graph Commands

Graph Window Commands

## **Window Commands (Graph Window)**

Control the display of the Graph window.

### Enlarge

Enlarges the contents of the Graph window.

### Reduce

Reduces the enlarged contents of the Graph window.

### Full

Redisplays the contents of the Graph window at normal size.

### Zoom

Enlarges an area of the Graph window to fill the window.

### Tile

Sizes all open windows and places them side by side in the 1-2-3 window.

### Cascade

Sizes all open windows and arranges them in the 1-2-3 window so they appear one on top of the other, with just the title bars showing.

### (Window Name)

Lists up to nine windows that are open in the 1-2-3 window and displays a check mark next to the active window.

### More Windows

Lists all windows that are open in the 1-2-3 window.

See also:

Graph Commands

Graph Window Commands

## Chart Ranges (Graph Window)



Sets the X and A - F data ranges for a graph.

For information about the way 1-2-3 uses the X and A - F data ranges in graphs, see About Graph Types.

### To Set Data Ranges Individually

1. Choose Chart Ranges.
2. Specify a range of labels for the x-axis in the X data range text box.
3. Under Data ranges, specify a range in the A text box.
4. To attach the A data range to the 2nd y-axis in line, area, bar, mixed, and XY graphs, select the 2nd Y check box for the A range.
5. Repeat steps 3 and 4 for each data range (through F) you want to graph.
6. Select OK.

1-2-3 does not display the 2nd y-axis unless you attach one or more ranges to it. If you attach all data ranges to the 2nd y-axis, 1-2-3 does not display the y-axis.

### To Set Data Ranges and Graph Display Options for a Pie Chart

1. (Optional) Set up a colors range in the worksheet.
2. (Optional) To remove percent labels from pie slices, set up a percent-labels range in the worksheet.
3. Choose Chart Ranges.
4. Specify the range of pie-slice labels in the X data range text box.
5. Under Data ranges, in the A text box, specify the range of data to graph.
6. To assign colors to the values in the A data range, hide a pie slice, or explode a pie slice, specify in the B text box the colors range you set up in step 1.
7. To remove the percent labels from the pie chart, specify in the C text box the percent-labels range you set up in step 2.
8. Select OK.

To set up hatch patterns for a pie chart, use Chart Options Advanced Styles.

### To Set Data Ranges All at Once

1. Choose Chart Ranges.
2. Select Group Range.

1-2-3 displays the Chart Ranges Group Range dialog box.

See also:

Chart Commands (Graph Window)  
Creating Graphs  
Graph Commands  
Graph Window Commands



## Chart Ranges Group Range (Graph Window)



[Graphing Rows of Data \(1:55\)](#)

Using a single range, sets the X and A - F data ranges for a graph. 1-2-3 sets the first column of the selected range as the X data range and each succeeding column as the A - F data ranges. If you select a single-column range, 1-2-3 sets the column as the A data range.

For information about the way 1-2-3 uses the X and A - F data ranges in graphs, see [About Graph Types](#).

1. Choose Chart Ranges.
2. Select Group Range.
3. Specify a range in the Range text box.
4. Under Divide into data ranges, select one of the following options:

### *Columnwise*

Sets the first column of the range as the X data range and each succeeding column as the A - F data ranges.

If you specified only a single column, 1-2-3 uses it to set the A data range.

### *Rowwise*

Sets the first row of the range as the X data range and each succeeding row as the A - F data ranges.

5. Select OK.  
The Chart Ranges dialog box is redisplayed.
6. Select OK.

To create individual data ranges or to attach one or more of the A - F data ranges to the 2nd y-axis, use [Chart Ranges](#).

## To Set Data Ranges and Graph Display Options for a Pie Chart

1. (Optional) Set up a colors range in the worksheet.
2. (Optional) To remove percent labels from pie slices, set up a percent-labels range in the worksheet.
3. Choose Chart Ranges.
4. Select Group Range.
5. Specify a range in the Range text box.
6. Under Divide into data ranges, select one of the following options:

### *Columnwise*

Sets the first column of the range as the range of pie-slice labels (the X data range) and the second column as the range of data to graph (the A data range).

If you specified only a single column, 1-2-3 uses it to set the A data range.

### *Rowwise*

Sets the first row of the range as the range of pie-slice labels (the X data range) and the second row as the range of data to graph (the A data range).

7. Select OK.  
The Chart Ranges dialog box is redisplayed.

8. To assign colors to the values in the A data range, hide a pie slice, or explode a pie slice, specify in the B text box the colors range you set up in step 1.
9. To remove the percent labels from the pie chart, specify in the C text box the percent-labels range you set up in step 2.
10. Select OK.

To set up hatch patterns for a pie chart, use [Chart Options Advanced Styles](#).

See also:

[Chart Commands \(Graph Window\)](#)

[Creating Graphs](#)

[Graph Window Commands](#)



## Chart Type (Graph Window)

- ▶ Moving a Range of Data (1:10)
- ▶ Moving a Range of Data (1:10)
- ▶ Moving a Range of Data (1:10)

Selects a graph type, sets the graph orientation, and, optionally, creates a table of values for data ranges included in the graph.

1. Choose Chart Type.
2. Under Orientation, select one of the following options:

### *Vertical*

Displays the x-axis across the bottom of the graph, the y-axis along the left edge of the graph, and the 2nd y-axis along the right edge of the graph.

### *Horizontal*

Displays the x-axis along the left edge of the graph, the y-axis across the top of the graph, and the 2nd y-axis along the bottom of the graph.

3. Under Type, select one of the following graph types:

### *Line*

Graphs up to six data ranges as stacked or unstacked lines, with or without data points, or as stacked or unstacked data points.

### *Area*

Graphs up to six data ranges as lines, with the area between the lines filled in.

### *Bar*

Graphs up to six data ranges as clustered or stacked bars.

### *Pie*

Graphs values in a data range as slices in a circular chart.

### *XY*

Graphs up to six data ranges, using a scaled x-axis, as stacked or unstacked lines with or without data points, or as stacked or unstacked data points.

### *HLCO*

Graphs four data ranges as high, low, close, and open lines, a fifth data range as bars, and a sixth data range as a line.

### *Mixed*

Graphs up to three data ranges as clustered or stacked bars and up to three other data ranges as lines, as lines with the area between them filled in, or as lines with or without data points.

### *3D Line*

Graphs up to six data ranges as stacked or unstacked lines with 3-D effect.

### *3D Area*

Graphs up to six data ranges as stacked or unstacked lines and filled areas with 3-D effect.

### *3D Bar*

Graphs up to six data ranges as clustered or stacked bars with 3-D effect.

### *3D Pie*

Graphs values in a data range as slices in a circular chart with 3-D effect.

4. Select one of the options displayed for the graph type.

5. To include a table of the values plotted in the graph, select the Include table of values check box.

This option is not available for pie charts, HLCO graphs, and XY graphs.

6. Select OK.

To set the way lines are displayed for individual A - F data ranges in area, line, XY, HLCO, and mixed graphs, use Chart Options Lines.

See also:

[About Graph Types](#)

[Chart Commands \(Graph Window\)](#)

[Creating Graphs](#)

[Graph Commands](#)

[Graph Window Commands](#)

## Chart Data Labels (Graph Window)

Creates labels for data points or bars, using data in one or more ranges as the labels.

### To Create Labels for Data Ranges Individually

1. Choose Chart Data Labels.
2. In the text box for one of the A - F data ranges, specify the range that contains the values, labels, or formulas you want to use as data labels.  
The data-label range should be the same size as the corresponding A - F data range. The data-label range can contain any combination of values, labels, or formulas. 1-2-3 uses the current value of a formula as the data label.
3. To position the labels for the data range, select one of the following options from the drop-down box:

#### *Above*

Places the data labels above the data points in a line graph and area graph and above the bars in a bar graph.

#### *Center*

Centers the data labels on the data points in a line graph and area graph and above the bars in a bar graph.

#### *Below*

Places the data labels below the data points in a line graph and area graph and below the bars in a bar graph.

#### *Left*

Places the data labels to the left of the data points in a line graph and area graph and above the bars in a bar graph.

#### *Right*

Places the data labels to the right of the data points in a line graph and area graph and above the bars in a bar graph.

**Note** For stacked bars, 1-2-3 places data labels inside the corresponding portions of the stacked bars regardless of the placement you specify.

4. Repeat steps 2 and 3 for each data range you want to assign labels to.
5. Select OK.

### To Create Labels for Data Ranges All at Once

1. Choose Chart Data Labels.
2. Select Group Range.  
1-2-3 displays the Chart Data Labels Group Range dialog box.

### Creating Data Labels

- \* To label only some of the values in a data range, leave blank the cells in the data-label range that correspond to the values you don't want to label. For example, to label only the first, third, and fifth values in a data range, enter numbers, labels, or formulas in only the first, third, and fifth cells of the data-label range.
- \* To label the slices in a pie chart, use Chart Ranges and specify an X data range that contains the numbers, labels, or formulas you want to use.
- \* When you clear a data range with Chart Clear, 1-2-3 automatically clears the corresponding data-label ranges.

See also:

[About Graph Types](#)

[Chart Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

## Chart Data Labels Group Range (Graph Window)

Creates labels for data points or bars, using data in a single range as the data labels.

1. Choose Chart Data Labels.
2. Select Group Range.
3. In the Range text box, specify the range that contains the values, labels, or formulas you want to use as data labels.

The data-label range can contain any combination of values, labels, or formulas. 1-2-3 uses the current value of a formula as the data label.

The data-label range should be the same size as all the data ranges combined. For example, if the graph includes A, B, and C data ranges, each of which contains six values, the group data-label range should include 18 cells (six each in three consecutive rows or columns).

4. To change the position of labels for the data ranges, select one of the following options from the Label position drop-down box:

### *Above*

Places the data labels above the data points in a line graph and area graph and above the bars in a bar graph.

### *Center*

Centers the data labels on the data points in a line graph and area graph and above the bars in a bar graph.

### *Below*

Places the data labels below the data points in a line graph and area graph and below the bars in a bar graph.

### *Left*

Places the data labels to the left of the data points in a line graph and area graph and above the bars in a bar graph.

### *Right*

Places the data labels to the right of the data points in a line graph and area graph and above the bars in a bar graph.

**Note** For stacked bars, 1-2-3 places data labels inside the corresponding portions of the stacked bars regardless of the placement you specify.

5. Under Divide into data label ranges, select one of the following options:

### *Columnwise*

Divides the data-label range by columns and uses data in the first column as labels for the A data range, data in the second column as labels for the B data range, and so on.

### *Rowwise*

Divides the data-label range by rows and uses data in the first row as labels for the A data range, data in the second row as labels for the B data range, and so on.

6. Select OK.

To create data labels for individual data ranges, use Chart Data Labels.

## Creating Data Labels

- \* To label only some of the values in a data range, leave blank the cells in the data-label range that correspond to the values you don't want to label. For example, to label only the first, third, and fifth values in a data range, enter numbers, labels, or formulas in only the first, third, and fifth cells of the data-label range.

- \* To label the slices in a pie chart, use [Chart Ranges](#) and specify an X data range that contains the numbers, labels, or formulas you want to use.
- \* When you clear a data range with [Chart Clear](#), 1-2-3 automatically clears the corresponding data-label ranges.

See also:

[About Graph Types](#)

[Chart Commands \(Graph Window\)](#)

[Graph Window Commands](#)

## Chart Headings (Graph Window)

 [Moving a Range of Data \(1:10\)](#)

 [Moving a Range of Data \(1:10\)](#)

Adds graph titles and footnotes to a graph.

1. Choose Chart Headings.
2. Specify the title in the Title text box in one of the following ways:
  - \* Enter the title.
  - \* Type \ (backslash) and specify the cell that contains the title.  
If you enter a range name or address, 1-2-3 uses the contents of the first cell in the range.
3. Specify the subtitle in the Subtitle text box in one of the ways described in step 2.
4. Specify the footnote in the Note text box in one of the ways described in step 2.
5. Specify the second footnote in the 2nd note text box in one of the ways described in step 2.
6. Select OK.

Titles and footnotes can contain any numbers, letters, and special characters.

1-2-3 centers the graph title and subtitle above the graphed data and places footnotes below the graphed data in the left corner of the graph window.

1-2-3 displays the titles and footnotes using the font you set with [Chart Options Fonts](#) and the colors you set with [Chart Options Colors](#).

See also:

[Chart Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

## Chart Legend (Graph Window)



Creates legend labels that identify the colors, symbols, or hatch patterns of the graph's data ranges.

### To Create Legend Labels for Data Ranges Individually

1. Choose Chart Legend.
2. In the text box for a data range, specify the legend label in one of the following ways:
  - \* Enter the legend label.
  - \* Type \ (backslash) and specify the cell that contains the legend label.  
If you enter a range name or address, 1-2-3 uses the contents of the first cell in the range.
3. Repeat step 2 for each data range you want to include in the legend.
4. Select OK.

1-2-3 locates the legend below the graph.

To assign colors and hatch patterns to graph data ranges, use Chart Options.

### To Create Legend Labels for Data Ranges All at Once

1. Choose Chart Legend.
2. Select Group Range.

1-2-3 displays the Chart Legend Group Range dialog box.

See also:

[Chart Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)



## **Chart Legend Group Range (Graph Window)**

Creates legend labels that identify the colors, symbols, or hatch patterns of the graph's data ranges, using data in a single column or row as the legend labels.

1. Choose Chart Legend.
2. Select Group Range.
3. In the Range text box, specify the column or row that contains the data you want to use as legend labels.
4. Select OK.

1-2-3 uses the first entry in the range as the legend label for the A data range, the second entry as the legend label for the B data range, and so on. In a pie chart, 1-2-3 uses the data in the first cell of the range as the legend label for the first pie slice, the data in the second cell as the legend label for the second pie slice, and so on up to six pie slices.

1-2-3 locates the legend below the graph.

To create legend labels for individual data ranges, use Chart Legend.

To assign colors and hatch patterns to graph data ranges, use Chart Options.

See also:

[Chart Commands \(Graph Window\)](#)  
[Graph Window Commands](#)

## **Chart Axis (Graph Window)**

Sets axis scaling, the format of numbers that appear along an axis, [axis titles](#), [axis-unit names](#), and other options for the x-axis, y-axis, and 2nd y-axis. The Chart Axis commands do not apply to pie charts.

### X

Sets all options and formats values for the numeric x-axis in XY graphs; for other graph types, sets only the x-axis title and the display interval for x-axis labels, and lets you assign an x-axis-unit name.

### Y

For the y-axis, sets the scaling, the format of numbers, the axis title, and the axis-unit name.

### 2nd Y

For the 2nd y-axis, sets the scaling, the format of numbers, the 2nd y-axis title, and the 2nd y-axis-unit name.

See also:

[Chart Commands \(Graph Window\)](#)

[Graph Window Commands](#)

## Chart Axis X (Graph Window)

Sets the scaling, the order of magnitude, and the type of scale for the numeric x-axis of XY graphs. For options you can use with other graph types, as well as XY graphs, see [Chart Axis X Options](#).

1. Choose Chart Axis X.
2. Under Scale axis, select one of the following scaling methods:

### *Automatic*

Automatically creates a scale for the x-axis that displays all the graph data.

### *Manual*

Creates a scale for the x-axis that displays only the data that falls between (and includes) the upper and lower limits that you specify.

If you select Manual, enter the lower limit value in the Lower text box and the upper limit value in the Upper text box. If you specify an upper limit value that is lower than the lower limit value, 1-2-3 displays a blank window when you try to view the graph.

3. Under Axis units, select one of the following methods for setting the order of magnitude for the x-axis scale (the power of 10 by which the numbers along the scale must be multiplied to reflect the values you are graphing):

### *Automatic*

Automatically sets the order of magnitude for the scale based on the values you are graphing.

For example, if you are graphing values between 0 and 5,000, 1-2-3 sets the order of magnitude as 3 (10 to the third power).

### *Manual*

Uses the order of magnitude that you specify.

If you select Manual, specify a magnitude value between -95 and 95 in the Exponent text box.

Use Chart Axis X Options to create the axis-unit name that explains the magnitude used for the scale.

4. Under Type of scale, select one of the following options:

### *Standard*

Increases scale numbers linearly by a fixed number of units.

### *Logarithmic*

Increases scale numbers logarithmically.

5. Select OK.

## To Format Numbers Displayed on the X-Axis of XY Graphs

1. Choose Chart Axis X.
2. Select Format.

1-2-3 displays the [Chart Axis X Format](#) dialog box.

## To Specify the X-Axis Title, Axis-Unit Name, and Display Interval for X-Axis Labels

1. Choose Chart Axis X.
2. Select Options.

1-2-3 displays the Chart Axis X Options dialog box.

See also:

[Chart Axis \(Graph Window\)](#)

[Chart Commands \(Graph Window\)](#)

[Graph Window Commands](#)

## **Chart Axis X Format (Graph Window)**

Sets the format in which 1-2-3 displays numbers along the x-axis in XY graphs.

1. Choose Chart Axis X.
2. Select Format.
3. Select a numeric, date, time, or other format from the Format list box.
4. If you select any numeric format except General, specify in the Decimal places text box the number of decimal places (0 through 15) you want 1-2-3 to display.
5. Select OK.

The Chart Axis X dialog box is redisplayed.

6. Select OK.

See also:

[Chart Axis \(Graph Window\)](#)

[Chart Axis X \(Graph Window\)](#)

[Chart Commands \(Graph Window\)](#)

## Chart Axis X Options (Graph Window)

Specifies the x-axis title, axis-unit name, and display interval for x-axis labels.

1. Choose Chart Axis X.
2. Select Options.
3. In the Axis title text box, specify the title for the x-axis in one of the following ways:
  - \* Enter the title.
  - \* Type \ (backslash) and specify the cell that contains the title.  
If you enter a range name or address, 1-2-3 uses the contents of the first cell in the range.

4. Under Name of units, select one of the following methods for creating the x-axis-unit name:

### *Automatic*

Automatically creates the axis-unit name based on the order of magnitude used for the scale numbers.

### *Manual*

Uses the axis-unit name that you specify.

If you select Manual, specify the axis-unit name in the Manual text box in one of the following ways:

- \* Enter the x-axis-unit name.
  - \* Type \ (backslash) and specify the cell that contains the name.  
If you enter a range name or address, 1-2-3 uses the contents of the first cell in the range.
5. In the Display label every  $n$  ticks text box, enter a value that specifies the points on the x-axis at which to display x-axis labels.  
  
This option determines which entries in the X data range 1-2-3 displays along the x-axis. For example, if you enter 3, 1-2-3 displays along the x-axis only the first, fourth, seventh, tenth (and so on) entries in the X data range. This option does not affect XY graphs.
  6. Select OK.  
The Chart Axis X dialog box is redisplayed.
  7. Select OK.

See also:

[Chart Axis \(Graph Window\)](#)

[Chart Axis X \(Graph Window\)](#)

[Chart Commands \(Graph Window\)](#)

## Chart Axis Y (Graph Window)

For the y-axis, sets the scaling, the format of numbers, the axis title, and the axis-unit name.

1. Choose Chart Axis Y.
2. Under Scale axis, select one of the following scaling methods:

### *Automatic*

Automatically creates a scale for the y-axis that displays all the graph data.

### *Manual*

Creates a scale for the y-axis that displays only the data that falls between (and includes) the upper and lower limits that you specify.

If you select Manual, enter the lower limit value in the Lower text box and the upper limit value in the Upper text box. If you specify an upper limit value that is lower than the lower limit value, 1-2-3 displays a blank window when you try to view the graph.

3. Under Axis units, select one of the following methods for setting the order of magnitude for the y-axis scale (the power of 10 by which the numbers along the scale must be multiplied to reflect the values you are graphing):

### *Automatic*

Automatically sets the order of magnitude for the scale based on the values you are graphing.

For example, if you are graphing values between 0 and 5,000, 1-2-3 sets the order of magnitude as 3 (10 to the third power).

### *Manual*

Uses the order of magnitude that you specify.

If you select Manual, specify a magnitude value between -95 and 95 in the Exponent text box.

Use Chart Axis Y Options to create the axis-unit name that explains the magnitude used for the scale.

4. Under Type of scale, select one of the following options:

### *Standard*

Increases scale numbers linearly by a fixed number of units.

### *Logarithmic*

Increases scale numbers logarithmically.

### *Percentage*

Shows values in a data range as percentages of their total value.

Selecting Percentage for the y-axis also selects Percentage for the 2nd y-axis.

5. Select OK.

## To Format Numbers Displayed on the Y-Axis

1. Choose Chart Axis Y.
  2. Select Format.
- 1-2-3 displays the Chart Axis Y Format dialog box.

## To Specify the Y-Axis Title and Axis-Unit Name

1. Choose Chart Axis Y.

2. Select Options.

1-2-3 displays the Chart Axis Y Options dialog box.

See also:

[Chart Axis \(Graph Window\)](#)

[Chart Commands \(Graph Window\)](#)

[Graph Window Commands](#)



## **Chart Axis Y Format (Graph Window)**

Sets the format in which 1-2-3 displays numbers along the y-axis.

1. Choose Chart Axis Y.
2. Select Format.
3. Select a numeric, date, time, or other format from the Format list box.
4. If you select any numeric format except General, specify in the Decimal places text box the number of decimal places (0 through 15) you want 1-2-3 to display.
5. Select OK.

The Chart Axis Y dialog box is redisplayed.

6. Select OK.

See also:

[Chart Axis \(Graph Window\)](#)

[Chart Axis Y \(Graph Window\)](#)

[Chart Commands \(Graph Window\)](#)

## Chart Axis Y Options (Graph Window)

Specifies the y-axis title and axis-unit name.

1. Choose Chart Axis Y.
2. Select Options.
3. In the Axis title text box, specify the title for the y-axis in one of the following ways:
  - \* Enter the title.
  - \* Type \ (backslash) and specify the cell that contains the title.  
If you enter a range name or address, 1-2-3 uses the contents of the first cell in the range.
4. Under Name of units, select one of the following methods for creating the y-axis-unit name:
  - Automatic*  
Automatically creates the axis-unit name based on the order of magnitude used for the scale numbers.
  - Manual*  
Uses the axis-unit name that you specify.  
If you select Manual, specify the axis-unit name in the Manual text box in one of the following ways:
    - \* Enter the y-axis-unit name.
    - \* Type \ (backslash) and specify the cell that contains the name.  
If you enter a range name or address, 1-2-3 uses the contents of the first cell in the range.
5. Select OK.  
The Chart Axis Y dialog box is redisplayed.
6. Select OK.

See also:

[Chart Axis \(Graph Window\)](#)

[Chart Axis Y \(Graph Window\)](#)

[Chart Commands \(Graph Window\)](#)

## Chart Axis 2nd Y (Graph Window)

For the 2nd y-axis, sets the scaling, the format of numbers, the axis title, and the axis-unit name.

1. Choose Chart Axis 2nd Y.
2. Under Scale axis, select one of the following scaling methods:

### *Automatic*

Automatically creates a scale for the 2nd y-axis that displays all the graph data.

### *Manual*

Creates a scale for the 2nd y-axis that displays only the data that falls between (and includes) the upper and lower limits that you specify.

If you select Manual, enter the lower limit value in the Lower text box and the upper limit value in the Upper text box. If you specify an upper limit value that is lower than the lower limit value, 1-2-3 displays a blank window when you try to view the graph.

3. Under Axis units, select one of the following methods for setting the order of magnitude for the 2nd y-axis scale (the power of 10 by which the numbers along the scale must be multiplied to reflect the values you are graphing):

### *Automatic*

Automatically sets the order of magnitude for the scale based on the values you are graphing.

For example, if you are graphing values between 0 and 5,000, 1-2-3 sets the order of magnitude as 3 (10 to the third power).

### *Manual*

Uses the order of magnitude that you specify.

If you select Manual, specify a magnitude value between -95 and 95 in the Exponent text box.

Use Chart Axis 2nd Y Options to create the text that explains the magnitude used for the scale.

4. Under Type of scale, select one of the following options:

### *Standard*

Increases scale numbers linearly by a fixed number of units.

### *Logarithmic*

Increases scale numbers logarithmically.

### *Percentage*

Shows values in a data range as percentages of their total value.

Selecting Percentage for the 2nd y-axis also selects Percentage for the y-axis.

5. Select OK.

## To Format Numbers Displayed on the 2nd Y-Axis

1. Choose Chart Axis 2nd Y.
  2. Select Format.
- 1-2-3 displays the Chart Axis 2nd Y Format dialog box.

## To Specify the 2nd Y-Axis Title and Axis-Unit Name

1. Choose Chart Axis 2nd Y.

2. Select Options.

1-2-3 displays the Chart Axis 2nd Y Options dialog box.

See also:

[Chart Axis \(Graph Window\)](#)

[Chart Commands \(Graph Window\)](#)

[Graph Window Commands](#)

## **Chart Axis 2nd Y Format (Graph Window)**

Sets the format in which 1-2-3 displays numbers along the 2nd y-axis.

1. Choose Chart Axis 2nd Y.
2. Select Format.
3. Select a numeric, date, time, or other format from the Format list box.
4. If you select any numeric format except General, specify in the Decimal places text box the number of decimal places (0 through 15) you want 1-2-3 to display.
5. Select OK.

The Chart Axis 2nd Y dialog box is redisplayed.

6. Select OK.

See also:

[Chart Axis \(Graph Window\)](#)

[Chart Axis 2nd Y \(Graph Window\)](#)

[Chart Commands \(Graph Window\)](#)

## Chart Axis 2nd Y Options (Graph Window)

Specifies the 2nd y-axis title and axis-unit name.

1. Choose Chart Axis 2nd Y.
2. Select Options.
3. In the Axis title text box, specify the title for the 2nd y-axis in one of the following ways:
  - \* Enter the title.
  - \* Type \ (backslash) and specify the cell that contains the title.  
If you enter a range name or address, 1-2-3 uses the contents of the first cell in the range.
4. Under Name of units, select one of the following methods for creating the axis-unit name:
  - Automatic*  
Automatically creates the axis-unit name based on the order of magnitude used for the scale numbers.
  - Manual*  
Uses the axis-unit name that you specify.  
If you select Manual, specify the axis-unit name in the Manual text box in one of the following ways:
    - \* Enter the 2nd y-axis-unit name.
    - \* Type \ (backslash) and specify the cell that contains the name.  
If you enter a range name or address, 1-2-3 uses the contents of the first cell in the range.
5. Select OK.  
The Chart Axis 2nd Y dialog box is redisplayed.
6. Select OK.

See also:

[Chart Axis \(Graph Window\)](#)

[Chart Axis 2nd Y \(Graph Window\)](#)

[Chart Commands \(Graph Window\)](#)

## **Chart Borders/Grids (Graph Window)**

Adds borders and grid lines to the current graph. Chart Borders/Grids does not apply to pie charts.

1. Choose Chart Borders/Grids.
2. Under Borders, select one or more of the following options:

*Left*

Adds a border to the left of the graphed data.

*Right*

Adds a border to the right of the graphed data.

*Top*

Adds a border above the graphed data.

*Bottom*

Adds a border below the graphed data.

3. Under Grid lines, select one or more of the following options:

*X-axis*

Adds vertical grid lines that originate from points along the x-axis.

*Y-axis*

Adds horizontal grid lines that originate from points along the y-axis.

*2nd Y-axis*

Adds horizontal grid lines that originate from points along the 2nd y-axis.

4. Select OK.

See also:

[Chart Commands \(Graph Windows\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

## **Chart Options (Graph Window)**

Controls the colors, [hatch patterns](#), fonts, and lines used to display text and data in a graph.

### Colors

Sets the colors for text and A - F data ranges, or hides text and data ranges.

### Hatches

Sets hatch patterns for A - F data ranges.

### Fonts

Sets the fonts for text in a graph.

### Lines

Sets the way 1-2-3 displays lines for individual A - F data ranges in area, HLCO, line, mixed, and XY graphs.

### Advanced Styles

Sets the color and hatch pattern for individual values in an A - F data range based on values you set up in a worksheet.

See also:

[Chart Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)



## Chart Options Colors (Graph Window)

Sets the colors for text and A - F data ranges in a graph, or hides text and data ranges.

### To Set Text Colors

1. Choose Chart Options Colors.
2. Under Text colors, select the drop-down box for one of the following categories of text:
  - Chart title*  
Sets the color for, or hides, the title of the graph.
  - Subtitle, axis titles, legend*  
Sets the color for, or hides, the graph subtitle, axis titles, and legend.
  - Labels, notes, name of units*  
Sets the color for, or hides, the A - F data labels, graph footnotes, and axis-unit names.
3. Select a color, or select H to hide the text.
4. Repeat steps 2 and 3 for each category of text you want to set colors for.
5. Select OK.

### To create

### Use

---

Graph title, subtitle, footnotes	<u>Chart Headings</u>
Legend	<u>Chart Legend</u>
Data labels	<u>Chart Data Labels</u>
Axis titles, axis-unit names	<u>Chart Axis</u>

### To Set Data-Range Colors

1. Choose Chart Options Colors.
2. Under Data range colors, select the drop-down box for one of the A - F data ranges.
3. Select a color, or select H to hide the data range.
4. Repeat steps 2 and 3 for each A - F data range you want to set colors for.
5. Select OK.

### To set

### Use

---

Colors for pie slices	<u>Chart Ranges</u>
A - F data ranges	<u>Chart Ranges</u>

To assign colors to individual values in a data range, use Chart Options Advanced Styles.

See also:

Chart Commands (Graph Window)  
Chart Options (Graph Window)  
Graph Window Commands

## **Chart Options Hatches (Graph Window)**

Sets the hatch patterns for A - F data ranges. You can use these hatch patterns in the bars of a bar, HLCO, or mixed graph, in the slices of a pie chart, and in the area between lines in an area or mixed graph.

1. Choose Chart Options Hatches.
2. Select the drop-down box for one of the A - F data ranges.
3. Select a hatch pattern.
4. Repeat steps 2 and 3 for each A - F data range you want to set a hatch pattern for.
5. Select OK.

To assign hatch patterns to individual values in a data range, including the values used to create the slices of a pie chart, use Chart Options Advanced Styles.

To create A - F data ranges, use Chart Ranges.

See also:

[Chart Commands \(Graph Window\)](#)

[Chart Options \(Graph Window\)](#)

[Graph Window Commands](#)

## Chart Options Fonts (Graph Window)

Sets the font for text displayed in a graph.

1. Choose Chart Options Fonts.
2. Select the drop-down box for one of the following options:

*Chart title*

Sets the font for the title of the graph.

*Subtitle, axis titles, legend*

Sets the font for the graph subtitle, axis titles, and legend labels.

*Labels, notes, name of units*

Sets the font for data labels, graph footnotes, and axis-unit names.

3. Select a font from the list.
4. Repeat steps 2 and 3 for each category of text you want to set fonts for.
5. Select OK.

### **To create**

### **Use**

---

Graph title, subtitle, footnotes      Chart Headings

Legend      Chart Legend

Data labels      Chart Data Labels

Axis titles, axis-unit names      Chart Axis

See also:

Chart Commands (Graph Window)

Chart Options (Graph Window)

Graph Window Commands

## Chart Options Lines (Graph Window)

Sets the way 1-2-3 displays lines for individual A - F data ranges in area, HLCO, line, mixed, and XY graphs.

1. Choose Chart Options Lines.
2. For one of the A - F data ranges, select the check box of one or more of the following line options:

### *Connectors*

Displays connecting lines between the points in the data range.

### *Symbols*

Displays a symbol at each point in the data range.

### *Area fill*

Fills the space between one data range and the next, or between the data range and the x-axis, with the color assigned to the data range with Chart Options Colors.

3. Repeat step 2 for each A - F data range you want to set a line for.
4. Select OK.

To display all lines in a graph in the same way or to make line display different in different types of graphs, use Chart Type.

See also:

[Chart Commands \(Graph Window\)](#)

[Chart Options \(Graph Window\)](#)

[Graph Window Commands](#)

## **Chart Options Advanced Styles (Graph Window)**

Sets the color and the hatch pattern for each value in an A - F data range, using a range of color values and a range of hatch values you set up in a worksheet, or sets the hatch patterns for the slices in a pie chart using a range of hatch values you set up.

To set colors and other display options for a pie chart, use Chart Ranges.

### **To Set a Color and Hatch Pattern for Each Value in an A - F Data Range**

1. Set up each colors range and hatches range you want to use with the A - F data ranges.
2. Choose Chart Options Advanced Styles.
3. In the text boxes for an A - F data range, specify the colors range in the text box on the left and the hatches range in the text box on the right.
4. Repeat step 3 for each A - F data range you want to assign colors and hatch patterns to.
5. Select OK.

To set one color for all values in an A - F data range, use Chart Options Colors.

To set one hatch pattern for all values in an A - F data range, use Chart Options Hatches.

### **To Set Hatch Patterns for a Pie Chart**

1. Set up the hatches range you want to use for the pie chart.
2. Choose Chart Options Advanced Styles.
3. In the hatch values text box for the B data range, specify the hatches range.
4. Select OK.

See also:

[Chart Commands \(Graph Window\)](#)

[Chart Options \(Graph Window\)](#)

[Graph Window Commands](#)

## Setting Up a Colors Range

You use a colors range to assign a color to each value in an A - F data range or to assign a color to each slice in a pie chart, hide a pie slice, or explode a pie slice.

### Assigning Colors

- \* The colors range must be the same size as the data range.
- \* Each cell in the colors range must contain a value from 1 through 14.  
Values 1 through 8 correspond to the palette you set with Window Display Options Palette.  
Values 9 through 14 correspond to colors set by your computer's monitor.
- \* 1-2-3 uses the color value in the color range whose location corresponds to the location of the value in the data range.

### Example

Colors Range

### Hiding and Exploding Pie Slices

You can use the colors range to hide and explode pie slices. (An exploded pie slice is displayed as cut away from the pie.)

- \* To hide a pie slice, enter a negative number in the color-range cell that corresponds to the value in the data range you want to hide.
- \* To explode a pie slice, add 100 to the value in the corresponding color-range cell.  
For example, to explode a pie slice to which you are assigning the color 4, enter 104 in the corresponding color-range cell.

See also:

[Chart Commands \(Graph Window\)](#)

[Chart Options Advanced Styles \(Graph Window\)](#)

[Chart Ranges \(Graph Window\)](#)

### Example: Colors Range

B21..B25 is the A data range and C21..C25 is its corresponding colors range. The value 4 in the colors range represents the fourth color in the color palette, and the value 6 represents the sixth color in the palette. In a bar graph of this data range, 1-2-3 displays the first and second bars in color 4 and the third, fourth, and fifth bars in color 6.

	A -----	A -----	B -----	C -----
19	SALESPERSON		Q1 TOTAL	
20	-----			
21	Aubry		35,000	4
22	Hall		38,275	4
23	Howard		25,225	6
24	Kaplan		26,225	6
25	Maher		26,650	6
26				
27				

## Setting Up a Hatches Range

You use a hatches range to assign a [hatch pattern](#) to each value in an A - F [data range](#) or to assign a hatch pattern to each slice in a [pie chart](#), hide a pie slice, or explode a pie slice.

### Assigning Hatch Patterns

- \* The hatches range must be the same size as the data range.
- \* Each cell in the hatches range must contain a value from 1 through 14.  
Values 1 through 8 correspond to the hatch patterns available in [Chart Options Hatches](#).  
Values 9 through 14 correspond to varying shades of gray.
- \* 1-2-3 uses the hatch value in the hatches range whose location corresponds to the location of the value in the data range.

### Example

[Hatches Range](#)

### Hiding and Exploding Pie Slices

You can use the hatches range to hide and explode pie slices. (An exploded pie slice is displayed as cut away from the pie.)

- \* To hide a pie slice, enter a negative number in the hatches-range cell that corresponds to the value in the data range you want to hide.
- \* To explode a pie slice, add 100 to the value in the corresponding hatches-range cell.  
For example, to explode a pie slice to which you are assigning hatch pattern 4, enter 104 in the corresponding hatches-range cell.

See also:

[Chart Commands \(Graph Window\)](#)

[Chart Options Advanced Styles \(Graph Window\)](#)



### Example: Hatches Range

B21..B25 is the A data range and C21..C25 is its corresponding hatches range. The values 2 and 7 represent two of the hatch patterns available in 1-2-3. In a bar graph of this data range, 1-2-3 displays the first and second bars in hatch pattern 2 and the third, fourth, and fifth bars in hatch pattern 7.

	A -----	A -----	B -----	C -----
19	SALESPERSON	Q1 TOTAL		
20	-----			
21	Aubry	35,000		2
22	Hall	38,275		2
23	Howard	25,225		7
24	Kaplan	26,225		7
25	Maher	26,650		7
26				
27				

## Setting Up a Percent-Labels Range

You use a percent-labels range to remove percent labels from display in a [pie chart](#).

- \* The percent-labels range must be the same size as the data range.
- \* Each cell in the percent-labels range must contain a 0 (zero) or a one (1).
- \* 0 (zero) removes the percent label from the pie slice displayed for the value in the corresponding cell of the data range.

### Example

[Percent-Labels Range](#)

See also:

[Chart Commands \(Graph Window\)](#)

[Chart Ranges \(Graph Window\)](#)

### Example: Percent-Labels Range

B21..B25 is the A data range and C21..C25 is its corresponding percent-labels range. A 0 is entered for two sales totals (both representing more than 20% of the total sales for the quarter). In a pie chart of the Q1 TOTAL data range, 1-2-3 removes the percent labels for the corresponding slices.

	A -----	A -----	B -----	C -----
19	SALESPERSON	Q1 TOTAL		
20	-----			
21	Aubry	35,000		0
22	Hall	38,275		0
23	Howard	25,225		1
24	Kaplan	26,225		1
25	Maher	26,650		1
26				
27				

## **Chart Clear (Graph Window)**

Resets all or selected settings for the current graph to 1-2-3 default settings.

1. Choose Chart Clear.
2. To clear current X and A - F data-range settings and data-label settings, select the check box of one or more of the following options under Data ranges:  
*All (X, A-F)*  
Erases all data-range and data-label settings and deletes the ranges and labels from the graph.  
*X, A, B, C, D, E, F*  
Erases a data-range and its data-label settings and deletes the range and labels from the graph.
3. To clear all settings for the graph, select Entire chart.
4. To clear data-label, heading, legend, axis, color, hatch, font, and line settings for the graph, select Chart settings.
5. Select OK.

To remove the graph from a range in the worksheet, use Edit Clear Special.

To delete the graph from the file, use Graph Name Delete.

See also:

Chart Commands (Graph Window)

Graph Commands

Graph Window Commands

## About Graph Types



[About Choosing Graph Types \(5:00\)](#)

The graph type you choose determines how data in data ranges is plotted and displayed. In 1-2-3, you can create seven basic types of graphs.

### Area Graph (Including 3-D Area)

Area graphs are line graphs. 1-2-3 plots area graphs exactly as it plots line graphs: the X data range becomes the x-axis labels, and the A - F data ranges become lines in the graph. Data points along the line represent one value in the range.

In an area graph, however, 1-2-3 uses a different color or hatch pattern to fill the area between each line or between each line and the x-axis.

### Bar Graph (Including 3-D Bar)

Bar graphs are useful for comparing related data at a point in time or for tracking changes in data over time. Each bar in a bar graph represents a value in a data range.

In a bar graph, 1-2-3 uses the X data range as the x-axis labels and the A - F data ranges as the sets of bars in the graph. 1-2-3 creates one set of bars for each data range, with each bar representing one value in the range.

In a stacked bar graph, 1-2-3 graphs the A - F data ranges as portions of bars, with the A-range data at the bottom of the bars, the B-range data above the A-range data, and so on. In a clustered bar graph, 1-2-3 uses separate bars to graph A - F data ranges.

### HLCO Graph

High-Low-Close-Open graphs, also called stock market graphs, track fluctuations in stock prices (or any other type of data) over time. The high and low values are depicted as a vertical line that includes a right tick mark for the closing value and a left tick mark for the opening value. The number of vertical lines in the graph depends on the number of time periods for which the high-low-close-open data was recorded.

You can also include bars (to represent, for example, the daily volume of trading for the stock) and a line (to represent, for example, a rolling stock-price average) in the graph.

In an HLCO graph, 1-2-3 uses the X data range as the x-axis labels; the A, B, C, and D ranges as the sets of high, low, close, and open values, respectively; the E data range as the set of bars below the high-low-close-open area of the graph; and the F data range as the line in the high-low-close-open area.

You must use at least the A and B data ranges or the E or F data range.

### Line Graph (Including 3-D Line)

Line graphs stress continuity of data over time, and they are particularly useful for identifying trends and making projections. Each line in a line graph represents a data range, and each point along the line represents a value at a particular time.

In a line graph, 1-2-3 uses the X data range as the x-axis labels and the A - F data ranges as the lines in the graph. 1-2-3 creates one line for each data range; each data point along the line represents one value in the range.

In an unstacked line graph, 1-2-3 plots the actual values in each data range, so the lines may overlap if the data ranges have values that are close together.

In a stacked line graph, 1-2-3 plots data ranges one on top of the other, placing the A range closest to the x-axis and plotting its actual values. To plot the line for the B data range, 1-2-3 adds the values in the A data range to the corresponding values in the B data range. To

plot the line for the C data range, 1-2-3 adds the newly derived values of the B data range to the corresponding values in the C data range, and so on for each range in the graph.

### **Mixed Graph**

Mixed graphs are combination bar and line graphs. They are useful for plotting different types of data (for example, sales volumes and advertising expenditures) in the same graph.

For mixed graphs, 1-2-3 uses the X data range as the x-axis labels; the A, B, and C data ranges as sets of bars in the graph; and the D, E, and F data ranges as lines.

### **Pie Chart (Including 3-D Pie)**

Pie charts relate two or more positive values to one another and to the whole data range by depicting the values as slices of a pie. Pie charts show the percentage of the total belonging to each value.

In a pie chart, 1-2-3 uses the X data range as the pie-slice labels and the A data range as the pie slices. Optionally, you can create a B data range to color, hide, and explode pie slices and a C data range to suppress display of percent labels.

### **XY Graph**

XY graphs, also called scatter charts, show correlations between two types of numeric data. XY graphs resemble line graphs in the sense that values are plotted as points in the graph. Unlike line graphs, however, XY graphs use a numeric scale along the x-axis.

In an XY graph, 1-2-3 uses the values in the X data range as the x-axis scale. 1-2-3 graphs the A - F data ranges as points, creating one set of points for each data range you specify. These points are plotted against the values in the x-axis.

In an unstacked XY graph, 1-2-3 plots the actual values in each data range, so the lines, data points, or lines and data points may overlap if the data ranges have values that are close together.

In a stacked XY graph, 1-2-3 plots data ranges one on top of the other, placing the A range closest to the x-axis and plotting its actual values. To plot the line, data points, or line and data points for the B data range, 1-2-3 adds the values in the A data range to the corresponding values in the B data range. To plot the line, data points, or line and data points for the C data range, 1-2-3 adds the newly derived values of the B data range to the corresponding values in the C data range, and so on for each range in the graph.

### **Displaying X-Axis Labels**

- \* When 1-2-3 uses the contents of the X data range as the x-axis labels (in area, bar, HLCO, line, and mixed graphs) and the labels are long enough to overlap one another, 1-2-3 automatically staggers the labels.
- \* To suppress the display of some of the labels along the x-axis, use [Chart Axis X Options](#).

See also:

[Chart Commands \(Graph Window\)](#)

[Chart Ranges \(Graph Window\)](#)

[Chart Type \(Graph Window\)](#)

[Creating Graphs](#)

[Graph Commands](#)

## Draw Text (Graph Window)

Adds text to the current Graph window. Each block of text that you add can contain up to 512 characters of text.

1. Choose Draw Text.
2. Specify the text in the New text text box in one of the following ways:
  - \* Enter the text.
  - \* Type \ (backslash) and specify the cell that contains the text.  
If you enter a range name or address, 1-2-3 uses the contents of the first cell in the range.

3. Select OK.

The mouse pointer changes to a thin black cross in the Graph window.

4. Using the mouse or the pointer-movement keys, move the mouse pointer to the place in the Graph window at which you want to enter the text.

5. Click the mouse or press ENTER to add the text.

1-2-3 adds the text to the Graph window as a selected object (handles appear around the text).

To move the text block within the Graph window, select the text and drag it to the new location.

### To Change the Text

1. In the Graph window, select the text you want to change.
2. Press F2 (EDIT).
3. Change the text in the New text text box in one of the following ways:
  - \* Enter the new text.
  - \* Type \ (backslash) and specify the cell that contains the new text.  
If you enter a range name or address, 1-2-3 uses the contents of the first cell in the range.
4. Select OK.

1-2-3 replaces the existing text with the new text.

See also:

[Draw Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

## **Edit Text (Graph Window)**

Changes text created with Draw Text in the current Graph window.

1. In the Graph window, select the text you want to change.
2. Press F2 (EDIT).

The Edit Text dialog box is displayed.

3. Change the text in the New text text box in one of the following ways:

- \* Enter the new text.
- \* Type \ (backslash) and specify the cell that contains the new text.

If you enter a range name or address, 1-2-3 uses the contents of the first cell in the range.

Each block of text can contain up to 512 characters of text.

4. Select OK.

1-2-3 replaces the existing text with the new text.

See also:

[Draw Text \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)



## Draw Line (Graph Window)

Adds a single straight line or connected line segments to the current Graph window.

1. Choose Draw Line.

The mouse pointer changes to a thin black cross in the Graph window.

2. Using the mouse or the pointer-movement keys, move the mouse pointer to the place in the Graph window at which you want to begin drawing the line.

3. Draw the line in one of the following ways:

- \* Drag the mouse in the direction you want the first line segment to go and release the mouse; drag the mouse in the direction you want the second line segment to go and release the mouse again. Continue dragging and releasing the mouse until you draw all the line segments you want.

To erase the previously drawn line segment, click the right mouse button.

To stop drawing line segments, double-click the mouse.

To align a line segment with the nearest 45-degree increment, press SHIFT as you begin to drag the mouse, or as you release the mouse to stop drawing.

- \* Press the space bar to anchor the first line segment and use the pointer-movement keys to draw the first line segment in the direction you want it to go; press the space bar to anchor the second line segment and use the pointer-movement keys to draw the second line segment in the direction you want it to go. Continue using the space bar and pointer-movement keys to draw all the line segments you want.

To erase the previously drawn line segment, press ESC.

To stop drawing line segments, press ENTER.

To align a line segment with the nearest 45-degree increment, press SHIFT as you anchor the line, or as you press ENTER to stop drawing.

1-2-3 adds the line to the Graph window as a selected object (a handle appears at the center of the line).

To move the line within the Graph window, select the line and drag it to the new location.

To smooth connected line segments into curves, use Style Lines (Graph window).

See also:

Draw Commands (Graph Window)

Graph Commands

Graph Window Commands

Selecting Objects in the Graph Window

## Draw Arrow (Graph Window)

Adds a line segment or connected line segments with an arrowhead at one end to the current Graph window.

1. Choose Draw Arrow.

The mouse pointer changes to a thin black cross in the Graph window.

2. Using the mouse or the pointer-movement keys, move the pointer to the place in the Graph window at which you want to begin drawing the arrow line.

3. Draw the arrow line in one of the following ways:

- \* Drag the mouse in the direction you want the first line segment to go and release the mouse; drag the mouse in the direction you want the second line segment to go and release the mouse again. Continue dragging and releasing the mouse until you draw all the line segments you want.

To erase the previously drawn line segment, click the right mouse button.

To stop drawing line segments, double-click the mouse.

To align a line segment with the nearest 45-degree increment, press SHIFT as you begin to drag the mouse, or as you release the mouse to stop drawing.

- \* Press the space bar to anchor the first line segment and use the pointer-movement keys to draw the first line segment in the direction you want it to go; press the space bar to anchor the second line segment and use the pointer-movement keys to draw the second line segment in the direction you want it to go. Continue using the space bar and pointer-movement keys to draw all the line segments you want.

To erase the previously drawn line segment, press ESC.

To stop drawing line segments, press ENTER.

To align a line segment with the nearest 45-degree increment, press SHIFT as you anchor the line, or as you press ENTER to stop drawing.

1-2-3 adds an arrowhead to the line and displays the arrow in the Graph window as a selected object (a handle appears at the center of the line).

To add or delete arrowheads, or to smooth connected line segments into curves, use Style Lines (Graph window).

To move the arrow within the Graph window, select the arrow and drag it to the new location.

See also:

[Draw Commands \(Graph Window\)](#)

[Graph Commands](#)

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[Selecting Objects in the Graph Window](#)

## Draw Rectangle (Graph Window)

Adds a rectangle or a square to the current Graph window.

1. Choose Draw Rectangle.

The mouse pointer changes to a thin black cross in the Graph window.

2. Using the mouse or the pointer-movement keys, move the pointer to the place in the Graph window at which you want to begin drawing the rectangle or square.

3. Draw the rectangle or square in one of the following ways:

- \* Drag the mouse in the direction you want the rectangle to go until the bounding box is the size and shape you want. Release the mouse to stop drawing the rectangle.

To draw a square, press SHIFT as you begin to drag the mouse or as you release the mouse to stop drawing.

- \* Press the space bar to anchor the first corner of the bounding box, and use the pointer-movement keys to stretch the box in the direction you want the rectangle to go until the box is the size you want the rectangle to be. Press ENTER to stop drawing the rectangle.

To draw a square, press SHIFT as you anchor the first corner of the bounding box or as you press ENTER to stop drawing.

1-2-3 adds the rectangle or square to the Graph window as a selected object (handles appear in the outline of the rectangle or square).

To move the rectangle or square within the Graph window, select the rectangle or square and drag it to the new location.

To smooth the corners of the rectangle or square into curves, use Style Lines (Graph window).

See also:

[Draw Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

## Draw Polygon (Graph Window)

Adds a multi-sided object to the current Graph window.

1. Choose Draw Polygon.

The mouse pointer changes to a thin black cross in the Graph window.

2. Using the mouse or the pointer-movement keys, move the mouse pointer to the place in the Graph window at which you want to begin drawing the polygon.

3. Draw the polygon in one of the following ways:

- \* Drag the mouse in the direction you want the first side of the polygon to go and release the mouse; drag the mouse in the direction you want the second side to go and release the mouse again. Continue dragging and releasing the mouse until you draw all the sides you want; if you don't draw the last side, 1-2-3 draws it for you.

To erase the previously drawn line segment, click the right mouse button.

To stop drawing the polygon, double-click the mouse.

- \* Press the space bar to anchor the first side of the polygon and use the pointer-movement keys to draw the first side of the polygon in the direction you want it to go; press the space bar to anchor the second side of the polygon and use the pointer-movement keys to draw the second side. Continue using the space bar and pointer-movement keys to draw all the sides you want; if you don't draw the last side, 1-2-3 draws it for you.

To erase the previously drawn line segment, press ESC.

To stop drawing the polygon, press ENTER.

1-2-3 adds the polygon to the Graph window as a selected object (handles appear in the outline of the polygon).

To move the polygon within the Graph window, select the polygon and drag it to the new location.

To smooth the corners of the polygon into curves, use Style Lines (Graph window).

See also:

[Draw Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

## Draw Ellipse (Graph Window)

Adds an ellipse or a circle to the current Graph window.

1. Choose Draw Ellipse.

The mouse pointer changes to a thin black cross in the Graph window.

2. Using the mouse or the pointer-movement keys, move the mouse pointer to the place in the Graph window at which you want to begin drawing the ellipse or circle.

3. Draw the ellipse or circle in one of the following ways:

- \* Drag the mouse in the direction you want the ellipse to go until the bounding box is the size and shape you want the ellipse to be. Release the mouse to stop drawing the ellipse.

To draw a circle, press SHIFT as you begin to drag the mouse or as you release the mouse to stop drawing.

- \* Press the space bar to anchor the first corner of the bounding box, and use the pointer-movement keys to stretch the box in the direction you want the ellipse to go until the box is the size you want the ellipse to be. Press ENTER to stop drawing the ellipse.

To draw a circle, press SHIFT as you anchor the first corner of the bounding box or as you press ENTER to stop drawing.

1-2-3 adds the ellipse or circle to the Graph window as a selected object (handles appear in the outline of the ellipse or circle).

To move the ellipse or circle within the Graph window, select the ellipse or circle and drag it to the new location.

See also:

[Draw Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

## **Draw Freehand (Graph Window)**

Adds an object that is drawn freehand to the current Graph window.

1. Choose Draw Freehand.

The mouse pointer changes to a thin black cross in the Graph window.

2. Using the mouse or the pointer-movement keys, move the mouse pointer to the place in the Graph window at which you want to begin drawing the object.

3. Draw the freehand object in one of the following ways:

- \* Drag the mouse to draw the object; the pointer changes to a pencil when you begin to drag the mouse. Release the mouse to stop drawing the object.
- \* Press the space bar to anchor the drawing and use the pointer-movement keys to draw the object; the pointer changes to a pencil when you anchor the drawing. Press ENTER to stop drawing the object.

1-2-3 adds the freehand object to the Graph window as a selected object (handles appear in the outline of the object).

To move the freehand object within the Graph window, select the object and drag it to the new location.

To smooth corners in the drawing into curves, use Style Lines (Graph window).

See also:

[Draw Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

## Selecting Objects in the Graph Window

You must select an object or a graph before you can copy, delete, rearrange, or move the object or graph in the Graph window, adjust the object's line style or colors, and make other layout changes to the object or graph. You can then make one or more changes to your selection and select another item to change.

You can use the mouse or the Edit Select (Graph window) commands to select an object or a graph. When you make your selection, 1-2-3 outlines the object or the graph with handles.

You can also use the mouse and Edit Select commands to deselect an object or a graph. When you deselect an item, the handles go away.

### Using the Mouse

To select an object or a graph with the mouse, position the mouse pointer on the boundary line of the object or graph and click the mouse. When you select a graph, objects drawn in the graph are not selected.

To select several objects with the mouse, imagine a box large enough to include all the objects you want to select, position the mouse pointer at one corner of this box, and then drag the mouse until you surround all the objects.

To deselect all selected items, position the mouse pointer anywhere in the Graph window and click the mouse.

To deselect one item when several items are selected, position the mouse pointer in the item and simultaneously press SHIFT and click the mouse.

### Using the Edit Select Commands

You can use the Edit Select (Graph window) commands to select and deselect an object or a graph as described below:

<b>This command</b>	<b>Does this:</b>
Edit Select All	Selects all objects, but not a graph, in the Graph window.
Edit Select None	Deselects all selected items in the Graph window, including a selected graph.
Edit Select Cycle	Starting with the item in the Graph window that was created first, cycles through all items, including the graph, and selects the items you specify.
Edit Select Chart	Selects the graph in the Graph window.

See also:

[Draw Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

## **Edit Copy (Graph Window)**

Copies the contents of the Graph window to the Clipboard. The copy remains on the Clipboard until you use Edit Copy or Edit Cut again in 1-2-3 for Windows or in another Windows application.

1. Choose Edit Copy.

Use Edit Paste to insert the copied items in a worksheet file or in another Windows application.

See also:

[Copying Data in 1-2-3](#)

[Edit Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)



## **Edit Delete (Graph Window)**

Deletes an object or the entire graph from the Graph window.

1. Select the objects or graph to delete.
2. Choose Edit Delete or press DEL.

To undo the deletion, choose Edit Undelete or press INS while the Graph window is displayed.

See also:

[Edit Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Name Delete](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

## **Edit Undelete (Graph Window)**

Restores to the Graph window the object or graph most recently deleted with Edit Delete or DEL.

1. Choose Edit Undelete or press INS.

1-2-3 redisplay the deleted items in the Graph window.

See also:

[Edit Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

## **Edit Replicate (Graph Window)**

Creates a copy of an object or the entire graph.

1. Select the objects or graph to replicate.
2. Choose Edit Replicate or press SHIFT+INS.

1-2-3 displays the copy superimposed on the original. To move the copy, position the mouse pointer in the copy and drag the copy to another location in the Graph window.

See also:

[Edit Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

## **Edit Select (Graph Window)**

Selects or deselects an object or the entire graph.

### All

Selects all objects, except a graph.

### None

Deselects all selected objects, including a graph.

### Cycle

Cycles through objects, including a graph, and selects or deselects the items you specify.

### Chart

Selects a graph.

See also:

[Edit Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

## **Edit Select All (Graph Window)**

Selects all objects, except a graph. After you choose Edit Select All, you can use other Graph window commands to copy, delete, or rearrange the selected items, or make layout changes.

1. Choose Edit Select All.

1-2-3 outlines all the items with handles.

See also:

[Edit Commands \(Graph Window\)](#)

[Edit Select \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Edit Select None (Graph Window)**

Deselects all selected objects, including a graph.

1. Choose Edit Select None.

1-2-3 removes handles from all items.

See also:

[Edit Commands \(Graph Window\)](#)

[Edit Select \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Edit Select Cycle (Graph Window)**

Starting with the item that was created first, cycles through objects, including a graph, and selects or deselects the items you specify. After you choose Edit Select Cycle and select items, you can use other Graph window commands to copy, delete, or rearrange the items, or make layout changes.

1. Choose Edit Select Cycle.
2. Select Next to move to the next item in the cycle. Select Previous to move to the previous item in the cycle.
3. To select or deselect the item, select Select.

**Note** You can reverse selection or deselection of the item by selecting Select again before you move to the next item or before you select OK.

4. To move to another item and select or deselect it, repeat steps 2 and 3.
5. Select OK.

1-2-3 outlines each selected item with handles.

See also:

[Edit Commands \(Graph Window\)](#)

[Edit Select \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Edit Select Chart (Graph Window)**

Selects a graph. After you choose Edit Select Chart, you can use other Graph window commands to copy, delete, or rearrange the graph, or make layout changes.

1. Choose Edit Select Chart.

1-2-3 outlines the graph with handles.

See also:

[Edit Commands \(Graph Window\)](#)

[Edit Select \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)



## **File Close (Graph Window)**

Closes the current Graph window and redisplay the worksheet. When you close a Graph window, 1-2-3 removes the graph from memory but does not delete the graph from disk.

1. Choose File Close.

1-2-3 automatically saves changes to graphs.

See also:

[File Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Name Delete](#)

[Graph Window Commands](#)

## **File Exit (Graph Window)**

Ends the 1-2-3 for Windows session. When you end a session, 1-2-3 saves changes to graphs and removes all active files from memory but does not delete the files from disk. The 1-2-3 window closes, and the Windows Program Manager screen is redisplayed.

1. Choose File Exit.
2. If 1-2-3 indicates that active files changed and asks whether you want to save the changes, select one of the following options:

*Yes*

Saves the changes and ends the session.

*No*

Ends the session without saving the changes.

*Cancel*

Does not end the session.

See also:

[Closing a Window in 1-2-3](#)

[Exiting and Ending 1-2-3 for Windows](#)

[File Commands \(Graph Window\)](#)

[Graph Commands](#)

[Graph Window Commands](#)

[Working with Multiple Files](#)

## **File Exit (Replace/Backup/Cancel)**

Cancels or completes the File Exit (Graph window) command when one or more files changed during the 1-2-3 for Windows session already exist on disk.

1. Select one of the following options:

*Replace*

For all changed files, replaces the data in the files on disk with the updated data.

*Backup*

For all changed files, renames the files on disk with the extension .BAK and replaces the data in the original files on disk with the updated data.

*Cancel*

Returns 1-2-3 to READY mode without updating any file on disk.

2. Select OK.

See also:

[File Commands \(Graph Window\)](#)

[File Exit \(Graph Window\)](#)

## **Layout Send Forward (Graph Window)**

Places selected objects in front of all other objects. Objects in front may hide objects behind them.

1. Select the objects to place in front.
2. Choose Layout Send Forward.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Layout Commands \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Layout Fall Back (Graph Window)**

Places selected objects behind all other objects. Objects in back may be hidden by objects in front of them.

1. Select the objects to place in back.
2. Choose Layout Fall Back.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Layout Commands \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Layout Lock (Graph Window)**

Prevents changes to objects or the graph itself. When you lock objects, their selection indicators change from squares to diamonds.

1. Select the objects or graph to lock.
2. Choose Layout Lock.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Layout Commands \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Layout Unlock (Graph Window)**

Removes the lock, set with [Layout Lock](#), that protects selected [objects](#) from changes.

1. Select the objects to unlock.
2. Choose Layout Unlock.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Layout Commands \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Rearrange Flip (Graph Window)**

Flips an object or the entire graph horizontally or vertically.

### Horizontal

Flips an object or the entire graph horizontally axis so that it appears backwards.

### Vertical

Flips an object or the entire graph vertically so that it appears upside down.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Rearrange Commands \(Graph Window\)](#)



## **Rearrange Flip Horizontal (Graph Window)**

Flips an object or the entire graph horizontally so that it appears backwards.

1. Select the objects or graph you want to flip.
2. Choose Rearrange Flip Horizontal.

See also:

[Rearrange Commands \(Graph Window\)](#)

[Rearrange Flip \(Graph Window\)](#)

[Rearrange Flip Vertical \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Rearrange Flip Vertical (Graph Window)**

Flips an object or the entire graph vertically so that it appears upside down.

1. Select the objects or graph you want to flip.
2. Choose Rearrange Flip Vertical.

See also:

[Rearrange Commands \(Graph Window\)](#)

[Rearrange Flip \(Graph Window\)](#)

[Rearrange Flip Horizontal \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Rearrange Quarter-Turn (Graph Window)**

Rotates an object or the entire graph around its center in 90-degree increments.

1. Select the objects or graph you want to rotate.
2. Choose Rearrange Quarter-Turn.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Rearrange Commands \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Rearrange Skew (Graph Window)**

Adjusts the slant and size of an object or the entire graph by making its horizontal or vertical axis a hinge on which you can rotate the object.

### Horizontal

Adjusts the slant and size of an object or the entire graph by making its horizontal axis a hinge on which you can rotate the object.

### Vertical

Adjusts the slant and size of an object or the entire graph by making its vertical axis a hinge on which you can rotate the object.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Rearrange Commands \(Graph Window\)](#)

## **Rearrange Skew Horizontal (Graph Window)**

Adjusts the slant and size of an object or the entire graph by making its horizontal axis a hinge on which you can rotate the object.

1. Select the objects or graph whose slant and size you want to change.
2. Choose Rearrange Skew Horizontal.
3. Use the mouse or pointer-movement keys to adjust the selected objects. When you finish, double-click or press ENTER.

See also:

[Rearrange Commands \(Graph Window\)](#)

[Rearrange Skew \(Graph Window\)](#)

[Rearrange Skew Vertical \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Rearrange Skew Vertical (Graph Window)**

Adjusts the slant and size of an object or the entire graph by making its vertical axis a hinge on which you can rotate the object.

1. Select the objects or graph whose size and slant you want to change.
2. Choose Rearrange Skew Vertical.
3. Use the mouse or pointer-movement keys to adjust the selected objects. When you finish, double-click or press ENTER.

See also:

[Rearrange Commands \(Graph Window\)](#)

[Rearrange Skew \(Graph Window\)](#)

[Rearrange Flip Horizontal \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Rearrange Turn (Graph Window)**

Rotates an object or the entire graph around its center at any angle.

1. Select the objects or graph you want to rotate.
2. Choose Rearrange Turn.
3. Use the mouse or pointer-movement keys to rotate the selected objects or graph. When you finish, double-click or press ENTER.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Rearrange Commands \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Rearrange Adjust Size (Graph Window)**

Changes the size of an object or the entire graph.

1. Select the objects or graph whose size you want to change.
2. Choose Rearrange Adjust Size.
3. Use the mouse or pointer-movement keys to adjust the size of the selected objects or graph. When you finish, double-click or press ENTER.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Rearrange Commands \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)



## **Rearrange Clear (Graph Window)**

Cancels the effects of all Rearrange commands, returning an object or the entire graph to its original state.

1. Select the objects or graph you want to return to its original states.
2. Choose Rearrange Clear.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Rearrange Commands \(Graph Window\)](#)

[Selecting Objects in the Graph Window](#)

## **Style Font (Graph Window)**

Applies a font in the current font set to text you add to a graph with Draw Text, or changes the size of all text in a graph.

1. Select the text to format.
2. Choose Style Font.
3. Select a font from the Fonts list box.

The first font in the list is the default font for the current worksheet file.

4. To indicate the percentage by which to increase or decrease the size of all text in the graph, enter a number from 1 through 1000 in the Magnify all fonts text box.

For example, enter 150 to enlarge all text in the graph to 150% of its default size.

5. Select OK.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

[Style Commands \(Graph Window\)](#)

## Style Color (Graph Window)

Assigns colors to parts of the graph. These colors are visible when the worksheet is displayed on a color monitor or printed on a color printer.

1. Select the objects whose colors you want to change.
2. Choose Style Color.
3. Select the drop-down box of one of the following options:

### *Text*

Sets the color for text added to the graph with Draw Text.

### *Line*

Sets the color for a selected line or arrow, or the outline of a selected rectangle, polygon, ellipse, or freehand drawing.

### *Interior fill*

Sets the color for the inside of a selected object.

**Note** If the selected object is the graph itself, selecting Interior fill changes the color inside the frame bounded by the x-axis and y-axis.

### *Background*

Sets the color for the background of the graph.

4. Select a color from the list.
5. Repeat steps 3 and 4 to assign colors to other parts of the graph.
6. Select OK.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

[Style Commands \(Graph Window\)](#)

## **Style Lines (Graph Window)**

Controls the appearance of lines or the outlines of rectangles, polygons, ellipses, or freehand drawings.

### Line

Changes the style and width of lines and outlines.

### Smoothing

Replaces the corners of rectangles, polygons, freehand drawings, and connected line segments with curves.

### Add arrowheads

Adds, removes, and changes the placement of arrowheads.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Style Commands \(Graph Window\)](#)

## **Style Lines Line (Graph Window)**

Changes the style and width of lines or outlines.

1. Select the objects whose line styles or line widths you want to change.
2. Choose Style Lines.
3. To specify a style for lines and outlines, select a line style from the Style drop-down box.
4. To specify a width for lines and outlines, select a width from the Width drop-down box.
5. Select OK.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

[Style Commands \(Graph Window\)](#)

## Style Lines Smoothing (Graph Window)

Replaces the corners of rectangles, polygons, freehand drawings, and connected line segments with curves.

1. Select the objects whose smoothing you want to change.
2. Choose Style Lines.
3. Under Smoothing, select one of the following options:

*None*

Removes smoothing from an object (turns an ellipse into a rectangle, for example).

*Tight*

Draws a smooth outline that approximates the original outline of an object.

*Medium*

Draws an object with maximum smoothing (turns a rectangle into an ellipse, for example).

4. Select OK.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

[Style Commands \(Graph Window\)](#)

## **Style Lines Add Arrowheads (Graph Window)**

Adds, removes, and changes the placement of arrowheads.

1. Select the lines or arrows you want to change.
2. Choose Style Lines.
3. Under Add arrowheads, select one or both of the following:
  - Start of line*  
Adds an arrowhead to the beginning of a line.
  - End of line*  
Adds an arrowhead to the end of a line.
4. Select OK.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

[Style Commands \(Graph Window\)](#)

## Style Alignment (Graph Window)

Left-aligns, centers, or right-aligns text added to a graph with [Draw Text](#). 1-2-3 aligns the text relative to what the center point of the line of text was when it was added.

1. Select the lines of text you want to align.
2. Choose Style Alignment.
3. Under Align text, select one of the following options:

*Left*

Left-aligns a line of text.

*Center*

Centers a line of text.

*Right*

Right-aligns a line of text.

4. Select OK.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

[Style Commands \(Graph Window\)](#)



## Style Display Options (Graph Window)

Makes a graph in the worksheet transparent or opaque; turns the display of a graph in the worksheet on or off; makes a graph in the worksheet update automatically to reflect changes in the data on which it is based; and displays a grid that shows the outline of each cell in the range the graph occupies.

1. Choose Style Display Options.
2. Under Graph display on sheet, select one or more of the following options:

### *Transparent*

Changes the current graph in the worksheet from opaque to transparent. Opaque graphs hide worksheet data under them; transparent graphs let worksheet data under them show through.

### *Hidden*

Turns the display of the current graph in the worksheet off. When the display of a graph is turned off, 1-2-3 displays the graph as a shaded rectangle in the worksheet. When you turn the display of a graph off, 1-2-3 still prints the actual graph, not the shaded rectangle.

### *Updated automatically*

Turns on automatic recalculation of the current graph in the worksheet. When automatic recalculation of graphs is on, 1-2-3 automatically updates graphs in the worksheet when you change the data the graphs are based on.

4. To display a grid that shows the outline of each cell in the range the graph occupies, select the Show grid lines check box.

**Note** The grid lines are not part of the graph and are not displayed when you return to the Worksheet window.

5. Select OK.

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Style Commands \(Graph Window\)](#)

## **Window Enlarge (Graph Window)**

Enlarges the contents of the Graph window. Window Enlarge does not affect the way the contents of the Graph window appear in the worksheet or in print.

1. Choose Window Enlarge or press + (plus sign).
2. Repeat step 1 up to four times to continue enlarging the contents of the Graph window.

1-2-3 displays scroll bars in the Graph window when you choose Window Enlarge. You can use the scroll bars to view other areas of the window.

To reduce the enlarged contents of the Graph window, choose Window Reduce or press - (minus sign).

To redisplay the contents of the Graph window at normal size, choose Window Full or press \* (asterisk).

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Window Commands \(Graph Window\)](#)

## **Window Reduce (Graph Window)**

Reduces the enlarged contents of the Graph window. Window Reduce does not affect the way the contents of the Graph window appear in the worksheet or in print.

1. Choose Window Reduce or press - (minus sign).
2. Repeat step 1 up to four times to continue reducing the Graph window contents.

To enlarge the contents of the Graph window, choose Window Enlarge or press + (plus sign).

To redisplay the contents of the Graph window at normal size, choose Window Full or press \* (asterisk).

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Window Commands \(Graph Window\)](#)

## **Window Full (Graph Window)**

Redisplays the contents of the Graph window at normal size. Window Full does not affect the way the contents of the Graph window appear in the worksheet or in print.

1. Choose Window Full or press \* (asterisk).

To enlarge the contents of the Graph window, choose Window Enlarge or press + (plus sign).

To reduce the enlarged contents of the Graph window, choose Window Reduce or press - (minus sign).

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Window Commands \(Graph Window\)](#)

## **Window Zoom (Graph Window)**

Enlarges an area of the Graph window to fill the window. Window Zoom does not affect the way the contents of the Graph window appear in the worksheet or in print.

1. Choose Window Zoom or press @ (at sign).
2. Select an area of the Graph window to enlarge.

1-2-3 displays scroll bars in the Graph window when you choose Window Zoom. You can use the scroll bars to view other areas of the window.

To reduce the enlarged area of the Graph window, choose Window Reduce or press - (minus sign).

To redisplay the contents of the Graph window at normal size, choose Window Full or press \* (asterisk).

See also:

[Graph Commands](#)

[Graph Window Commands](#)

[Selecting Objects in the Graph Window](#)

[Window Commands \(Graph Window\)](#)

## **@Function Basics**

 [Moving a Range of Data \(1:10\)](#)

 [Moving a Range of Data \(1:10\)](#)

The 1-2-3 @functions are built-in formulas that perform specialized calculations automatically. Some @functions are simple; for example, @SUM adds the values in a range. @SUM(D1..D7) adds the values in the range D1..D7, which is easier than typing out the formula +D1+D2+D3+D4+D5+D6+D7. Other @functions replace complex formulas; for example, @NPV calculates the net present value of a series of future cash-flow values.

You can use an @function by itself as a formula, combine it with other @functions and formulas, or use it in a macro.

### @Function Categories

Lists the categories of @functions.

### @Function Format

Illustrates the format for writing @functions and defines the types of arguments you can use in @functions.

### @Function Index

Lists @functions in alphabetical order.

### @Function Rules

Lists rules for writing @functions.

### Writing an @Function

Describes how to enter an @function.

## **@Function Categories**

1-2-3 has eight categories of @functions. For an alphabetical list of all @functions, see the [@Function Index](#).

### Database

Perform statistical calculations and queries in [database tables](#).

### Date and time

Calculate values that represent dates and times.

### Financial

Analyze investments and annuities, determine depreciation, and calculate cash flows and loans.

### Logical

Calculate the results of [logical formulas](#).

### Mathematical

Simplify various mathematical operations, such as calculating square roots, and replace complex trigonometric calculations.

### Special

Return information about cells, ranges, or the operating system; find the contents of a cell; or mark places where information is missing or incorrect.

### Statistical

Perform calculations on lists of values.

### String

Provide information about text in cells, and perform other operations on text.

See also:

[@Function Format](#)

[@Function Rules](#)

[Writing an @Function](#)

## Writing an @Function



Most @functions have three parts:

- \* The @ (at sign)
- \* The name of the @function
- \* One or more arguments enclosed in parentheses

For example, to enter an @function in cell B12 that calculates the sum of the numbers in cells B1 through B10

1. Move to cell B12.
2. Type @sum(.

You can enter @functions in either uppercase or lowercase letters; 1-2-3 displays them in uppercase letters.

3. Type or select B1..B10, the range you want to sum in the @function.
4. Type ) (close parenthesis) to complete the @function.
5. Click the Confirm box or press ENTER.

### **To Enter @Functions Using F3 (NAME)**

1. Type @.
  2. Press F3 (NAME).
- 1-2-3 displays a list of the @functions.

3. Select the @function you want.
4. Double-click or press ENTER.

1-2-3 inserts the @function name into the edit line along with the ( (open parenthesis) if the @function requires an argument.

5. Enter the arguments and the ) (close parenthesis).
6. Click the Confirm box or press ENTER.

See also:

- [@Function Format](#)
- [@Function Index](#)
- [@Function Rules](#)
- [Entering Formulas](#)



## @Function Index

<u>@@</u>	<u>@ISSTRING</u>
<u>@ABS</u>	<u>@LEFT</u>
<u>@ACOS</u>	<u>@LENGTH</u>
<u>@ASIN</u>	<u>@LN</u>
<u>@ATAN</u>	<u>@LOG</u>
<u>@ATAN2</u>	<u>@LOWER</u>
<u>@AVG</u>	<u>@MAX</u>
<u>@CELL</u>	<u>@MID</u>
<u>@CELLPOINTER</u>	<u>@MIN</u>
<u>@CHAR</u>	<u>@MINUTE</u>
<u>@CHOOSE</u>	<u>@MOD</u>
<u>@CLEAN</u>	<u>@MONTH</u>
<u>@CODE</u>	<u>@N</u>
<u>@COLS</u>	<u>@NA</u>
<u>@COORD</u>	<u>@NOW</u>
<u>@COS</u>	<u>@NPV</u>
<u>@COUNT</u>	<u>@PI</u>
<u>@CTERM</u>	<u>@PMT</u>
<u>@DATE</u>	<u>@PROPER</u>
<u>@DATEVALUE</u>	<u>@PV</u>
<u>@DAVG</u>	<u>@RAND</u>
<u>@DAY</u>	<u>@RATE</u>
<u>@DAYS360</u>	<u>@REPEAT</u>
<u>@DCOUNT</u>	<u>@REPLACE</u>
<u>@DDB</u>	<u>@RIGHT</u>
<u>@DGET</u>	<u>@ROUND</u>
<u>@DMAX</u>	<u>@ROWS</u>
<u>@DMIN</u>	<u>@S</u>
<u>@DQUERY</u>	<u>@SECOND</u>
<u>@DSTD</u>	<u>@SHEETS</u>
<u>@DSTDS</u>	<u>@SIN</u>
<u>@DSUM</u>	<u>@SLN</u>
<u>@D360</u>	<u>@SOLVER</u>
<u>@DVAR</u>	<u>@SQRT</u>
<u>@DVAR</u>	<u>@STD</u>
<u>@ERR</u>	<u>@STDS</u>

@EXACT  
@EXP  
@FALSE  
@FIND  
@FV  
@HLOOKUP  
@HOUR  
@IF  
@INDEX  
@INFO  
@INT  
@IRR  
@ISAAF  
@ISAPP  
@ISERR  
@ISNA  
@ISNUMBER  
@ISRANGE

@STRING  
@SUM  
@SUMPRODUCT  
@SYD  
@TAN  
@TERM  
@TIME  
@TIMEVALUE  
@TODAY  
@TRIM  
@TRUE  
@UPPER  
@VALUE  
@VAR  
@VARS  
@VDB  
@VLOOKUP  
@YEAR

## **Database @Functions Category**

Database @functions perform statistical calculations and queries, based on criteria you specify, in database tables in both worksheets and external databases.

### @DAVG

Averages values in a field.

### @DCOUNT

Counts nonblank cells in a field.

### @DGET

Finds the contents of a cell in a field.

### @DMAX

Finds the largest value in a field.

### @DMIN

Finds the smallest value in a field.

### @DQUERY

Gives you access to a function of an external database and uses the result of the function in a criteria range.

### @DSTD

Calculates the population standard deviation of values in a field.

### @DSTDS

Calculates the sample standard deviation of values in a field.

### @DSUM

Sums values in a field.

### @DVAR

Calculates the population variance of values in a field.

### @DVARs

Calculates the sample variance of values in a field.

See also:

[Guidelines for Using Database @Functions](#)

## **Date and Time @Functions Category**

Date and time @functions calculate values that represent dates and times.

### **Date Calculations**

#### @DATE

Calculates the date number for a set of year, month, and day values.

#### @DATEVALUE

Converts text that looks like a date into its equivalent date number.

#### @DAY

Calculates the day of the month in a date number.

#### @DAYS360

Calculates the number of days between two date numbers, based on a 360-day year. (This conforms to the 1990 modifications to the Securities Industry Association's 1986 *Standard Securities Calculation Methods*.)

#### @D360

Calculates the number of days between two date numbers, based on a 360-day year (12 months, each with 30 days).

#### @MONTH

Calculates the month in a date number.

#### @YEAR

Calculates the year in a date number.

### **Time Calculations**

#### @HOUR

Calculates the hour in a time number.

#### @MINUTE

Calculates the minutes in a time number.

#### @SECOND

Calculates the seconds in a time number.

#### @TIME

Calculates the time number for a set of hours, minutes, and seconds.

#### @TIMEVALUE

Converts text that looks like a time into its equivalent time number.

### **Current Date and Time Calculations**

#### @NOW

Calculates the value that corresponds to the current date and time on the computer's clock.

#### @TODAY

Calculates the date number that corresponds to the current date on the computer's clock.

See also:

#### @MOD

[Guidelines for Using Date and Time @Functions](#)

## **Financial @Functions Category**

Financial @functions analyze investments and annuities, determine depreciation, and calculate cash flows and loans.

### **Capital-Budgeting Tools**

#### @IRR

Calculates the internal rate of return for a series of cash flows.

#### @NPV

Calculates the net present value of a series of cash flows.

### **Depreciation**

#### @DDB

Calculates the double-declining balance depreciation allowance of an asset.

#### @SLN

Calculates the straight-line depreciation allowance of an asset for one period.

#### @SYD

Calculates the sum-of-the-years'-digits depreciation allowance of an asset.

#### @VDB

Calculates depreciation using the double-declining balance method and allows the percentage of straight-line depreciation to be values other than 200%.

### **Ordinary Annuities**

#### @FV

Calculates the future value of a series of equal payments.

#### @PMT

Calculates the amount of periodic payment needed to pay off a loan.

#### @PV

Calculates the present value of a series of equal payments.

#### @TERM

Calculates the number of payment periods of an investment.

### **Single-Sum Compounding**

#### @CTERM

Calculates the number of compounding periods necessary for an investment to grow to a future value.

#### @RATE

Calculates the periodic interest rate necessary for an investment to grow to a future value.

See also:

[Guidelines for Using Financial @Functions](#)

## Logical @Functions Category

Logical @functions calculate the results of logical formulas.

### @FALSE

Returns the logical value 0 (false).

### @IF

Takes one action if a condition is true; another if the condition is false.

### @ISAAF

Returns 1 (true) for a defined add-in @function; 0 (false) for any other entry.

### @ISAPP

Returns 1 (true) for a currently loaded add-in; 0 (false) for any other entry.

### @ISERR

Returns 1 (true) for the value ERR; 0 (false) for any other entry.

### @ISNA

Returns 1 (true) for the value NA; 0 (false) for any other entry.

### @ISNUMBER

Returns 1 (true) for a value or a blank cell; 0 (false) for any other entry.

### @ISRANGE

Returns 1 (true) for a defined range name or valid range address; 0 (false) for any other entry.

### @ISSTRING

Returns 1 (true) for text enclosed in " " (double quotation marks), a text formula, or the address or name of a cell that contains a label; 0 (false) for a value or blank cell.

### @TRUE

Returns the logical value 1 (true).

See also:

[Guidelines for Using Logical @Functions](#)

## Mathematical @Functions Category

Mathematical @functions simplify various mathematical operations, such as calculating square roots, and replace complex trigonometric calculations.

### General

#### @ABS

Calculates the absolute (positive) value of a value.

#### @EXP

Calculates the number e raised to a specified power.

#### @INT

Returns the integer portion of a value.

#### @LN

Calculates the natural logarithm (base e) of a value.

#### @LOG

Calculates the common logarithm (base 10) of a value.

#### @MOD

Calculates the remainder (modulus) of two values.

#### @RAND

Generates a random value between 0 and 1.

#### @ROUND

Rounds a value to a specified number of decimal places.

#### @SQRT

Calculates the positive square root of a value.

### Trigonometric

#### @ACOS

Calculates the arc cosine of a value.

#### @ASIN

Calculates the arc sine of a value.

#### @ATAN

Calculates the arc tangent of a value.

#### @ATAN2

Calculates the four-quadrant arc tangent of two values.

#### @COS

Calculates the cosine of an angle.

#### @PI

Returns the value pi (calculated at 3.14159265358979324).

#### @SIN

Calculates the sine of an angle.

#### @TAN

Calculates the tangent of an angle.

See also:

[Guidelines for Using Mathematical @Functions](#)

## Special @Functions Category

Special @functions return information about cells, ranges, or the operating system; find the contents of a cell; or mark places where information is missing or incorrect.

### Cell and Range Information

#### @@

Returns the contents of the cell whose name or address is specified in another cell.

#### @CELL

Returns information about a cell or its contents.

#### @CELLPOINTER

Returns information about the current cell or its contents.

#### @COLS

Counts the columns in a range.

#### @COORD

Creates an absolute, mixed, or relative cell reference from values.

#### @ROWS

Counts the rows in a range.

#### @SHEETS

Counts the worksheets in a range.

### Error Checking

#### @ERR

Returns the value ERR.

#### @NA

Returns the value NA.

### Lookup Calculations

#### @CHOOSE

Finds a specified value or label in a list of values and/or labels.

#### @HLOOKUP

Finds the contents of a cell in a specified row in a horizontal lookup table.

#### @INDEX

Finds the contents of a cell in a specified row, column, and worksheet in a range.

#### @VLOOKUP

Finds the contents of a cell in a specified column in a vertical lookup table.

### System and Session Information

#### @INFO

Returns information for the current 1-2-3 session.

#### @SOLVER

Returns information about the status of the Solver.



## **Statistical @Functions Category**

Statistical @functions perform calculations on lists of values.

### @AVG

Averages a list of values.

### @COUNT

Counts the nonblank cells in a list of ranges.

### @MAX

Finds the largest value in a list of values.

### @MIN

Finds the minimum value in a list of values.

### @STD

Calculates the population standard deviation of a list of values.

### @STDS

Calculates the sample standard deviation of a list of values.

### @SUM

Adds a list of values.

### @SUMPRODUCT

Sums the products of corresponding elements in multiple ranges.

### @VAR

Calculates the population variance of a list of values.

### @VARS

Calculates the sample variance of a list of values.

See also:

[Guidelines for Using Statistical @Functions](#)

## String @Functions Category

String @functions provide information about text in cells and perform other operations on text.

### @CHAR

Returns the character that a Lotus Multibyte Character Set (LMBCS) code produces.

### @CODE

Returns the LMBCS code that corresponds to the first character in a string.

### @EXACT

Returns 1 (true) if two strings are the same; 0 (false) if the strings are different.

### @FIND

Calculates the position of the first occurrence of one string within another string.

### @LEFT

Returns a specified number of characters from the beginning of a string.

### @LENGTH

Counts the characters in a string.

### @LOWER

Converts all the letters in a string to lowercase.

### @MID

Returns a number of characters in a string, starting at a specified character.

### @N

Returns the value in the first cell in a range or 0 if the cell contains a label.

### @PROPER

Converts the first letter in each word in a string to uppercase and the rest of the letters in each word to lowercase.

### @REPEAT

Duplicates a string a specified number of times.

### @REPLACE

Replaces characters in a string with characters from a different string.

### @RIGHT

Returns a specified number of characters from the end of a string.

### @S

Returns the label in the first cell in a range or an empty string if the cell contains a value or is blank.

### @STRING

Converts a value into a label with a specified number of decimal places.

### @TRIM

Removes leading, trailing, and consecutive spaces from a string.

### @UPPER

Converts all the letters in a string to uppercase.

### @VALUE

Converts a label or text that looks like a number into a value.

See also:

[Guidelines for Using String @Functions](#)

## @Function Format



Each @function has a specific format. Unless you follow this format exactly, 1-2-3 cannot interpret the @function. The format for an @function is

**@FUNCTION**

or

**@FUNCTION(*arg1, arg2, ..., argn*)**

**@FUNCTION** represents the name of the @function. It tells 1-2-3 which calculation to perform.

***arg1, arg2, ..., argn*** represent arguments. Arguments supply the information 1-2-3 needs to complete the @function calculation. For example, when 1-2-3 encounters the function @SUM(B4..B25), the argument B4..B25 tells 1-2-3 to add the values in the range B4..B25.

The arguments in an @function can be any length, providing the total number of characters in the cell that contains the @function does not exceed 512.

### Optional Arguments

Optional arguments, displayed in [ ] (brackets) in Help, are arguments you can omit from an @function. For example, @INDEX(*range, column, row, [worksheet]*) works even if you don't specify a *worksheet* argument.

### Argument Separators

Argument separators separate two or more arguments. 1-2-3 allows three argument separators: , (comma), ; (semicolon), and . (period). A ; (semicolon) is always a valid argument separator. You can set either . (period) or , (comma) as an argument separator with [Tools User Setup International](#), but the argument separator cannot be the same as the decimal separator. Some countries use , (comma) as the decimal separator, while others use . (period); so you may want to use ; (semicolon) as the argument separator in worksheet files that will be used with varying international settings.

### Argument Types

@Functions use four types of information as arguments: values, strings, locations, and conditions.

#### Value

A number, a [numeric formula](#), or the address or name of a cell that contains a number or formula.

#### String

Text enclosed in " " (quotation marks), a [text formula](#), or the address or name of a cell that contains a [label](#) or a formula that results in a label.

#### Location

A [range name](#) or [address](#), or any formula that evaluates to a range name or address.

#### Condition

Usually a [logical formula](#) or the address or name of a cell that contains a logical formula. However, you can also use any numeric or text formula, text (enclosed in double quotation marks), or cell reference as a condition argument.

## @Function Rules



Observe the following rules when you write @functions:

### Writing an @Function

- \* Begin every @function with the @ symbol.
- \* Do not type spaces between the @function name and its arguments. For example, @AVG(B6..B12) is correct; @AVG (B6..B12) is not.
- \* Enclose an @function's arguments in parentheses. For example, in @INT(@SUM(A5..A11)), the argument for @INT is (@SUM(A5..A11)), and the argument for @SUM is (A5..A11).
- \* The total number of characters in the cell that contains the @function must not exceed 512.

### Using Ranges with @Functions

- \* You can use single-sheet or 3-D ranges as arguments in any @function that accepts a range address or name as an argument, except for database @functions, @HLOOKUP, and @VLOOKUP; you cannot use 3-D ranges for these @functions.
- \* If, after entering an @function that uses a range address as an argument, you assign a name to that range, 1-2-3 automatically replaces the address in the @function with the range name you assigned.

For example, if you enter @SUM(E5..H7) and later assign E5..H7 the name COSTS, 1-2-3 automatically changes @SUM(E5..H7) to @SUM(COSTS).

The automatic replacement occurs only for range addresses. For example, if you assign a range name to C10, 1-2-3 updates @AVG(C10..C10) and @AVG(!C10) but not @AVG(C10). (Typing an exclamation point in front of a single-cell address, as in @AVG(!C10), is equivalent to using a range address.)

- \* If, after entering an @function that uses a range name as an argument, you undefine the range name, the @function evaluates to ERR.

See also:

@Function Format  
Writing an @Function

## Guidelines for Using Database @Functions

Database @functions scan one or more database tables, select the records that match the criteria in the criteria range, and then perform calculations on the selected records in the field you specify. You can use database @functions on any range of related data organized in rows and columns, as long as the columns have unique field names and you provide a criteria range.

Most database @functions have an equivalent statistical @function. Use the database @functions to select and use only those values in a field that meet specific criteria. Use the statistical @functions to calculate using all values in a range. For example, use @DAVG to find the average of values that meet criteria you specify, such as the average sales in July by salesperson. Use @AVG to calculate the average value for a range, such as the average of all sales. The database @functions are equivalent to using the corresponding statistical @functions on the results of a Data Query command.

A database @function that refers to external database tables is recalculated each time any value in the worksheet changes. A database @function that refers only to database tables in the worksheet file is recalculated only when a value the @function depends on changes.

All database @functions except @DQUERY use three arguments: *input*, *field*, and *criteria*.

### **input**

*input* is the input range. *input* can be the address or name of a single-sheet range that contains a database table, or the name of an external table.

You can use more than one *input* range in a database @function. To do so, separate each *input* range with a valid argument separator. When 1-2-3 calculates a database @function, it reads the arguments from right to left. 1-2-3 uses the last argument in the @function as the *criteria* range, the next to last argument as the *field*, and the remaining arguments as *input* ranges.

For example, @DAVG(SALES,INVENTORY,"PRICE",CRIT\_RANGE) has a *criteria* range (CRIT\_RANGE), a *field* name ("PRICE"), and two *input* ranges (SALES and INVENTORY).

There is no limit to the number of input ranges you can use, providing the total number of characters in the cell that contains the @function does not exceed 512.

You do not need to identify an *input* range with the Data Query command before you use an *input* argument with a database @function.

### **field**

*field* is the field name or the field's offset number.

If you use just one *input* range, *field* can be a field name from the database table enclosed in quotation marks, or an offset number.

If you use more than one *input* range, *field* must be a field name from the database table enclosed in quotation marks.

If you use an *input* range from an external table, *field* must be a field name from the external table enclosed in quotation marks.

**Note** If you use more than one *input* range (either in the worksheet or from an external database table) and *field* is not a unique field name (it appears in more than one of the *input* ranges), *field* must be the name of the *input* range followed by a period and the field name, enclosed in quotation marks. For example, if the field name COST appears in two *input* ranges, GOTHAM and MAYFAIR, "GOTHAM.COST" refers to the field name COST in the *input* range GOTHAM.

**criteria**

*criteria* is the criteria range. *criteria* can be a range address or a range name.

See also:

Creating the Criteria Range for information on setting up a criteria range  
Database @Functions Category

Specifying the Input Range for information on setting up a database table

## **Guidelines for Using Date and Time @Functions**

If you enter a date number that contains decimal places as an argument, 1-2-3 uses only the integer part of the number. For example, 1-2-3 calculates both @YEAR(31790.5) and @YEAR(31790) as 87.

If you enter a time number that contains numbers to the left of the decimal point as an argument, 1-2-3 uses only the decimal part of the number. For example, 1-2-3 calculates both @SECOND(54.333) and @SECOND(.333) as 31.

See also:

[Date and Time @Functions Category](#)

## **Guidelines for Using Financial @Functions**

### **Term**

Within an @function, express the term and the interest rate in the same unit of time. For example, in @PMT(1000,0.05/12,36) the term is 36 months, so the annual interest rate is divided by 12 to produce a monthly interest rate.

### **Interest**

1-2-3 accepts interest rates as either percentages or decimal values. For example, you can enter 15.5% either as 0.155 or as 15.5%. 1-2-3 automatically converts all percentages to decimal values.

### **Annuities**

The financial @functions assume that investments are ordinary annuities. An annuity is a series of equal payments made at regular intervals. An ordinary annuity is an annuity in which the payments are made at the end of each time interval. An annuity due is an annuity in which a payment is made at the beginning of each period.

### **Ranges**

1-2-3 assigns the value 0 to blank cells whose addresses are used as arguments in financial @functions.

Financial @functions accept 3-D ranges.

See also:

[Financial @Functions Category](#)



## Guidelines for Using Logical @Functions

### Error Checking with Logical @Functions

Use [@ISERR](#) and [@ISNA](#) to test for the values [ERR](#) and [NA](#). These values cause a [ripple-through effect](#). You can use [@ISERR](#) and [@ISNA](#) in [@IF](#) formulas to stop the ripple-through effect.

For example, you want to divide the value in G12 by the value in K12. The value in G12 is the result of a complex formula, and you want to be sure the formula has not evaluated to [ERR](#) before you use G12 in other calculations. [@IF\(@ISERR\(G12\),0,G12/K12\)](#) returns 0 if G12 contains the value [ERR](#); this prevents 1-2-3 from evaluating the G12/K12 formula if G12 contains the value [ERR](#). If G12 does not contain the value [ERR](#), the [@IF](#) formula returns the result of G12/K12.

Use [@ISNUMBER](#) and [@ISSTRING](#) to prevent errors that would occur if a cell used in a formula contained the wrong type of data.

For example, [@IF\(@ISNUMBER\(G12\),@AVG\(A12..K12\),"Label"\)](#) returns the result of [@AVG\(A12..K12\)](#) if G12 contains a value. If G12 contains a label, the [@IF](#) formula returns the word Label.

### Ranges

1-2-3 assigns the value 0 to [blank cells](#) whose addresses are used as arguments in logical @functions.

See also:

[Logical @Functions Category](#)

## **Guidelines for Using Mathematical @Functions**

### **Angles and Radians**

You must express angles you enter as arguments for [@SIN](#), [@COS](#), and [@TAN](#) in radians. To convert degrees to radians, multiply the number of degrees by  $\text{@PI}/180$ .

[@ASIN](#), [@ACOS](#), [@ATAN](#), and [@ATAN2](#) produce angle values in radians. To convert radians to degrees, multiply the number of radians by  $180/\text{@PI}$ .

### **Ranges**

1-2-3 assigns the value 0 to blank cells whose addresses are used as arguments in mathematical @functions.

See also:

[Mathematical @Functions Category](#)

## Guidelines for Using Statistical @Functions

With the exception of @SUMPRODUCT, each of the statistical @functions has an equivalent database @function. For example, you use @AVG to average values in a range; you use @DAVG to average values in a field of a database table that meet criteria you specify.

All statistical @functions perform calculations on lists of values, which are represented by the argument named *list*.

### ***list***

*list* can contain any of the following, in any combination: numbers, numeric formulas, and addresses or names of ranges that contain numbers or numeric formulas. Separate elements of *list* with argument separators. You can use 3-D ranges with statistical @functions.

**Note** @SUMPRODUCT is the only statistical @function that requires all entries in *list* to be references to ranges.

Labels within ranges in *list* will not cause statistical @functions to evaluate to ERR. With the exception of @COUNT, 1-2-3 assigns the value 0 to all labels in *list* (either in a range or listed individually) and includes them in calculations. For example, if you use @AVG to calculate the average of the values in a range and the range contains a label, 1-2-3 considers the label to have the value 0 when it calculates the average. Always check for labels in the ranges you use in statistical @functions to guard against unexpected results.

The statistical @functions ignore blank cells in multiple-cell ranges in *list*, but they do not ignore references to blank cells listed individually. For example, if you use @AVG to average the values in a range that spans four cells (A1..A4), and the range contains a blank cell, 1-2-3 divides the sum by three to find the correct average. If you list those four cells individually, however (A1,A2,A3,A4), 1-2-3 divides the sum by four.

See also:

Statistical @Functions Category

## **Guidelines for Using String @Functions**

Uppercase and lowercase letters have different LMBCS codes. For example, @CODE("A") returns the code 65, but @CODE("a") returns the code 97.

If you use blank cells as arguments in string @functions, 1-2-3 returns the value ERR. For example, @LENGTH(D9) returns the value ERR if D9 is a blank cell.

If a cell contains a label-prefix character but contains no text, 1-2-3 treats it as an empty string, a string with a length of 0. The cell looks blank, but 1-2-3 will not return the value ERR when you use it as an argument in a string @function.

See also:

[String @Functions Category](#)

**@CLEAN is reserved for internal use only.**

## @@

`@@(location)` lets you indirectly obtain the contents of the cell specified in *location*.

### Arguments

*location* is the address or name of a cell that contains a cell address or name, or a formula that returns the address or name of a cell. *location* points to another cell, whose contents @@ displays in the cell that contains @@. If *location* is not a valid cell address or range name, or is a multiple-cell range, @@ evaluates to ERR.

### Uses

@@ is useful in building conditional formulas because its indirect reference can automatically alter its own value. For example, the formula

```
@IF(D2="Y","D8",@IF(D2="N","D9",@ERR))
```

in cell A10, and the formula @@(A10) in cell E2, return the contents of cell D8 or D9, or ERR, in E2, depending on whether D2 contains Y or N, or something else.

### Notes

When *location* refers to a cell that contains a formula you must press F9 (CALC) to update the @@ formula after automatic recalculation. If you do not press F9 (CALC), the @@ formula evaluates to 0.

### Examples

@@

### Similar @Functions

[@HLOOKUP](#) and [@VLOOKUP](#) return the contents of a specified cell in a horizontal or vertical lookup table. [@CHOOSE](#) returns a value or label from *list*, and [@INDEX](#) returns the contents of a cell located at the intersection of a specified column, row, and worksheet.

See also:

[@Function Basics](#)

**Example: @@**

In this simple sales commission chart, cell A10 contains the formula

`@IF(C3="W","C7",@IF(C3="G","C8",@ERR))`

that results in one of two cell addresses (C7 or C8), depending on which product code (W or G) you enter in C3. `@@(A10)` entered in C4 returns the contents of the cell whose address is returned by the formula in A10.

If you enter anything in C3 other than one of the two product codes, both the `@IF` and `@@` functions will evaluate to `ERR`.

A	-----	A	-----	B	-----	C	-----
1		SALES COMMISSION CHART					
2							
3		Enter Product Code:		W			
4		Commission rate:		5%			
5							
6		Product		Code		Rate	
7		Widgets		W		5%	
8		Grommets		G		3%	
9							
10		C7					

## **@ABS**

@ABS(x) calculates the absolute (positive) value of x.

### **Arguments**

x is any value, or the address or name of a cell that contains a value.

### **Uses**

Use @ABS when you need numbers to be positive, such as percentage differences between actual and budgeted values, or to find the absolute difference between values in a list of positive and negative values.

@ABS prevents ERR when you use @SQRT to find the square root of a negative number. You can also combine @ABS with @IF to test whether a number is negative in a check register or other application where positive numbers are essential. For example, @IF(@ABS(TOTAL)=TOTAL,TOTAL,"Overdrawn") prints the contents of TOTAL if its value is positive, and Overdrawn if not.

### **Notes**

Use -@ABS to force the result of the @function to be negative.

### **Examples**

@ABS(A5) = 25 if cell A5 contains the value 25, -25, or a formula that results in 25 or -25.

-@ABS(A5) = -25 if cell A5 contains the value 25, -25, or a formula that results in 25 or -25.

@ABS(START-END) = 5.6, when START and END contain any combination of positive or negative numbers that differ by 5.6 or -5.6.

See also:

[@Function Basics](#)  
[Guidelines for Using Mathematical @Functions](#)



## **@ACOS**

@ACOS(x) calculates the arc cosine (inverse cosine) using the cosine x of an angle. The result of @ACOS is an angle, in radians, from 0 through pi. This represents an angle between 0 and 180 degrees.

### **Arguments**

x is the cosine of an angle and is a value, or the address or name of a cell that contains a value, from -1 through 1.

### **Uses**

Use @ACOS to find the size of an angle when you know the cosine of the angle. @ACOS calculates the angle between the hypotenuse and the side adjacent to the angle in a right triangle.

### **Notes**

To convert the result of @ACOS from radians to degrees, multiply it by 180/@PI.

### **Examples**

In a right triangle, the cosine of angle z is 1/2, or 0.5. To determine the arc cosine, use @ACOS(0.5), which returns 1.0472 radians. To convert this to degrees, use @ACOS(0.5)\*180/@PI. The result is 60 degrees, the size of angle z.

### **Similar @Functions**

@COS calculates the cosine of an angle.

See also:

[@Function Basics](#)

[Guidelines for Using Mathematical @Functions](#)

## **@ASIN**

@ASIN(x) calculates the arc sine (inverse sine) using the sine x of an angle. The result of @ASIN is an angle, in radians, from  $-\pi/2$  through  $\pi/2$ . This represents an angle between -90 and 90 degrees.

### **Arguments**

x is the sine of an angle and is a value, or the address or name of a cell that contains a value, from -1 through 1.

### **Uses**

Use @ASIN to find the size of an angle when you know the sine of the angle.

### **Notes**

To convert the result of @ASIN from radians to degrees, multiply it by  $180/\pi$ .

### **Examples**

In a right triangle, the sine of angle z is  $2/3$ , or 0.66. To determine the arc sine, use @ASIN(0.66), which returns 0.72082 radians. To convert this to degrees, use @ASIN(0.66)\* $180/\pi$ . The result is 41.3 degrees, the size of angle z.

### **Similar @Functions**

@SIN calculates the sine of an angle.

See also:

@Function Basics

Guidelines for Using Mathematical @Functions

## **@ATAN**

@ATAN( $x$ ) calculates the arc tangent (inverse tangent) using the tangent  $x$  of an angle. The result of @ATAN is an angle, in radians, from  $-\pi/2$  through  $\pi/2$ . This represents an angle between  $-90$  and  $90$  degrees.

### **Arguments**

$x$  is the tangent of an angle and is any value, or the address or name of a cell that contains any value.

### **Uses**

Use @ATAN to find the size of an angle when you know the tangent of the angle. @ATAN calculates the angle between the hypotenuse and the adjacent side.

### **Notes**

To convert the result of @ATAN from radians to degrees, multiply it by  $180/@PI$ .

### **Examples**

In a right triangle, the tangent of angle  $z$  is  $2/1$ , or  $2$ . To determine the arc tangent, use @ATAN( $2$ ), which returns  $1.10715$  radians. To convert this to degrees, use @ATAN( $2$ )\* $180/@PI$ . The result is  $63.4$  degrees, the size of angle  $z$ .

### **Similar @Functions**

@ATAN2 calculates the size of an angle whose tangent is  $y/x$ . @TAN calculates the tangent of an angle.

See also:

[@Function Basics](#)  
[Guidelines for Using Mathematical @Functions](#)

## @ATAN2

@ATAN2(x,y) calculates the arc tangent using the tangent  $y/x$  of an angle. The result of @ATAN2 is an angle, in radians, from  $-\pi$  through  $\pi$ . This represents an angle between  $-180$  and  $180$  degrees, depending on the sign of  $x$  and  $y$  (see the list below).

### Arguments

$x$  and  $y$  are values, or the addresses or names of cells that contain values. If  $y$  is 0, @ATAN2 returns 0; if both  $x$  and  $y$  are 0, @ATAN2 returns ERR.

### Uses

Use @ATAN2 to find the size of an angle in any of the four quadrants when you know the length of the two sides ( $x$  and  $y$ ) that form the right angle in a right triangle. @ATAN2 calculates the angle between the hypotenuse and either of the sides that form the right angle, without first having to calculate the tangent.

### Notes

To convert the result of @ATAN2 from radians to degrees, multiply it by  $180/@PI$ .

@ATAN2 differs from @ATAN in that the result of @ATAN2 is a value from  $-\pi$  through  $\pi$ . The list below gives the value ranges for @ATAN2.

- \* If  $x$  is positive and  $y$  is positive, then the result can be from 0 to  $\pi/2$  (quadrant I).
- \* If  $x$  is negative and  $y$  is positive, then the result can be from  $\pi/2$  to  $\pi$  (quadrant II).
- \* If  $x$  is negative and  $y$  is negative, then the result can be from  $-\pi$  to  $-\pi/2$  (quadrant III).
- \* If  $x$  is positive and  $y$  is negative, then the result can be from  $-\pi/2$  to 0 (quadrant IV).

When  $x$  and  $y$  are both positive (quadrant I), and when  $x$  is positive and  $y$  is negative (quadrant IV), the results are the same as for @ATAN.

### Examples

In a right triangle, the two sides that form the right angle measure 1 and 2. To determine the arc tangent, use @ATAN2(1,2), which returns 1.10715 radians. To convert this to degrees, use @ATAN2(1,2)\*180/@PI. The result is 63.4 degrees, the size of angle  $z$ .

### Similar @Functions

@ATAN calculates the arc tangent using the tangent  $x$  of an angle. @TAN calculates the tangent of an angle.

See also:

[@Function Basics](#)  
[Guidelines for Using Mathematical @Functions](#)

## **@AVG**

@AVG(*list*) calculates the average of a *list* of values.

### **Arguments**

*list* can contain any of the following, in any combination: numbers, numeric formulas, and addresses or names of ranges that contain numbers or numeric formulas. Separate elements of *list* with argument separators.

### **Uses**

Use @AVG to find the average, or mean, of any series of values in a worksheet.

### **Notes**

@AVG ignores blank cells in ranges, but not references to blank cells listed individually. Labels count as zero, as do cells that are apparently empty but contain a label-prefix character or spaces. This means that labels, apparently empty cells, and blank cells listed individually increase the total number of items in *list*; and if *list* contains any of these, the result of @AVG may not be what you expect.

### **Examples**

@AVG(720,318,332,278) = 412.

@AVG(A1..A4) = 252.75, when A1..A4 contains the values 160, 227, 397, and 227.

### **Similar @Functions**

@DAVG finds the average of values in a field of a database table that meet criteria you specify.

See also:

[@Function Basics](#)

[Guidelines for Using Statistical @Functions](#)

## @CELL

@CELL(*attribute,location*) returns information about the first cell in *location*. The information depends on the *attribute* you specify.

### Arguments

*location* is the address or name of a range.

*attribute* is any of the items listed below, enclosed in " " (quotation marks), or the address or name of a cell that contains one of the items.

<b>Attribute</b>	<b>Returns</b>
address	The absolute address in abbreviated form (column letter and row number only)
col	The column letter, as a value from 1 through 256 (1 for column A, 2 for column B, and so on)
color	1 if the cell is formatted for negative numbers in color 0 if the cell is not formatted for negative numbers in color
contents	The contents of the cell
coord	The absolute cell address in full form (worksheet letter, column letter, and row number)
filename	The name of the file that contains the cell, including the path
format	The cell format: C0 to C15 if Currency, 0 through 15 decimal places F0 to F15 if Fixed, 0 through 15 decimal places G if General, a label, or a blank cell P0 to P15 if Percent, 0 through 15 decimal places S0 to S15 if Sci (Scientific), 0 through 15 decimal places ,0 to ,15 if , (Comma), 0 through 15 decimal places + if +/- format D1 to D9 if Date/Time T if Text H if Hidden L if Label A if Automatic -- if Color for negative numbers ( ) if Parentheses
parentheses	1 if the cell is formatted for parentheses 0 if the cell is not formatted for parentheses
prefix	' if the cell contains a left-aligned label " if the cell contains a right-aligned label ^ if the cell contains a centered label

	\ if the cell contains a repeating label
	if the cell contains a nonprinting label
	Blank (no label prefix) if the cell is blank or contains a value
protect	1 if the cell is protected 0 if the cell is not protected
row	The row number, from 1 through 8192
sheet	The worksheet letter, as a value from 1 through 256 (1 for worksheet A, 2 for worksheet B, and so on)
type	The type of data in the cell: b if the cell is blank v if the cell contains a numeric value or a <u>numeric formula</u> or <u>text formula</u> l if the cell contains a label
width	The column width

### Uses

@CELL is useful in macros and in combination with @IF. Use @CELL to check input during a macro to guard against certain types of entries, and to direct macro execution using subroutines based on a user's entry. @CELL can also allow an automated application to change cell attributes based on a user's entries.

### Notes

@CELL returns the attribute for the first cell in *location* as it was last recalculated. Because the cell is not recalculated by some commands, recalculate your work before you use @CELL to be sure the results are correct.

### Examples

The following example uses @CELL with @IF and @ERR to return an error (ERR) if the user does not type a value in the cell named AMT, and to return the contents of AMT (a value) if the user types a value.

```
@IF(@CELL("type",AMT)="v",AMT,@ERR)
```

You can also use @CELL in an {IF} macro to perform a similar task. In the following example, if the user does not type a value, 1-2-3 beeps and displays a message to advise the user.

```
{IF @CELL("type",AMT)<>"v"}{BEEP}{INDICATE "Type a value!"}
```

### Similar @Functions

@CELLPOINTER returns information about the current cell. @@ indirectly returns the contents of a specified cell.

See also:

@Function Basics

## @CELLPOINTER

@CELLPOINTER(*attribute*) returns information about the current cell. The information depends on the *attribute* you specify.

### Arguments

*attribute* is any of the items listed in the table below, enclosed in " " (quotation marks), or the address or name of a cell that contains one of the items.

<b>Attribute</b>	<b>Returns</b>
address	The absolute address in abbreviated form (column letter and row number only)
col	The column letter, as a value from 1 through 256 (1 for column A, 2 for column B, and so on)
color	1 if the cell is formatted for negative numbers in color 0 if the cell is not formatted for negative numbers in color
contents	The contents of the cell
coord	The absolute cell address in full form (worksheet letter, column letter, and row number)
filename	The name of the file that contains the cell, including the path
format	The cell format: C0 to C15 if Currency, 0 through 15 decimal places F0 to F15 if Fixed, 0 through 15 decimal places G if General, a label, or a blank cell P0 to P15 if Percent, 0 through 15 decimal places S0 to S15 if Sci (Scientific), 0 through 15 decimal places ,0 to ,15 if , (Comma), 0 through 15 decimal places + if +/- format D1 to D9 if Date/Time T if Text H if Hidden L if Label A if Automatic -- if Color for negative numbers ( ) if Parentheses
parentheses	1 if the cell is formatted for parentheses 0 if the cell is not formatted for parentheses
prefix	' if the cell contains a left-aligned label " if the cell contains a right-aligned label ^ if the cell contains a centered label \ if the cell contains a repeating label



	if the cell contains a nonprinting label
	Blank (no label prefix) if the cell is blank or contains a value
protect	1 if the cell is protected 0 if the cell is not protected
row	The row number, from 1 through 8192
sheet	The worksheet letter, as a value from 1 through 256 (1 for worksheet A, 2 for worksheet B, and so on)
type	The type of data in the cell: b if the cell is blank v if the cell contains a numeric value or a <u>numeric formula</u> or <u>text formula</u> l if the cell contains a label
width	The column width

### Uses

@CELLPOINTER is useful in macros and in combination with @IF. Use @CELLPOINTER to find the current location of the cell pointer or to evaluate a formula based on the contents of the current cell. You can then direct processing depending on the cell's contents or type.

### Notes

@CELLPOINTER returns the attribute for the current cell as it was last recalculated. Because the cell is not recalculated by some commands, recalculate your work before you use @CELLPOINTER to be sure the results are correct.

### Examples

You can use @CELLPOINTER in a macro that tests for a blank cell in a list of items. In the following example, if 1-2-3 encounters a blank cell, it beeps and branches to a subroutine.

```
{IF @CELLPOINTER("type")="b"}{BEEP}{BRANCH Step2}
```

### Similar @Functions

@CELL returns information about a specified cell.

See also:

@Function Basics

## **@CHAR**

@CHAR(x) returns the character of the Lotus Multibyte Character Set (LMBCS) that corresponds to the number x.

### **Arguments**

x is an integer, or the address or name of a cell that contains an integer. Values that do not correspond to LMBCS character codes return ERR. If x is not an integer, @CHAR truncates it to an integer.

### **Uses**

@CHAR is useful for entering foreign-language characters and mathematical symbols. Whether a character prints depends on the capabilities of your printer.

### **Notes**

If your monitor cannot display the character that corresponds to x, 1-2-3 displays a character that resembles the desired character when possible. If no character approximates the character, 1-2-3 displays a solid rectangle, which represents an undisplayable character. Make sure your printer can print the characters you enter.

### **Examples**

@CHAR(156) = £ (British pound sign).

@CHAR(D9) = A, if cell D9 contains the value 65.

### **Similar @Functions**

@CODE returns the LMBCS code that corresponds to a character.

See also:

[@Function Basics](#)

[Guidelines for Using String @Functions](#)

## **@CHOOSE**

@CHOOSE(*x,list*) returns a value or label, represented by *x*, from *list*.

### **Arguments**

*x* is a value, or the address or name of a cell that contains a value. *x* represents the offset number of an item's position in *list*.

*list* is a group of values and, or the addresses or names of cells that contain values and labels, separated by argument separators. 1-2-3 numbers each entry in *list*, and then chooses the entry that corresponds to the value of *x*.

### **Uses**

Use @CHOOSE to enter a list of values to use in formulas without setting up a lookup table.

### **Examples**

A worksheet contains a list of labels in the range A1..A4 and their offset numbers 0, 1, 2, 3 in the range B1..B4. @CHOOSE(B3,A1,A2,A3,A4) returns the label in A3, which is the item whose offset number is 2 (2 is the value in B3) in *list*.

### **Similar @Functions**

@HLOOKUP. and @VLOOKUP find entries in horizontal or vertical lookup tables. @INDEX returns the contents of a cell located at the intersection of a specified column, row, and worksheet.

See also:

[@Function Basics](#)

## **@CODE**

**@CODE**(*string*) returns the Lotus Multibyte Character Set (LMBCS) code that corresponds to the first character in *string*.

### **Arguments**

*string* is text enclosed in " " (quotation marks), the address or name of a cell that contains a label, or a formula or @function that results in text.

### **Uses**

Use @CODE when you need to know the LMBCS code for a character.

### **Notes**

If *string* refers to a blank cell or a value, @CODE returns ERR.

### **Examples**

@CODE("A") = 65.

@CODE(C5) = 77, if C5 contains the label Ms. Jones, because 77 is the LMBCS code for M.

### **Similar @Functions**

@CHAR returns the LMBCS character that corresponds to a code number.

See also:

[@Function Basics](#)

[Guidelines for Using String @Functions](#)

## **@COLS**

@COLS(*range*) counts the number of columns in *range*.

### **Arguments**

*range* is a range address or range name.

### **Uses**

@COLS is useful when you need to determine a value that depends on the number of columns (for example, to find the size of a range you want to print).

Use @COLS with {FOR} in a macro that repeats the same action on a series of columns to determine when the macro should stop.

### **Examples**

@COLS(D9..J25) = 7, because *range* contains columns D through J (seven columns).

@COLS(SCORES) = 2, if SCORES is the name of the range B3..C45.

### **Similar @Functions**

@ROWS counts the rows, and @SHEETS counts the worksheets, in a range.

See also:

[@Function Basics](#)

## @COORD

@COORD(*worksheet,column,row,absolute*) creates a cell reference from values that correspond to *worksheet*, *column*, and *row*.

### Arguments

*worksheet* and *column* are any integers, or the addresses or names of cells that contain integers, from 1 through 256. *worksheet* and *column* correspond to the worksheet and column letters (1 for column A, 2 for column B, and so on).

*row* is any integer, or the address or name of a cell that contains an integer, from 1 through 8192. *row* corresponds to the row number.

*absolute* is any integer, or the address or name of a cell that contains an integer, from 1 through 8.

### Uses

Use @COORD with @INDEX, @VLOOKUP, or @HLOOKUP to create cell addresses from tables of values in the active worksheet file. Use @COORD with @@ to return the value in the cell address created by @COORD.

### Notes

@COORD creates a cell reference that is relative, absolute, or mixed, according to the value of *absolute*. The following table shows the possible values of *absolute* and their effect on the cell address A1 in worksheet A.

<b>Value of <i>absolute</i></b>	<b>Value of @COORD(1,1,1,<i>absolute</i>)</b>
1	\$A:\$A\$1
2	\$A:A\$1
3	\$A:\$A1
4	\$A:A1
5	A:\$A\$1
6	A:A\$1
7	A:\$A1
8	A:A1

### Examples

@COORD(3,7,25,8) returns the relative cell address C:G25.

@@(@COORD(C1,D1,E4,8)) returns the value in cell A:A4 (C1 contains 1, D1 contains 1, and E4 contains 4).

See also:

[@Function Basics](#)

## **@COS**

@COS(z) calculates the cosine of angle z. The cosine is the ratio of the side adjacent an acute angle of a right triangle to the hypotenuse. The result of @COS is a value from -1 through 1.

### **Arguments**

z is an angle measured in radians.

### **Uses**

Use @COS to find the length of a side in a right triangle, when you know the length of the hypotenuse and of the size of the angle between the hypotenuse and the side adjacent to the angle.

Use @COS to find the secant, or reciprocal of @COS, with the following formula:  $1/@COS(z)$ .

### **Notes**

To convert from degrees to radians, multiply degrees by @PI/180. z is any value, or the address or name of a cell that contains a value, from  $-2_{32}*\pi$  through  $2_{32}*\pi$ .

### **Examples**

@COS(30\*@PI/180) = 0.866, the cosine of a 30-degree angle.

### **Similar @Functions**

@ACOS calculates the arc cosine of a value to find the size of an angle.

See also:

[@Function Basics](#)  
[Guidelines for Using Mathematical @Functions](#)

## @COUNT

@COUNT(*list*) counts the nonblank cells in a *list* of ranges.

### Arguments

*list* is any combination of range addresses or names, separated by argument separators.

### Uses

Use @COUNT to count the entries in a range. @COUNT also counts labels, so if you want to keep an accurate count of values in a range, make sure the range does not contain any labels.

@COUNT is also useful to stop (or divert) a macro that performs a task on a series of ranges when the cell pointer reaches a range that has no entries.

### Notes

@COUNT counts every cell in *list* that contains an entry of any kind, including a label, a label-prefix character, or the values ERR and NA. @COUNT does not count blank cells if they occur in a range; however, @COUNT counts blank cells if you refer to them by single-cell addresses in *list*.

### Examples

@COUNT(A2..A3,A5) = 1, if A2..A3 is blank and whether or not A5 is blank, because A5 is a single-cell address.

{IF @COUNT(SEPTEMBER)=0}{BRANCH YTD} branches to a macro called YTD (which may calculate year-to-date totals) if the range named SEPTEMBER is blank.

### Similar @Functions

@DCOUNT counts the nonblank cells in a field of a database table that meet criteria you specify.

See also:

[@Function Basics](#)

[Guidelines for Using Statistical @Functions](#)



## @CTERM

@CTERM(*interest*,*future-value*,*present-value*) calculates the number of compounding periods required for an investment (*present-value*) to grow to a *future-value*, earning a fixed *interest* rate per compounding period.

### Arguments

*interest* is any value, or the address or name of a cell that contains a value, greater than -1 except 0.

*future-value* and *present-value* can be any values, or the addresses or names of cells that contain values. Both *future-value* and *present-value* must be either positive or negative.

### Uses

Use @CTERM to determine how long it will take a single investment of a given amount to grow to another given amount at a specified interest rate.

### Notes

See [Chapter 4](#) of the *User's Guide* for the formula@CTERM uses to calculate the compounding period.

### Examples

You just deposited \$10,000 in an account that pays an annual interest rate of 10% (.10), compounded monthly. You want to determine how many years it will take to double your investment.

@CTERM(.10/12,20000,10000)/12 = 6.960312.

In other words, it will take about seven years to double the original investment of \$10,000.

Because @CTERM calculates the total number of compounding periods, you may need to include the number of periods for which the *interest* rate is compounded in order to express the term and interest rate in the same unit of time. In the example above, the annual interest rate of 10%, compounded monthly, is entered as .10/12 (*interest* divided by the number of compounding periods).

### Similar @Functions

[@TERM](#) determines the number of periods required for an investment of equal periodic payments to reach a specified value.

See also:

[@Function Basics](#)  
[Guidelines for Using Financial @Functions](#)

## **@DATE**

@DATE(*year,month,day*) calculates the date number for the specified *year*, *month*, and *day*.

### **Arguments**

*year* is an integer, or the address or name of a cell that contains an integer, from 0 (the year 1900) through 199 (the year 2099).

*month* is an integer, or the address or name of a cell that contains an integer, from 1 through 12.

*day* is an integer, or the address or name of a cell that contains an integer, from 1 through 31. The value you use for *day* must be a valid day for the *month*. For example, you cannot use 31 as the *day* if you use 4 (April) as the *month*.

### **Uses**

Use @DATE to create date entries to use in calculation. Dates you enter with @DATE are also the only dates you can use in operations that depend on chronological order, such as sorting by date, or using search criteria to search for dates within a range.

### **Notes**

Even though February 29,1900, did not exist (it was not a leap year), 1-2-3 assigns a date number to this day. This does not invalidate any of your date calculations unless you use dates from January 1, 1900, through March 1, 1900. If you are using dates within that period, subtract 1 from any results within the period.

If you want the results of an @DATE calculation to appear as an actual date, format the cell that contains the @DATE function with one of the Range Format date formats.

### **Examples**

@DATE(92,2,21) returns 33655, or 21-Feb-92, in a cell formatted as DD-MMM-YY.

@DATE(91,2,29) returns ERR, because 1991 was not a leap year.

### **Similar @Functions**

@DATEVALUE calculates the date number for a date entered as a label. @TIME calculates the time number for a specified time. @NOW calculates the date-and-time number for the current date and time.

See also:

[@Function Basics](#)  
[Guidelines for Using Date and Time @Functions](#)

## **@DATEVALUE**

@DATEVALUE(*string*) calculates the date number for the date specified in *string*.

### **Arguments**

*string* is text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label. *string* must be in one of the five 1-2-3 date formats.

### **Uses**

@DATEVALUE is useful with data imported from another program, such as a word processing program. You can also use @DATEVALUE to convert dates entered as labels to date numbers so that you can use the dates in calculations.

### **Notes**

If you want the results of an @DATEVALUE calculation to appear as an actual date, format the cell that contains the @DATEVALUE function with one of the Range Format date formats.

### **Examples**

@DATEVALUE("21-Feb-91") returns the date number 33290.

@DATEVALUE(BIRTHDAY) returns the date number 20723, if the cell named BIRTHDAY contains the label 25-Sep-56.

### **Similar @Functions**

@DATE calculates the date number for a specified date.

See also:

[@Function Basics](#)  
[Guidelines for Using Date and Time @Functions](#)

## **@DAVG**

**@DAVG**(*input,field,criteria*) finds the average of the values in a *field* of a database table (or any range set up like a database table) that meet the criteria in the *criteria* range.

### **Arguments**

For detailed descriptions of Database @Function arguments, see [Guidelines for Using Database @Functions](#)

*input* is the address or name of a range (or ranges) that contains a database table.

*field* is either the name or [offset number](#) of the field, or the address of a cell that contains the field name.

*criteria* is the address or name of a range you create to specify selection requirements.

### **Uses**

Use @DAVG to find the average value of only those items in a list that meet certain conditions: for example, the average sales for a particular division or the average score for test-takers from a certain city.

### **Examples**

[@DAVG](#)

### **Similar @Functions**

[@AVG](#) finds the average value in a list.

See also:

[@Function Basics](#)

**Example: @DAVG**

A database table named SALES lists house sales in Arlington, Belmont, and Cambridge in April and May. The sale prices of the houses are listed in the field named SOLD. The criteria range, in C13..C14, is named CRIT\_RANGE. The following @DAVG formula determines the average price of a house sold in Cambridge:

@DAVG(SALES,"SOLD",CRIT\_RANGE)

entered in a cell formatted as Currency with no decimal places, returns \$365,667, the average price of a house sold in Cambridge in April and May.

A	-----	A	-----	B	-----	C	-----
1	ADDRESS	CITY				SOLD	
2	467 Brattle	Cambridge	720,000				
3	183 Hillside	Arlington				318,000	
4	64 N. Gate	Belmont	332,000				
5	80 Mt. Auburn	Cambridge				278,000	
6	14 Charles	Cambridge	160,000				
7	1160 Memorial	Cambridge				227,000	
8	130 Crescent	Arlington					397,000
9	12 Trenton	Arlington				303,000	
10	36 Barnes	Cambridge	669,000				
11	234 Third	Cambridge	140,000				
12							
13		CITY					
14		Cambridge					

## **@DAY**

**@DAY**(*date-number*) calculates the day of the month (1 through 31) using the value of *date-number*.

### **Arguments**

*date-number* is a value, or the address or name of a cell that contains a value, from 1 (January 1, 1900) through 73050 (December 31, 2099).

### **Uses**

@DAY is useful when you need to know only the day of the month, and not the entire date. @DAY can also supply the *day* argument for other date @functions that build on previously calculated dates.

### **Notes**

You can use one of the other date @functions to supply the value for *date-number*.

### **Examples**

@DAY(@NOW) = the current day of the month.

@DAY(D9) = 12, if cell D9 contains the date number 33250 (the date 12-Jan-91).

### **Similar @Functions**

@MONTH calculates the month, using a date number. @YEAR calculates the year, using a date number. You can use @MOD to calculate the day of the week.

See also:

[@Function Basics](#)  
[Guidelines for Using Date and Time @Functions](#)

## @DAYS360

@DAYS360(*start-date*,*end-date*) calculates the number of days between two date numbers, based on a 360-day year, according to the standards of the U.S. securities industry.

### Arguments

*start-date* and *end-date* are date numbers, @functions that produce date numbers, or the addresses or names of cells that contain date numbers.

### Uses

Use @DAYS360 to calculate the number of days in a period. @DAYS360 is also useful to simplify calculations of payments.

### Notes

The formula used to calculate @DAYS360 conforms to the 1990 modifications to the Securities Industry Association's 1986 edition of *Standard Security Calculation Methods*.

Use @DATE with @DAYS360 to convert actual dates into date numbers.

### Examples

@DAYS360(@DATE(89,4,16),@DATE(89,9,25)) = 159.

@DAYS360(33290,33524) = 232, the number of days between February 21, 1991, and October 13, 1991, based on a 360-day year.

### Similar @Functions

@D360 calculates the number of days between two date numbers, based on a 360-day year (12 months, each with 30 days). This method conforms to German standards for a 360-day year.

**Note** @DAYS360 and @D360 typically return different answers for the same data when either *start-date* or *end-date* is the last day of the month.

See also:

[@Function Basics](#)  
[Guidelines for Using Date and Time @Functions](#)

## **@DCOUNT**

**@DCOUNT**(*input,field,criteria*) counts the nonblank cells in a *field* of a database table that meet the criteria in the *criteria* range.

### **Arguments**

For detailed descriptions of Database @Function arguments, see [Guidelines for Using Database @Functions](#)

*input* is the address or name of a range (or ranges) that contains a database table.

*field* is either the name or offset number of the field, or the address of a cell that contains the field name.

*criteria* is the address or name of a range you create to specify selection requirements.

### **Uses**

Use @DCOUNT to count the number of records in a database table that meet specified criteria: for example, the number of checks written in a certain month.

### **Examples**

@DCOUNT

### **Similar @Functions**

@COUNT counts the nonblank cells in a list.

See also:

@Function Basics



**Example: @DCOUNT**

A database table named APR\_SALES lists house sales for the month of April. The types of heating systems the houses have are listed in a field named HEAT. The criteria range is in C9..C10. The following @DCOUNT formula finds the number of houses heated with gas:

@DCOUNT(APR\_SALES,"HEAT",C9..C10)

returns 4, the number of houses sold in April that are heated with gas.

A	----- A -----	B	----- B -----	C	----- C -----	D	----- D -----
1	ADDRESS	BDRMS	HEAT		COST		
2	671 Washington	5	Gas		\$290,000		
3	131 Aslett	5	Oil		\$105,000		
4	46 Carlton	2	Gas		\$135,000		
5	76 Phillips	4	Elec		\$128,000		
6	479 Marlborough	2	Gas		\$174,000		
7	8844 Wonderland	3	Gas		\$195,000		
8							
9			HEAT				
10			Gas				

## @DDB

`@DDB(cost,salvage,life,period)` calculates the depreciation allowance of an asset with an initial value of *cost*, an expected useful *life*, and a final *salvage* value for a specified *period* of time, using the double-declining balance method.

### Arguments

*cost* is the amount paid for the asset. *cost* is any value, or the address or name of a cell that contains any value, greater than or equal to *salvage*.

*salvage* is the estimated value of the asset at the end of its useful life. *salvage* is any value or the address or name of a cell that contains any value.

*life* is the number of periods the asset takes to depreciate to its *salvage* value. *life* is any value, or the address or name of a cell that contains any value, greater than 2.

*period* is the time period for which you want to find the depreciation allowance. *period* is any value, or the address or name of a cell that contains any value, greater than or equal to 1.

You must express *life* and *period* in the same units, typically years.

### Uses

@DDB uses the double-declining balance method of depreciation. The double-declining balance method accelerates the rate of depreciation so that more depreciation expense occurs (and can be written off) in earlier periods than in later ones. Depreciation stops when the book value of the asset -- that is, the total cost of the asset minus its total depreciation over all prior periods -- reaches the salvage value.

### Notes

See [Chapter 4](#) of the *User's Guide* for the formula @DDB uses to calculate the double-declining balance depreciation for any period.

If the salvage value of an asset is relatively low, @DDB may not fully depreciate the asset by the end of the estimated useful life. You may want to use @VDB, which always fully depreciates the asset within the estimated life.

### Examples

You just purchased an office machine for \$10,000. The useful life of this machine is eight years, and the salvage value after eight years is \$1,200. You want to calculate the depreciation expense for the fifth year, using the double-declining balance method:

```
@DDB(10000,1200,8,5)
```

returns \$791.02, the depreciation expense for the fifth year of the asset's life.

### Similar @Functions

[@VDB](#) calculates depreciation using the variable-rate declining balance method. [@SLN](#) uses the straight-line method, and [@SYD](#) uses the sum-of-the-year's-digits method.

See also:

[@Function Basics](#)

[Guidelines for Using Financial @Functions](#)

## **@DGET**

`@DGET(input,field,criteria)` retrieves a value or label from a *field* of a database table that meets the criteria in the *criteria* range.

### **Arguments**

For detailed descriptions of Database @Function arguments, see [Guidelines for Using Database @Functions](#)

*input* is the address or name of a range (or ranges) that contains a database table.

*field* is either the name or [offset number](#) of the field, or the address of a cell that contains the field name.

*criteria* is the address or name of a range you create to specify selection requirements.

### **Uses**

@DGET is useful when you need to retrieve a single value that meets specific criteria: the employee number of a particular employee, for example. With @DGET, you can retrieve this kind of information automatically for use in a macro, as an argument in an @function, or as a variable in a formula.

### **Notes**

If more than one entry meets the *criteria* you specify, @DGET returns [ERR](#).

### **Examples**

`@DGET`

### **Similar @Functions**

[@HLOOKUP](#) and [@VLOOKUP](#) return the contents of a specified cell in a horizontal or vertical lookup table. [@CHOOSE](#) finds an entry in a list. [@INDEX](#) returns the contents of a cell in a table based on relative worksheet, column, and row locations. [@@](#) indirectly returns the contents of a specified cell.

See also:

[@Function Basics](#)

**Example: @DGET**

A database table named SALES lists house sales in three towns in April and May. Brokers' commissions are listed in the field named COMM. The criteria range, in B11..B12, is named CRIT\_RANGE. The following @DGET formula returns the broker's commission on the sale of the house at 12 Trenton Street:

@DGET(SALES,"COMM",CRIT\_RANGE)

entered in a cell formatted as Currency with no decimal places, returns \$12,120, the broker's commission on the sale.

A	A	B	C
1	ADDRESS	BROKER	COMM
2	467 Brattle	Higle	28,800
3	183 Hillside	Levine	12,720
4	64 N. Gate	Higle	19,920
5	80 Mt. Auburn	Smith	11,120
6	14 Charles	Dunbar	9,600
7	1160 Memorial	Levine	13,620
8	130 Crescent	Dunbar	15,880
9	12 Trenton	Higle	12,120
10			
11	ADDRESS		
12	12 Trenton		

## **@DMAX**

**@DMAX**(*input,field,criteria*) finds the largest value in a *field* of a database table that meets the criteria in the *criteria* range.

### **Arguments**

For detailed descriptions of Database @Function arguments, see [Guidelines for Using Database @Functions](#)

*input* is the address or name of a range (or ranges) that contains a database table.

*field* is either the name or [offset number](#) of the field, or the address of a cell that contains the field name.

*criteria* is the address or name of a range you create to specify selection requirements.

### **Uses**

Use @DMAX to find the largest value of only those items that meet certain conditions: the month with the highest sales for a particular product, for example. You can also use @DMAX to find the most recent date or time in a list of dates or times.

@DMAX is also useful when you need to check for unusually large values or to find (and discard) the largest value in some statistical calculations.

### **Examples**

[@DMAX](#)

### **Similar @Functions**

[@MAX](#) finds the largest value in a list.

See also:

[@Function Basics](#)

**Example: @DMAX**

A database table named SALES lists house sales in Arlington, Belmont, and Cambridge in April and May. The sale prices of the houses are listed in the field named SOLD. The criteria range, in C13..C14, is named CRIT\_RANGE. The following @DMAX formula returns the highest price paid for a house in Cambridge:

@DMAX(SALES,"SOLD",CRIT\_RANGE)

entered in a cell formatted as Currency with no decimal places, returns \$720,000.

A	----- A -----	B -----	C -----
1	ADDRESS	CITY	SOLD
2	467 Brattle	Cambridge	720,000
3	183 Hillside	Arlington	318,000
4	64 N. Gate	Belmont	332,000
5	80 Mt. Auburn	Cambridge	278,000
6	14 Charles	Cambridge	160,000
7	1160 Memorial	Cambridge	227,000
8	130 Crescent	Arlington	397,000
9	12 Trenton	Arlington	303,000
10	36 Barnes	Cambridge	669,000
11	234 Third	Cambridge	140,000
12			
13		CITY	
14		Cambridge	

## **@DMIN**

**@DMIN**(*input,field,criteria*) finds the smallest value in a *field* of a database table that meets the criteria in the *criteria* range.

### **Arguments**

For detailed descriptions of Database @Function arguments, see [Guidelines for Using Database @Functions](#)

*input* is the address or name of a range (or ranges) that contains a database table.

*field* is either the name or [offset number](#) of the field, or the address of a cell that contains the field name.

*criteria* is the address or name of a range you create to specify selection requirements.

### **Uses**

Use @DMIN to find the lowest value of only those items that meet certain conditions: the month with the lowest sales for a particular product, for example. You can also use @DMIN to find the earliest date or time in a list of dates or times.

@DMIN is also useful when you need to check for unusually small values, or to find (and discard) the smallest value in some statistical calculations.

### **Examples**

[@DMIN](#)

### **Similar @Functions**

[@MIN](#) finds the smallest value in a list.

See also:

[@Function Basics](#)

**Example: @DMIN**

A database table named SALES lists house sales in Arlington, Belmont, and Cambridge in April and May. The sale prices of the houses are listed in the field named SOLD. The criteria range, in C13..C14, is named CRIT\_RANGE. The following @DMIN formula returns the lowest price paid for a house in Cambridge:

@DMIN(SALES,"SOLD",CRIT\_RANGE)

entered in a cell formatted as Currency with no decimal places, returns \$140,000.

A	B	C
1	ADDRESS CITY	SOLD
2	467 Brattle Cambridge	720,000
3	183 Hillside Arlington	318,000
4	64 N. Gate Belmont	332,000
5	80 Mt. Auburn Cambridge	278,000
6	14 Charles Cambridge	160,000
7	1160 Memorial Cambridge	227,000
8	130 Crescent Arlington	397,000
9	12 Trenton Arlington	303,000
10	36 Barnes Cambridge	669,000
11	234 Third Cambridge	140,000
12		
13	CITY	
14	Cambridge	



## **@DQUERY**

@DQUERY(*function*[,*ext-arguments*]) gives you access to a function of an external database and uses the result of the function in a criteria range in 1-2-3.

### **Arguments**

*function* is the name of the external database function.

*ext-arguments* is an optional argument that lists the arguments the external function requires, separated by valid argument separators.

### **Uses**

@DQUERY is useful when you want to perform a task in an external database that you can't perform in 1-2-3, and then use the results in 1-2-3. Use @DQUERY only in a criteria range to select specific records from an external database table.

### **Notes**

You cannot use @DQUERY in the criteria range of a query whose input range contains more than one database table.

Consult the documentation that came with your external database driver to see if the driver supports @DQUERY.

1-2-3 calculates @DQUERY only when you use Data Query Delete, Data Query Extract, Data Query Modify Extract, or Data Query Modify Replace.

### **Examples**

An external database management program has a function called LITERS that converts gallons to liters. The function requires a single argument: the number of gallons to convert. To use the function in 1-2-3, you would enter

```
+QUANTITY=@DQUERY("LITERS",10)
```

in a criteria range to extract entries from the field QUANTITY of an external table that match the quantity in liters equivalent to 10 gallons.

See also:

[@Function Basics](#)

[Guidelines for Using Database @Functions](#)

## @DSTD

[@DSTD\(input,field,criteria\)](#) calculates the standard deviation of the values in a *field* of a database table that meet the criteria in the *criteria* range.

### Arguments

For detailed descriptions of Database @Function arguments, see [Guidelines for Using Database @Functions](#)

*input* is the address or name of a range (or ranges) that contains a database table.

*field* is either the name or [offset number](#) of the field, or the address of a cell that contains the field name.

*criteria* is the address or name of a range you create to specify selection requirements.

### Uses

Standard deviation measures the degree to which individual values in a list vary from the mean (average) of all values in the list. The lower the standard deviation, the less individual values vary from the mean, and the more reliable the mean. A standard deviation of 0 indicates that all values in the list are equal.

Use @DSTD to find the standard deviation of values in a field in a database table that meet criteria you specify (when those values are the entire population), such as the standard deviation of all sales within a particular sales group, or the standard deviation of all salaries for a certain job level.

Use @DSTD instead of @DSTDs when the population is large, for more accurate results.

### Notes

@DSTD uses the n, or population, method to calculate standard deviation of population data. The n method assumes that the selected values are the entire population. If the values are only a sample of the population, the standard deviation is biased because of errors introduced in taking the sample. See [Chapter 4](#) of the *User's Guide* for the formula the n method uses.

Standard deviation is the square root of the variance of all individual values from the mean.

### Examples

[@DSTD](#)

### Similar @Functions

[@DSTDs](#) uses the n-1 (sample) method to calculate an unbiased standard deviation. [@STD](#) calculates the standard deviation of the entire population of values in a range. [@DVAR](#) calculates the population variance of values that meet criteria you specify.

See also:

[@Function Basics](#)

**Example: @DSTD**

A database table named SALES\_HISTORY lists house sales for the years 1982 through 1986. (To save space, rows 4 through 37 in the worksheet are hidden.) The lot sizes of the houses are listed in the field named LOT. The criteria range, in C44..C45, is named CRIT\_RANGE. The following @DSTD formula returns the standard deviation of lot size for houses with a cost greater than \$125,000:

@DSTD(SALES\_HISTORY,"LOT",CRIT\_RANGE)

returns 0.47.

A	B	C	D
1	ADDRESS	LOT	HEAT COST
2	12 Bartholomew Sq	0.25	Gas \$290,000
3	40 Prospect St	0.40	Oil \$105,000
38	103 Cranberry La	0.50	Gas \$135,000
39	27 Kilburn St	1.00	Elec \$128,000
40	468 Henshaw St	0.50	Gas \$174,000
41	9 Pleasant St	0.25	Gas \$195,000
42	80 Beach St	0.25	Oil \$118,000
43			
44		COST	
45		>125000	

## @DSTDS

`@DSTDS(input,field,criteria)` calculates the standard deviation of sample values in a *field* of a database table that meet the criteria in the *criteria* range.

### Arguments

For detailed descriptions of Database @Function arguments, see [Guidelines for Using Database @Functions](#)

*input* is the address or name of a range (or ranges) that contains a database table.

*field* is either the name or [offset number](#) of the field, or the address of a cell that contains the field name.

*criteria* is the address or name of a range you create to specify selection requirements.

### Uses

Standard deviation measures the degree to which individual values in a list vary from the mean (average) of all values in the list. The lower the standard deviation, the less individual values vary from the mean, and the more reliable the mean. A standard deviation of 0 indicates that all values in the list are equal.

Use @DSTDS to calculate the standard deviation of a sample of values that meet conditions you specify, such as the standard deviation of a sample of SAT scores for high school seniors in Chicago, or the standard deviation of a random sample of salaries for a certain job level.

Use @DSTDS instead of @DSTD when the population is small, for more accurate results. @DSTDS is useful when the entire population is too large to work with, and a sample becomes necessary.

### Notes

@DSTDS uses the n-1, or sample, method to calculate standard deviation of sample population data. The n-1 method makes the standard deviation slightly larger than the n method to compensate for errors in the sample. A larger standard deviation is unbiased by sampling errors, and is thus more accurate. See [Chapter 4](#) of the *User's Guide* for the formula the n-1 method uses.

Standard deviation is the square root of the variance of all individual values from the mean.

### Examples

`@DSTDS`

### Similar @Functions

[@DSTD](#) uses the n method to calculate the standard deviation of an entire population of data. [@STDS](#) calculates the sample standard deviation of a values in a list. [@DVAR](#) calculates the sample variance of values that meet criteria you specify.

See also:

[@Function Basics](#)

**Example: @DSTDS**

A database table named SALES\_HISTORY lists house sales for the years 1982 through 1986. (To save space, rows 4 through 37 in the worksheet are hidden.) The lot sizes of the houses are listed in the field named LOT. The criteria range, in C44..C45, is named CRIT\_RANGE. The following @DSTDS formula returns the sample standard deviation of lot size for houses with a cost greater than \$100,000:

@DSTDS(SALES\_HISTORY,"LOT",CRIT\_RANGE)

returns 0.44.

A	B	C	D
1	ADDRESS	LOT	HEAT COST
2	12 Bartholomew Sq	0.25	Gas \$290,000
3	40 Prospect St	0.40	Oil \$105,000
38	103 Cranberry La	0.50	Gas \$135,000
39	27 Kilburn St	1.00	Elec \$128,000
40	468 Henshaw St	0.50	Gas \$174,000
41	9 Pleasant St	0.25	Gas \$195,000
42	80 Beach St	0.25	Oil \$118,000
43			
44		COST	
45		>100000	

## **@DSUM**

**@DSUM**(*input,field,criteria*) calculates the sum of the values in a *field* of a database table that meet the criteria in the *criteria* range.

### **Arguments**

For detailed descriptions of Database @Function arguments, see [Guidelines for Using Database @Functions](#)

*input* is the address or name of a range (or ranges) that contains a database table.

*field* is either the name or [offset number](#) of the field, or the address of a cell that contains the field name.

*criteria* is the address or name of a range you create to specify selection requirements.

### **Uses**

Use @DSUM to find the total of values that meet conditions you specify, such as total sales for a particular month, or total number of goals scored by a soccer team against a particular team over a season.

### **Examples**

[@DSUM](#)

### **Similar @Functions**

[@SUM](#) calculates the sum of the values in a list.

See also:

[@Function Basics](#)

**Example: @DSUM**

A database table named SALES lists house sales in Arlington, Belmont, and Cambridge in April and May. The brokers' commissions on the sales are listed in the field named COMM. The criteria range, in B11..B12, is named CRIT\_RANGE. The following @DSUM formula calculates the total commission earned by the broker Dunbar:

@DSUM(SALES,"COMM",CRIT\_RANGE)

entered in a cell formatted as Currency with no decimal places, returns \$25,480.

A	ADDRESS	BROKER	COMM	C
1	467 Brattle	Higle	28,800	
2	183 Hillside	Levine	12,720	
3	64 N. Gate	Higle	19,920	
4	80 Mt. Auburn	Smith	11,120	
5	14 Charles	Dunbar	9,600	
6	1160 Memorial	Levine	13,620	
7	130 Crescent	Dunbar	15,880	
8	12 Trenton	Higle	12,120	
9				
10				
11		BROKER		
12		Dunbar		

## **@D360**

**@D360**(*start-date, end-date*) calculates the number of days between two date numbers, based on a 360-day year (12 months, each with 30 days).

### **Arguments**

*start-date* and *end-date* are date numbers, @functions that produce date numbers, or the addresses or names of cells that contain date numbers.

### **Uses**

Use @D360 to calculate the number of days in a period. @D360 is also useful to simplify calculations of payments, based on twelve 30-day months.

### **Notes**

Use @DATE with @D360 to convert actual dates into date numbers.

### **Examples**

**@D360**(**@DATE**(89,4,16),**@DATE**(89,9,25)) = 159.

**@D360**(33290,33524) = 232, the number of days between February 21, 1991, and October 13, 1991, based on a 360-day year.

### **Similar @Functions**

@DAYS360 calculates the number of days between two date numbers, based on a 360-day year, in accordance with the 1990 modifications to the Securities Industry Association's 1986 edition of *Standard Securities Calculation Methods*.

See also:

[@Function Basics](#)

[Guidelines for Using Date and Time @Functions](#)



## @DVAR

[@DVAR\(input,field,criteria\)](#) calculates the population variance of the values in a *field* of a database table that meet the criteria in the *criteria* range.

### Arguments

For detailed descriptions of Database @Function arguments, see [Guidelines for Using Database @Functions](#)

*input* is the address or name of a range (or ranges) that contains a database table.

*field* is either the name or [offset number](#) of the field, or the address of a cell that contains the field name.

*criteria* is the address or name of a range you create to specify selection requirements.

### Uses

Variance measures the degree to which individual values in a list vary from the mean (average) of all the values in the list. The lower the variance, the less individual values vary from the mean, and the more reliable the mean. A variance of 0 indicates that all values in the list are equal. Variance is necessary in several ANOVA (analysis of variance) statistical tests.

Use @DVAR to calculate the variance from the mean of a group of values in a database table that meet criteria you specify (when those values are the entire population), such as the variance of all sales within a particular division, or the variance of salaries for a job level.

Use @DVAR instead of @DVARs when the population is large, for more accurate results.

### Notes

@DVAR uses the n, or population, method to calculate variance. The n method assumes the selected values are the entire population. If the values are only a sample of the population, the variance is biased because of errors introduced in taking a sample. See [Chapter 4](#) of the *User's Guide* for the formula the n method uses.

Variance is the square of standard deviation.

### Examples

[@DVAR](#)

### Similar @Functions

[@DVARs](#) uses the n-1 (sample) method to calculate an unbiased variance for a sample.

[@VAR](#) calculates the population variance of values in a list. [@DSTD](#) calculates the population standard deviation of values that meet criteria you specify.

See also:

[@Function Basics](#)

**Example: @DVAR**

A database table named SALES\_HISTORY lists house sales for 1982 through 1986. (To save space, rows 4 through 37 in the worksheet are hidden.) The lot sizes of the houses are listed in the field named LOT. The criteria range, in C44..C45, is named CRIT\_RANGE. The following @DVAR formula returns the variance of lot size for houses with a cost greater than \$125,000:

@DVAR(SALES\_HISTORY,"LOT",CRIT\_RANGE)

returns 0.216385.

A	B	C	D
1	ADDRESS	LOT	HEAT COST
2	12 Bartholomew Sq 0.25	Gas	\$290,000
3	40 Prospect St	0.40	Oil \$105,000
38	103 Cranberry La 0.50	Gas	\$135,000
39	27 Kilburn St	1.00	Elec \$128,000
40	468 Henshaw St 0.50	Gas	\$174,000
41	9 Pleasant St	0.25	Gas \$195,000
42	80 Beach St 0.25	Oil	\$118,000
43			
44		COST	
45		>125000	

## @DVARs

`@DVARs(input,field,criteria)` calculates the variance of sample values in a field of a database table that meet the criteria in the *criteria* range.

### Arguments

For detailed descriptions of Database @Function arguments, see [Guidelines for Using Database @Functions](#)

*input* is the address or name of a range (or ranges) that contains a database table.

*field* is either the name or offset number of the field, or the address of a cell that contains the field name.

*criteria* is the address or name of a range you create to specify selection requirements.

### Uses

Variance measures the degree to which individual values in a list vary from the mean (average) of all the values in the list. The lower the variance, the less individual values vary from the mean, and the more reliable the mean. A variance of 0 indicates that all values in the list are equal.

Use @DVARs to calculate the variance of a sample of values that meet conditions you specify, such as the variance of a sample of SAT scores for high school seniors in Chicago, or the variance of a random sample of salaries for a job level.

Use @DVARs (instead of @DVAR) when the population is small, for more accurate results. @DVARs is useful when you need to carry out ANOVA (analysis of variance) statistical tests, but the population is large or a sample is all that is available or feasible.

### Notes

@DVARs uses the n-1, or sample, method to calculate variance. The n-1 method produces a variance that is slightly larger than the n method to compensate for errors in the sample. A larger variance is unbiased by sampling errors, and is thus more accurate. See [Chapter 4](#) of the *User's Guide* for the formula the n-1 method uses.

@DVARs replaces the calculation required to produce a sample variance in releases of 1-2-3 earlier than Release 3:

$$\text{@DCOUNT}(1,F,C)/(\text{@DCOUNT}(1,F,C)-1)*\text{@DVAR}(1,F,C)$$

### Examples

`@DVARs`

### Similar @Functions

[@DVAR](#) uses the n (population) method to calculate the variance for an entire population of data. [@VARs](#) calculates the variance of a sample of values in a list. [@DSTDS](#) calculates the sample standard deviation of values that meet criteria you specify.

See also:

[@Function Basics](#)

**Example: @DVARs**

A database table named SALES\_HISTORY lists house sales for 1982 through 1986. (To save space, rows 4 through 37 in the worksheet are hidden.) The lot sizes of the houses are listed in the field named LOT. The criteria range, in C44..C45, is named CRIT\_RANGE. The following @DVARs formula returns the variance of a sample of lot sizes for houses costing more than \$100,000:

@DVARs(SALES\_HISTORY,"LOT",CRIT\_RANGE)

returns 0.224114.

A	B	C	D
1	ADDRESS	LOT	HEAT COST
2	12 Bartholomew Sq	0.25	Gas \$290,000
3	40 Prospect St	0.40	Oil \$105,000
38	103 Cranberry La	0.50	Gas \$135,000
39	27 Kilburn St	1.00	Elec \$128,000
40	468 Henshaw St	0.50	Gas \$174,000
41	9 Pleasant St	0.25	Gas \$195,000
42	80 Beach St	0.25	Oil \$118,000
43			
44			COST
45			>100000

## **@ERR**

@ERR returns the value ERR.

### **Uses**

@ERR is useful in flagging errors in calculations. It is seldom used by itself. For example, @ERR used as an argument with @IF produces the value ERR when certain conditions exist, such as when a formula results in an unacceptable value (such as a negative monthly payment).

### **Notes**

The label ERR and the value ERR are not equivalent in formulas. For example, the formula +A2+34 equals ERR, if cell A2 contains @ERR, but equals 34 when cell A2 contains the label ERR.

### **Examples**

@IF(B14>3,@ERR,B14) = ERR, if the value in cell B14 is greater than 3.

### **Similar @Functions**

@NA returns the value NA (not available). @ISERR tests for the value ERR.

See also:

[@Function Basics](#)

## **@EXACT**

@EXACT(*string1*,*string2*) compares two sets of characters. If the two sets match exactly, @EXACT returns 1 (true); if the two sets are not exactly the same, @EXACT returns 0 (false).

### **Arguments**

*string1* and *string2* are text enclosed in " " (quotation marks), formulas that result in text, or the addresses or names of cells that contain labels or formulas that result in labels.

### **Uses**

Use @EXACT when you need to ensure that a set of characters exactly matches a required entry, such as in macros that compare what a user enters with a required entry before continuing. This lets you set passwords for macros.

@EXACT is also useful for checking existing entries, as in a database in which you need to ensure that all entries in a field contain the same value.

### **Notes**

@EXACT is more precise than = (the equal operator) in a formula. Unlike =, @EXACT distinguishes between uppercase and lowercase letters and between letters with and without accent marks.

### **Examples**

@EXACT("ATHENS","Athens") = 0 (false).

@EXACT("Overdue",B2) = 1 (true), if cell B2 contains the label Overdue.

@EXACT("400",400) = ERR, because *string2* is a value.

See also:

[@Function Basics](#)  
[Guidelines for Using String @Functions](#)

## **@EXP**

@EXP(*x*) calculates the value of the constant *e* (approximately 2.718282) raised to the power *x*.

### **Arguments**

*x* is a value, or the address or name of a cell that contains a value, from approximately 11355.1371 to approximately 11356.5234.

### **Uses**

Use @EXP in scientific calculations that require exponential functions.

### **Notes**

If *x* is larger than approximately 11356.5234 or smaller than approximately -11355.1371, the calculation is too large for 1-2-3 to store, and @EXP returns ERR. If *x* is smaller than approximately -227.956 or larger than approximately 230.259, 1-2-3 can calculate and store the value of @EXP, but cannot display it. (The cell displays a series of asterisks.)

### **Examples**

@EXP(-1.25) = 0.286505.

@EXP(B1) = *e* raised to the power of the value in cell B1.

### **Similar @Functions**

@LN is the inverse of @EXP.

See also:

[@Function Basics](#)  
[Guidelines for Using Mathematical @Functions](#)

## **@FALSE**

@FALSE returns the logical value 0 (false).

### **Uses**

Use @FALSE with macros or @functions such as [@IF](#) and [@CHOOSE](#) that require a logical value of 0 (false). @FALSE is useful as the y argument for @IF, which is the value returned if the condition is not met.

### **Notes**

If a logical statement such as A1=B1 is true, its logical value is 1. If it is false, its logical value is 0.

Using @FALSE is the same as using the value 0 in formulas that evaluate logical conditions, but @FALSE makes the formula easier to understand.

### **Examples**

@IF(A6>500,@TRUE,@FALSE) = 0 when cell A6 contains a value less than or equal to 500.

### **Similar @Functions**

[@TRUE](#) returns the logical value 1.

See also:

[@Function Basics](#)

[Guidelines for Using Logical @Functions](#)



## **@FIND**

@FIND(*search-string*,*string*,*start-number*) calculates the position in *string* at which 1-2-3 finds the first occurrence of *search-string*, beginning at the position indicated by *start-number*.

### **Arguments**

*search-string* and *string* are text enclosed in " " (quotation marks), a formula that results in text or the address or name of a cell that contains text or a formula that results in a label.

*start-number* is an offset number, or the address or name of a cell that contains a positive integer or 0.

### **Uses**

Use @FIND when you need to determine the position of a particular character or group of characters within a group. @FIND is useful in macros that locate particular sequences of characters for processing.

@FIND is also useful when combined with @MID or @REPLACE to locate and extract or replace text.

### **Notes**

If 1-2-3 does not find *search-string* in *string*, @FIND returns ERR. @FIND also returns ERR if *start-number* is greater than the number of characters in *string*, or if *start-number* is negative.

@FIND is case-sensitive and accent-sensitive; for example, @FIND will not find the *search-string* "e" in the *string* "CAMBRIDGE."

### **Examples**

@FIND("P","Accounts Payable",0) = 9 because *search-string* P is at position 9 in *string* Accounts Payable.

See also:

[@Function Basics](#)

[Guidelines for Using String @Functions](#)

## @FV

@FV(*payments,interest,term*) calculates the future value of an investment, based on a series of equal *payments*, earning a periodic *interest* rate, over the number of payment periods in *term*.

### Arguments

*payments* and *term* are values, or the addresses or names of cells that contain values. *interest* is a value, or the address or name of a cell that contains a value, greater than -1.

### Uses

Use @FV to determine whether an investment will produce the results you want at the end of *term*.

### Notes

See [Chapter 4](#) of the *User's Guide* for the formula @FV uses to calculate future value.

@FV assumes the investment you are calculating is an ordinary annuity: an investment in which equal *payments* are made at the end of each period in the *term*.

If you make each year's contribution on the first day of the year, you would calculate the amount for an annuity due. To calculate the future value of an annuity due, use the formula

@FV(*payments,interest,term*)\*(1+*interest*)

For example, @FV(2000,0.075,20)\*(1+0.075) = \$93,105.06, the value of your account in 20 years if you make each deposit on the first day of each year.

### Examples

You plan to deposit \$2,000 each year for the next 20 years into an account to save for retirement. The account pays 7.5% interest, compounded annually; interest is paid on the last day of each year. You want to calculate the value of your account in 20 years. You make each year's contribution on the last day of the year.

@FV(2000,0.075,20) returns \$86,609.36, the value of your account at the end of 20 years.

### Similar @Functions

[@PV](#) determines the present value of an investment. [@NPV](#) computes the net present value of an investment, discounting the future value to present value.

See also:

[@Function Basics](#)

[Guidelines for Using Financial @Functions](#)

## @HLOOKUP

@HLOOKUP(*x,range,row-offset*) finds the contents of the cell in a specified row of a horizontal lookup table, a range with either value information in ascending order or labels in the first row.

### Arguments

*x* is either a value or a string.

If the first row of the horizontal lookup table contains values, *x* can be any value greater than or equal to the first value in *range*. If *x* is smaller than the first value in *range*, @HLOOKUP returns ERR. If *x* is larger than the last value in the first row of *range*, @HLOOKUP stops at the last cell in the row specified by *row-offset* and returns the contents of that cell as the answer.

If the first row of the horizontal lookup table contains labels, *x* can be text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label. If *x* does not exactly match the contents of a cell in the first row of *range*, @HLOOKUP returns ERR.

*range* represents the location of the horizontal lookup table. *range* is any range address or range name. If *range* is a 3-D range, 1-2-3 uses only the first worksheet in *range*.

*row-offset* represents an offset number corresponding to the position the row occupies in *range*.

### Uses

Use @HLOOKUP when you need to choose items from a table, or to automate data selection for formulas or macros, such as in an application that supplies prices from a price list.

@HLOOKUP is useful for finding entries in tables, such as tax tables or sales commission tables, that contain many different choices based on different variables.

### Notes

@HLOOKUP compares *x* to each cell in the first row of the table. When 1-2-3 locates a cell in the first row that contains *x* (or if *x* is a value, the value closest to, but not larger than, *x*), it moves down that column the number of rows specified by *row-offset* and returns the contents of that cell as the answer.

### Examples

@HLOOKUP

### Similar @Functions

@VLOOKUP finds the contents of a cell in a vertical lookup table. @INDEX finds the contents of a cell when you specify offset numbers for both the column and row. @CHOOSE replaces a lookup table that requires only one row.

See also:

@Function Basics

**Example: @HLOOKUP**

A horizontal lookup table named RATES (A2..E7) lists rates for sending a parcel to several cities.

@HLOOKUP("Frankfurt",RATES,3), entered in a cell formatted as Currency with two decimal places, returns \$24.00, the rate for sending a type 3 parcel to Frankfurt.

A	B	C	D	E	
1	PARCEL	DESTINATION			
2	Parcel type	London	Paris	Frankfurt	New York
3	1	\$18.36	\$19.33	\$20.12	\$9.29
4	2	\$20.32	\$21.66	\$22.03	\$11.25
5	3	\$22.44	\$23.88	\$24.00	\$13.25
6	4	\$24.14	\$25.26	\$25.75	\$16.85
7	5	\$28.32	\$29.00	\$29.80	\$19.54

## **@HOUR**

**@HOUR**(*time-number*) extracts the hour, a value between 0 (midnight) and 23 (23:00 or 11:00 PM), from *time-number*.

### **Arguments**

*time-number* is a value, or the address or name of a cell that contains a value, from .000000 (midnight) through .999988 (11:59:59 PM). Usually, another time @function supplies *time-number*.

### **Uses**

Use @HOUR to extract the hour portion of time values created with [@NOW](#), [@TIME](#), and [@TIMEVALUE](#). The hour portion is useful in calculations that involve whole hours, such as calculating hourly wages or hours elapsed since you began working on a project, or time-stamping a worksheet.

### **Examples**

@HOUR(.51565) = 12 because .51565 is the time number for 12:22:32 PM.

@HOUR(@TIME(13,45,18)) = 13 (1:00 PM), because 13 is the *hour* argument for @TIME(13,45,18).

### **Similar @Functions**

[@MINUTE](#) extracts the minutes, and [@SECOND](#) extracts the seconds, from a time number.

See also:

[@Function Basics](#)

[Guidelines for Using Date and Time @Functions](#)

## @IF

@IF(*condition*,*x*,*y*) evaluates *condition* and returns one of two values, depending on the result of the evaluation. If *condition* is true, @IF returns *x*; if *condition* is false, @IF returns *y*.

### Arguments

*condition* is usually a logical formula, or the address or name of a cell that contains a logical formula. However, you can use any formula, number, text enclosed in " " (quotation marks), or name or address of a cell as *condition*. 1-2-3 evaluates any *condition* that does not equal zero as true and any *condition* that does equal zero as false. Blank cells, text, and ERR and NA values all equal zero when used as *condition*.

*x* and *y* are values, text enclosed in " " (quotation marks), or the addresses or names of cells that contain values or labels.

### Uses

Use @IF when calculations or processing depends on the result of a test, for example, a test to determine savings-account interest at one rate for balances of \$1,000.00 and over and another rate for balances below that amount.

@IF is useful when combined with @ERR and @NA to document errors or missing data in formulas. It is also useful in preventing ERR, NA, and calculation errors in situations where data may be missing or inaccurate, for example, to prevent division by zero, or, with @ISSTRING, to prevent a label from being included in calculations such as @AVG.

### Notes

You can nest @IF functions within one another to create a complex condition. For example,

```
@IF(TOT>10000,TOT*0.15,@IF(TOT>5000,TOT*0.10,TOT*0.02))
```

nests two @IF functions to determine a commission rate based on three levels of sales: total sales greater than \$10,000, total sales greater than \$5,000, and total sales less than or equal to \$5,000.

### Examples

@IF(BALANCE>=0,BALANCE,"Overdrawn") returns the value in the cell named BALANCE when the value in BALANCE is 0 or positive; or returns the label Overdrawn when the value in BALANCE is negative.

See also:

[@Function Basics](#)

[Guidelines for Using Logical @Functions](#)

## **@INDEX**

**@INDEX**(*range*,*column*,*row*[,*worksheet*]) returns the contents of a cell located at the intersection of a specified *column*, *row*, and (optionally) *worksheet* of a range.

### **Arguments**

*range* is a range address or range name.

*column* is the offset number of the column that @INDEX uses, or the address or name of a cell that contains 0 or a positive integer.

*row* is the offset number of the row that @INDEX uses, or the address or name of a cell that contains 0 or a positive integer.

*worksheet* is an optional argument that is the offset number of the worksheet that @INDEX uses, or the address or name of a cell that contains 0 or a positive integer. If you do not specify *worksheet*, @INDEX uses only the first worksheet in *range*.

### **Uses**

Use @INDEX when you want to use a lookup table but need to use the relative positions (offset numbers) of the rows, columns, and worksheets, instead of specified values.

### **Examples**

@INDEX

### **Similar @Functions**

@HLOOKUP and @VLOOKUP find entries in horizontal and vertical lookup tables. @CHOOSE finds an entry in a list.

See also:

@Function Basics

**Example: @INDEX**

A table named INCREASE (A3..E8) shows salary increases based on employee performance ratings.

@INDEX(INCREASE,2,3), entered in a cell formatted as percent, returns 5%, the salary increase for an employee who has a rating of 3 and has a salary level of 2.

@INDEX(INCREASE,1,2), entered in a cell formatted as Percent, returns 7%, the salary increase for an employee who has a rating of 2 and a salary level of 1.

	A	B	C	D	E
1					
2					
3			--- S A L A R Y		
4	Rating	1	2	3	4
5	1	10%	9%	8%	7%
6	2	7%	6%	5%	4%
7	3	6%	5%	4%	3%
8	4	3%	2%	1%	0%
9	5	0%	0%	0%	0%



## @INFO

@INFO(*attribute*) returns information for the current 1-2-3 session.

### Arguments

*attribute* is one of the following items, entered as text enclosed in " " (quotation marks), or the address or name of a cell that contains one of the items:

<b>Attribute</b>	<b>Returns</b>
dbreturncode	The most recent error code returned by the DataLens driver
dbdrivermessage	The most recent DataLens message
dbrecordcount	The number of records extracted, modified, or inserted from the last query (in the worksheet or in an external database)
directory	The current <u>path</u> , including the drive letter
memavail	The amount of available memory
mode	The current mode: 0 WAIT 1 READY 2 LABEL 3 MENU 4 VALUE 5 POINT 6 EDIT 7 ERROR 8 FIND 9 FILES 10 HELP 11 STAT 13 NAMES 99 All other modes (for example, user-defined with <u>{INDICATE}</u> )
numfile	The number of currently open files
origin	The address of the first cell in the window that contains the cell pointer
osreturncode	The value returned by the most recent operating system command
osversion	The current operating system version
recalc	The current recalculation mode as one of the two strings, automatic or manual
release	The release number for the 1-2-3 for Windows product being used, consisting of three parts: major release number, upgrade level, and version number
system	The name of the operating system
totmem	The total memory available (both the amount currently available and the

amount being used)

### **Uses**

@INFO is useful in macros when you need to provide information about the status of 1-2-3 to the user or the macro (for example, to tell the user the current path in a macro that automates saving files, or to warn that memory is low).

Use @INFO with @IF to check the status of 1-2-3 and to tell a macro what to do in certain conditions, such as to change the path if necessary or to delete unnecessary data or close active files if memory is low.

### **Notes**

Recalculate your work before you use @INFO to be sure the results are correct.

### **Examples**

@INFO("numfile") = 2, if two files are active.

@INFO(B4) = 3, if B4 contains the label mode and 1-2-3 is in MENU mode.

### **Similar @Functions**

@CELL returns information about a specific cell. @CELLPOINTER returns information about the current cell.

See also:

[@Function Basics](#)

## **@INT**

@INT(x) returns the integer portion of x.

### **Arguments**

x is a value, or the address or name of a cell that contains a value.

### **Uses**

Use @INT in calculations that require only the integer portion of values (for example, a calculation of staffing levels).

### **Notes**

@INT truncates a value to its integer portion and eliminates the decimal portion. Format values as Fixed, with 0 decimal places, to display values as integers in the worksheet if you want 1-2-3 to calculate values using their full precision. @INT does not round to an integer.

### **Examples**

@INT(35.67) = 35.

@INT(@NOW) = the date number for the current date and time, because the time portion is a decimal value.

### **Similar @Functions**

@ROUND rounds a value to the closest multiple of the specified power of 10.

See also:

[@Function Basics](#)[Guidelines for Using Mathematical @Functions](#)  
[Range Format](#)  
[Worksheet Global Settings Format](#)

## @IRR

@IRR(*guess*,*range*) calculates the internal rate of return (profit) for a series of cash-flow values generated by an investment. The internal rate of return is the percentage rate that equates the present value of an expected future series of cash flows to the initial investment.

### Arguments

*guess* is a decimal or percentage value, or the address or name of a cell that contains a decimal or percentage value, that represents your estimate of the internal rate of return. In most cases, *guess* should be a percentage between 0 (0%) and 1 (100%). With very large cash flows, make *guess* as accurate as possible.

*range* is the address or name of a range that contains the cash flows. 1-2-3 considers negative numbers as cash outflows and positive numbers as cash inflows. Normally, the first cash-flow amount in the range is a negative number (a cash outflow) that represents the investment. 1-2-3 assigns the value 0 to all blank cells and labels in *range* and includes them in the calculation.

### Uses

Use @IRR to determine the profitability of an investment. Combine @IRR with other financial @functions, such as @NPV, to assess an investment.

### Notes

1-2-3 assumes the cash flows are received at regular, equal intervals.

@IRR uses a series of approximations, starting with your *guess* value, to calculate the internal rate of return. Start with a *guess* that you feel is reasonable for the internal rate of return. More than one solution may be possible, so try another *guess* if the result is less than 0 or greater than 1.

If @IRR cannot approximate the result to within 0.0000001 after 30 calculation iterations, the result is ERR. If your guesses continue to return ERR, use @NPV to determine a better guess. If @NPV returns a positive value, your guess is too low. If @NPV returns a negative value, your guess is too high. @NPV returns 0 if your guess is accurate.

Use @AVG to determine the internal rate of return if you calculate several rates.

### Examples

A schedule calculates the internal rate of return of an initial investment of \$10,000 that is followed by 12 monthly payments of \$1,500. *guess* (12.00%) is entered in GUESS and the payments are listed in a range named CASHFLOWS.

@IRR(GUESS,CASHFLOWS)

returns 10.45%, the internal rate of return.

### Similar @Functions

@NPV calculates the net present value of a series of future cash flows. @PV calculates the present value of an annuity based on a series of equal payments. @FV calculates the future value of an annuity. @RATE returns the periodic interest rate necessary for an investment to grow to a future value.

See also:

[@Function Basics](#)

[Guidelines for Using Financial @Functions](#)



## **@ISAAF**

`@ISAAF(name)` tests *name* for a defined add-in @function. If *name* is a defined add-in @function, @ISAAF returns 1 (true); if *name* is not a defined add-in @function, @ISAAF returns 0 (false).

### **Arguments**

*name* is the name of the add-in @function you want to test. *name* is text enclosed in " " (quotation marks), the address or name of a cell that contains text, or a formula or @function that results in text. Do not include the initial @ symbol in *name*.

### **Examples**

`@ISAAF("degrees") = 1` if @DEGREES is a defined add-in @function.

`@ISAAF("dsum") = 0`, because @DSUM is a built-in 1-2-3 @function, not an add-in @function.

### **Similar @Functions**

[@ISAPP](#) tests for an add-in that is currently in memory.

See also:

[@Function Basics](#)

[Guidelines for Using Logical @Functions](#)

## **@ISAPP**

@ISAPP(*name*) tests *name* for an add-in that is currently in memory. If *name* is an add-in that is currently in memory, @ISAPP returns 1 (true); if *name* is not an add-in that is currently in memory, @ISAPP returns 0 (false).

### **Arguments**

*name* is the name of the add-in you want to test. *name* is text enclosed in " " (quotation marks), the address or name of a cell that contains text, or a formula or @function that results in text. Do not include the file extension in *name*.

### **Notes**

@ISAPP returns 1 (true) only for any add-ins you load using Tools Add-in Load. For add-ins that only define add-in @functions, or any add-in installed in your DCF, @ISAPP returns 0 (false).

### **Examples**

@ISAPP("finance") = 1 if an add-in called FINANCE is currently in memory.

### **Similar @Functions**

[@ISAAF](#) tests for a defined add-in @function.

See also:

[@Function Basics](#)

[Guidelines for Using Logical @Functions](#)

## @ISERR

@ISERR(x) tests x for the value ERR. If x is the value ERR, @ISERR returns 1 (true); if x is not the value ERR, @ISERR returns 0 (false) .

### Arguments

x is any value, location, text, or condition.

### Uses

Use @ISERR with @IF in formulas to stop the ripple-through effect of the value ERR. For example, @IF(@ISERR(C3),0,C3) returns 0 if cell C3 contains the value ERR. The formula returns the contents of cell C3 if cell C3 contains any other entry.

Use @ISERR to block errors that arise from division by zero. For example, the formula @IF(@ISERR(A1/A2),0,A1/A2) tests the result of the division A1/A2 (the contents of cell A1 divided by the contents of cell A2). If the result is the value ERR, the formula returns 0. If the result is any other value, the formula returns that result.

### Notes

The label ERR is not equivalent to the value ERR. For example, @ISERR(B2) returns 0 (false) if cell B2 contains the label ERR.

### Examples

The subroutine CHKQTY consists of three short subroutines that check entries in the cells named QTY and PRICE. CHKQTY tests whether the entry in QTY is a value; if it is, processing transfers to the subroutine CKERRNA. If QTY does not contain a value, NEWQTY requests a new entry and then transfers to CHKQTY.

CKERRNA uses @ISERR to determine whether QTY contains the value ERR; if @ISERR returns 1 (true), it requests a new value. If QTY does not contain ERR and PRICE does not contain NA, the subroutine multiplies the values in the two cells and enters the result in the cell named TOTAL.

```
...
CHKQTY      {IF @ISNUMBER(QTY)}{BRANCH CKERRNA}
NEWQTY      {GETNUMBER "Enter Quantity number: ",QTY}
             {BRANCH CHKQTY}
CKERRNA     {IF @ISERR(QTY)}{BRANCH NEWQTY}
             {IF @ISNA(PRICE)}{GETNUMBER "Enter new price: ",PRICE}{BRANCH CHKQTY}
             {GOTO}TOTAL~+QTY*Price~
...
```

### Similar @Functions

@ISNA tests for the value NA.

See also:

[@Function Basics](#)

[Guidelines for Using Logical @Functions](#)



## @ISNA

@ISNA(x) tests x for the value NA. If x is the value NA, @ISNA returns 1 (true); if x is not the value NA, @ISNA returns 0 (false).

### Arguments

x is any value, location, text, or condition.

### Uses

Use @ISNA in formulas to stop the ripple-through effect of the value NA. For example, @IF(@ISNA(C3),0,C3) returns 0 if cell C3 contains the value NA; the formula returns the contents of cell C3 if cell C3 contains any other entry.

### Notes

The label NA is not equivalent to the value NA. For example, @ISNA(B2) returns 0 (false) if cell B2 contains the label NA.

### Examples

The subroutine CHKQTY consists of three short subroutines that check entries in the cells named QTY and PRICE. CHKQTY tests whether the entry in QTY is a value; if it is, processing transfers to the subroutine CKERRNA. If QTY does not contain a value, NEWQTY requests a new entry and then transfers to CHKQTY.

CKERRNA uses @ISNA to determine whether PRICE contains the value NA; if @ISNA returns 1 (true), it requests a new value. If PRICE does not contain NA and QTY does not contain ERR, the subroutine multiplies the values in the two cells and enters the result in the cell named TOTAL.

```
...
CHKQTY      {IF @ISNUMBER(QTY)}{BRANCH CKERRNA}
NEWQTY      {GETNUMBER "Enter Quantity number: ",QTY}
             {BRANCH CHKQTY}
CKERRNA     {IF @ISERR(QTY)}{BRANCH NEWQTY}
             {IF @ISNA(PRICE)}{GETNUMBER "Enter new price: ",PRICE}{BRANCH CHKQTY}
             {GOTO}TOTAL~+QTY*Price~
...
```

### Similar @Functions

@ISERR tests for the value ERR.

See also:

[@Function Basics](#)  
[Guidelines for Using Logical @Functions](#)

## @ISNUMBER

@ISNUMBER(x) tests x for a value. If x is a value, NA, ERR, or a blank, @ISNUMBER returns 1 (true); if x is text or a cell that contains a label or a formula that results in a label, @ISNUMBER returns 0 (false).

### Arguments

x is any value, location, text, or condition. If x is a multiple-cell range, @ISNUMBER returns 0 (false), even if the first cell of the range contains a value.

### Uses

@ISNUMBER is useful in macros to make sure a user enters the correct type of information (values or labels). For example, @IF(@ISNUMBER(C6),"","ERROR - Entry must be numeric") returns a blank cell if C6 contains a value, or an error message if C6 contains a label.

### Examples

The subroutine CHKQTY consists of three short subroutines that check entries in the cells named QTY and PRICE.

CHKQTY uses @ISNUMBER to determine whether the entry in QTY is a value; if it is, processing transfers to the CKERRNA subroutine. If QTY does not contain a value, NEWQTY requests a new entry.

```
...
CHKQTY      {IF @ISNUMBER(QTY)}{BRANCH CKERRNA}
NEWQTY      {GETNUMBER "Enter Quantity number: ",QTY}
             {BRANCH CHKQTY}
CKERRNA     {IF @ISERR(QTY)}{BRANCH NEWQTY}
             {IF @ISNA(PRICE)}{GETNUMBER "Enter new price: ",PRICE}{BRANCH CHKQTY}
             {GOTO}TOTAL~+QTY*Price~
...

```

### Similar @Functions

@ISSTRING tests for a label. @CELL and @CELLPOINTER can also determine whether a cell contains a value or a label.

See also:

[@Function Basics](#)  
[Guidelines for Using Logical @Functions](#)

## @ISRANGE

@ISRANGE(*range*) tests *range* for a defined range name or valid range address (a range address with worksheet and column letters from A through IV and row numbers from 1 through 8192). If *range* is a defined range name or valid range address, @ISRANGE returns 1 (true); if *range* is not a defined range name or valid range address, @ISRANGE returns 0 (false).

### Arguments

*range* is any text or range address.

### Uses

Use @ISRANGE to avoid errors in formulas caused by incorrect range names.

@ISRANGE is also useful with @IF to determine if an entry is a valid range name for subroutine calls and branching with {DISPATCH}.

### Notes

The following table shows when @ISRANGE returns 1 (true) or 0 (false):

<b>If x is</b>	<b>@ISRANGE returns</b>
A valid cell address	1 (true)
A valid range address	1
A defined range name	1
A cell address preceded by +	0 (false)
An undefined range name	0
A number or a string	0
@ERR or @NA	0

### Examples

@ISRANGE(A1) = 1 (true).

@ISRANGE(A1..C3) = 1(true).

@ISRANGE(SALES) = 1 (true), if SALES is a defined range name.

@ISRANGE(PRICE) = 0 (false), if PRICE is an undefined range name.

@ISRANGE(3) = 0 (false).

@ISRANGE("COMMISSION") = 0 (false) because the argument is text enclosed in " " (quotation marks).

See also:

[@Function Basics](#)  
[Guidelines for Using Logical @Functions](#)

## **@ISSTRING**

@ISSTRING(x) tests x for text or a label. If x is text or a cell that contains a label or a formula that results in a label, @ISSTRING returns 1 (true); if x is a value, ERR, NA, or blank, @ISSTRING returns 0 (false).

### **Arguments**

x is any value, location, text, or condition.

### **Uses**

@ISSTRING is useful in macros to make sure a user enters the correct type of information (values or labels). For example, @IF(@ISSTRING(C6),"","ERROR - Entry must be a label") returns a blank cell if C6 contains a label, or an error message if C6 contains a value.

### **Examples**

The subroutine CHKSTR checks the contents of the cell named CUSTOMER. If CUSTOMER contains a label (@ISSTRING(CUSTOMER) = 1), the subroutine branches to a new subroutine named FILEORDER. If CUSTOMER does not contain a label, the subroutine requests a new entry.

```
...  
CHKSTR      {IF @ISSTRING(CUSTOMER)} {BRANCH FILEORDER}  
            {GETLABEL "Enter CUSTOMER name: ",CUSTOMER}  
            {CHKSTR}  
...
```

### **Similar @Functions**

@ISNUMBER tests for a value. @CELL and @CELLPOINTER can also determine whether a cell contains a value or a label.

See also:

[@Function Basics](#)  
[Guidelines for Using Logical @Functions](#)

## **@LEFT**

@LEFT(*string*,*n*) returns the first *n* characters in *string*.

### **Arguments**

*string* is text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

*n* is an offset number, or the address or name of a cell that contains a positive integer or 0. If *n* is 0, the result is an empty string. If *n* is larger than the length of *string*, @LEFT returns the entire string.

### **Uses**

@LEFT is useful for copying only part of a label into another cell, starting at the beginning of the label (for example, for separating titles such as Dr. and Ms. from names).

In a macro, @LEFT can extract parts of labels the user enters to store them in a database, for subroutine calls, or to alter the macro itself.

Use @LEFT with @FIND when you do not know the exact value for *n*, or when *n* may vary.

### **Notes**

@LEFT counts punctuation and spaces as characters.

### **Examples**

@LEFT(PHONE,3} = the area code for the telephone number in the cell PHONE.

@LEFT(A1,@FIND("\*",A1,0)) = the first name in cell A1 (for example, Richard if cell A1 contains the name Richard Smith). The \* (asterisk) represents one space.

### **Similar @Functions**

@MID returns characters from within *string*. @RIGHT returns the last *n* characters in *string*.

See also:

[@Function Basics](#)

[Guidelines for Using String @Functions](#)

## **@LENGTH**

@LENGTH(*string*) counts the characters in *string*.

### **Arguments**

*string* is text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

### **Uses**

Use @LENGTH with [@TRIM](#) to find the length of *string* without including leading, trailing, or consecutive spaces.

@LENGTH is also useful in any application in which labels should be a certain length, such as ZIP codes and purchase order numbers.

### **Notes**

@LENGTH counts punctuation and spaces as characters.

### **Examples**

@LENGTH("fiscal") = 6.

@LENGTH(A5&G12) = the total number of characters in cells A5 and G12.

@LENGTH(@TRIM(" Mr. Jones")) = 9.

See also:

[@Function Basics](#)

[Guidelines for Using String @Functions](#)

## **@LN**

@LN(x) calculates the natural logarithm (base e) of x.

### **Arguments**

x is a value, or the address or name of a cell that contains a value, greater than 0.

### **Uses**

Use @LN in scientific calculations that require natural logarithms, such as compound growth or loss.

### **Notes**

A natural logarithm is one that uses the number e (approximately 2.718282) as a base.

### **Examples**

@LN(2) = 0.693147.

@LN(@EXP(1)) = 1, because @EXP(1) = 2.718282.

### **Similar @Functions**

@EXP is the inverse of @LN. @LOG calculates the common logarithm (base 10) of x.

See also:

[@Function Basics](#)

[Guidelines for Using Mathematical @Functions](#)

## **@LOG**

@LOG(x) calculates the common logarithm (base 10) of x .

### **Arguments**

x is a value, or the address or name of a cell that contains a value, greater than 0.

### **Uses**

Use @LOG in any calculation that requires a common logarithm, such as a formula to find a root of a number.

### **Examples**

$10^{(@LOG(8)/3)} = 2$ , the cube root of 8.

@LOG(B3) = 0.60206, if cell B3 contains the value 4.

### **Similar @Functions**

@LN calculates the natural logarithm (base e) of a value.

See also:

[@Function Basics](#)

[Guidelines for Using Mathematical @Functions](#)



## **@LOWER**

@LOWER(*string*) converts all the letters in *string* to lowercase.

### **Arguments**

*string* is text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

### **Uses**

@LOWER is useful when you combine labels from several sources and you want the case of the labels to be consistent throughout the worksheet file.

### **Notes**

If you selected ASCII sort order during Install, capitalization affects the sort order of labels when you use Data Sort; two otherwise identical labels may not appear together if their capitalization is different.

### **Examples**

@LOWER("Sales Forecast") = sales forecast.

### **Similar @Functions**

@UPPER converts all letters in *string* to uppercase. @PROPER converts the first letter of each word in *string* to uppercase and converts the rest of the letters to lowercase.

See also:

[@Function Basics](#)  
[Guidelines for Using String @Functions](#)

## **@MAX**

@MAX(*list*) finds the largest value in *list*.

### **Arguments**

*list* can contain any of the following, in any combination: numbers, numeric formulas, and addresses or names of ranges that contain numbers or numeric formulas. Separate elements of *list* with argument separators.

### **Uses**

Use @MAX to find the largest value in a series. @MAX is also useful when you need to check for unusually large values or to find (and discard) the largest value in some statistical calculations.

### **Notes**

@MAX ignores blank cells in ranges, but not references to blank cells listed individually. Labels count as zero, as do cells that are apparently empty but contain a label-prefix character or spaces. This means that labels, apparently empty cells, and blank cells listed individually increase the total number of items in *list*; and if *list* contains any of these, the result of @MAX may not be what you expect.

### **Examples**

@MAX(55,39,50,28,67,43) = 67.

@MAX(A1..C10) returns the largest value in A1..C10.

### **Similar @Functions**

@MIN finds the smallest value in *list*. @DMAX finds the largest value in the field of a database table that meets criteria you specify.

See also:

[@Function Basics](#)  
[Guidelines for Using Statistical @Functions](#)

## @MID

@MID(*string*,*start-number*,*n*) copies *n* characters from *string*, beginning with the character at *start-number*.

### Arguments

*string* is text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

*start-number* is an offset number, or the address or name of a cell that contains a positive integer or 0. If *start-number* is larger than the length of *string*, the result of @MID is an empty string.

*n* is any positive integer or 0, or the address or name of a cell that contains a positive integer or 0. If *n* is 0, the result of @MID is an empty string; if *n* is larger than the length of *string*, 1-2-3 returns all the characters from *start-number* to the end of *string*.

### Uses

Use @MID to extract a part of a label that is not located at the beginning or end of the label. To extract part of a label when you do not know its *start-number*, use @MID with @FIND.

@MID is useful in macros to store parts of labels the user enters, to create subroutine calls, or to alter the macro itself.

### Notes

@MID counts punctuation and spaces as characters.

Use a large number for *n* if you do not know the length of *string*; 1-2-3 will ignore the extra spaces and return the entire *string* beginning with *start-number*.

### Examples

@MID("Daily Account Balance",6,7) = Account.

### Similar @Functions

@LEFT returns the first *n* characters of *string*, and @RIGHT returns the last *n* characters in *string*.

See also:

[@Function Basics](#)

[Guidelines for Using String @Functions](#)

## **@MIN**

@MIN(*list*) finds the smallest value in *list*.

### **Arguments**

*list* can contain any of the following, in any combination: numbers, numeric formulas, and addresses or names of ranges that contain numbers or numeric formulas. Separate elements of *list* with argument separators.

### **Uses**

Use @MIN to find the smallest value in a series. @MIN is also useful when you need to check for unusually small values or to find (and discard) the smallest value in some statistical calculations.

### **Notes**

@MIN ignores blank cells in ranges, but not references to blank cells listed individually. Labels count as zero, as do cells that are apparently empty but contain a label-prefix character or spaces. This means that labels, apparently empty cells, and blank cells listed individually increase the total number of items in *list*; and if *list* contains any of these, the result of @MIN may not be what you expect.

### **Examples**

@MIN(55,39,50,28,67,43) = 28.

@MIN(A1..C10) returns the smallest value in A1..C10.

### **Similar @Functions**

@MAX finds the largest value in *list*. @DMIN finds the smallest value in the field of a database table that meets criteria you specify.

See also:

[@Function Basics](#)

[Guidelines for Using Statistical @Functions](#)

## **@MINUTE**

**@MINUTE**(*time-number*) extracts the minutes, a value from 0 through 59, from *time-number*.

### **Arguments**

*time-number* is a value, or the address or name of a cell that contains a value, from .000000 (midnight) through .999988 (11:59:59 PM). Usually, another time @function supplies *time-number*.

### **Uses**

Use @MINUTE to extract the minutes portion of time values created with [@NOW](#), [@TIME](#), and [@TIMEVALUE](#). The minutes portion is useful in calculations that involve only minutes, such as the time that has elapsed since the start of an application.

### **Examples**

@MINUTE(0.333) = 59 because 0.333 is the time number for 7:59:31.

@MINUTE(@TIME(11,15,45)) = 15 because 15 is the *minutes* argument for @TIME(11,15,45).

### **Similar @Functions**

[@HOUR](#) extracts the hour, and [@SECOND](#) extracts the seconds, from a time number.

See also:

[@Function Basics](#)

[Guidelines for Using Date and Time @Functions](#)

## **@MOD**

@MOD(x,y) calculates the remainder (modulus) of x/y.

### **Arguments**

x is a value, or the address or name of a cell that contains a value. If x is 0, @MOD returns 0. The sign of the result (+ or -) is always the same as the sign of x.

y is a value, or the address or name of a cell that contains a value, other than 0.

### **Uses**

Use @MOD to determine the remainder in a calculation (for example, the amount of material left over from a production run). You can also use @MOD to determine whether a number is even or odd: with a divisor of 2, an even number has no remainder.

Use @MOD to calculate the day of the week by entering a date number as x and 7 (the number of days in a week) as y. 1-2-3 assigns a number to each day of the week: 0 for Saturday, 1 for Sunday, 2 for Monday, up to 6 for Friday. If you divide the date number by 7, the remainder is the day of the week. For example, @MOD(@DATE(91,1,19),7) = 0; January 19, 1991, was a Saturday.

### **Notes**

1-2-3 uses the following formula to calculate the modulus:

$$x-(y*\text{@INT}(x/y))$$

### **Examples**

$$\text{@MOD}(9,4) = 1.$$

$$\text{@MOD}(-14,3) = -2.$$

See also:

[@Function Basics](#)

[Guidelines for Using Mathematical @Functions](#)

## **@MONTH**

@MONTH(*date-number*) extracts the month, a value from 1 through 12, from *date-number*.

### **Arguments**

*date-number* is a value, or the address or name of a cell that contains a value, from 1 (January 1, 1900) through 73050 (December 31, 2099).

### **Uses**

Use @MONTH to track months rather than entire dates. Use @MONTH to keep track of events that happen in certain months, such as quarterly sales summaries, or to calculate the months that have elapsed between events.

@MONTH can also supply the *month* argument for other date @functions that build on previously calculated dates.

### **Notes**

You can use one of the other [date @functions](#) to supply the value for *date-number*.

### **Examples**

@MONTH(@DATE(91,3,27)) = 3 because 3 is the *month* argument for @DATE(91,3,27).

@MONTH(20181) = 4 because the date number 20181 is the date 02-Apr-55.

@MONTH(@NOW) = the current month.

### **Similar @Functions**

[@DAY](#) calculates the day, using a date number. [@YEAR](#) calculates the year, using a date number.

See also:

[@Function Basics](#)

[Guidelines for Using Date and Time @Functions](#)





## **@N**

**@N**(*range*) returns the entry in the first cell of *range* as a value. If the cell contains a label, @N returns the value 0.

### **Arguments**

*range* is a cell or range address, or a range name.

### **Uses**

@N is useful with any @function or formula when a cell may contain a label and the entry must be a value. Use @N to prevent formulas from resulting in ERR.

@N is also useful in macros to check user entries.

### **Examples**

+100+@N(B5..F5) = 885, if cell B5 contains the value 785.

@N(A5)+@N(B5) returns 785, if A5 contains a label and B5 contains the value 785.

### **Similar @Functions**

@S returns the entry in the first cell of a range as a label. @ISNUMBER can determine whether a cell contains a value.

See also:

[@Function Basics](#)

[Guidelines for Using String @Functions](#)

## **@NA**

@NA returns the value NA (not available).

### **Uses**

@NA is useful when you are building a worksheet that will contain data that you have not yet determined. Use @NA to flag cells where you will enter the data; formulas that refer to those cells result in the value NA until you supply the correct data.

@NA is also useful to determine which formulas depend on a particular cell.

### **Notes**

The label NA and the value NA are not equivalent in formulas. For example, the formula +A2+34 equals NA, if cell A2 contains @NA, but equals 34 when cell A2 contains the label NA.

### **Examples**

@IF(@CELL("type",B14)="b",@NA,B14) returns the value NA when B14 is blank.

### **Similar @Functions**

@ERR returns the value ERR. @ISNA tests for the value NA.

See also:

[@Function Basics](#)

## **@NOW**

@NOW calculates the number that corresponds to the current date and time on your computer's clock. This includes both a date number (integer portion) and a time number (decimal portion).

### **Uses**

@NOW produces a record of the current date and time. This record is useful in any calculation that requires the current date, for example, determining the time a payment has been overdue. Use @NOW with F2 (EDIT) and F9 (CALC) to create a fixed record of a date and time for time-stamping worksheets or in calculations of elapsed time.

### **Notes**

Format the value of @NOW in any of the Date or Time formats. If you format @NOW as a date, 1-2-3 displays only the date (integer) portion of the date and time number. If you format @NOW as time, 1-2-3 displays only the time (decimal) portion of the date and time number. In both cases, 1-2-3 stores and calculates with the entire date and time number.

1-2-3 recalculates @NOW each time you recalculate your work. If you use Tools User Setup Recalculation Automatic, 1-2-3 recalculates @NOW whenever it recalculates another value.

### **Examples**

@NOW = 31050.5 at noon on January 3, 1985.

@NOW = 33418.395 at 9:28 A.M. on June 29, 1991.

### **Similar @Functions**

@TODAY calculates the date number that corresponds to the current date.

See also:

[@Function Basics](#)

[Guidelines for Using Date and Time @Functions](#)

[Range Format](#)

## @NPV

@NPV(*interest*,*range*) calculates the net present value of a series of future cash-flow values (*range*), discounted at a fixed periodic *interest* rate.

### Arguments

*interest* is a decimal or percentage value, or the address or name of a cell that contains a decimal or percentage value.

*range* is the range that contains the cash flows.

### Uses

Use @NPV to evaluate an investment or to compare one investment with others. @NPV calculates the initial investment necessary to achieve a certain cash outflow at a certain rate.

### Notes

See [Chapter 4](#) of the *User's Guide* for the formula @NPV uses to calculate net present value.

@NPV assumes that the cash outflows occur at equal time intervals, that the first cash outflow occurs at the end of the first period, and that subsequent cash outflows occur at the end of subsequent periods.

To determine the net present value of an investment in which you make an initial cash outflow immediately, followed by a series of future inflows, you must factor the initial outflow separately, because it is not affected by the interest. For example,

+INITIAL+@NPV(RATE,SERIES) = \$904.07 when INITIAL is the initial cash outflow, RATE is the interest rate, and SERIES is the series of future cash inflows.

@NPV returns ERR if *range* contains more than one row or more than one column. For example, @NPV returns ERR if *range* is A1..D25, but does not return ERR if *range* is A1..D1 (a single row) or A1..A25 (a single column).

### Examples

This example uses @NPV to discount to today's dollars a series of irregular distributions invested at 11.5% annual percentage rate.

*range* is a list of cash flows, one a month for 12 months, in a range named DISTRIBUTIONS:

\$	0.00
\$	0.00
\$	2,500.00
\$	2,500.00
\$	3,000.00
\$	5,000.00
\$	6,000.00
\$	9,000.00
\$	3,000.00
\$	2,500.00
\$	0.00
\$	7,500.00
\$41,000.00	TOTAL

To provide @NPV with the correct number of periods, months in which no distribution is made must be included in *range*. The distributions are monthly, so @NPV requires *interest*

(the discount rate), in a cell named DISCOUNT, to be expressed as a monthly percentage:

$$0.115/12 = 0.96$$

$$\text{@NPV}(\text{DISCOUNT}, \text{DISTRIBUTIONS}) = \$38,084.13.$$

### **Similar @Functions**

@PV calculates the present value of an annuity based on a series of equal payments. @FV calculates the future value of an annuity.

See also:

[@Function Basics](#)

[Guidelines for Using Financial @Functions](#)

## **@PI**

@PI produces the value pi (calculated at 3.14159265358979324). The value pi is the ratio of the circumference of a circle to its diameter.

### **Uses**

Use @PI in calculations that require the value pi, particularly in conjunction with trigonometric functions.

### **Examples**

@PI = 3.1415926536.

@PI\*4^2 = 50.26548, the area of a circle with a radius of 4.

See also:

[@Function Basics](#)

[Guidelines for Using Mathematical @Functions](#)

## @PMT

@PMT(*principal, interest, term*) calculates the payment on a loan (*principal*) at a given *interest* rate for a specified number of payment periods (*term*).

### Arguments

*principal* and *term* are values, or the addresses or names of cells that contain values.

*interest* is a decimal or percentage value, or the address or name of a cell that contains a decimal or percentage value.

### Uses

Use @PMT to calculate the payment necessary to amortize a loan or the periodic payment returned by an annuity.

### Notes

See [Chapter 4](#) of the *User's Guide* for the formula @PMT uses to calculate periodic payment.

The period used to calculate *interest* must be the same period used for *term*; for example, if you are calculating a monthly payment, enter the interest and term in monthly increments. Usually, this means you must divide the interest rate and the number of years in *term* by 12.

@PMT assumes payments occur at the end of each payment period (an ordinary annuity).

If you make payments at the beginning of each month, you would calculate the amount for an annuity due. To calculate the amount of the periodic payment on an annuity due, use the formula @PMT(*principal, interest, term*)/(1+*interest*).

For example, @PMT(8000,0.14/12,36)/(1+0.14/12) = \$270.27, the monthly payment.

### Examples

You are considering taking out an \$8,000 loan for 3 years at an annual interest rate of 14%, compounded monthly. You want to determine your monthly payment:

@PMT(8000,0.14/12,36) = \$273.42, the monthly payment.

See also:

[@Function Basics](#)

[Guidelines for Using Financial @Functions](#)

## @PROPER

@PROPER(*string*) capitalizes the first letter of each word in *string* and converts the remaining letters to lowercase.

### Arguments

*string* can be text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

### Uses

@PROPER is useful when you combine data from several sources and want labels to be consistent throughout the worksheet file. Use @PROPER in a database to ensure consistent capitalization of names before sorting the names or before using the names to create mailing labels.

### Notes

If you selected ASCII sort order in Install, capitalization affects the sort order of labels when you use Data Sort; two otherwise identical labels may not appear together if their capitalization is different.

### Examples

@PROPER(A7&" ; "&G7) returns Morton Smith; Athens, Georgia if A7 contains the label MORTON SMITH, and G7 contains the label athens, georgia. Note that the ; (semicolon) is in quotation marks and is therefore treated as a literal string instead of an argument separator.

### Similar @Functions

@LOWER converts all letters in *string* to lowercase. @UPPER converts all letters in *string* to uppercase.

See also:

[@Function Basics](#)

[Guidelines for Using String @Functions](#)



## @PV

@PV(*payments,interest,term*) determines the present value of an investment. @PV calculates the present value based on a series of equal *payments*, discounted at a periodic *interest* rate over the number of periods in *term*.

### Arguments

*payments* and *term* are values, or the addresses or names of cells that contain values.

*interest* is a decimal or percentage value, or the address or name of a cell that contains a decimal or percentage value.

### Uses

Use @PV to evaluate an investment or to compare one investment with others. @PV is useful in comparing different types of investments, for example, comparing a single payment investment from a pension fund with a series of periodic payments. Use @PV with @PMT to create an amortization table.

### Notes

See [Chapter 4](#) of the *User's Guide* for the formula @PV uses to calculate present value.

@PV complements @PMT: @PV tells you how large a loan you can take out, given the constraint of the size of the monthly payment you can afford. Conversely, @PMT tells you how large your monthly payment will be, given the constraint of the size of the loan you want to take out.

@PV assumes each payment is made at the end of the period. To calculate the present value of an annuity due (a payment made at the beginning of each period), use the formula @PV(*payments,interest,term*)\*(1+*interest*).

### Examples

You won \$1,000,000. You can receive either 20 annual payments of \$50,000 at the end of each year or a single payment of \$400,000 instead of the \$1,000,000 annuity. You want to find out which option is worth more in today's dollars.

If you were to accept the annual payments of \$50,000, you assume that you would invest the money at a rate of 8%, compounded annually.

@PV(50000,0.08,20) returns \$490,907, which tells you that the \$1,000,000 paid over 20 years is worth \$490,907 in today's dollars.

### Similar @Functions

[@FV](#) calculates the future value of an investment based on a series of equal payments.

[@NPV](#) computes the net present value of an investment, discounting future value to present value.

See also:

[@Function Basics](#)

[Guidelines for Using Financial @Functions](#)

## **@RAND**

@RAND generates a random value between 0 and 1. 1-2-3 calculates @RAND to 17 decimal places. Each time 1-2-3 recalculates your work, @RAND generates a new random value.

### **Uses**

@RAND is useful in situations that require random numbers, for example, generating test data for simulations or choosing returns to audit.

### **Notes**

To convert the value generated by @RAND to a fixed value, use F2 (EDIT) and F9 (CALC) or [Edit Quick Copy](#)

To generate random values in different numeric intervals, multiply @RAND by the size of the interval. Use [@ROUND](#) or [@INT](#) with the result to create random whole numbers.

### **Examples**

@RAND = 0.419501, or any value between 0 and 1.

@RAND\*10 = 6.933674, or any value between 0 and 10.

@INT(@RAND\*50)+1 = 49, or any integer between 1 and 50.

See also:

[@Function Basics](#)

[Guidelines for Using Mathematical @Functions](#)

## @RATE

@RATE(*future-value,present-value,term*) returns the periodic interest rate necessary for an investment (*present-value*) to grow to a *future-value* over the number of compounding periods in *term*.

### Arguments

*future-value*, *present-value*, and *term* are values, or the addresses or names of cells that contain values.

### Uses

Use @RATE to evaluate an investment or to compare one investment with others. @RATE is useful when you need to calculate the compound rate of an investment, such as the value of a stock, or in any situation where you know the initial value, the final value, and the time elapsed between the two.

### Notes

See [Chapter 4](#) of the *User's Guide* for the formula @RATE uses to calculate periodic interest rate.

### Examples

You invested \$10,000 in a bond that matures in five years and has a maturity value of \$18,000. Interest is compounded monthly. You want to determine the periodic interest rate for this investment.

@RATE(18000,10000,60) returns 0.984%, the periodic (monthly) interest rate. To determine the annual interest rate, use the formula  $((1+\text{@RATE}(18000,10000,60))^{12})-1$ . This yields an annual interest rate of 12.47%.

See also:

[@Function Basics](#)  
[Guidelines for Using Financial @Functions](#)

## **@REPEAT**

@REPEAT(*string*,*n*) duplicates *string* the number of times specified by *n*.

### **Arguments**

*string* can be text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

*n* can be any positive integer, or the address or name of a cell that contains a positive integer.

### **Uses**

Use @REPEAT to repeat any character, including special mathematical, graphics, or foreign-language symbols.

### **Notes**

@REPEAT duplicates the string as many times as you specify; it is not limited by the current column width. This differs from using the repeating label-prefix character \ (backslash), which repeats a label only as many times as will fill the current column.

### **Examples**

@REPEAT("Hello ",3) returns Hello Hello Hello.

@REPEAT("-",10) returns -----.

See also:

[@Function Basics](#)  
[Guidelines for Using String @Functions](#)

## @REPLACE

@REPLACE(*original-string*,*start-number*,*n*,*new-string*) replaces *n* characters in *original-string* with *new-string*, beginning at *start-number*.

### Arguments

*original-string* and *new-string* can be text enclosed in " " (quotation marks), formulas that result in text, or the addresses or names of cells that contain labels or formulas that result in labels.

*start-number* is the offset number of a character in *original-string*. It can be any positive value or 0, or the address or name of a cell that contains a positive value or 0. If *start-number* is greater than the length of *original-string*, @REPLACE appends *new-string* to *original-string*.

*n* can be any positive integer or 0, or the address or name of a cell that contains a positive integer or 0. If *n* is 0, @REPLACE inserts *new-string* at *start-number* without deleting any characters in *original-string*.

### Uses

Use @FIND with @REPLACE to search for and replace a label or to calculate an unknown *start-number*.

@REPLACE is useful when you need to replace one set of characters with another, for example, to change the area code in a database of telephone numbers.

### Notes

@REPLACE counts all the characters in a string, including spaces and punctuation. If you use @REPLACE to append or insert text, remember to include the necessary spaces.

### Examples

@REPLACE(CELL,@FIND("-",CELL,0),1,"/") copies the label in Cell, 4-24, as 4/24.

See also:

[@Function Basics](#)

[Guidelines for Using String @Functions](#)

## **@RIGHT**

@RIGHT(*string*,*n*) returns the last *n* characters in *string*.

### **Arguments**

*string* can be text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

*n* can be a positive integer or 0, or the address or name of a cell that contains a positive integer or 0. If *n* is 0, the result is an empty string. If *n* is greater than the length of *string*, @RIGHT returns the entire string.

### **Uses**

@RIGHT is useful for copying only part of a label into another cell (for example, for extracting last names from labels that include both first and last names).

In a macro, @RIGHT can extract parts of labels the user enters to store them in a database, for subroutine calls, or to alter the macro itself.

Use @RIGHT with [@FIND](#) when you do not know the exact value for *n*, or when *n* may vary.

### **Notes**

@RIGHT counts punctuation and spaces as characters.

### **Examples**

@RIGHT(B3,5) = Sales, if B3 contains the label January Sales.

### **Similar @Functions**

[@LEFT](#) returns the first *n* characters in *string*. [@MID](#) returns characters from within *string*.

See also:

[@Function Basics](#)

[Guidelines for Using String @Functions](#)

## **@ROUND**

@ROUND(*x*,*n*) rounds the value *x* to the nearest multiple of the power of 10 specified by *n*.

### **Arguments**

*x* is a value, or the address or name of a cell that contains a value.

*n* is a value, or the address or name of a cell that contains a value, from -100 through 100.

### **Uses**

Use @ROUND in calculations in which you want to use only the rounded portion of a value.

### **Notes**

If *n* is positive, @ROUND affects the decimal portion of the number (moving right from the decimal point). For example, if *n* is 2, 1-2-3 rounds *x* to the nearest hundredth.

If *n* is negative, @ROUND affects the integer portion of the number (moving left from the decimal point). For example, if *n* is -2, 1-2-3 rounds *x* to the nearest hundred.

If *n* is 0, 1-2-3 rounds *x* to the nearest integer.

Select Fixed from [Range Format](#) or [Worksheet Global Settings Format](#) to display values with a specified number of decimal places if you want 1-2-3 to calculate the values to their full precision; do not use @ROUND.

### **Examples**

@ROUND(134.578,2) = 134.58.

@ROUND(134.578,0) = 135.

@ROUND(134.578,-2) = 100.

### **Similar @Functions**

[@INT](#) truncates a value, discarding the decimal portions.

See also:

[@Function Basics](#)

[Guidelines for Using Mathematical @Functions](#)

## **@ROWS**

@ROWS(*range*) counts the number of rows in *range*.

### **Arguments**

*range* is a range address or range name.

### **Uses**

@ROWS is useful when you need to determine a value that depends on the number of rows.

Use @ROWS with {FOR} in a macro that repeats the same action on a series of rows to determine when the macro should stop.

### **Examples**

@ROWS(A3..B7) = 5 (rows 3 through 7).

@ROWS(SCORES) = 43, if SCORES is the range B3..B45.

### **Similar @Functions**

@COLS counts the columns, and @SHEETS counts the worksheets, in a range.

See also:

@Function Basics



## @S

@S(*range*) returns the entry in the first cell in *range* as a label.

### Arguments

*range* is a cell address or range name.

### Uses

@S is useful with any string @function or text formula when a cell may contain a value and the entry must be a label (for example, a cell that contains a ZIP code). Use @S to prevent text formulas from resulting in ERR, for example, +A1&A2 returns ERR if either cell contains a value.

@S is also useful in macros to check user entries. Use @S in error-trapping routines in macros to prevent errors that would result if a cell used in formulas contained the wrong type of data.

### Examples

In the macro instructions

```
{IF @S(B6)=""}{BEEP}{INDICATE "ENTRY MUST BE A LABEL"}
```

@S returns an empty string if B6 contains a value or is a blank cell; 1-2-3 then beeps and changes the mode indicator to ENTRY MUST BE A LABEL.

### Similar @Functions

@N returns the entry in the first cell of *range* as a value. @ISSTRING determines whether a cell contains a label.

See also:

[@Function Basics](#)  
[Guidelines for Using String @Functions](#)

## **@SECOND**

**@SECOND**(*time-number*) extracts the seconds, an integer from 0 through 59, from *time-number*.

### **Arguments**

*time-number* is a value, or the address or name of a cell that contains a value, from .000000 (midnight) through .999988 (11:59:59 PM).

### **Uses**

Use **@SECOND** to use only the seconds portion of time values created with **@NOW**, **@TIME**, or **@TIMEVALUE**. The seconds portion is useful in calculations that involve only seconds, such as the seconds beyond the four-minute mark that runners take to complete a one-mile course.

### **Examples**

**@SECOND**(0.333) = 31.

**@SECOND**(**@TIME**(11,15,45)) = 45, because 45 is the *seconds* argument for **@TIME**(11,15,45).

### **Similar @Functions**

**@HOUR** extracts the hour, and **@MINUTE** extracts the minutes, from a time number.

See also:

[@Function Basics](#)

[Guidelines for Using Date and Time @Functions](#)

## **@SHEETS**

@SHEETS(*range*) counts the number of worksheets in *range*.

### **Arguments**

*range* is a range address or range name.

### **Uses**

@SHEETS is useful when you need to determine a value that depends on the number of worksheets.

Use @SHEETS with {FOR} in a macro that repeats the same action in a series of worksheets to determine when the macro should stop.

### **Examples**

@SHEETS(Q\_2) = 4 if Q\_2 is the range B:B3..E:C45 (worksheets B, C, D, and E).

### **Similar @Functions**

@COLS counts the columns, and @ROWS counts the rows, in a range.

See also:

@Function Basics

## **@SIN**

@SIN(z) calculates the sine of angle z. The sine is the ratio of the side opposite an acute angle of a right triangle to the hypotenuse:

$\sin(\text{angle}) = \text{side opposite/hypotenuse}$ .

### **Arguments**

z is an angle measured in radians. z can be any value, or the address or name of a cell that contains a value, from  $-2^{32}\pi$  through  $2^{32}\pi$ .

### **Uses**

Use @SIN to find the cosecant, or reciprocal of @SIN, with the following formula:  $1/@\text{SIN}(z)$ .

### **Notes**

To convert from degrees to radians, multiply degrees by @PI/180.

### **Examples**

@SIN(35\*@PI/180) = 0.573576, the sine of a 35-degree angle.

### **Similar @Functions**

@ASIN calculates the arc sine of a value to find the size of an angle.

See also:

[@Function Basics](#)

[Guidelines for Using Mathematical @Functions](#)

## @SLN

`@SLN(cost,salvage,life)` calculates the straight-line depreciation allowance of an asset with an initial value of *cost*, an expected useful *life*, and a final value of *salvage*, for one period.

### Arguments

*cost* is the amount paid for the asset. *cost* can be any value, or the address or name of a cell that contains any value.

*salvage* is the value of the asset at the end of its life. *salvage* can be any value, or the address or name of a cell that contains any value.

*life* is the number of periods the asset takes to depreciate to its salvage value. *life* can be any value, or the address or name of a cell that contains any value, except 0.

### Uses

Use `@SLN` to calculate an asset's depreciation when the situation does not require accelerated depreciation.

### Notes

See [Chapter 4](#) of the *User's Guide* for the formula `@SLN` uses to calculate straight-line depreciation.

Straight-line depreciation divides the depreciable cost (the actual cost minus the salvage value) equally into each period of the useful life of the asset. The useful life is the number of periods (typically years) over which the asset is depreciated.

### Examples

You have an office machine that cost \$10,000. The useful life of this machine is 10 years, and the salvage value in 10 years will be \$1,200. You want to calculate yearly depreciation expense, using the straight-line method. `@SLN(10000,1200,10)` returns \$880, the yearly depreciation allowance.

### Similar @Functions

[@DDB](#) calculates depreciation using the double-declining balance method, [@VDB](#) calculates depreciation using the variable-rate declining balance method, and [@SYD](#) calculates depreciation using the sum-of-the-years'-digits method.

See also:

[@Function Basics](#)  
[Guidelines for Using Financial @Functions](#)

## @SOLVER

@SOLVER(*query-string*) returns a value that gives information about the status of the Solver.

### Arguments

*query-string* is any of the words from the table below, as text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

Argument	Returns
consistent	1 if all constraints are satisfied 2 if at least one constraint is not satisfied ERR if the Solver is not active or there is no answer in the worksheet
done	1 if the Solver has finished solving 2 if the Solver is currently solving 3 if the Solver is active, but hasn't begun solving ERR if the Solver is not active
moreanswers	1 if the Solver has found all the answers 2 if the Solver might be able to find more answers ERR if the Solver is not active
needguess	1 if the Solver needs no guesses to find an answer 2 if the Solver needs guesses to find an answer ERR if the Solver is not active or there is no answer in the worksheet
numanswers	<i>n</i> , where <i>n</i> is the number of answers or attempts the Solver found ERR if the Solver is not active or has not solved the problem yet
optimal	1 for the optimal answer 2 for the best answer found 3 if the problem is unbounded 4 if no optimization requested or no answer found ERR if the Solver is not active
progress	<i>n</i> , where <i>n</i> is the percentage of solving completed ERR if the Solver is not active or solving has not begun
result	1 if the Solver found one or more answers 2 if no answers found but representative attempts are available ERR if the Solver is not active or has not solved the problem yet

### Uses

Use @SOLVER in macros to provide information about the Solver.

### Notes

@SOLVER is not recalculated whenever 1-2-3 performs a recalculation. Use {RECALC} or

{RECALCCOL} to recalculate cells containing @SOLVER

### **Examples**

The following lines are an excerpt from a longer macro that runs the Solver. The macro uses @SOLVER to determine if the Solver has found all answers. If it has found all answers, the macro enters the first answer in the worksheet and ends processing. If it hasn't found all answers, the macro presses the Solve button to continue solving and then repeats {IF} to see if more answers can be found. The loop continues until the Solver finishes finding all answers. When the Solver has found all answers, subroutine {A} puts the first answer in the worksheet, and {RETURN} ends the macro.

```
CHKSLV {IF @SOLVER("moreanswers")=1}{A}{RETURN}  
      {BRANCH CHKSLV}
```

See also:

[@Function Basics](#)

## **@SQRT**

@SQRT(x) returns the positive square root of x.

### **Arguments**

x is a positive value, or the address or name of a cell that contains a positive value.

### **Uses**

Use @SQRT to calculate with or derive the square root of a number. Use @SQRT with @ABS to ensure x is a positive number: @SQRT(@ABS(x)).

### **Examples**

@SQRT(B3) = 10, if B3 contains the value 100.

@SQRT(-2) = ERR, because x is negative.

See also:

[@Function Basics](#)

[Guidelines for Using Mathematical @Functions](#)



## @STD

@STD(*list*) calculates the population standard deviation of the values in *list*.

### Arguments

*list* can contain any of the following, in any combination: numbers, numeric formulas, and range addresses or range names that contain numbers or formulas. Separate elements of *list* with argument separators.

### Uses

Standard deviation measures the degree to which individual values in a list vary from the mean (average) of all values in the list. The lower the standard deviation, the less individual values vary from the mean, and the more reliable the mean. A standard deviation of 0 indicates that all values in the list are equal.

Use @STD to find the standard deviation within a population of values (for example, the degree to which individual scores or weights vary from the mean). @STD is useful for statistical calculations that involve finite groups, such as test scores, salary distributions, or ages of people in a company.

### Notes

@STD uses the n, or population, method to calculate standard deviation of population data. The n method assumes that the values in *list* are the entire population. If *list* is only a sample of the population, the standard deviation is biased because of errors introduced in taking the sample. See [Chapter 4](#) of the *User's Guide* for the formula the n method uses.

Standard deviation is the square root of the variance of all individual values from the mean.

### Examples

@STD

### Similar @Functions

@DSTD calculates the standard deviation of the values in a field of a database table.

@STDS calculates the sample standard deviation of the values in a list. @VAR calculates the population variance of the values in a list.

See also:

@Function Basics

Guidelines for Using Statistical @Functions

**Example: @STD**

This table lists house sales for the years 1982 through 1986. (To save space, rows 4 through 37 in the worksheet are hidden.) The ages (in years) of the houses are listed in a range named AGE\_LIST (C2..C42).

@STD(AGE\_LIST) returns 18.29, the standard deviation of the ages of the houses in the list.

A	B	C	D
1	ADDRESS	LOT	AGE
2	12 Bartholomew Sq	0.25	48
3	40 Prospect St	0.40	22
38	103 Cranberry La	0.50	21
39	27 Kilburn St	1.00	70
40	468 Henshaw St	0.50	52
41	9 Pleasant St	0.25	42
42	80 Beach St	0.25	23

## @STDS

@STDS(*list*) calculates the sample standard deviation of the values in *list*.

### Arguments

*list* can contain any of the following, in any combination: numbers, numeric formulas, and range addresses or range names that contain numbers or formulas. Separate elements of *list* with argument separators.

### Uses

Standard deviation measures the degree to which individual values in a list vary from the mean (average) of all values in the list. The lower the standard deviation, the less individual values vary from the mean, and the more reliable the mean. A standard deviation of 0 indicates that all values in the list are equal.

Use @STDS to determine the standard deviation within any group that is only a sample of the entire population (for example, a customer survey, a sample of usability test results, or a random sampling of salary distributions).

### Notes

@STDS uses the n-1, or sample, method to calculate standard deviation of sample population data. The n-1 method makes the standard deviation slightly larger than the n method to compensate for errors in the sample. A larger standard deviation is unbiased by sampling errors, and is thus more accurate. See [Chapter 4](#) of the *User's Guide* for the formula the n-1 method uses.

The sample standard deviation is the square root of the sample variance (@VARS).

### Examples

@STDS

### Similar @Functions

@DSTDS calculates the sample standard deviation of the values in a field of a database table. @STD calculates the population standard deviation of the values in a list. @VARS calculates the sample variance of the values in a list.

See also:

[@Function Basics](#)  
[Guidelines for Using Statistical @Functions](#)

**Example: @STDS**

This table lists house sales in three towns in April and May. The sale prices of the houses are listed in a range named ALL\_SOLD (D2..D11).

@STDS(ALL\_SOLD) returns \$195,717, the sample standard deviation of the sale prices of the houses in the list.

A	-----	A	-----	B	-----	C	----
1		ADDRESS		CITY			SOLD
2		467 Brattle		Cambridge		\$720,000	
3		183 Hillside		Arlington			\$318,000
4		64 N. Gate		Belmont		\$332,000	
5		80 Mt. Auburn		Cambridge		\$278,000	
6		14 Charles		Cambridge		\$160,000	
7		1160 Memorial		Cambridge		\$227,000	
8		130 Crescent		Arlington			\$397,000
9		12 Trenton		Arlington		\$303,000	
10		36 Barnes		Cambridge		\$669,000	
11		234 Third		Cambridge		\$140,000	

## **@STRING**

@STRING(*x*,*n*) converts the value *x* to a label with *n* decimal places.

### **Arguments**

*x* is a value, or the address or name of a cell that contains a value.

*n* is an integer, or the address or name of a cell that contains an integer, from 0 through 15.

### **Uses**

@STRING is useful when you need to use a value as text, such as in a text formula to form a complex label. For example, if cell B3 contains the value 78 and cell B4 contains the label Lincoln Avenue, the formula @STRING(B3,0)&" "&B4 produces the label 78 Lincoln Avenue.

### **Notes**

@STRING ignores any formatting characters 1-2-3 uses to display the value *x*. This includes all currency and other numeric formatting symbols, whether you enter them or 1-2-3 creates them after you select a format from Range Format or Worksheet Global Settings Format. For example, if cell A7 contains the formatted value \$45.23, @STRING(A7,2) returns the label 45.23.

### **Examples**

@STRING(203,3) = the label 203.000.

@STRING(1.23587,0) = the label 1.

@STRING(20%,1) = the label 0.2.

### **Similar @Functions**

@VALUE converts a number entered as text to its corresponding value.

See also:

[@Function Basics](#)  
[Guidelines for Using String @Functions](#)

## **@SUM**

@SUM(*list*) adds the values in *list* .

### **Arguments**

*list* can contain any of the following, in any combination: numbers, numeric formulas, and range addresses or range names that contain numbers or formulas. Separate elements of *list* with argument separators.

### **Uses**

Use @SUM to find the total value of a series of values, such as total sales or gross budget projections. @SUM eases the time-consuming task of adding the values in individual ranges: @SUM(B1..B5) is equivalent to the formula +B1+B2+B3+B4+B5.

### **Examples**

@SUM(B5..B9) returns the sum of the values in B5..B9.

@SUM(SALES,M25..R25) returns the sum of the values in the range SALES and the range M25..R25.

### **Similar @Functions**

@DSUM calculates the sum of values that meet criteria you specify.

See also:

[@Function Basics](#)

[Guidelines for Using Statistical @Functions](#)

## @SUMPRODUCT

@SUMPRODUCT(*list*) multiplies the values in corresponding cells in multiple ranges and then sums the products.

### Arguments

*list* can be any combination of ranges that contain values and are the same size and shape. If the ranges in *list* are not the same size and shape, @SUMPRODUCT returns ERR.

### Uses

Use @SUMPRODUCT when you are more interested in the sum of a series of multiplication formulas than you are in the results of individual formulas. @SUMPRODUCT eases the time-consuming task of multiplying the values in ranges, as long as the ranges are parallel. For example, @SUMPRODUCT(B1..B15,E1..E15,F1..F15) does the same work as setting up 15 formulas with 3 values each (+B1\*E1\*F1,+B2\*E2\*F2,+B3\*E3\*F3, and so on) and then adding the results to find the total.

### Notes

If the ranges in *list* are columns, @SUMPRODUCT multiplies by rows. If the ranges in *list* are rows, @SUMPRODUCT multiplies by columns. If each range in *list* spans more than one column, @SUMPRODUCT multiplies by rows.

### Examples

This example, taken from a real estate database table, uses @SUMPRODUCT to calculate the total commissions due to agents on house sales in February 1990.

*list* contains two ranges: SOLD (D4..D6) contains the prices paid for three houses, and COMM (E4..E6) contains the agent's commission percentage of the sale price:

SOLD	COMM
\$25,000	0.04
\$34,580	0.05
\$77,325	0.04

@SUMPRODUCT(SOLD,COMM) = \$5,822, the total commissions (\$1,000 + \$1,729 + \$3,093) due to agents on the sale of three houses.

See also:

[@Function Basics](#)

[Guidelines for Using Statistical @Functions](#)

## @SYD

`@SYD(cost,salvage,life,period)` calculates the sum-of-the-years'-digits depreciation allowance of an asset with an initial value of *cost*, an expected useful *life*, and a final value of *salvage*, for a specified *period*.

### Arguments

*cost* is the amount paid for the asset. *cost* can be any value.

*salvage* is the value of the asset at the end of its life. *salvage* can be any value.

*life* is the number of periods the asset takes to depreciate to its salvage value. *life* can be any value greater than or equal to 1.

*period* is the time for which you want to find the depreciation allowance. *period* can be any value greater than or equal to 1.

### Uses

The sum-of-the-years'-digits method accelerates the rate of depreciation so that more depreciation expense occurs in earlier periods than in later ones (although not so much as when you use the double-declining balance method). The depreciable cost is the actual cost minus the salvage value.

Use @SYD when you need a higher depreciation expense early in the life of an asset, such as in preparing tax returns.

### Notes

See [Chapter 4](#) of the *User's Guide* for the formula @SYD uses to calculate depreciation using the sum-of-the-years'-digits method.

### Examples

You have an office machine that cost \$10,000. The useful life of the machine is 10 years, and the salvage value in 10 years will be \$1,200. You want to calculate depreciation expense for the fifth year, using the sum-of-the-years'-digits method.

`@SYD(10000,1200,10,5)` returns \$960, the depreciation allowance for the fifth year.

### Similar @Functions

[@DDB](#) calculates depreciation using the double-declining balance method. [@VDB](#) uses the variable-rate declining balance method, and [@SLN](#) uses the straight-line method.

See also:

[@Function Basics](#)

[Guidelines for Using Financial @Functions](#)



## **@TAN**

@TAN(z) calculates the tangent of angle z. The tangent is the ratio of the side opposite an acute angle of a right triangle to the side adjacent to the same acute angle:

$\tan(\text{angle}) = \text{side opposite}/\text{side adjacent}$ .

### **Arguments**

z is an angle measured in radians.

### **Uses**

Use @TAN, instead of a tangent table, to calculate the tangent of an angle. Use @TAN to find the cotangent, or reciprocal of @TAN, with the following formula:  $1/@TAN(z)$ .

### **Notes**

To convert from degrees to radians, multiply degrees by @PI/180.

### **Examples**

@TAN(35\*@PI/180) = 0.700208.

### **Similar @Functions**

@ATAN calculates the arc tangent using the tangent of an angle.

See also:

[@Function Basics](#)

[Guidelines for Using Mathematical @Functions](#)

## @TERM

@TERM(*payments,interest,future-value*) calculates the number of equal *payments* required for an investment to accumulate a *future-value* at periodic *interest* rate.

### Arguments

*payments* is the value of the equal investments. *payments* can be any value except 0.

*interest* is the periodic interest rate. *interest* can be any value greater than -1.

*future-value* is the amount you want to accumulate. *future-value* can be any value.

### Uses

Use @TERM when you need to calculate the number of equal deposits, payments, or additions required to attain a specific amount at a given interest rate.

### Notes

See [Chapter 4](#) of the *User's Guide* for the formula @TERM uses to calculate the payment term.

@TERM assumes you are using an ordinary annuity: payments are made at the end of each period. If you made payments at the beginning of each year, you would calculate the amount for an annuity due. To calculate the number of payment periods in an annuity due, use the formula @TERM(*payment,interest,future-value/(1+interest)*).

For example, @TERM(2000,0.075,100000/(1+0.075)) = 20.8, the number of years it would take to accumulate \$100,000 if you made deposits of \$2,000 at the beginning of each year.

You can calculate the term necessary to pay back a loan by using @TERM with a negative *future-value*. For example, you want to know how long it will take to pay back a \$10,000 loan at 10% yearly interest, making payments of \$1,174 per year.

@ABS(@TERM(1174.6,0.1,-10000)) calculates 20 years to pay back the loan.

### Examples

You deposit \$2,000 at the end of each year into a savings account. Your account earns 7.5% a year, compounded annually. You want to determine how long it will take to accumulate \$100,000:

@TERM(2000,0.075,100000) = 21.5, the number of years it will take to accumulate \$100,000 in your account.

### Similar @Functions

[@CTERM](#) calculates the number of compounding periods for a single-deposit investment.

See also:

[@Function Basics](#)

[Guidelines for Using Financial @Functions](#)

## **@TIME**

@TIME(*hour,minutes,seconds*) calculates the time number for the specified *hour, minutes, and seconds*.

### **Arguments**

*hour* is an integer from 0 (midnight) through 23 (11:00 PM).

*minutes* is an integer from 0 through 59.

*seconds* is an integer from 0 through 59.

### **Uses**

Use @TIME to enter time numbers so that 1-2-3 can perform time arithmetic. Time arithmetic is useful when you need to determine the differences between times, for example, when you need to keep track of elapsed times for billing or in test runs. @TIME is also useful in calendar worksheets.

### **Notes**

Range Format and Worksheet Global Settings Format make the time number appear as the time it represents.

### **Examples**

The formula @TIME(13,0,0)-@TIME(9,15,0)\*95\*24 calculates the amount due to a consultant on a given day by subtracting the start time from the stop time and multiplying the result by an hourly rate of \$95.00.

### **Similar @Functions**

@TIMEVALUE converts labels to time numbers.

See also:

@Function Basics

Guidelines for Using Date and Time @Functions

## @TIMEVALUE

@TIMEVALUE(*string*) calculates the time number for the time specified in *string*.

### Arguments

*string* can be text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label. *string* must be in one of the four 1-2-3 time formats.

### Uses

The uses of @TIMEVALUE are the same as those for @TIME, but @TIMEVALUE makes entering arguments simpler.

@TIMEVALUE is useful when you need to convert times entered as labels into time numbers for use in calculations. @TIMEVALUE is especially useful with data that has been imported from another program, such as a word processing program.

### Notes

Range Format and Worksheet Global Settings Format make the time number appear as the time it represents.

### Examples

@TIMEVALUE("08:19:27 AM") returns 0.34684.

@TIMEVALUE("08:19:27 AM") returns 0.34684 as 08:19:27 AM, if the cell is formatted as HH:MM:SS AM/PM.

### Similar @Functions

@TIME calculates the time number when you specify the hour, minutes, and seconds.

See also:

[@Function Basics](#)

[Guidelines for Using Date and Time @Functions](#)

## **@TODAY**

@TODAY calculates the date number that corresponds to the current date on your computer.

### **Uses**

Use @TODAY in place of @NOW when you need only the current date and not both the current date and time, for example, when you need to calculate the days between two events.

### **Notes**

Format the value of @TODAY in any Date format. 1-2-3 recalculates @TODAY each time you recalculate your work. If you use Tools User Setup Recalculation Automatic, 1-2-3 recalculates @TODAY whenever it recalculates another value.

### **Examples**

@TODAY = 31048 on January 01, 1985.

@TODAY = 33418 on June 29, 1991.

See also:

[@Function Basics](#)

[Guidelines for Using Date and Time @Functions](#)

[Range Format](#)

## @TRIM

@TRIM(*string*) removes leading, trailing, and consecutive space characters from *string*.

### Arguments

*string* can be text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

### Uses

Use @TRIM when entries contain unnecessary spaces, such as labels positioned by adding spaces in cells, or labels imported from another program.

@TRIM is also useful to control spaces entered with data or to combine pieces of text that have unknown spacing. @TRIM ensures that database entries do not contain unnecessary spaces that would affect sort order when you use Data Sort.

### Examples

@TRIM(" 45 3/8") = 45 3/8, removing the leading space before 45 and one of the two spaces between 45 and 3/8.

@TRIM(" 500 South St.") = 500 South St., removing the leading space before 500, two of the three spaces between 500 and South, and one of the two spaces between South and St.

See also:

[@Function Basics](#)

[Guidelines for Using String @Functions](#)

## **@TRUE**

@TRUE returns the logical value 1 (true).

### **Uses**

Use @TRUE with macros or @functions such as [@IF](#) and [@CHOOSE](#) that require a logical value of 1 (true).

### **Notes**

If a logical statement such as  $A1=B1$  is true, its logical value is 1. If it is false, its logical value is 0.

Using @TRUE is the same as using the value 1 in formulas that evaluate logical conditions, but @TRUE makes the formula easier to understand.

### **Examples**

$@IF(A6>500,@TRUE,@FALSE) = 1$  when cell A6 contains a value greater than 500.

### **Similar @Functions**

[@FALSE](#) returns the logical value 0.

See also:

[@Function Basics](#)

[Guidelines for Using Logical @Functions](#)

## **@UPPER**

@UPPER(*string*) converts all the letters in *string* to uppercase.

### **Arguments**

*string* can be text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

### **Uses**

@UPPER is useful when you combine labels from several sources and want capitalization to be consistent throughout the worksheet file. Use @UPPER when you want to ensure that labels are consistently uppercase, for example, before sorting a parts list.

### **Notes**

Capitalization affects the sort order of labels when you use Data Sort. Two otherwise identical labels may not appear together if their capitalization is different.

### **Examples**

@UPPER("Account Number") = ACCOUNT NUMBER.

@UPPER(B2) = WARNING, if B2 contains the label warning.

### **Similar @Functions**

@LOWER converts all letters in *string* to lowercase. @PROPER capitalizes only the first letter of each word in *string*.

See also:

[@Function Basics](#)  
[Guidelines for Using String @Functions](#)



## @VALUE

@VALUE(*string*) converts a number entered as a *string* to its corresponding value.

### Arguments

*string* can be text in " " (quotation marks) or a label that contains only numbers. *string* can resemble a standard number (456.7), a number in scientific format (4.567E2), a mixed number (45 7/8), or a formatted number (\$45.67).

### Uses

Use @VALUE to convert text that consists of numbers into values you can use in mathematical calculations. @VALUE is useful when you need to convert entries retrieved from another source into values.

### Notes

@VALUE ignores leading and trailing spaces; however, @VALUE returns ERR when *string* contains spaces that separate symbols from the numbers (such as \$ 32.85 or £ 56.20).

@VALUE results in 0 when *string* is a blank cell or empty string, and returns ERR when *string* contains non-numeric characters.

Use Edit Quick Copy to replace @VALUE with its value.

You cannot calculate within a *string* argument in @VALUE, but you can create a formula with several @VALUE functions. For example, @VALUE("22"+"20") = 0, but @VALUE("22") +@VALUE("20") = 42.

### Examples

@VALUE("543") = the value 543.

@VALUE(B3) = the value 49.75, if cell B3 contains the label 49 3/4.

@VALUE("85%") = the value .85.

### Similar @Functions

@STRING converts a value to a label.

See also:

@Function Basics

Guidelines for Using String @Functions

## @VAR

@VAR(*list*) calculates the population variance in a *list* of values.

### Arguments

*list* can contain any of the following, in any combination: numbers, numeric formulas, and range addresses or range names that contain numbers or formulas. Separate elements of *list* with argument separators.

### Uses

Variance measures the degree to which individual values in a list vary from the mean (average) of all the values in the list. The lower the variance, the less individual values vary from the mean, and the more reliable the mean. A variance of 0 indicates that all values in the list are equal.

Use @VAR to calculate the variance from the mean of a list of values when *list* contains all values for the group, as in an employee database or a set of test scores. Variance is necessary in several ANOVA (analysis of variance) statistical tests.

### Notes

@VAR uses the *n*, or population, method to calculate variance. The *n* method assumes the selected values are the entire population. If the values are only a sample of the population, the variance is biased because of errors introduced in taking a sample. See [Chapter 4](#) of the *User's Guide* for the formula the *n* method uses.

### Examples

@VAR

### Similar @Functions

[@VAR.S](#) uses the *n*-1 (sample) method to calculate an unbiased variance for a sample.

[@DVAR](#) calculates the population variance of values that meet criteria you specify.

See also:

[@Function Basics](#)

[Guidelines for Using Statistical @Functions](#)

**Example: @VAR**

This table lists house sales for the years 1982 through 1986. (To save space, rows 4 through 37 in the worksheet are hidden.) The ages of the houses (in years) are listed in a range named AGE\_LIST (C2..C42).

@VAR(AGE\_LIST) returns 334.49, the variance in the age of the houses in the list.

A	B	C	D	
1	ADDRESS	LOT	AGE	COST
2	12 Bartholomew Sq	0.25	48	\$290,000
3	40 Prospect St	0.40	22	\$105,000
38	103 Cranberry La	0.50	21	\$135,000
39	27 Kilburn St	1.00	70	\$128,000
40	468 Henshaw St	0.50	52	\$174,000
41	9 Pleasant St	0.25	42	\$195,000
42	80 Beach St	0.25	23	\$118,000

## @VARS

@VARS(*list*) calculates the sample population variance in a *list* of values.

### Arguments

*list* can contain any of the following, in any combination: numbers, numeric formulas, and range addresses or range names that contain numbers or formulas. Separate elements of *list* with argument separators.

### Uses

Variance measures the degree to which individual values in a list vary from the mean (average) of all the values in the list. The lower the variance, the less individual values vary from the mean, and the more reliable the mean. A variance of 0 indicates that all values in the list are equal.

@VARS replaces the calculation required to produce a sample variance in releases of 1-2-3 earlier than Release 3:

$$\text{@COUNT}(\textit{list})/\text{@COUNT}(\textit{list})-1*\text{@VAR}(\textit{list})$$

Use @VARS to calculate the variance of a list of values when *list* is only a sample, not the entire population of values, such as a sample of employee salaries or a sample of test scores.

Use @VARS (instead of @VAR) when the population is small, for more accurate results. @VARS is useful when the entire population is too large to work with, and a sample becomes necessary. @VARS is useful when you need to carry out ANOVA (analysis of variance) statistical tests, but the population is large or a sample is all that is available or feasible.

### Notes

@VARS uses the n-1, or sample, method to calculate variance. The n-1 method produces a variance that is slightly larger than the n method to compensate for errors in the sample. A larger variance is unbiased by sampling errors, and is thus more accurate. See [Chapter 4](#) of the *User's Guide* for the formula the n-1 method uses.

### Examples

@VARS

### Similar @Functions

@VAR uses the n, or population, method to calculate the variance for an entire population of data. @DVAR calculates the sample variance of values that meet criteria you specify.

See also:

@Function Basics  
Guidelines for Using Statistical @Functions

**Example: @VARS**

This table lists house sales in three towns in April and May. The sale prices of the houses are listed in a range named ALL\_SOLD (D2..D11).

@VARS(ALL\_SOLD) returns 3.83E+10, the sample variance in the sale prices of the houses in the list.

A	-----	A	-----	B	-----	C	----
1	ADDRESS	CITY					SOLD
2	467 Brattle	Cambridge		\$720,000			
3	183 Hillside	Arlington				\$318,000	
4	64 N. Gate	Belmont		\$332,000			
5	80 Mt. Auburn	Cambridge				\$278,000	
6	14 Charles	Cambridge		\$160,000			
7	1160 Memorial	Cambridge				\$227,000	
8	130 Crescent	Arlington					\$397,000
9	12 Trenton	Arlington				\$303,000	
10	36 Barnes	Cambridge		\$669,000			
11	234 Third	Cambridge		\$140,000			

## @VDB

@VDB(*cost*,*salvage*,*life*,*start-period*,*end-period*,[*depreciation-factor*],[*switch*]) calculates the depreciation allowance of an asset with an initial value of *cost*, an expected useful *life*, and a final value of *salvage* for a period specified by *start-period* and *end-period*, using the variable-rate declining balance method.

### Arguments

*cost* is the amount paid for the asset. *cost* can be any value greater than *salvage*.

*salvage* is the value of the asset at the end of its life. *salvage* can be any value.

*life* is the number of periods the asset takes to depreciate to its salvage value. *life* can be any value greater than 0.

*start-period* is the point in the asset's life when you want to begin calculating depreciation. *start-period* can be any value greater than or equal to 0, but cannot be greater than *life*.

*end-period* is the point in the asset's life when you want to stop calculating depreciation. *end-period* can be any value greater than *start-period*.

*start-period* and *end-period* correspond to the asset's life, relative to the fiscal period. For example, if you want to find the first year's depreciation of an asset purchased at the beginning of the second quarter of a fiscal year, *start-period* would be 0 and *end-period* would be 0.75 (1 minus 1/4 of a year). You can use @VDB for multiple-period depreciation calculations.

@VDB allows for the use of an initial-period option to calculate depreciation for the period the asset is placed in service. @VDB uses the fractional part of *start-period* and *end-period* to determine the initial-period option. If both *start-period* and *end-period* have fractional parts, then @VDB uses the fractional part of *start-period*.

*depreciation-factor* is an optional argument that specifies the percentage of straight-line depreciation you want to use as the depreciation rate. If you omit this argument, 1-2-3 uses 200%, which is the double-declining balance rate. *depreciation-factor* can be any value greater than or equal to 0; commonly used rates are 1.25, 1.50, 1.75, and 2.

*switch* is an optional argument that you include if you do not want @VDB to switch to straight-line depreciation for the remaining useful life. Normally, declining-balance switches to such a straight-line calculation when it is greater than the declining-balance calculation.

*switch* can be either 0 or 1. If *switch* is 0 (the default), @VDB automatically switches to straight-line depreciation when that is greater than declining-balance depreciation. If *switch* is 1, @VDB never switches to straight-line depreciation.

### Uses

Use @VDB when you need to choose the rate of declining balance.

### Notes

See [Chapter 4](#) of the *User's Guide* for the formulas @VDB uses to calculate double-declining balance depreciation and straight-line depreciation.

The variable-rate declining balance method maintains a steady rate of depreciation until the salvage value of an asset drops to less than the value of the following equation:

$$(\text{book value} * ((1 - (\text{rate}/\text{life}))^{\text{life}}))$$

where book value = cost - salvage - prior depreciation.

At this point, 1-2-3 switches to straight-line depreciation for the balance of the life of the asset so that there is no excess salvage value. By switching to straight-line depreciation, 1-

2-3 adjusts the result of @VDB when necessary to ensure that total depreciation taken over the life of the asset equals the asset's cost minus its salvage value.

### Examples

This example calculates depreciation for an office machine, purchased in the middle of the first quarter of the fiscal year, that cost \$10,000. The useful life of the machine is 10 years, and the salvage value after 10 years is \$600. The following formulas calculate the depreciation expense for each of the 10 years, using the variable-rate declining balance method, with a depreciation rate of 150%. Notice that the switch to straight-line depreciation occurs in the sixth year.

@VDB(10000,600,10,0,0.875,1.5)	= \$1,312.50
@VDB(10000,600,10,0.875,1.875,1.5)	= \$1,303.13
@VDB(10000,600,10,1.875,2.875,1.5)	= \$1,107.66
@VDB(10000,600,10,2.875,3.875,1.5)	= \$ 941.51
@VDB(10000,600,10,3.875,4.875,1.5)	= \$ 800.28
@VDB(10000,600,10,4.875,5.875,1.5)	= \$ 767.79
@VDB(10000,600,10,5.875,6.875,1.5)	= \$ 767.79
@VDB(10000,600,10,6.875,7.875,1.5)	= \$ 767.79
@VDB(10000,600,10,7.875,8.875,1.5)	= \$ 767.79
@VDB(10000,600,10,8.875,9.875,1.5)	= \$ 767.79
@VDB(10000,600,10,9.875,10,1.5)	= \$ 95.97
	\$9,400.00 Total depreciation ( <i>cost minus salvage</i> )

### Similar @Functions

[@DDB](#) calculates depreciation using the double-declining balance method. [@SLN](#) uses the straight-line method, and [@SYD](#) uses the sum-of-the-years'-digits method.

See also:

[@Function Basics](#)  
[Guidelines for Using Financial @Functions](#)

## @VLOOKUP

@VLOOKUP(*x*,*range*,*column-offset*) finds the contents of the cell in a specified column of a vertical lookup table.

### Arguments

*x* can be either a value or a string.

If the first column of the vertical lookup table contains values, *x* can be any value greater than or equal to the first value in *range*. If *x* is smaller than the first value in *range*, @VLOOKUP returns ERR. If *x* is larger than the last value in the first column of *range*, @VLOOKUP stops at the last cell in the column specified by *column-offset* and returns the contents of that cell as the answer.

If the first column of the vertical lookup table contains labels, *x* can be text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label. If *x* does not exactly match the contents of a cell in the first column of *range*, @VLOOKUP returns ERR.

*range* represents the location of the vertical lookup table. *range* can be any range address or range name. If *range* is a 3-D range, 1-2-3 uses only the first worksheet in *range*.

*column-offset* represents an offset number corresponding to the position the column occupies in *range*.

### Uses

Use @VLOOKUP when you need to choose items from a table, or to automate data selection for formulas or macros, such as in an application that supplies prices from a price list.

@VLOOKUP is useful for finding entries in tables, such as tax tables or sales commission tables, that contain many different choices based on different variables.

### Notes

@VLOOKUP compares *x* to each cell in the first column of the table. When 1-2-3 locates a cell in the first column that contains *x* (or, if *x* is a value, the value closest to , but not larger than, *x*), it moves across that row the number of columns specified by *column-offset* and returns the contents of that cell as the answer.

### Examples

@VLOOKUP

### Similar @Functions

@HLOOKUP finds the contents of a cell in a horizontal lookup table. @INDEX finds the contents of a cell when you specify offset numbers for both the column and row. @CHOOSE replaces a lookup table that requires only one row.

See also:

@Function Basics



**Example: @VLOOKUP**

A vertical lookup table named TAXTABLE (A3..E11) lists tax amounts based on income and filing status.

@VLOOKUP(35329,TAXTABLE,1), entered in a cell formatted as Currency with no decimal places, returns \$9,351, the tax amount for the income figure that is closest to, but not greater than, \$35,329.

A	B	C	D	E
1	FILING		STATUS	
2	Income >=	1	2	3
3	\$35,000	\$9,219	\$7,265	\$11,315 \$8,531
4	\$35,050	\$9,241	\$7,282	\$11,340 \$8,552
5	\$35,100	\$9,263	\$7,299	\$11,363 \$8,573
6	\$35,150	\$9,285	\$7,313	\$11,386 \$8,594
7	\$35,200	\$9,307	\$7,330	\$11,411 \$8,615
8	\$35,250	\$9,329	\$7,347	\$11,436 \$8,636
9	\$35,300	\$9,351	\$7,361	\$11,459 \$8,657
10	\$35,350	\$9,373	\$7,377	\$11,483 \$8,678
11	\$35,400	\$9,395	\$7,393	\$11,507 \$8,699

## **@YEAR**

**@YEAR**(*date-number*) extracts the year, an integer from 0 (1900) through 199 (2099), from a date number.

### **Arguments**

*date-number* is an integer, or the address or name of a cell that contains an integer, from 1 (January 1, 1900) through 73050 (December 31, 2099).

### **Uses**

Use **@YEAR** when you need only the year, rather than the entire date, for example, to determine whether an item was purchased in or before a particular year for warranty restrictions of bond maturity, or to calculate seniority or length of tenure for benefits.

**@YEAR** can also supply the *year* argument for other date **@**functions that build on previously calculated dates.

### **Notes**

Add 1900 to **@YEAR** to convert it into a four-digit year. For example, **@YEAR(20181)+1900** creates the four-digit year 1955.

### **Examples**

**@YEAR(20181)** = 55, because the date number 20181 is the date 02-Apr-55.

**@YEAR(@NOW)** = the current year.

**@YEAR(@DATEVALUE("14-Feb-91"))** = 91.

### **Similar @Functions**

**@DAY** extracts the day of the month (1 to 31), and **@MONTH** extracts the month (1 to 12), from a date number.

See also:

[@Function Basics](#)

[Guidelines for Using Date and Time @Functions](#)



## Macro Basics

A macro is a series of instructions that speeds up repetitive or complex tasks:

- \* Macros can automate procedures you normally perform from the keyboard, such as using commands.
- \* Macros can perform complex tasks and programming procedures, such as loops and if-then-else statements.
- \* Macros can guide users who are unfamiliar with 1-2-3 through tasks and applications that you create and control.

Macros can consist of keystrokes, macro commands, or both. You can use macros from any open worksheet file or an open macro library file.

### Macro Command Categories

Lists the categories of macro commands.

### Macro Command Format

Illustrates the format for writing macro commands and defines the types of arguments you can use in macro commands.

### Macro Command Index

Lists all macro commands in alphabetical order.

### Macro Command Rules

Lists rules for writing macro commands.

### Macro Key Names

Lists the macro keywords that correspond to the standard keyboard keys and the 1-2-3 function keys.

### Sample Macros

Presents several short, general-purpose macros.

### Summary of Steps for Creating a Macro

Provides an overview of the steps for creating and saving a macro.

### Special Keystroke Instructions

Describes the ENTER and {CLEARENTRY} keystroke instructions.

Using the Transcript Window Describes how to use the Transcript window to create macros.

## **Summary of Steps for Creating a Macro**

The following list is an overview of the steps for creating and saving a macro.

### Planning a Macro

You can save time and trouble by planning what you want a macro to do, and knowing all the steps needed to accomplish that task.

### Choosing a Macro Location

You enter a macro in a column in a worksheet. If you use a macro with only one file, it is simplest to enter the macro in that file. If you use a macro with several files, you might enter the macro in a macro library.

### Writing a Macro

You can enter recorded macro instructions or enter them from scratch.

### Naming a Macro

You name a macro by naming the range that contains the macro.

### Documenting a Macro

You document a macro so that you and others can remember the macro name and what the macro does.

### Running a Macro

You start the macro so it carries out the task it automates.

### Debugging a Macro

If the macro does not do what you expect when you run it, or if 1-2-3 does not finish running it because of an error, you need to debug the macro.

### Saving a macro

You save a macro by saving the file that contains the macro.

See also:

Macro Basics

Sample Macros

## **Planning a Macro**

To create a macro, you must first identify the steps of the 1-2-3 task you are automating.

In some cases, identifying the steps means performing the task once manually, noting each key that you press. In other cases, mapping out the procedure with a flow chart may help you work out the steps of a task.

See also:

[Macro Basics](#)

[Using the Transcript Window](#)

## Choosing a Macro Location

You can enter a macro in a worksheet file with other data or in a macro library.

### Storing Macros in a Worksheet File with Data

If a macro acts upon only a single worksheet file, the simplest approach is to enter the macro in that file. When you enter macros in a file that contains data, follow these guidelines:

- \* Enter macros in a separate worksheet rather than in worksheets that contain data. This keeps you from writing over data when you enter the macros or damaging the macros when you insert or delete rows and columns in the data area. To create another worksheet in a file, use [Worksheet Insert](#).

**Note** Before you enter macros in a separate worksheet of a data file, you may want to turn [GROUP mode](#) off for the current file. This keeps you from damaging the macros when you insert or delete rows and columns in other worksheets in the file.

To further protect the macros you enter in a separate worksheet, turn global protection on for that worksheet with [Worksheet Global Settings Protection](#).

- \* If you do enter macros in the same worksheet as data, enter the macros below and to the right of the data.

### Storing Macros in a Macro Library

If a macro acts upon several files, you may want to enter it in a macro library. A macro library is a file that contains only macros. To use macros in a macro library with data in other files, you must have the macro library file open along with the other files.

### To Run Macros in a Macro Library

1. Use [File Open](#) to open the worksheet file(s) you want to work with.
2. Use File Open to open the macro library file.
3. To run one of the macros in the library, move the [cell pointer](#) to the appropriate location in the file that you want the macro to affect.
4. Choose [Tools Macro Run](#).
5. Select the name of the macro library file from the list box to see the range names from the library file. Then select the macro name from the list.
6. Select OK.

### Using a Macro Library

- \* In macros in a macro library, cell addresses and range names not preceded by a [file reference](#) refer to the current file (the file the macro is acting on), unless they specify a [branch](#) or [subroutine](#) location, in which case they refer to the macro library file. For example, suppose the following macro is in a macro library:

```
{EDIT-COPY TOTALS}
```

```
{BRANCH NEXT_TASK}
```

If you run the macro in file SALES, 1-2-3 looks for TOTALS in file SALES and NEXT\_TASK in the macro library file.

- \* If you use a macro library with a specific worksheet file, create in that file an [autoexecute macro](#) that selects File Open and specifies the macro library as the file to open. For example, to open a macro library named MACROS.WK3 (stored in directory

123W on drive C) whenever you open a file named SALES.WK3, create the following autoexecute macro in file SALES.WK3:

```
{ALT}fo{CE}c:\123w\macros.wk3~
```

- \* To have 1-2-3 open a macro library file automatically whenever you start the program, name the file AUTO123.WK3 and save the file in the default directory.

See also:

Macro Basics

Naming a Macro



## Writing a Macro

A macro must include instructions for every step of the task or procedure it automates. After planning a macro and choosing its location, you must write the macro instructions. A macro can consist of keystroke instructions and macro commands.

### Organizing Macro Instructions

- \* Enter the macro instructions in consecutive cells in a column. 1-2-3 reads a macro by starting at the first cell and moving down the column until it reaches a blank cell, a cell that contains a numeric value, or the macro command {QUIT}.

- \* Enter macro instructions as labels. You can either create the entire set of macro instructions (up to a total of 512 characters) as one label or divide the instructions among a series of labels.

To make the macro easier to read and debug, divide the macro instructions among a series of labels.

- \* Type a label-prefix character ( ' " or ^ ) if the first keystroke is a number, numeric character, \ (backslash), / (slash), : (colon), or < (less than) symbol. Then type the keystrokes.

### Using Macro Commands

- \* Enter macro commands and macro key names surrounded by { } (braces). The format for a macro command is {KEYWORD} or {KEYWORD arg1,arg2,...,argn}.

- \* Begin and end any instruction in { } (braces), such as {DOWN}, in the same cell. Splitting such an instruction between two or more cells results in an error.

- \* You can type any instruction in braces, such as {DOWN}, in uppercase or lowercase letters.

- \* When entering instructions in { } (braces), such as {PGUP} and {DOWN}, specify two or more repetitions of the same instruction with a number following the key name within the braces. For example, {DOWN 5} tells 1-2-3 to move the cell pointer down one cell five times. Separate the number from the key name with a space.

Or, instead of a number, include a cell reference after the key name. For example, {DOWN SOME} moves the cell pointer down the number of rows specified by the value in cell SOME.

- \* You can use { } (open and close braces with nothing inside them) as placeholders in a macro. 1-2-3 ignores empty braces when executing a macro.

### To Enter Macro Commands Using F3 (NAME)

1. Type { (open brace).

2. Press F3 (NAME).

1-2-3 displays a list of the macro commands.

3. Select the macro command you want.

4. Double-click or press ENTER.

1-2-3 inserts the macro command name into the edit line.

5. Enter the arguments and the } (close brace).

6. Click the Confirm button or press ENTER.

### Specifying Locations in a Macro

- \* When specifying a cell or range in a macro, use a file reference unless the cell or range is in the file that will be current when you run the macro.
- \* Although you can use cell addresses when specifying worksheet locations in a macro, Lotus recommends that you use range names. If you move a range (for example, if you insert some rows above the range), a macro that refers to the range by name will continue to work correctly, but a macro that refers to the range by address will no longer work correctly.

### Selecting Menu Commands and Dialog Box Options

- \* To choose a command from a menu, use {ALT}x, where x is the underlined letter of the command. For example, to choose File Save As, use {ALT}FA.
- \* To select an option button, command button, check box, list box, drop-down box, or text box, use {ALT "x"}, where x is the underlined letter of the option button or check box. For example, to select the Password protect check box in the File Save As dialog box, use {ALT "P"}.
- \* Once you select a list box or drop-down box, you can move to an item in the list with the first letter or number of the item. If there is more than one item with the same first letter, 1-2-3 moves to the first item that begins with that letter.

You can also move through the list with {DOWN} or {RIGHT} (to move from top to bottom), and {UP} or {LEFT} (to move from bottom to top). For example, {DOWN 4} moves down four items in a list.

Use {HOME} to select the first item in a list and use {END} to select the last item in a list.

- \* When you finish making selections in a dialog box, use ~ (tilde) to complete the command. Using ~ (tilde) is equivalent to selecting OK.

**Note** If your current location is a command button other than OK, use {TAB} to move to OK and then use ~ (tilde) to complete the command. For example, in the Style Font Replace dialog box, if your current location is the Save button, use {TAB 2}~ to move to OK and complete the command.

See also:

Macro Basics

Macro Command Format

Macro Command Rules

Macro Key Names

Sample Macros

## Naming a Macro

After you enter a macro, name the first cell of the macro with [Range Name Create](#) or [Range Name Label Create](#). Macro names follow all the rules for [range names](#).

1-2-3 accepts two kinds of macro names:

- \* Backslash names consist of a \ (backslash) followed by a single keyboard character, such as \D. When you use a backslash name, you can use CTRL to run the macro. For example, to run the macro named \D, press CTRL+d.
- \* Multiple-character names are ordinary [range names](#). This type of name lets you use a name that reminds you of what the macro does and makes it easy to avoid duplicating names. When you use a multiple-character name, you must use ALT+F3 (RUN) to run the macro.

## Using \ (Backslash) in Macro Names

- \* If you store macros in a worksheet file that contains other named ranges, start all the macro range names in the file, including multiple-character range names, with \ (backslash). This lets you quickly distinguish your macro range names from the other range names in the file when 1-2-3 displays them all together in list boxes, for example, when you select Tools Macro Run.
- \* For any macro with a backslash-letter name, you can run the macro with CTRL when 1-2-3 prompts you for information during a command. For example, suppose the macro ABSOLUTE ENTERPRISES, INC. is named \A. After selecting File Page Setup Header, you can run the macro, by pressing CTRL+A, to specify ABSOLUTE ENTERPRISES, INC. as the document header.

## Autoexecute Macros

An autoexecute macro is a macro that 1-2-3 runs automatically when you open the worksheet file that contains it. Autoexecute macros are especially useful in custom applications and for worksheet files that you use often.

An autoexecute macro is like any other macro, except that you give it a special name: \0 (backslash zero).

For 1-2-3 to run an autoexecute macro when you open the worksheet file that contains it, you must have previously selected the Run autoexecute macros [check box](#) in [Tools User Setup](#).

If you run a macro that uses File Open and the opened file contains an autoexecute macro, 1-2-3 runs the autoexecute macro (as a [subroutine](#)) if the Run autoexecute macros check box in Tools User Setup is selected. If the box is not selected, 1-2-3 continues to execute the original macro.

## Naming a Branch or Subroutine Location

If you use [branching](#) and subroutine calls in a macro, assign range names to the branch locations and subroutines as well as to the main macro. You can use any valid range names; there is no advantage to using backslash names for branch locations and subroutines.

See also:

[Macro Basics](#)  
[Running a Macro](#)

## Documenting a Macro

After you enter and name a macro, document both the macro's range name and the macro instructions. Documenting a macro quickly identifies which range name belongs to the macro, clarifies the macro's purpose, and describes the steps of the macro procedure. Documentation can be extremely helpful when you or someone else needs to revise the macro.

- \* Document the macro's range name by entering the name as a label to the left of the macro's first cell. If the name starts with a backslash, such as \N, be sure to type a label-prefix character before you type the name.
- \* Document the macro instructions by entering comments to the right of the cell or cells containing the macro. Do not enter documentation in the same cell as macro instructions. 1-2-3 considers anything in a cell within a macro to be part of the macro and thus will try to run the documentation as part of the macro.

See also:

[Macro Basics](#)

[Sample Macros](#)

## Running a Macro

You can run a macro in any mode. For example, you can use a macro to enter data in a dialog box.

**Note** Before you run the macro, use File Save to save any files that will be affected by the macro.

### To Run a Macro with CTRL

If the macro's name consists of a backslash and a single letter (for example, \N), you can use CTRL to run the macro.

1. Make sure the file that contains the macro is active. If the file that contains the macro is not the current file, make sure no other active file contains a macro with the same range name.
2. Hold down CTRL and then press the letter that names the macro. For example, to run a macro named \N, press CTRL+n.

### To Run a Macro with Tools Macro Run

If the macro's name consists of any other combination of characters (for example, NEW\_SHEET), you must use Tools Macro Run to run the macro.

1. Choose Tools Macro Run.
2. Select a macro from the Macro name list box.

The list box displays all range names in the current file and the names of other active files.

If the macro is in another active file, select the name of that file to see the range names from that file. Then select the macro name from the list.

3. Select OK.

See also:

Macro Basics

Debugging a Macro

## Debugging a Macro

If the macro does not do what you expect when you run it, it probably contains an incorrect instruction or sequence of instructions, or a format or typing error. You can correct obvious errors by editing the instruction just as you edit any cell entry.

If 1-2-3 cannot run a macro because instructions are wrong or incomplete, it displays an error message when the macro fails. (Press F1 (HELP) for an explanation of the message.) The error message indicates the location and the instruction that 1-2-3 was executing at the time it encountered the error.

### Common Errors

- \* Typing or spelling errors, including incorrect spelling of keywords and range names.
- \* Spaces where there shouldn't be any, for example, between arguments in an @function or macro command.
- \* Missing steps in a command sequence.
- \* A blank cell or a cell that contains a value before the end of the macro.
- \* Missing braces, or brackets or parentheses instead of braces.
- \* Incorrect cell or range references, such as undefined range names, or references to ranges in another worksheet file that don't specify the correct file name.
- \* Range names that duplicate keyword names or function-key names.

**Note** Do not use macro keywords as names for ranges, macros, or subroutines.

### STEP Mode and the Macro Trace Window

Finding an error in a lengthy or complicated macro is sometimes difficult. To help diagnose problems in a macro, use STEP mode and/or the Macro Trace window. STEP mode executes a macro one instruction at a time. The Macro Trace window shows the current macro command about to be executed. If the macro fails, the Macro Trace window shows which step failed.

You can use STEP mode and the Macro Trace window separately, but these features are most effective when used together; then you can step through a macro and see it as it executes.

To start STEP mode without opening the Macro Trace window, press ALT+F2 (STEP).

### To Use STEP and the Macro Trace Window

1. Choose Tools Macro Debug.
2. Select Single step.
3. Select Trace.
4. Select OK.

The STEP indicator appears at the bottom of the window, and 1-2-3 displays the Macro Trace window.

5. Start the macro.
6. Press any key to execute one instruction at a time until you encounter the instruction that caused the error.

The SST indicator replaces the STEP indicator each time 1-2-3 executes a macro instruction in STEP mode. The Macro Trace window displays the current location and the macro instruction 1-2-3 is currently executing.

## **Correcting an Error**

When you find the error, end the macro by pressing CTRL+BREAK and then pressing ESC or ENTER. This does not end STEP mode or close the Macro Trace window. 1-2-3 still displays the STEP indicator and the Macro Trace window.

You do not need to turn STEP mode off or close the Macro Trace window before you edit the macro. Edit the cells that contain the macro instructions you want to change. After you edit the macro, run through it again to ensure that there are no other problems.

To turn STEP mode off, press ALT+F2 (STEP) or choose Tools Macro Debug and remove the check from Single step.

To close the Macro Trace window, choose Tools Macro Debug and remove the check from Trace.

See also:

[Macro Basics](#)

[Tools Macro Debug](#)

## **Saving a Macro**

When the macro is running correctly, save it for future use. Use [File Save](#) to save the file in which you entered the macro. Then, any time the file is active, you can run the macro.

See also:

[Macro Basics](#)



## **Using the Transcript Window**

The Transcript window records keystrokes you type during a 1-2-3 session. The Transcript window automates entering data and creating macros.

### About the Transcript Window

Provides information about the way 1-2-3 records keystrokes.

### Creating a Macro with the Transcript Window

Explains how to enter a macro by performing the task you want to automate and then copying the keystrokes from the Transcript window into the worksheet.

See also:

Macro Basics

Tools Macro Show Transcript

## About the Transcript Window

The Transcript window records tasks you perform during a 1-2-3 session. The Transcript window automates entering data and creating macros.

### Maximum Number of Keystrokes

The Transcript window holds up to 512 bytes. (Most characters use one byte.) Characters stored in the Transcript window include { } (braces) that 1-2-3 adds, as well as spaces you type. When the 512-byte limit is reached, 1-2-3 discards keystrokes from the beginning of the transcript (the earliest keystrokes you made since the last time you erased all the keystrokes in the Transcript window) to make room for recent keystrokes. To avoid losing keystrokes, cut and paste them into the worksheet.

### Transcript Window Conventions

The Transcript window records most keystrokes in macro-instruction format. Nonprinting keystrokes are enclosed in { } (braces), for example, {DEL}. Menu choices are the underlined letter of the menu item, for example, f for File and a for Save As.

The Transcript window uses 1-2-3 names for function keys, not generic names. For example, it records F9 (CALC) as {CALC}, not {F9}.

To fit the maximum number of keystrokes, the Transcript window abbreviates keystroke instructions with an abbreviation of the key name, for example, {D} instead of {DOWN}, and a repetition number for duplicate keystrokes, for example, {D 2} instead of {D}{D}.

### Backslash Macros in the Transcript Window

When you use CTRL to start a macro named \A - \Z, the Transcript window records the action as {\A}, {\B}, and so on. It does not record the keystrokes that the macro plays back.

### Excluded Keystrokes

The Transcript window does not record the following keys: ALT+BACKSPACE (UNDO); ALT+F1 (COMPOSE), but it does record composed characters; ALT+F2 (STEP); ALT+F3 (RUN); CTRL+BREAK; and INS. When you use CTRL+BREAK to leave a menu, 1-2-3 records the equivalent number of {ESC} keystrokes instead of {BREAK}.

See also:

[Macro Basics](#)

[Tools Macro Show Transcript](#)

[Using the Transcript Window](#)

## Creating a Macro with the Transcript Window

You can create a macro by performing the task you want to automate and then copying keystrokes from the [Transcript window](#) into the worksheet.

Once you record the keystrokes for a task, you can have 1-2-3 repeat the keystrokes by playing them back from the Transcript without copying them to the worksheet.

### To Record Keystrokes

1. Choose Tools Macro Show Transcript.
2. Select Edit Clear All to delete all keystrokes from the Transcript window.
3. Perform the task you want to record.

**Note** The Transcript window records mouse actions as their keystroke equivalents.

### To Edit Keystrokes

1. When you finish the task, choose Tools Macro Show Transcript.
2. To correct mistakes, edit the keystrokes.

You can also edit instructions after you copy them into the worksheet file.

### To Create a Macro by Copying Keystrokes

1. Select the recorded keystrokes you want to copy using the mouse or SHIFT and the arrow keys.
2. Choose Edit Copy or press CTRL+INS to copy the selected keystrokes to the [Clipboard](#).
3. Select the worksheet cell in which you want to enter the first keystroke.
4. Choose [Edit Paste](#).  
1-2-3 copies keystrokes into the cells in a single column, beginning with the cell you selected.
5. Name the macro as described in [Naming a Macro](#).

The keystrokes are recorded as a macro in the worksheet file.

### To Play Back Keystrokes as a Macro

1. Select the cell in which you want 1-2-3 to begin the tasks recorded in the Transcript window.
2. Choose Tools Macro Show Transcript.
3. Select the recorded keystrokes you want to play back using the mouse or SHIFT and the arrow keys.
4. Choose Macro Run.

1-2-3 plays back the selected keystrokes as a macro. To stop the macro, press CTRL+BREAK. The macro stops automatically if 1-2-3 encounters an error.

See also:

[About the Transcript Window](#)

[Macro Basics](#)

[Tools Macro Transcript](#)

## Macro Command Format

Each macro command has a specific format. Unless you follow this format exactly, 1-2-3 cannot interpret the macro command. The format for a macro command is

**{KEYWORD}**

or

**{KEYWORD *arg1,arg2,...,argn*}**

**KEYWORD** represents the verb in the macro command. It tells 1-2-3 which action to perform.

***arg1,arg2,...,argn*** represent arguments. Arguments supply the information 1-2-3 needs to complete the command. For example, in the {LET} command

{LET TOTAL,@SUM(EXPENSES)}

the first argument, TOTAL, tells 1-2-3 where to enter the data (in cell TOTAL) and the second argument, @SUM(EXPENSES), tells 1-2-3 what data to enter (the result of the @SUM formula).

The arguments in a macro command can be any length, providing the total number of characters in the cell that contains the macro command does not exceed 512.

**Note** In Help, an italicized argument indicates that you must substitute something else when you write the command. For example, {BRANCH *location*} means you must include an actual location in the command. When an argument is not italicized, you must include that exact word as the argument in the command. For example, {PANELOFF [clear]} means that if you choose to use the optional [clear] argument, you must type the command as {PANELOFF clear}.

### Optional Arguments

Optional arguments, displayed in [ ] (brackets) in Help, are arguments you can omit from a macro command. For example {BEEP [*tone-number*]} works even if you don't specify a *tone-number* argument.

### Argument Separators

If a macro command includes two or more arguments, separate the arguments from one another with argument separators. Initially , (comma) and ; (semicolon) are the valid argument separators for macro commands, but you can use [Tools User Setup International](#) to set semicolons only or semicolons and periods as the valid argument separators.

### Argument Types

Macro commands use four types of information as arguments: values, strings, locations, and conditions.

Value

A number, a [numeric formula](#), or the address or name of a cell that contains a number or formula.

String

Text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a [label](#) or a formula that results in a label.

Location

A [range name](#), address, or any formula that evaluates to a range name or address.

Condition

Usually a logical formula or the address or name of a cell that contains a logical formula. However, you can also use any numeric or text formula, text enclosed in " " (quotation marks), or cell reference as a condition argument.

See also:

Macro Basics

Macro Command Rules

Writing a Macro

## Macro Command Rules

Observe the following rules when you enter macro commands:

- \* Enter the entire macro command (keyword and arguments, if any) in a single cell. For example, this {GETLABEL} command is entered correctly:  
`{GETLABEL "Enter today's totals: ",TOTALS}`  
but this {GETLABEL} command is entered incorrectly:  
`{GETLABEL "Enter today's totals: ",  
TOTALS}`
- \* The total number of characters in the cell that contains the macro command must not exceed 512.
- \* Start the command with { (open brace) and end it with } (close brace).
- \* Immediately after the open brace, type the keyword. You can type it in uppercase or lowercase letters.
- \* If the command includes arguments, separate the keyword from the first argument with one space. Do not include any other spaces in the command, unless they are part of an argument. For example, the prompt in a {GETLABEL} command can include spaces between the words in the prompt. If the command includes no arguments, the command should include no spaces.

See also:

[Macro Basics](#)

[Macro Command Format](#)

[Writing a Macro](#)

## Macro Command Index

{subroutine}

{?}

{ADDIN}

{APP-ADJUST}

{APPENDBELOW}

{APPENDRIGHT}

{APP4}

{APP-STATE}

{BEEP}

{BLANK}

{BORDERSOFF}

{BORDERSON}

{BRANCH}

{BREAK}

{BREAKOFF}

{BREAKON}

{CLOSE}

{COMMIT}

{CONTENTS}

{DDE-ADVISE}

{DDE-CLOSE}

{DDE-EXECUTE}

{DDE-OPEN}

{DDE-POKE}

{DDE-REQUEST}

{DDE-UNADVISE}

{DDE-USE}

{DEFINE}

{DISPATCH}

{EDIT-CLEAR}

{EDIT-COPY}

{EDIT-COPY-GRAPH}

{EDIT-CUT}

{EDIT-PASTE}

{EDIT-PASTE-LINK}

{FILESIZE}

{FOR}  
{FORBREAK}  
{FORM}  
{FORMBREAK}  
{FRAMEOFF}  
{FRAMEON}  
{GET}  
{GETLABEL}  
{GETNUMBER}  
{GETPOS}  
{GRAPH}  
{GRAPHOFF}  
{GRAPHON}  
{IF}  
{IFKEY}  
{INDICATE}  
{LAUNCH}  
{LET}  
{LINK-ASSIGN}  
{LINK-CREATE}  
{LINK-DEACTIVATE}  
{LINK-DELETE}  
{LINK-REMOVE}  
{LINK-TABLE}  
{LINK-UPDATE}  
{LOOK}  
{MENUBRANCH}  
{MENUCALL}  
{ONERROR}  
{OPEN}  
{PANELOFF}  
{PANELON}  
{PUT}  
{QUIT}  
{READ}  
{READLN}  
{RECALC}



{RECALCCOL}

{RESTART}

{RETURN}

{ROLLBACK}

{SETPOS}

{SYSTEM}

{WAIT}

{WINDOW-ADJUST}

{WINDOW-SELECT}

{WINDOWSOFF}

{WINDOWSON}

{WINDOW-STATE}

{WRITE}

{WRITELN}

See also:

Macro Key Names

## Macro Command Categories

1-2-3 has eleven categories of macro commands.

### Clipboard

Clipboard commands cut and copy data to the Clipboard, and paste data from the Clipboard.

### Data manipulation

Enter data, edit existing entries, erase entries, and recalculate formulas.

### Dynamic Data Exchange

Manipulate conversation-level (low-level) links between 1-2-3 for Windows and other Windows applications.

### External table control

Commit (finalize) or roll back (cancel) pending transactions with external databases.

### File manipulation

Work with text files.

### Flow-of-control

Direct the path of macro execution, using branches, subroutine calls, loops, and conditional processing.

### Interactive

Suspend macro execution for user input, control macro interruption and the timing of macro execution, and create custom menus.

### Link

Manipulate link-level (high-level) links between 1-2-3 for Windows and other Windows applications.

### Macro key names

Replicate actions of the nonprinting keys.

### Screen control

Control different parts of the screen display, including the mode indicator and the worksheet window, and sound the computer's bell.

### Window control

Activate, move, and size 1-2-3 windows.

See also:

Macro Basics

Macro Command Index

## Clipboard Macro Commands Category

Clipboard commands cut and copy data to the Windows Clipboard, and paste data from the Clipboard.

### {EDIT-CLEAR}

Deletes selected types of data (cell contents, cell format, formatting, or graphs) permanently without using the Clipboard.

### {EDIT-COPY}

Copies data and related formatting from the worksheet to the Clipboard.

### {EDIT-COPY-GRAPH}

Copies the contents of the active Graph window to the Clipboard.

### {EDIT-CUT}

Cuts data and related formatting from the worksheet to the Clipboard.

### {EDIT-PASTE}

Pastes data and related formatting from the Clipboard into the worksheet.

### {EDIT-PASTE-LINK}

Creates a link between the current worksheet file and the file referred to on the Clipboard.

## **Data Manipulation Macro Commands Category**

Data manipulation commands enter data, edit existing entries, erase entries, and recalculate formulas.

### {APPENDBELOW}

Copies data in one range to the bottom of another range, automatically extending the destination range to include the copied data.

### {APPENDRIGHT}

Copies data in one range to the right of another range, automatically extending the destination range to include the copied data.

### {BLANK}

Erases a cell or range.

### {CONTENTS}

Copies the contents of one cell to another cell as a label.

### {LET}

Enters a label or number in a cell.

### {PUT}

Enters a label or number in a range.

### {RECALC}

Recalculates formulas in a range row by row.

### {RECALCCOL}

Recalculates formulas in a range column by column.

## **Dynamic Data Exchange Macro Commands Category**

Dynamic Data Exchange (DDE) commands manipulate conversation-level (low-level) links between 1-2-3 for Windows and other Windows applications. For information about macro commands that manipulate link-level (high-level) links between 1-2-3 for Windows and other Windows applications, see [Link Macro Commands Category](#).

### {DDE-ADVISE}

Specifies the macro that is executed when data changes in the server application.

### {DDE-CLOSE}

Terminates a conversation with a Windows application.

### {DDE-EXECUTE}

Sends a command to an application.

### {DDE-OPEN}

Initiates a conversation with a Windows application, making that the current conversation.

### {DDE-POKE}

Sends data to an application.

### {DDE-REQUEST}

Transfers data from an application.

### {DDE-UNADVISE}

Terminates a {DDE-ADVISE} command.

### {DDE-USE}

Selects the current conversation that is used by other DDE macro commands.

## **External Table Control Macro Commands Category**

External table control commands commit (finalize) or roll back (cancel) pending transactions with external databases.

{COMMIT}

Commits pending external database transactions.

{ROLLBACK}

Cancels pending external database transactions.

## **File Manipulation Macro Commands Category**

File manipulation commands work with text files.

### {CLOSE}

Closes the open text file.

### {FILESIZE}

Records in a cell the number of bytes in the open text file.

### {GETPOS}

Records in a cell the location in the open text file at which data is read from or written to.

### {OPEN}

Opens a new or existing text file so you can use other file manipulation commands with that text file.

### {READ}

Copies a series of bytes from the open text file to a cell.

### {READLN}

Copies an entire line from the open text file to a cell.

### {SETPOS}

Changes the location in the open text file at which data is read from or written to.

### {WRITE}

Writes text to the open text file.

### {WRITELN}

Writes text to the open text file and adds an end-of-line sequence.

## Flow-of-Control Macro Commands Category

Flow-of-control commands direct the path of macro execution.

### {subroutine}

Performs a subroutine call.

### {BRANCH}

Performs a branch.

### {DEFINE}

Evaluates and stores arguments that you pass to a subroutine in a {subroutine} command.

### {DISPATCH}

Performs an indirect branch by directing 1-2-3 to a cell that contains the name or address of the branch location.

### {FOR}

Creates a for loop, that is, repeats a subroutine a specified number of times.

### {FORBREAK}

Cancels a for loop.

### {IF}

Sets up a condition that 1-2-3 evaluates to determine whether to continue with the macro instructions that follow {IF} in the same cell or to go directly to the instructions in the next cell.

### {LAUNCH}

Starts a Windows application.

### {ONERROR}

Performs a branch if an error occurs while a macro is running, so macro execution continues instead of terminating in an error.

### {QUIT}

Ends a macro, returning control to the user.

### {RESTART}

Keeps 1-2-3 from returning to the location from which the subroutine call was issued after completing the instructions in a subroutine.

### {RETURN}

Ends a subroutine and returns control to the instruction following the command that called the subroutine. In a for loop, ends the current repetition immediately and starts the next repetition.

### {SYSTEM}

Temporarily suspends the 1-2-3 session and executes the operating system command you specify. When the operating system command is completed, automatically resumes the 1-2-3 session and continues the macro.



## Interactive Macro Commands Category

Interactive macro commands suspend macro execution for user input, control macro interruption and the timing of macro execution, and create custom menus.

### {?}

Suspends macro execution to let you move the cell pointer or enter data.

### {BREAKOFF}

Disables CTRL+BREAK while a macro is running, protecting the macro from interruption.

### {BREAKON}

Restores the use of CTRL+BREAK, undoing a {BREAKOFF}.

### {FORM}

Suspends macro execution so you can enter data in a specified range.

### {FORMBREAK}

Ends a {FORM} command.

### {GET}

Suspends macro execution until you press a key, and then records that key in a cell.

### {GETLABEL}

Displays a prompt in the 1-2-3 Classic window, waits for a response, and enters the response as a label in a cell.

### {GETNUMBER}

Displays a prompt in the 1-2-3 Classic window, waits for a response, and enters the response as a number in a cell.

### {LOOK}

Checks the computer's typeahead buffer and enters the first keystroke in the buffer (if any) in a cell.

### {MENUBRANCH}

Displays a customized menu in the 1-2-3 Classic window, waits for you to select a menu item, and then branches to the macro instructions associated with that menu item.

### {MENUCALL}

Displays a customized menu in the 1-2-3 Classic window, waits for you to select a menu item, and then performs a subroutine call to the macro instructions associated with that menu item.

### {WAIT}

Suspends macro execution and displays the WAIT indicator until a specified time.

## **Link Macro Commands Category**

Link macro commands manipulate link-level (high-level) links between 1-2-3 for Windows and other Windows applications. For information about commands that manipulate conversation-level (low-level) links between 1-2-3 for Windows and other Windows applications, see [Dynamic Data Exchange Macro Commands Category](#).

### {LINK-ASSIGN}

Specifies a destination range for a link.

### {LINK-CREATE}

Creates a DDE link to another Windows application.

### {LINK-DEACTIVATE}

Turns off a specified link.

### {LINK-DELETE}

Deletes a DDE link previously created between 1-2-3 and another Windows application.

### {LINK-REMOVE}

Removes the currently used destination range for a link.

### {LINK-TABLE}

Creates a table of links.

### {LINK-UPDATE}

Refreshes a manual DDE link.

## Macro Key Names

The table below lists the macro key names that correspond to the 1-2-3 function keys, pointer-movement keys, and a few keyboard keys. For explanations of what the 1-2-3 keys do, see [Keyboard Index](#).

<b>1-2-3 Key</b>	<b>Macro Instruction</b>
~ (tilde)	{~}
{ (open brace)	{{}
} (close brace)	{}}
/ (slash) or < (less than)	/, <, or {MENU}
ALT+F6 (ZOOM)	{ZOOM}
ALT+F7 (APP1)	{APP1}
ALT+F8 (APP2)	{APP2}
ALT+F9 (APP3)	{APP3}
BACKSPACE	{BACKSPACE} or {BS}
CTRL+END	{FILE}
CTRL+END CTRL+PG DN	{PREVFILE}, {PF}, or {FILE}{PS}
CTRL+END CTRL+PG UP	{NEXTFILE}, {NF}, or {FILE}{NS}
CTRL+END END	{LASTFILE}, {LF}, or {FILE}{END}
CTRL+END HOME	{FIRSTFILE},{FF}, or {FILE}{HOME}
CTRL+HOME	{FIRSTCELL} or {FC}
CTRL+LEFT	{BACKTAB} or {BIGLEFT}
CTRL+PG UP	{NEXTSHEET} or {NS}
CTRL+PG DN	{PREVSHEET} or {PS}
CTRL+RIGHT	{BIGRIGHT}
DEL	{DELETE} or {DEL}
DOWN	{DOWN} or {D}
END	{END}
END CTRL+HOME	{LASTCELL} or {LC}
ESC	{ESCAPE} OR {ESC}
F1 (HELP)	{HELP}
F2 (EDIT)	{EDIT}
F3 (NAME)	{NAME}
F4 in READY mode	{ANCHOR}
F4 (ABS)	{ABS}
F5 (GOTO)	{GOTO}
F6 (PANE)	{WINDOW}
F7 (QUERY)	{QUERY}

F8 (TABLE)	{TABLE}
F9 (CALC)	{CALC}
F10 (MENU)	{ALT}, {MB}, or {MENUBAR}
HOME	{HOME}
INS	{INSERT} or {INS}
LEFT	{LEFT} or {L}
PG DN	{PGDN}
PG UP	{PGUP}
RIGHT	{RIGHT} or {R}
TAB	{TAB}
UP	{UP} or {U}

**Note** 1-2-3 does not have macro key names for the following keys: ALT+BACKSPACE (UNDO), ALT+F1 (COMPOSE), ALT+F2 (STEP), ALT+F3 (RUN), CAPS LOCK, NUM LOCK, PRINT SCREEN, SCROLL LOCK, and SHIFT. Therefore, you cannot use these keystrokes in a macro.

See also:

[Macro Command Index](#)

[Special Keystroke Instructions](#)

## Screen Control Macro Commands Category

Screen control macro commands control different parts of the screen display, including the mode indicator and the worksheet window, and sound the computer's bell.

### {BEEP}

Sounds the computer's bell.

### {BREAK}

During data entry or selection of a 1-2-3 command, returns 1-2-3 to READY mode.

### {FRAMEOFF}

Turns off display of the worksheet frame.

### {FRAMEON}

Restores display of the worksheet frame, undoing {FRAMEOFF}.

### {GRAPHOFF}

Removes a graph displayed by {GRAPHON} and redisplay the current worksheet.

### {GRAPHON}

Without suspending macro execution, displays a full-screen view of the current graph or makes a named graph the current graph and optionally displays it.

### {INDICATE}

Changes the mode indicator to the text you specify or restores the standard mode indicator.

### {PANELOFF}

Freezes the control panel and status line either in their current states or after clearing them.

### {PANELON}

Unfreezes the control panel and status line, undoing {PANELOFF}.

### {WINDOWSOFF}

Freezes the worksheet window.

### {WINDOWSON}

Unfreezes the worksheet window, undoing {WINDOWSOFF}.

## **Window Control Macro Commands Category**

Activate, move, and size windows.

{APP-ADJUST}

Moves and changes the size of the 1-2-3 window.

{APP-STATE}

Minimizes, maximizes, or restores the 1-2-3 window.

{WINDOW-ADJUST}

Moves and changes the size of the active window.

{WINDOW-SELECT}

Makes a window the active window.

{WINDOW-STATE}

Minimizes, maximizes, or restores the active window.

## Special Keystroke Instructions

### The ENTER Keystroke Instruction

The only single-character keystroke instruction not identical to the key it represents is the ~ (tilde). The tilde is the keystroke instruction for ENTER. For example, in the macro instructions

```
{ALT}kir~
```

the tilde inserts a row to complete the Worksheet Insert command.

### The {CLEARENTRY} Keystroke Instruction

{CLEARENTRY} or {CE} represents an internal 1-2-3 keystroke; it does not have a corresponding key on the keyboard.

{CE} clears the current data from the edit line or a text box.

For example, the macro

```
{ALT}fo{CE}testfile.wk3~
```

brings up the File Open dialog box and clears the default path, and then enters the name of the file to open and opens it.

{CE} works similarly to {ESC}, but with the following differences:

- \* While you sometimes need more than one {ESC} instruction to clear all prompted data from the edit line during a command, one {CE} instruction clears the edit line of all data.
- \* When the edit line contains no data, an {ESC} instruction returns 1-2-3 to READY mode. In the same situation, a {CE} instruction keeps 1-2-3 in EDIT mode.

See also:

[Macro Basics](#)

[Macro Key Names](#)

## **Sample Macros**

These short, general-purpose macros provide concrete examples of concepts presented elsewhere in Help. Although the macros are short and simple, they illustrate programming techniques that you can apply to any macro you create.

### Date Macro (\D)

Enters today's date in the current cell.

### Rounding Macro (\R)

Rounds a column of values to the number of decimal places you specify.

See also:

Macro Basics

Sample DDE Macros

Writing a Macro



## Date Macro (\D)

Macro \D enters today's date in the current cell by converting the result of @TODAY to a value. Use the macro to document the data in a worksheet, insert the date in a memo, or create an entry to use as a print header or footer.

```
\D    {PANELOFF}{WINDOWSOFF}  
      {ALT}rf1~  
      @TODAY{CALC}~  
      {WINDOWSON}{PANELON}
```

### Explanation of Macro \D

The macro instructions in \D perform the following tasks:

**{PANELOFF}{WINDOWSOFF}** freezes the control panel and Worksheet window, preventing flashing on the screen as the macro executes and allowing the macro to work at maximum speed.

**{ALT}rf1~** uses Range Format Date 1 to format the current cell as Date 1 format (DD-MMM-YY).

**@TODAY{CALC}~** types @TODAY, converts @TODAY to its current value, and enters the value in the current cell.

**{WINDOWSON}{PANELON}** unfreezes the control panel and worksheet window before ending the macro.

**Note** When you use this macro, 1-2-3 may display \*\*\* (asterisks) instead of the date if the current cell's column width is too small or its font is too large. To remove the asterisks and display the date, use Worksheet Global Column width or Worksheet Column Set width.

See also:

Macro Basics  
Writing a Macro

## Rounding Macro (\R)

Macro \R rounds a column of values by converting the values to @ROUND formulas, using the number of decimal places you specify.

```
\R          {GETLABEL "Round to what place? ",PLACE}
R_LOOP     {EDIT}{HOME}@ROUND({END},{PLACE})~
           {DOWN}
           {IF @CELLPOINTER("type")="v"}{BRANCH R_LOOP}
           {QUIT}
PLACE      1
           {RETURN}
```

Before you start the macro, move the cell pointer to the first cell in the column of values you are rounding.

### Explanation of Macro \R

The macro instructions in \R perform the following tasks:

**{GETLABEL "Round to what place?",PLACE}** prompts you for the number of decimal places to which you want to round the values, waits for you to type a number and press ENTER, and then enters that number as a label in a cell with the range name PLACE for use later in the macro.

The next part of the macro is the rounding loop. It converts the value in the current cell to an @ROUND formula, for example, 24.759 to @ROUND(24.759,1), as follows:

**{EDIT}{HOME}@ROUND(** presses F2 (EDIT) to begin editing the current cell's contents, moves the cursor to the beginning of the entry, and inserts @ROUND( in front of the entry.

**{END},** moves the cursor to the end of the entry and types a comma.

**{PLACE}** calls subroutine PLACE. Subroutine PLACE contains two macro instructions. The first instruction is the number you specified in the {GETLABEL} command, so the macro types that number as the *decimal-place* argument in the @ROUND formula. **{RETURN}** ends the subroutine, so macro control shifts back to the main macro where **)~** completes and enters the @ROUND formula.

**{DOWN}** moves the cell pointer down one cell.

**{IF @CELLPOINTER("type")="v"}** tests the new cell's contents. If the cell contains a value, the macro continues to the next instruction following {IF} in the same cell; in this case the instruction is **{BRANCH R\_LOOP}**, which branches macro control back to cell R\_LOOP (the second cell in the macro). The macro then repeats the value-to-@ROUND-formula conversion.

If the cell is blank or contains a label, the macro skips the {BRANCH R\_LOOP} instruction and goes immediately to the next cell in the column of macro instructions, where **{QUIT}** ends the macro.

See also:

Macro Basics  
Writing a Macro

## Sample DDE Macros

These macros provide concrete examples of DDE concepts presented elsewhere in Help.

**Note** These examples show how you might write 1-2-3 macros that use DDE. The files used in these macros are not sample files included with either 1-2-3 for Windows or Ami Pro.

### Example 1: AMI\_OPR

```
AMI_OPR      {LAUNCH "D:\AMIPRO\AMIPRO"}
              {DDE-OPEN "AMIPRO","SYSTEM"}
              {DDE-EXECUTE "[FileOpen( ""D:\AMIPRO\DOCS\LOAN.SAM"",1,"" "" )]" } {ERROR}
              {DDE-EXECUTE "[FilePrint(1,1,9999,1537)]" } {ERROR}
              {DDE-CLOSE}
              {DDE-OPEN "AMIPRO","D:\AMIPRO\DOCS\LOAN.SAM"}
              {DDE-REQUEST LOANPAYMENT,"PAYMENT"}
              {DDE-CLOSE}

ERROR        {GOTO}ERROR~{R 2}ERROR OCCURRED~
              {DDE-CLOSE}
```

This macro performs the following tasks:

**{LAUNCH "D:\AMIPRO\AMIPRO"}** starts an Ami Pro session.

**{DDE-OPEN "AMIPRO","SYSTEM"}** initiates a conversation with Ami Pro.

**{DDE-EXECUTE "[FileOpen( ""D:\AMIPRO\DOCS\LOAN.SAM"",1,"" "" )]"}** opens the Ami Pro file D:\AMIPRO\DOCS\LOAN.SAM. **{DDE-EXECUTE "[FilePrint(1,1,9999,1537)]"}** prints the file. If 1-2-3 cannot open or print the file, the subroutine **ERROR** displays the message ERROR OCCURRED and terminates the conversation.

**{DDE-CLOSE}** terminates the system-topic conversation.

**{DDE-OPEN "AMIPRO","D:\AMIPRO\DOCS\LOAN.SAM"}** initiates a conversation with Ami Pro, with the file D:\AMIPRO\DOCS\LOAN.SAM as the topic.

**{DDE-REQUEST LOANPAYMENT,"PAYMENT"}** transfers data from a bookmark named PAYMENT in LOAN.SAM to the range named LOANPAYMENT in the current 1-2-3 file.

**{DDE-CLOSE}** terminates the conversation.

### Example 2: AMI\_OPA

```
AMI_OPA      {LAUNCH "D:\AMIPRO\AMIPRO"}
              {DDE-OPEN "AMIPRO","SYSTEM"}
              {DDE-EXECUTE "[FileOpen( ""D:\AMIPRO\DOCS\LOAN.SAM"",1,"" "" )]" } {ERROR}
              {DDE-EXECUTE "[FilePrint(1,1,9999,1537)]" } {ERROR}
              {DDE-CLOSE}
              {DDE-OPEN "AMIPRO","D:\AMIPRO\DOCS\LOAN.SAM"}
              {REQUEST}
              {DDE-ADVISE REQUEST,"PAYMENT"}
              {IF @ISERR(LOANPAYMENT)} {BREAKLINK}

REQUEST      {DDE-REQUEST LOANPAYMENT,"PAYMENT"}

ERROR        {GOTO}ERROR~{R 2}ERROR OCCURRED~
              {DDE-CLOSE}

BREAKLINK    {DDE-UNADVISE "PAYMENT"}
              {DDE-CLOSE}
```

This macro performs the following tasks:

**{LAUNCH "D:\AMIPRO\AMIPRO"}** starts an Ami Pro session.

**{DDE-OPEN "AMIPRO","SYSTEM"}** initiates a conversation with Ami Pro.

**{DDE-EXECUTE "[FileOpen( ""D:\AMIPRO\DOCS\LOAN.SAM"",1,"" "" )]"}** opens the Ami Pro file D:\AMIPRO\DOCS\LOAN.SAM. **{DDE-EXECUTE "[FilePrint(1,1,9999,1537)]"}** prints the file. If 1-2-3

cannot open or print the file, the subroutine **ERROR** displays the message ERROR OCCURRED and terminates the conversation.

**{DDE-CLOSE}** terminates the system-topic conversation.

**{DDE-OPEN "AMIPRO","D:\AMIPRO\DOCS\LOAN.SAM"}** initiates a conversation with Ami Pro, with the file D:\AMIPRO\DOCS\LOAN.SAM as the topic.

The subroutine **REQUEST** transfers data from a bookmark named PAYMENT in LOAN.SAM to the range named LOANPAYMENT in the current 1-2-3 file.

**{DDE-ADVISE REQUEST,"PAYMENT"}** branches to the subroutine **REQUEST** each time the data in PAYMENT changes.

**{IF @ISERR(LOANPAYMENT)}** tests the contents of LOANPAYMENT. If the cell contains the value ERR, the macro continues to the next instruction following {IF} in the same cell; in this case the instruction is **{BREAKLINK}**, which ends the {DDE-ADVISE} command and terminates the conversation.

### Example 3: AMI\_LC

```
AMI_LC      {ALT}eo{TAB 1}c
            {TAB 4}LOANPAYMENT{TAB 1}
            AMIPRO{TAB 2}
            D:\AMIPRO\DOCS\LOAN.SAM{TAB 2}
            PAYMENT~
            {ESC}
```

This macro performs the following tasks:

**{ALT}eo{TAB 1}c** opens the Edit Link Options Create dialog box.

**{TAB 4}LOANPAYMENT{TAB 1}** enters LOANPAYMENT in the Range text box and moves to the Application text box. **AMIPRO{TAB 2}** enters AMIPRO in the Application text box and moves to the Topic name text box. **D:\AMIPRO\DOCS\LOAN.SAM{TAB 2}** enters file name LOAN.SAM, including the path, in the Topic name text box and moves to the Item name text box. **PAYMENT~** enters PAYMENT in the Item name text box and selects OK.

**{ESC}** closes the Edit Link Options dialog box.

**Note** This link remains inactive until you open Ami Pro and use Edit Link Options Update.

### Example 4: AMI\_H\_LINK

```
AMI_H_LINK  {LINK-CREATE "AMILINK1","AMIPRO","D:\AMIPRO\DOCS\LOAN.SAM","PAYMENT"}
            {LINK-ASSIGN "AMILINK1",LOANPAYMENT}
            {IF @ISERR(LOANPAYMENT)}{STOP}
            {UPDATE}

UPDATE {LINK-UPDATE "AMILINK1"}

STOP        {LINK-DEACTIVATE "AMILINK1"}
            {QUIT}
```

This macro performs the following tasks:

**{LINK-CREATE "AMILINK1","AMIPRO","D:\AMIPRO\DOCS\LOAN.SAM","PAYMENT"}** creates an automatically updated link between the current worksheet file and Ami Pro. The name of the link is AMILINK1. The topic is the file name D:\AMIPRO\DOCS\LOAN.SAM and the item is a bookmark named PAYMENT from that file. Since no update mode is specified, 1-2-3 uses automatic.

**{LINK-ASSIGN "AMILINK1",LOANPAYMENT}** specifies the range named LOANPAYMENT as the destination range. Whenever the Ami Pro data specified by PAYMENT changes, 1-2-3 updates the contents of the range LOANPAYMENT with the new data.

**{IF @ISERR(LOANPAYMENT)}** tests the contents of LOANPAYMENT. If the cell contains the value

ERR, the macro continues to the next instruction following {IF} in the same cell; in this case the instruction is **{STOP}**, which deactivates the link AMILINK1 and ends the macro.

If LOANPAYMENT does not contain the value ERR, the macro skips the {STOP} instruction and goes immediately to the next cell in the column of macro instructions, where **{UPDATE}** updates the link AMILINK1.

### **Example 5: AMI\_C\_LINK**

```
AMI_C_LINK      {LINK-CREATE "AMILINK2","AMIPRO","D:\AMIPRO\DOCS\LOAN.SAM","PAYMENT","TEXT","MANUAL"}  
                {LINK-ASSIGN "AMILINK2",LOANPAYMENT}
```

This macro performs the following tasks:

**{LINK-CREATE "AMILINK2","AMIPRO","D:\AMIPRO\DOCS\LOAN.SAM","PAYMENT","TEXT","MANUAL"}** creates a link between the current worksheet file and Ami Pro. The name of the link is AMILINK2. The topic is the file name D:\AMIPRO\DOCS\LOAN.SAM and the item is a bookmark named PAYMENT from that file. Since manual is the specified update mode, you must use {LINK-UPDATE} to update this link.

**{LINK-ASSIGN "AMILINK2",LOANPAYMENT}** specifies the range named LOANPAYMENT as the destination range.

See also:

[Dynamic Data Exchange Macro Commands Category](#)

[Edit Link Options Create](#)

[Link Macro Commands Category](#)

[Macro Basics](#)

[Writing a Macro](#)

**{ADDIN} is reserved for internal use only.**

**{BORDERSOFF} is reserved for internal use only.**

**{BORDERSON} is reserved for internal use only.**



**{GRAPH} is reserved for internal use only.**

**{IFKEY} is reserved for internal use only.**

**{APP4} is reserved for internal use only.**

## **{subroutine}**

{subroutine [arg1],[arg2],...,[argn]} performs a subroutine call.

### **Arguments**

*subroutine* is the range name of the subroutine that you want the macro to call. The range name can refer to the first cell of the subroutine or to the entire subroutine. If you specify a range for *subroutine*, 1-2-3 begins executing in the upper left corner of the range.

Although you can use a range address for *subroutine*, Lotus recommends that you use a range name. If you move a *subroutine* (for example, if you insert some rows above the range), a {subroutine} command that refers to *subroutine* by name will continue to work correctly, but one that refers to *subroutine* by address will no longer work correctly.

*arg1, arg2, ..., argn* are optional arguments. You can include up to 31 optional arguments. Arguments can be values or text, including formulas and the names or addresses of cells. {subroutine} passes the arguments to the subroutine, which must begin with a {DEFINE} command if arguments are specified. {DEFINE} evaluates and stores the optional arguments in worksheet cells.

### **Uses**

Use subroutines to divide long macros into smaller, more specific tasks. If these tasks are shared by several macros, using a subroutine means you have to write the shared task only once. You can call it from all macros that use it. 1-2-3 can transfer macro execution from one subroutine to another to perform many different tasks during a macro.

### **Notes**

To call a subroutine, use a {subroutine} command in the calling macro where you want 1-2-3 to begin executing the subroutine. Specify the address or name of the subroutine as {subroutine}. 1-2-3 temporarily passes control from the calling macro to the subroutine when it encounters a {subroutine} command. A subroutine ends when 1-2-3 executes a {RETURN} command or encounters a blank cell. A {QUIT} command in the subroutine ends the macro.

One subroutine can call another subroutine. This is known as nesting. Using nested subroutines lets you create large macro applications that are clearly structured, accessible, and easy to revise. The number of subroutines you can nest is limited only by the amount of available memory.

When 1-2-3 encounters a {subroutine} command in a subroutine, it immediately starts executing the new subroutine. When the second subroutine ends, 1-2-3 returns to the subroutine that called it and finishes executing that subroutine, and then returns control to the original calling macro. If there is more than one nested subroutine, 1-2-3 keeps returning to the previous subroutine until it finally returns to the original calling macro.

If you don't want 1-2-3 to return from a particular subroutine, use {RESTART} in that subroutine. {RESTART} cancels the return sequence that 1-2-3 tracks as it executes nested subroutines. When 1-2-3 finishes executing the subroutine that contains {RESTART}, macro execution ends.

### **Examples**

The FORMAT1 macro calls the subroutine CURRSUB four times. Each time, it formats a range (Q\_1, Q\_2, Q\_3, or Q\_4) that it selects with {GOTO}. After each subroutine call, 1-2-3 returns to the next {GOTO} command in FORMAT1.

```
FORMAT1      {GOTO}Q_1~  
              {CURRSUB}
```

```

        {GOTO}Q_2~
        {CURRSUB}
        {GOTO}Q_3~
        {CURRSUB}
        {GOTO}Q_4~
        {CURRSUB}
CURRSUB  {ALT}rfc{TAB}2~
        {RETURN}

```

The `{subroutine}` command in macro \B passes three arguments to SUBR1. The `{DEFINE}` command at the beginning of SUBR1 evaluates the arguments before storing them. Thus, it stores the value of the first argument, today's date, as a number in cell ONE; the second argument, the string Closing Price:, as a label in cell TWO; and the value of the third argument, the contents of the cell named CLOSE, as a number in cell THREE.

The macro then formats the current cell as day-month and enters the number stored in cell ONE; moves right one cell and enters the label stored in cell TWO; moves right one cell again, formats the cell as Currency with two decimal places, and enters the number stored in cell THREE.

```

\B          {SUBR1 @TODAY,"Closing Price:",CLOSE}
...
SUBR1 {DEFINE ONE:V,TWO,THREE:V}
        {ALT}rf2~{LET @CELLPOINTER("coord"),ONE}{R}
        {LET @CELLPOINTER("coord"),TWO}{R}
        {ALT}rfc{TAB}2~{LET @CELLPOINTER("coord"),THREE}

```

The result is a row that reads (depending on the date and closing price)

17-Dec Closing Price \$9.32.

### Similar Commands

`{BRANCH}` transfers macro execution one way only; 1-2-3 does not return to the calling macro unless the subroutine contains a `{BRANCH}` command that branches to the calling macro. `{DISPATCH}` transfers macro execution indirectly, branching to the cell specified in *location* instead of branching directly to *location*.

See also:

[Macro Basics](#)

## **{?}**

{?} suspends macro execution until the user presses ENTER, letting the user type any number of keystrokes.

### **Uses**

Use {?} to stop the macro temporarily and return control of the work session to the user. The user can then move the cell pointer or menu pointer, complete part of a command, or enter data for the macro to process. The macro continues when the user presses ENTER.

### **Notes**

When the user presses ENTER, 1-2-3 ends the {?} command and continues the macro; it does not enter data or complete a menu command unless the next character in the macro is a ~ (tilde) or a cursor movement key name (for example, {DOWN}).

If the user clicks OK with the mouse to enter data, the {?} command remains in effect, allowing further entry before proceeding with the macro.

### **Examples**

The following example moves the cell pointer to the cell named ERR\_MSG, which contains an error message, and pauses to let the user read the message. When the user presses ENTER, the macro continues.

```
{GOTO}ERR_MSG~  
{?}
```

### **Similar Commands**

{GET} suspends macro execution and retrieves a keystroke. {GETLABEL} and {GETNUMBER} suspend macro execution and retrieve particular types of information.

See also:

Macro Basics

## **{APP-ADJUST}**

{APP-ADJUST *x,y,width,height*} moves the 1-2-3 window so that the upper left corner of the window is *x* pixels from the left and *y* pixels from the top corner of the screen, and sizes the 1-2-3 window to be *height* pixels high and *width* pixels wide.

### **Arguments**

*x* specifies the horizontal position, in pixels, measured from the left side of the screen to the left side of the 1-2-3 window. *x* is a value, a formula that results in a value or the address or name of a cell that contains a value or a formula that results in a value.

*y* specifies the vertical position, in pixels, measured from the top of the screen to the top of the 1-2-3 window. *y* is a value, a formula that results in a value or the address or name of a cell that contains a value or a formula that results in a value.

*width* specifies the window width, in pixels, from the left border to the right border. *width* is a value, a formula that results in a value or the address or name of a cell that contains a value or a formula that results in a value.

*height* specifies the window height, in pixels, from the top border to the bottom border. *height* is a value, a formula that results in a value or the address or name of a cell that contains a value or a formula that results in a value.

### **Uses**

Use {APP-ADJUST} to position the 1-2-3 window on screen.

You can also use {APP-ADJUST} to reduce and enlarge the 1-2-3 window. Reducing the window lets the user see more of the other open application windows, and enlarging the window lets the user see more of the files displayed in the 1-2-3 window.

### **Notes**

If you specify too large a value for *x* or *y*, the window moves partially or completely out of view. Use the Program Manager Window Tile command to bring the window back into view.

### **Examples**

The following macro places the 1-2-3 window 50 pixels from the left and 30 pixels from the top of the screen, and makes the window 215 by 215 pixels in size:

```
{APP-ADJUST 50,30,215,215}
```

### **Similar Commands**

{WINDOW-ADJUST} changes the size and position of the Graph window and Worksheet windows.

See also:

Macro Basics

## **{APPENDBELOW}**

{APPENDBELOW *target-location,source-location*} copies the contents of *source-location* to the rows immediately below *target-location*.

### **Arguments**

*target-location* and *source-location* are ranges of any size. If you use named ranges, the range name definition of *target-location* expands to include the rows that contain the appended data.

### **Uses**

Use {APPENDBELOW} with {FORM} to transfer records from an entry form to a database table.

### **Notes**

In the following situations, {APPENDBELOW} fails and the macro stops due to an error:

- \* When the number of rows in *source-location* exceeds the number of rows in the worksheet below *target-location*.
- \* When appending *source-location* to *target-location* would write over data.
- \* When rows below *target-location* are protected.

When *source-location* contains formulas, {APPENDBELOW} copies the current values of the formulas to *target-location*, not the formulas themselves.

### **Examples**

The following macro lets you enter new customer information in an unprotected range named NEWCUST in an entry form named CUSTFORM. It then appends the information in NEWCUST to the customer database table named CUSTDB and expands CUSTDB to include the new record.

```
{FORM CUSTFORM}  
{APPENDBELOW CUSTDB,NEWCUST}
```

### **Similar Commands**

{APPENDRIGHT} copies the contents of *source-location* to the columns immediately to the right of *target-location*.

See also:

Macro Basics



## **{APPENDRIGHT}**

{APPENDRIGHT *target-location,source-location*} copies the contents of *source-location* to the columns immediately to the right of *target-location*.

### **Arguments**

*target-location* and *source-location* are ranges of any size. If you use named ranges, the range name definition of *target-location* expands to include the columns that contain the appended data.

### **Uses**

Use {APPENDRIGHT} with {FORM} to transfer records from an entry form to a database table.

### **Notes**

In the following situations, {APPENDRIGHT} fails and the macro stops due to an error:

- \* When the number of columns in *source-location* exceeds the number of columns in the worksheet to the right of *target-location*.
- \* When appending *source-location* to *target-location* would write over data.
- \* When columns to the right of *target-location* are protected.

When *source-location* contains formulas, {APPENDRIGHT} copies the current values of the formulas to *target-location*, not the formulas themselves.

### **Examples**

In a sales record-keeping system, the macro below copies July sales totals (JULTOT) to the right of the monthly sales totals (MONTOT), and expands MONTOT to include the appended totals.

```
{APPENDRIGHT MONTOT,JULTOT}
```

### **Similar Commands**

{APPENDBELOW} copies the contents of *source-location* to the rows immediately below *target-location*.

See also:

Macro Basics

## **{APP-STATE}**

{APP-STATE *state*} minimizes, maximizes, or restores the 1-2-3 window.

### **Arguments**

*state* is one of the words from the table below, as text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

<b>Argument</b>	<b>Action</b>
Maximize	Maximizes the window.
Minimize	Minimizes the window.
Restore	Restores a maximized window to its previous state.

### **Notes**

{APP-STATE} is equivalent to clicking the Maximize, Minimize, or Restore buttons.

### **Examples**

The following excerpt from a macro minimizes the 1-2-3 window.

```
{APP-STATE "minimize"}
```

See also:

Macro Basics

## **{BEEP}**

{BEEP [*tone-number*]} sounds one of four tones.

### **Arguments**

*tone-number* is an optional argument that tells 1-2-3 which tone to sound. *tone-number* must be a value or the address or name of a cell that contains a value, from 1 through 4. If you use a number other than 1, 2, 3, or 4 for *tone-number*, 1-2-3 divides the number by four and uses the remainder. (If the remainder is 0, 1-2-3 sounds tone 4.) For example, {BEEP 7} is equivalent to {BEEP 3}. {BEEP} without an argument is equivalent to {BEEP 1}.

### **Uses**

Use {BEEP} to get a user's attention: to signal the end of a macro or the end of a waiting period, to alert a user to an on-screen message, or to signal the beginning of an interactive command.

### **Notes**

{BEEP} does not produce a tone when Beep on error is not selected in Tools User Setup or if Sound is turned off with the Windows Control Panel.

### **Examples**

The following macro sounds two tones to draw attention to the subsequent interactive command:

```
{BEEP}{BEEP 4}
{?}
```

The following macro sounds a tone to draw attention to the information displayed in cell ERR\_MSG. The tone of the bell depends on the number in the cell named ERR\_TONE.

```
{GOTO}ERR_MSG~
{BEEP ERR_TONE}
```

See also:

[Macro Basics](#)

## **{BLANK}**

{BLANK *location*} erases the contents of *location*. {BLANK} does not change the cell format of the cells in *location* and does not force recalculation.

### **Arguments**

*location* is the address or name of a cell or range.

### **Examples**

The following macro erases the contents of the range named DATARANGE.

```
{BLANK DATARANGE}
```

The following macro erases the entry in the current cell and then sets the cell format to the global format.

```
{BLANK @CELLPOINTER("coord")}  
{ALT}rf{ALT "r"}
```

See also:

[Macro Basics](#)

## **{BRANCH}**

{BRANCH *location*} transfers macro control from the current macro instruction to *location* and does not return to the calling macro.

### **Arguments**

*location* is the address or name of a cell or range that contains macro instructions. It is often the name of another macro or subroutine. If you specify a range, 1-2-3 branches to the first cell in the range.

### **Uses**

Use {BRANCH} with {IF} to implement if-then-else processing or to transfer control to another macro.

Use {BRANCH} to create a loop by branching to a cell above the {BRANCH} command in the same macro. This structure is useful for repetitive data entry tasks.

### **Notes**

{BRANCH} is not the same as {GOTO}. {GOTO} moves the cell pointer to another cell. {BRANCH} transfers macro execution to the commands that begin in *location*.

### **Examples**

The following macro transfers control to either the macro named BIG or the macro named SMALL, depending on the value in the cell named SIZE.

```
{IF SIZE>100}{BRANCH BIG}  
{BRANCH SMALL}
```

The following macro creates a loop for data entry by entering the data you supply during the {?} command in subsequent cells down a column until you press CTRL+BREAK to end the macro.

```
\A    {?} {DOWN}  
      {BRANCH \A}
```

### **Similar Commands**

{subroutine} executes a specified subroutine and then returns control to the calling macro. {DISPATCH} transfers macro execution indirectly, branching to the cell specified in *location* instead of branching directly to *location*.

See also:

Macro Basics

## **{BREAK}**

{BREAK} clears the edit line when data is being entered or edited, or leaves the current dialog box during selection of a 1-2-3 command, and returns 1-2-3 to READY mode. In any other situation, {BREAK} has no effect.

### **Uses**

Use {BREAK} at the beginning of a macro to ensure that the macro executes, even if a user runs it while entering data or selecting a 1-2-3 command.

### **Examples**

The following macro leaves the current dialog box (if any) and displays a range named HELP\_SCREEN.

```
{BREAK}{GOTO}HELP_SCREEN~
```

See also:

[Macro Basics](#)

## **{BREAKOFF} and {BREAKON}**

{BREAKOFF} disables CTRL+BREAK while a macro is running.

{BREAKON} restores the use of CTRL+BREAK, undoing a {BREAKOFF} command.

### **Uses**

Normally, you can stop a macro while it is running by pressing CTRL+BREAK. While {BREAKOFF} is in effect, however, you cannot use CTRL+BREAK to stop the macro. Use {BREAKOFF} to keep users from stopping a macro to alter data or look at restricted data in a protected application.

### **Notes**

{BREAKOFF} stays in effect until 1-2-3 executes a {BREAKON} command or until the macro ends.

**Caution** Add {BREAKOFF} to a macro only after you have thoroughly tested the macro. If {BREAKOFF} is in effect and the macro goes into an infinite loop, the only way to stop the macro is to turn off and restart the computer. All data entered or changed since the last time the worksheet file was saved is lost.

### **Examples**

The following macro disables CTRL+BREAK before starting the PAYROLL subroutine, preventing the user from gaining access to proprietary information by stopping the macro when the payroll file is open. When the PAYROLL subroutine ends, {BREAKON} restores CTRL+BREAK for the rest of the macro.

```
{BREAKOFF}  
{PAYROLL}  
{BREAKON}
```

See also:

[Macro Basics](#)

## **{CLOSE}**

{CLOSE} closes the text file opened with an {OPEN} command and saves any changes made to the file.

### **Notes**

Only one text file can be open at one time. If a text file is already open when 1-2-3 executes an {OPEN} command, 1-2-3 automatically closes the currently open file before opening the new one -- you don't need a {CLOSE} command before the {OPEN} command. However, 1-2-3 does not automatically close a text file that is open when a macro ends. To close the last-opened text file in a macro, you must use a {CLOSE} command.

After it successfully executes a {CLOSE} command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after {CLOSE} in the same cell. If {CLOSE} returns an error, the macro continues in the same cell as {CLOSE}.

### **Examples**

The following macro opens a text file named STOCKS with append access, adds a line to the file to report the day's volume for a stock, and closes the file before ending the macro. Without the {CLOSE} command, STOCKS would remain open at the end of the macro, and you could continue processing STOCKS in a subsequent macro without using an {OPEN} command.

```
{OPEN STOCKS,A}  
{WRITELN VOLUME}  
{CLOSE}  
{QUIT}
```

### **Similar Commands**

{OPEN} opens a text file.

See also:

Macro Basics



## **{COMMIT}**

{COMMIT [*driver-name*],[*database-name*]} commits (finalizes) pending external database transactions.

### **Arguments**

*driver-name* is an optional argument that specifies the name of the driver. *driver-name* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

*database-name* is an optional argument that specifies the name of the external database. *database-name* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

You must use both arguments or no arguments. {COMMIT} with arguments commits only the transaction pending for the driver and database you specify. {COMMIT} with no arguments commits all pending transactions.

### **Notes**

{COMMIT} works with the SQL Server driver only.

To learn more about using macros for transaction control, see [Chapter 5](#) of *DataLens Drivers for 1-2-3*.

### **Examples**

The following excerpt from a macro commits the transaction pending for the driver SQL\_SERVER and the database named PAYROLL.

```
{COMMIT "SQL_SERVER","PAYROLL"}
```

### **Similar Commands**

{ROLLBACK} cancels pending external database transactions.

See also:

[Macro Basics](#)

## {CONTENTS}

{CONTENTS *target-location,source-location,[width],[cell-format]*} copies the contents of *source-location* to *target-location* as a label.

### Arguments

*target-location* and *source-location* are the addresses or names of cells or ranges. If you specify ranges, 1-2-3 uses the first cells of the ranges.

*width* is an optional argument that specifies the width of the label 1-2-3 creates. *width* is a value, or the address or name of a cell that contains a value, from 1 through 240.

*cell-format* is an optional argument that specifies the format of the label 1-2-3 creates. *cell-format* must be a code number from the list below, or the address or name of a cell that contains a code number.

Code number	Format
0 to 15	Fixed, 0 to 15 decimal places
16 to 31	Scientific, 0 to 15 decimal places
32 to 47	Currency, 0 to 15 decimal places
48 to 63	Percent, 0 to 15 decimal places
64 to 79	Comma, 0 to 15 decimal places
112	+/-
113	General
114	Day-month-year (31-Dec-90)
115	Day-month (31-Dec)
116	Month-year (Dec-90)
117	Text
118	Hidden
119	Hour-minutes seconds AM/PM (11:59:59 AM)
120	Hour-minutes AM/PM (11:59 AM)
121	Long Intl Date
122	Short Intl Date
123	Long Intl Time
124	Short Intl Time
127	Worksheet's global cell format (specified with <u>Worksheet Global Settings Format</u> )

### Uses

Use {CONTENTS} to store a value as a label so you can use it in a text formula. Use {CONTENTS} with the Text format number 117 to retrieve a formula rather than its result.

### Notes

If you do not include *width* and *cell-format*, the label 1-2-3 creates in *target-location* has the same width and format as *source-location*.

To include a *cell-format* argument without a *width* argument, use this syntax:

```
{CONTENTS target-location,source-location,,cell-format}
```

The extra argument separator between *source-location* and *cell-format* tells 1-2-3 that you omitted *width*.

Although {CONTENTS} changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a {CONTENTS} command when worksheet recalculation is set to Automatic. To force recalculation after a {CONTENTS} command, follow the command with ~ (tilde) or {CALC}.

### Examples

In the examples below, the cell named INCOME contains the formula +GROSSEXP, which results in \$167.24. INCOME is formatted as Currency with two decimal places, and its column width is 9.

```
{CONTENTS REPORT,INCOME}  
+"Today we earned"&REPORT~
```

Enters the label \$167.24 (with a leading and trailing space) in cell REPORT, and then creates the sentence, "Today we earned \$167.24" and enters it in the current cell.

```
{CONTENTS REPORT,INCOME,11,117}  
+"The formula we use to calculate earnings is: "&REPORT&"~"
```

Enters the label +GROSSEXP (with a trailing space) in REPORT (Code 117 is Text format), and then creates the sentence, "The formula we use to calculate earnings is: +GROSSEXP " and enters it in the current cell.

```
{CONTENTS REPORT,INCOME,3,}
```

Places the three-character label \*\*\* in REPORT, because the specified width is not wide enough to display \$167.24.

```
{CONTENTS REPORT,INCOME,,113}
```

Places the 167.24 (with two leading spaces and one trailing space) in REPORT. Code 113 formats \$167.24 in General format.

See also:

Macro Basics

## **{DDE-ADVISE}**

{DDE-ADVISE *branch-location,item-name,[format]*} specifies the macro that is executed when data changes in the server application.

### **Arguments**

*branch-location* is the address or name of a cell or range that contains macro instructions. It is often the name of another macro or subroutine. If you specify a range, 1-2-3 branches to the first cell in the range.

*item-name* is the name of the topic item to link to. This is the item in the application file whose data you want transferred through the link. *item-name* is text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

*format* is an optional argument that specifies one of the Clipboard formats (for example, Text, Metafilepict, or Bitmap). *format* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If you do not include the *format* argument, 1-2-3 uses the Clipboard Text format.

See your Windows 3.0 documentation for information about Clipboard formats.

### **Notes**

1-2-3 executes the macro at *branch-location* each time the item specified by *item-name* is updated by the server application, and then returns to the main macro.

After it successfully executes a {DDE-DDE-ADVISE} command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after {DDE-ADVISE} in the same cell. If the server application could not respond, the macro continues in the same cell as {DDE-ADVISE}.

### **Examples**

See {DDE-ADVISE} in Example 2 of [Sample DDE Macros](#).

See also:

[Linking Files](#)  
[Macro Basics](#)

## **{DDE-CLOSE}**

{DDE-CLOSE} terminates the current conversation with a Windows application.

### **Notes**

If no conversation is open, or if multiple conversations are open but none is the current conversation, {DDE-CLOSE} does nothing.

### **Similar Commands**

{DDE-OPEN} initiates a conversation with a Windows application, making that the current conversation. {DDE-USE} makes an open conversation the current conversation.

### **Examples**

See {DDE-CLOSE} in Example 1 of Sample DDE Macros.

See also:

[Linking Files](#)  
[Macro Basics](#)

## **{DDE-EXECUTE}**

{DDE-EXECUTE *execute-string*} sends a command to an application.

### **Arguments**

*execute-string* represents any command from the application, including macros. *execute-string* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

### **Notes**

{DDE-EXECUTE} returns an error if no conversation is open.

After it successfully executes a {DDE-EXECUTE} command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after {DDE-EXECUTE} in the same cell. If the server application times out, is busy, or cannot complete the command, the macro continues in the same cell as {DDE-EXECUTE}.

### **Examples**

See {DDE-EXECUTE} in Example 1 of [Sample DDE Macros](#).

See also:

[Linking Files](#)

[Macro Basics](#)

## **{DDE-OPEN}**

{DDE-OPEN *app-name,topic-name,[location]*} initiates a conversation with a Windows application, making that the current conversation; optionally, enters in *location* the unique decimal identification number Windows assigns to the conversation.

### **Arguments**

*app-name* is the name of an open Windows application that supports DDE. *app-name* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

*topic-name* is the name of the application file to link to. *topic-name* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

*location* is an optional argument that specifies the address or name of a cell or range. If you specify a range, 1-2-3 enters the identification number in the first cell of the range.

### **Notes**

You must start an application before using {DDE-OPEN}. You can start an application either with the Windows Program Manager or with the [{LAUNCH}](#) command

You can use more than one {DDE-OPEN} command in a macro; to make a particular conversation current, use [{DDE-USE}](#).

Although *location* is an optional argument, you should include it if you plan to use more than one {DDE-OPEN} command in a macro.

After it successfully executes a {DDE-OPEN} command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after {DDE-OPEN} in the same cell. If {DDE-OPEN} returns an error (for example, if 1-2-3 could not establish the conversation), the macro continues in the same cell as {DDE-OPEN}.

### **Examples**

See {DDE-OPEN} in Example 1 of [Sample DDE Macros](#).

### **Similar Commands**

[{DDE-CLOSE}](#) closes the current conversation.

See also:

[Linking Files](#)  
[Macro Basics](#)

## **{DDE-POKE}**

{DDE-POKE *range,item-name,[format]*} sends a range of data to a server application during the current conversation.

### **Arguments**

*range* is the the address or name of the range that contains the data you want to send to the server application.

*item-name* is the name of the topic item to link to. This is the item in the application file whose data you want transferred through the link. *item-name* is text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

*format* is an optional argument that specifies one of the Clipboard formats (for example, Text, Metafilepict, or Bitmap). *format* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If you do not include the *format* argument, 1-2-3 uses the Clipboard Text format.

See your Windows 3.0 documentation for information about Clipboard formats.

### **Notes**

Many Windows applications that support DDE as servers do not support {DDE-POKE} functionality. See your application's documentation to find out what level of DDE server support the application provides.

### **Examples**

The following line from a macro transfers the data from the range named LOANPAYMENT to the item named PAYMENT in Text format.

```
{DDE-POKE LOANPAYMENT,"PAYMENT","Text"}
```

See also:

[Linking Files](#)  
[Macro Basics](#)



## **{DDE-REQUEST}**

{DDE-REQUEST *range,item-name,[format]*} transfers data from a Windows application to 1-2-3.

### **Arguments**

*range* is a range address or range name. 1-2-3 enters the requested data in *range*.

*item-name* is the name of the topic item to link to. This is the item in the application file whose data you want transferred through the link. *item-name* is text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

*format* is an optional argument that specifies one of the Clipboard formats (for example, Text, Metafilepict, or Bitmap). *format* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If you do not include the *format* argument, 1-2-3 uses the Clipboard Text format.

See your Windows 3.0 documentation for information about Clipboard formats.

### **Notes**

{DDE-REQUEST} returns an error if no conversation is open.

After it successfully executes a {DDE-REQUEST} command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after {DDE-REQUEST} in the same cell. If *item-name* or *format* is not supported by the server application, the macro continues in the same cell as {DDE-REQUEST}.

{DDE-REQUEST} does not clear data, cell formats, or formatting from *range* before entering data. Use {EDIT-CLEAR} to clear data, cell formats, and formatting from *range* before using {DDE-REQUEST}.

### **Examples**

See {DDE-REQUEST} in Example 1 of Sample DDE Macros.

See also:

Linking Files  
Macro Basics

## **{DDE-UNADVISE}**

{DDE-UNADVISE *item-name*,[*format*]} ends a [{DDE-ADVISE}](#) command.

### **Arguments**

*item-name* is the name of the topic item to link to. This is the item in the application worksheet or file whose data you want transferred through the link. *item-name* is text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

*format* is an optional argument that specifies one of the Clipboard formats (for example, Text, Metafilepict, or Bitmap). *format* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If you do not include the *format* argument, 1-2-3 uses the Clipboard Text format.

See your Windows 3.0 documentation for information about Clipboard formats.

### **Notes**

If the original {DDE-ADVISE} command used a *format* argument, {DDE-UNADVISE} must use the same *format* argument.

### **Examples**

See {DDE-UNADVISE} in Example 2 of [Sample DDE Macros](#).

See also:

[Linking Files](#)  
[Macro Basics](#)

## **{DDE-USE}**

{DDE-USE *conversation-number*} makes the conversation specified by *conversation-number* the current conversation.

### **Arguments**

*conversation-number* is the unique identification number Windows assigns to the conversation. If you use the optional *location* argument in {DDE-OPEN}, 1-2-3 enters the identification number in the worksheet.

### **Uses**

You can open more than one conversation in a macro; to make a particular conversation current, use {DDE-USE}.

### **Notes**

{DDE-USE} returns an error if *conversation-number* is invalid or refers to a terminated conversation.

### **Examples**

The following excerpt from a macro opens two DDE conversations with Ami Pro, makes the first conversation current, and transfers data from a bookmark named PAYMENT in LOAN.SAM to the range named LOANPAYMENT in the current 1-2-3 file.

```
{DDE-OPEN "AMIPRO","D:\DOCS\LOAN.SAM",NUM_1}  
{DDE-OPEN "AMIPRO","C:\DOCS\INTEREST.SAM",NUM_2}  
{DDE-USE NUM_1}  
{DDE-REQUEST LOANPAYMENT,"PAYMENT"}
```

See also:

[Linking Files](#)  
[Macro Basics](#)

## {DEFINE}

{DEFINE *location1,location2,...,locationn*} specifies where to store arguments passed to a subroutine in a {subroutine} command. You must include a {DEFINE} command in any subroutine to which you pass arguments, and the {DEFINE} command must come before the point in the subroutine where the arguments are used.

### Arguments

*location* is the address or name of a cell or range. If *location* is a range, 1-2-3 uses the first cell of the range as the storage location.

Specify a *location* argument for each argument in the {subroutine} command. If you do not, the macro terminates with an error when 1-2-3 reaches the {DEFINE} command.

### Notes

You can add one or two suffixes -- :string or :value (or an abbreviation of string or value, as long as the first letter is s or v, respectively) -- to each *location* argument in a {DEFINE} command. The suffix tells 1-2-3 how to process the corresponding argument in the {subroutine} command. Omitting the suffix is equivalent to specifying :string.

The :string suffix tells 1-2-3 to store the argument as a left-aligned label, even if the argument looks like a number, formula, or cell or range address.

The :value suffix tells 1-2-3 to evaluate the argument before storing it. If the argument is a number, 1-2-3 stores it as a number. If the argument is a formula, 1-2-3 evaluates the formula, and stores the result either as a left-aligned label (for a text formula) or a number (for a numeric formula). If the argument is a cell address or range name, 1-2-3 evaluates the contents of the referenced cell and stores the result as a label or number.

Although {DEFINE} changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a {DEFINE} command when worksheet recalculation is set to Automatic. To force recalculation after a {DEFINE} command, follow the command with ~ (tilde) or {CALC}.

When you use {DEFINE}, it should be the first command in the subroutine.

### Examples

The {subroutine} command in macro \A passes three arguments to SUBR1. The {DEFINE} command at the beginning of SUBR1 stores the label @TODAY in cell ONE, the label "Closing Price:" in cell TWO, and the label CLOSE in cell THREE. The {LET} commands then enters the labels in three consecutive cells in a row.

```
\A          {SUBR1 @TODAY,"Closing Price:",CLOSE}
...
SUBR1 {DEFINE ONE,TWO,THREE}
        {LET @CELLPOINTER("coord"),ONE}{R}
        {LET @CELLPOINTER("coord"),TWO}{R}
        {LET @CELLPOINTER("coord"),THREE}
```

The result is a row that reads:

@TODAY Closing Price: CLOSE

The {subroutine} command in macro \B passes three arguments to SUBR1. The {DEFINE} command at the beginning of SUBR1 evaluates the arguments before storing them. Thus, it stores the value of the first argument, today's date, as a number in cell ONE; the second argument, the string Closing Price:, as a label in cell TWO; and the value of the third argument, the contents of the cell named CLOSE, as a number in cell THREE.

The macro then formats the current cell as day-month and enters the number stored in cell

ONE; moves right one cell and enters the label stored in cell TWO; moves right one cell again, formats the cell as Currency with two decimal places, and enters the number stored in cell THREE.

```
\B          {SUBR1 @TODAY,"Closing Price:",CLOSE}
```

```
...  
SUBR1 {DEFINE ONE:V,TWO,THREE:V}  
      {ALT}rf2~{LET @CELLPOINTER("coord"),ONE}{R}  
      {LET @CELLPOINTER("coord"),TWO}{R}  
      {ALT}rfc{TAB}2~{LET @CELLPOINTER("coord"),THREE}
```

The result is a row that reads (depending on the date and closing price)

17-Dec Closing Price \$9.32.

See also:

[Macro Basics](#)

## **{DISPATCH}**

{DISPATCH *location*} performs an indirect branch by transferring macro control to the cell whose name or address is entered in *location*.

*location* is a single cell containing the address or name of the cell to which macro control is transferred. If *location* is a multiple-cell range, 1-2-3 branches to *location* instead of to the cell whose name or address is entered in the first cell of *location*.

### **Uses**

Use {DISPATCH} to have 1-2-3 branch to one of several possible macros, depending on the contents of *location*. {DISPATCH} is particularly useful in macros that change depending on conditions in the worksheet.

### **Notes**

{DISPATCH} does not return control to the calling macro. If you want to return control to the calling macro, use {BRANCH} or another {DISPATCH} in the called macro.

### **Examples**

The following excerpt from a macro sets the label in the cell named SWITCH and then transfers macro control to the macro whose name is in SWITCH.

```
{IF BALANCE<0}{LET SWITCH,NEGATIVE:s}~  
{IF BALANCE=0}{LET SWITCH,ZERO:s}~  
{IF BALANCE>0}{LET SWITCH,POSITIVE:s}~  
{DISPATCH SWITCH}
```

### **Similar Commands**

{BRANCH} transfers macro execution directly to a specified location. {subroutine} executes a specified subroutine and then returns control to the calling macro.

See also:

Macro Basics

## {EDIT-CLEAR}

{EDIT-CLEAR [*selection*],[*property*]} deletes data and related formatting from the worksheet without moving it to the Clipboard.

### Arguments

*selection* is an optional argument that specifies the range whose contents you want to delete.

If you do not include the *selection* argument, 1-2-3 deletes the contents of the current selection.

*property* is an optional argument that is one of the words from the table below, as text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

If you do not include a *property* argument, 1-2-3 clears only the cell contents of the cells in the selected range.

Argument	Action
contents	Deletes the contents of all cells in the selected range but leaves cell format intact.
formats	Deletes all cell formats created with <u>Range Format</u> for the selected range and resets the cell formats to the default set for the worksheet with <u>Worksheet Global Settings Format</u> .
styles	Deletes all formatting done with the <u>Style</u> commands (except left, center, and right label alignment) for the selected range; returns the font settings to the default font set for the worksheet file with <u>Style Font</u> ; and returns the color settings to the defaults set for the worksheet window with <u>Window Display Options</u> .
graphs	Deletes a graph from the selected range, but does not delete the graph name from memory or from disk, and does not affect the data on which the graph is based.

### Notes

{EDIT-CLEAR} is equivalent to choosing Edit Clear Special. When you remove the contents of a range with {EDIT-CLEAR}, you cannot paste them back to the worksheet since they aren't on the Clipboard.

{EDIT-CLEAR} does not clear protected cells or change their format.

### Examples

The following {EDIT-CLEAR} command removes the contents of the range LOCAL and returns the cell format to the default.

```
{EDIT-CLEAR LOCAL,"FORMATS"}
```

### Similar Commands

{BLANK} erases the contents of a range but does not affect formatting.

See also:

Macro Basics

## **{EDIT-COPY}**

{EDIT-COPY [*selection*],[*format*]} copies data and related formatting from the worksheet to the Clipboard.

### **Arguments**

*selection* is an optional argument that specifies the range whose contents you want to copy to the Clipboard. If you do not include the *selection* argument, 1-2-3 copies the contents of the current selection.

*format* is an optional argument that specifies one of the Clipboard formats (for example, Text, Metafilepic, or Bitmap). *format* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If you do not include the *format* argument, 1-2-3 places all appropriate formats on the Clipboard.

See your Windows 3.0 documentation for information about Clipboard formats.

### **Notes**

{EDIT-COPY} is equivalent to choosing Edit Copy. After copying the contents of a range with {EDIT-COPY}, you can paste them repeatedly with {EDIT-PASTE} commands.

### **Examples**

The following {EDIT-COPY} command copies the contents of the range SALES to the Clipboard:

```
{EDIT-COPY SALES}
```

### **Similar Commands**

{EDIT-CUT} cuts data and related formatting from the worksheet to the Clipboard.

See also:

Macro Basics



## **{EDIT-COPY-GRAPH}**

{EDIT-COPY-GRAPH} copies the contents of the active Graph window to the [Clipboard](#).

### **Notes**

If the active window is not a Graph window, {EDIT-COPY-GRAPH} returns an error.

You cannot undo an {EDIT-COPY-GRAPH} command.

### **Examples**

The following excerpt from a macro makes the Graph window named SALES.CNF the active window and then copies the graph to the Clipboard:

```
{WINDOW-SELECT SALES.CNF}  
{EDIT-COPY-GRAPH}
```

### **Similar Commands**

[{EDIT-COPY}](#) copies data and related formatting from the worksheet to the Clipboard.

See also:

[Macro Basics](#)

## **{EDIT-CUT}**

{EDIT-CUT [*selection*],[*format*]} cuts data and related formatting from the worksheet to the Clipboard.

### **Arguments**

*selection* is an optional argument that specifies the range whose contents you want to cut to the Clipboard. If you do not include the *selection* argument, 1-2-3 cuts the contents of the current selection.

*format* is an optional argument that specifies one of the Clipboard formats (for example, Text, Metafilepict, or Bitmap). *format* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If you do not include the *format* argument, 1-2-3 places all appropriate formats on the Clipboard.

See your Windows 3.0 documentation for information about Clipboard formats.

### **Notes**

{EDIT-CUT} is equivalent to choosing Edit Cut. After cutting the contents of a range with {EDIT-CUT}, you can paste them repeatedly with {EDIT-PASTE} commands.

{EDIT-CUT} does not cut protected cells or change their format.

### **Examples**

The following {EDIT-CUT} command cuts the contents of the range TAX:

```
{EDIT-CUT TAX}
```

### **Similar Commands**

{EDIT-COPY} copies data and related formatting from the worksheet to the Clipboard.

See also:

Macro Basics

## **{EDIT-PASTE}**

{EDIT-PASTE [*selection*],[*format*]} copies data and related formatting from the Clipboard into the active worksheet file.

### **Arguments**

*selection* is an optional argument that specifies the range where you want to paste the contents of the Clipboard. If you do not include the *selection* argument, 1-2-3 pastes the contents of the Clipboard into the current selection.

*format* is an optional argument that specifies one of the Clipboard formats (for example, Text, Metafilepict, or Bitmap). *format* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If you do not include the *format* argument, 1-2-3 pastes using its own private format (Lotus123Private).

See your Windows 3.0 documentation for information about Clipboard formats.

### **Notes**

{EDIT-PASTE} is equivalent to choosing Edit Paste.

You cannot paste data into protected cells.

### **Examples**

The following macro cuts the contents of cell A:C3 and pastes them into each of the cells B:A1, C:A1, and D:A1.

```
{EDIT-CUT A:C3}  
{EDIT-PASTE B:A1}  
{EDIT-PASTE C:A1}  
{EDIT-PASTE D:A1}
```

### **Similar Commands**

{EDIT-COPY} copies data and related formatting from the worksheet to the Clipboard.

{EDIT-CUT} cuts data and related formatting from the worksheet to the Clipboard.

See also:

Macro Basics

## **{EDIT-PASTE-LINK}**

{EDIT-PASTE-LINK [*range*]} creates a link between a 1-2-3 for Windows worksheet file and the file referenced on the Clipboard.

### **Arguments**

*range* is an optional argument that specifies the

### **Notes**

{EDIT-PASTE-LINK} is equivalent to choosing Edit Paste Link.

You can use {EDIT-PASTE-LINK} only when the Clipboard contains data copied from a valid source file -- that is, from another worksheet file or from a file created with another Windows application that supports DDE.

When you copy data from a valid source file to the Clipboard, 1-2-3 also stores the link reference (for example, a range address) on the Clipboard. {EDIT-PASTE-LINK} links the active worksheet file to the source file from which you copied the data. Initially, 1-2-3 creates this new link with the update mode set to Automatic (updates the link automatically whenever the source file changes).

## **{FILESIZE}**

`{FILESIZE location}` counts the number of bytes in an open text file and enters the number in *location*.

### **Arguments**

*location* is the address or name of a cell or a range. If you specify a range, 1-2-3 enters the number in the first cell of the range.

### **Notes**

You must open a text file with {OPEN} before using `{FILESIZE}`

After it successfully executes a `{FILESIZE}` command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after `{FILESIZE}` in the same cell. If `{FILESIZE}` returns an error, the macro continues in the same cell as `{FILESIZE}`.

Although `{FILESIZE}` changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a `{FILESIZE}` command when worksheet recalculation is set to Automatic. To force recalculation after a `{FILESIZE}` command, follow the command with ~ (tilde) or `{CALC}`.

### **Examples**

The following macro enters in cell BYTES the number of bytes in the open text file. The `{READ}` command then copies the contents of the text file into cell FILECONTENTS. If no text file is open, 1-2-3 branches to cell NO\_OPEN\_FILE for further instructions.

```
{FILESIZE BYTES}{BRANCH NO_OPEN_FILE}  
{READ BYTES,FILECONTENTS}
```

### **Similar Commands**

{GETPOS} determines the current position of the byte pointer in the open text file and enters the position in a cell. {SETPOS} moves the byte pointer to a specified position in the open text file.

See also:

Macro Basics

## **{FOR}**

{FOR *counter,start,stop,step,subroutine*} creates a for loop; it repeatedly performs a subroutine call to *subroutine*.

### **Arguments**

*counter* is the address or name of a cell that keeps track of *subroutine* execution during the for loop. *counter* should be a blank cell, since anything in *counter* is replaced.

*start* is the initial value for *counter*.

*stop* is the value that tells 1-2-3 when to terminate the for loop.

*step* is the value added to *counter* each time 1-2-3 executes the subroutine.

*start*, *stop*, and *step* are numbers, numeric formulas, or the addresses or names of cells that contains numbers or formulas.

*subroutine* is the range address or name of the subroutine that 1-2-3 executes in the for loop.

### **Notes**

When 1-2-3 encounters a {FOR} command, it does the following:

1. Enters *start* in *counter*.
2. Compares the number in *counter* with *stop*. If the number in *counter* is less than or equal to *stop*, 1-2-3 performs a subroutine call to *subroutine* and goes to step 3.  
If the number in *counter* is greater than *stop*, 1-2-3 does not perform a subroutine call to *subroutine*. Instead, 1-2-3 returns to the location of the {FOR} command and continues the macro at the instruction following {FOR}.
3. Increases the number in *counter* by *step* and returns to step 2.

If *step* is 0, the number in *counter* can never exceed *stop*, and the for loop becomes an infinite loop. Press CTRL+BREAK to stop an infinite for loop.

1-2-3 stores *start*, *stop*, and *step* internally. You cannot have *subroutine* modify these values once it starts.

Although {FOR} changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a {FOR} command when worksheet recalculation is set to Automatic. To force recalculation after a {FOR} command, follow the command with {CALC}.

### **Examples**

The following examples show different ways of using a for loop to call a subroutine named FORMAT. The *counter* is the cell named REP\_NUM.

Repeat FORMAT 10 times:

```
{FOR REP_NUM,1,10,1,FORMAT}
```

Repeat FORMAT indefinitely:

```
{FOR REP_NUM,1,10,0,FORMAT}
```

FORMAT is never called because *start* (10) is larger than *stop* (1), and *step* (2) is positive:

```
{FOR REP_NUM,10,1,2,FORMAT}
```

See also:

Macro Basics



## **{FORBREAK}**

{FORBREAK} cancels a for loop created by a {FOR} command.

### **Notes**

After executing a {FORBREAK} command, 1-2-3 returns to the calling macro and executes the instruction immediately following the {FOR} command.

Use {FORBREAK} only within a for loop. Using {FORBREAK} anywhere else causes the macro to terminate with an error.

### **Examples**

In macro \A below, 1-2-3 repeats subroutine ENTRY up to ten times, to let you enter names in a roster. If you press ENTER at the {GETLABEL} command instead of typing a name, the {FORBREAK} command terminates the for loop and 1-2-3 continues immediately to the instructions following the {FOR} command.

```
\A          {BLANK ROSTER}
           {GOTO}ROSTER~
           {FOR J,1,10,1,ENTRY}
           ...
ENTRY      {GETLABEL "Enter name:",@CELLPOINTER("coord")}
           {IF @CELLPOINTER("contents")=""}{FORBREAK}
           {DOWN}
```

The following excerpt from a macro uses {FORBREAK} to end a for loop if the cell named TOTAL contains ERR. If TOTAL contains a value greater than 500, 1-2-3 executes {RETURN} and begins the next repetition of the loop. If TOTAL contains anything else, 1-2-3 continues executing the subroutine.

```
{IF @ISERR(TOTAL)}{FORBREAK}
{IF TOTAL>500}{RETURN}
```

See also:

Macro Basics



## {FORM}

{FORM *input-location*,[*call-table*],[*include-list*],[*exclude-list*]} suspends macro execution temporarily so you can enter and edit data in the unprotected cells in *input-location*.

### Arguments

*input-location* is a range of any size that contains cells you unprotected with Range Unprotect. This is the range where you enter data. *input-location* cannot include any hidden columns or worksheets.

*call-table* is an optional argument that specifies a two-column range. Each cell in the first column contains the macro name of a key on the keyboard. Each adjacent cell in the second column contains a set of macro instructions that 1-2-3 performs when the user presses the key listed in the first column.

*include-list* is an optional argument that specifies a range that contains a list of allowable keystrokes.

*exclude-list* is an optional argument that specifies a range that contains a list of keystrokes to ignore. If you specify an *include-list*, do not specify an *exclude-list*, and vice-versa. If you specify both an *include-list* and an *exclude-list*, 1-2-3 uses the *include-list* and ignores the *exclude-list*.

You can use any of the optional arguments without using the ones that precede it by inserting an extra argument separator as a placeholder. For example, to use a *call-table* and an *exclude-list* without an *include-list*, use this syntax:

```
{FORM input-location,call-table,,exclude-list}
```

The extra argument separator between *call-table* and *exclude-list* tells 1-2-3 that you omitted *include-list*.

### Notes

When 1-2-3 encounters a {FORM} command in a macro, it moves the cell pointer to the first unprotected cell in *input-location*, suspends macro execution, and waits for you to press a key. What happens when you press a key depends on whether the {FORM} command uses optional arguments.

If the {FORM} command does not use optional arguments, you can press any typewriter key or pointer-movement key, and any of the following keys: ENTER, ESC, F1 (HELP), F2 (EDIT), HOME, END, and, while typing or editing an entry, BACKSPACE and (if the entry is a value) F9 (CALC). If *input-location* is a 3-D range, you can also use CTRL+PG UP and CTRL+PG DN. If you are typing or editing a formula, you can use F4 (ABS) and F3 (NAME).

When you end the {FORM} command (by pressing either ENTER or ESC when the mode indicator displays READY), 1-2-3 continues the macro, leaving the cell pointer wherever it was when you pressed ENTER or ESC.

If the {FORM} command includes one or more optional arguments, 1-2-3 proceeds as follows:

1. If the {FORM} command uses a *call-table* argument, 1-2-3 checks the first column of the call table. If the keystroke is listed, 1-2-3 executes the instructions in the second column as a subroutine, and then returns to the {FORM} command and waits for you to press another key.

**Note** Including {ESC} or ~ (tilde) in a *call-table* subroutine, at a point in the subroutine when the mode indicator displays READY, temporarily suspends the {FORM} command, letting you move the cell pointer out of the *input-range* unprotected area and use all 1-2-3 keys and menus for their standard functions for the rest of the subroutine.

When the *call-table* subroutine ends, 1-2-3 moves the cell pointer back to wherever it was when the *call-table* subroutine started (unless the cell pointer is within the *input-range* unprotected area when the subroutine ends, in which case 1-2-3 leaves the cell pointer where it is) and reinstates use of 1-2-3 keys as defined by the {FORM} command.

To end a macro from within a *call-table* subroutine, use {RESTART} or {QUIT} in the subroutine. To end a {FORM} command from within a *call-table* subroutine but continue the macro, use {FORMBREAK} to leave the {FORM} command and continue macro execution at the instruction immediately following the {FORM} command.

2. If the keystroke is not in *call-table* and the {FORM} command uses an *include-list* argument, 1-2-3 checks *include-list*. If the keystroke appears in *include-list*, 1-2-3 performs the keystroke. Otherwise, 1-2-3 ignores the keystroke.
3. If there is no *include-list* argument and the {FORM} command uses an *exclude-list* argument, 1-2-3 checks *exclude-list*. If the keystroke appears in *exclude-list*, 1-2-3 ignores the keystroke. Otherwise, 1-2-3 performs the keystroke.

*call-table*, *include-list*, and *exclude-list* are case-sensitive for letters typed at the keyboard. For example, if *include-list* contains an uppercase B but not a lowercase b, 1-2-3 allows only uppercase B's during the {FORM} command; lowercase b's are ignored.

## Examples

The {FORM} command in the following example uses a *call-table* and an *exclude-list*. This {FORM} command processes inventory orders in a database table using an entry form in a range named ENTRYFORM.

```
{FORM ENTRYFORM,SIGKEYS,,BADKEYS}
```

stops the macro temporarily so the user can enter an order in the entry form. The *call-table*, SIGKEYS, includes two key names: {INS} and {QUERY}.

- \* If you press INS during the {FORM} command, 1-2-3 appends the data in INPUT to the order database table (ORDERS), erases INPUT, and returns to the {FORM} command.
- \* If you press F7 (QUERY) during the {FORM} command, 1-2-3 branches to subroutine CONFIRM, which uses a {GETLABEL} command to confirm that you want to stop entering orders. If you enter y at the {GETLABEL} prompt, the {QUIT} command ends the macro. If you enter any other letter, 1-2-3 returns to the {FORM} command.

## Similar Commands

{?} suspends macro execution while you use commands or enter or edit data. {GET} suspends macro execution and retrieves a keystroke. {GETLABEL} and {GETNUMBER} suspend macro execution and retrieve particular types of information.

See also:

Macro Basics

## **{FORMBREAK}**

{FORMBREAK} ends a {FORM} command.

### **Notes**

After executing a {FORMBREAK} command, 1-2-3 continues macro execution at the instruction immediately following the {FORM} command.

If you use {FORMBREAK} to end a nested {FORM} command, 1-2-3 returns you to the location from which the {FORM} command you are ending was issued and continues the macro there.

Use {FORMBREAK} only within a call-table subroutine or a subroutine to which you transfer control with {BRANCH} or {DISPATCH}. Using {FORMBREAK} anywhere else causes the macro to terminate with an error.

### **Examples**

The {FORM} command in the following example uses a *call-table* and an *exclude-list*. This {FORM} command processes inventory orders in a database table using an entry form in a range named ENTRYFORM.

```
{FORM ENTRYFORM,SIGKEYS,,BADKEYS}
```

stops the macro temporarily so you can enter an order in the entry form. The *call-table*, SIGKEYS, includes two key names: {INS} and {END}.

```
{INS}          {APPENDBELOW ORDERS,INPUT}{BLANK INPUT}
```

```
{END}          {FORMBREAK}
```

- \* If you press INS during the {FORM} command, 1-2-3 appends the data in INPUT to the order database table (ORDERS), erases INPUT, and returns to the {FORM} command.
- \* If you press END during the {FORM} command, the {FORMBREAK} command ends the {FORM} command and 1-2-3 continues to any instructions that immediately follow the {FORM} command.

See also:

Macro Basics

## **{FRAMEOFF} and {FRAMEON}**

{FRAMEOFF} suppresses display of the worksheet frame. The worksheet frame remains hidden until 1-2-3 reaches a {FRAMEON} command or the macro ends.

{FRAMEON} redisplay the worksheet frame hidden by a {FRAMEOFF} command.

### **Uses**

Use {FRAMEOFF} to display a larger area of the worksheet during macro execution. For example, if the displayed area is not large enough to accommodate a data entry form, use {FRAMEOFF} to increase the available area.

Use {FRAMEOFF} and {FRAMEON} when the worksheet frame might distract users.

### **Notes**

If a {WINDOWSOFF} command was executed earlier in the macro, be sure to precede {FRAMEOFF} or {FRAMEON} with a {WINDOWSON} command. The effects of {FRAMEOFF} or {FRAMEON} will not be visible until you turn screen redrawing back on.

### **Examples**

The following excerpt from a macro turns off display of the worksheet frame during a {FORM} command and then redisplay the frame.

```
{FRAMEOFF}  
{FORM ORDERFORM}  
{FRAMEON}
```

### **Similar Commands**

{PANELOFF} and {PANELON} suppress and restore the control panel and status line.  
{WINDOWSOFF} and {WINDOWSON} freeze and restore the worksheet window.

See also:

Macro Basics

## **{GET}**

`{GET location}` suspends macro execution until you press a key, and then records the keystroke as a left-aligned label in *location*.

### **Arguments**

*location* is the address or name of a cell or range. If you specify a range, 1-2-3 records the keystroke in the first cell of the range.

### **Notes**

After executing a `{GET}` command, 1-2-3 continues to the cell immediately below the `{GET}` command, ignoring any instructions in the same cell as the `{GET}` command.

There is no time limit on a `{GET}` command; the macro waits indefinitely for a keystroke.

`{GET}` records APP1 (ALT+F7), APP2 (ALT+F8), and APP3 (ALT+F9) keystrokes only if a 1-2-3 for Windows add-in is attached to the corresponding key.

You must use two `{GET}` commands to record any of the following keystrokes: CTRL+END HOME, END CTRL+HOME, CTRL+END END, CTRL+END CTRL+PG UP, and CTRL+END CTRL+PG DN.

Although `{GET}` changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a `{GET}` command when worksheet recalculation is set to Automatic. To force recalculation after a `{GET}` command, follow the command with ~ (tilde) or `{CALC}`.

### **Examples**

The following macro prompts you to choose Daily or Monthly (by typing D or M) and stores the keystroke in the cell named CHOICE. If the keystroke in CHOICE is D, 1-2-3 branches to DAY; if it is M, 1-2-3 branches to MONTH. If the keystroke is anything else, 1-2-3 beeps and starts the macro again.

```
\A      {GOTO}EXPENSES~
        {INDICATE "Choose (D)aily or (M)onthly"}
        {GET CHOICE}
        {IF CHOICE="d"}{BRANCH DAYS}
        {IF CHOICE="m"}{BRANCH MONTHS}
        {BEEP}{BRANCH \A}
```

### **Similar Commands**

`{?}` suspends macro execution while you use commands or enter or edit data. `{FORM}` suspends macro execution while you enter data in a form. `{GETLABEL}` and `{GETNUMBER}` suspend macro execution and retrieve particular types of information.

See also:

[Macro Basics](#)

## **{GETLABEL}**

{GETLABEL *prompt,location*} displays a prompt in the 1-2-3 Classic window and suspends macro execution while you type a response. When you click OK or press ENTER, 1-2-3 stores whatever you typed as a left-aligned label in *location*.

### **Arguments**

*prompt* is any text enclosed in " " (quotation marks), or the address or name of a cell that contains a label, or a formula that results in the prompt. {GETLABEL} returns an error if you use any of the following for *prompt*: the address or name of a multiple-cell range, a blank cell, or a cell that contains a value.

*location* is the address or name of a cell or range. If you specify a range, 1-2-3 stores the response in the first cell of the range.

### **Notes**

The response to the prompt can include up to 511 characters. If you press ENTER without typing anything, 1-2-3 enters the ' (apostrophe) label-prefix character in *location*.

There is no time limit on a {GETLABEL} command; the macro waits indefinitely for a response.

Although {GETLABEL} changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a {GETLABEL} command when worksheet recalculation is set to Automatic. To force recalculation after a {GETLABEL} command, follow the command with ~ (tilde) or {CALC}.

### **Examples**

The following {GETLABEL} command prompts the user to type a product name and then stores the name in a cell named PRODUCT.

```
{GETLABEL "Type a product name and press ENTER  ",PRODUCT}
```

In the following {GETLABEL} command, the macro gets the prompt from ZIP\_PROMPT and then enters your response as a label in cell ZIP.

```
{GETLABEL ZIP_PROMPT,ZIP}
```

### **Similar Commands**

{?} suspends macro execution while you use commands or enter or edit data. {FORM} suspends macro execution while you enter data in a form. {GET} suspends macro execution and retrieves a keystroke. {GETNUMBER} suspends macro execution and retrieves a value.

See also:

Macro Basics

## **{GETNUMBER}**

{GETNUMBER *prompt,location*} displays *prompt* in the 1-2-3 Classic window and suspends macro execution while you type a response. When you click OK or press ENTER, 1-2-3 evaluates your response and stores the resulting number in *location*.

### **Arguments**

*prompt* is any text enclosed in " " (quotation marks), or the address or name of a cell that contains a label, or a formula that results in the prompt. {GETLABEL} returns an error if you use any of the following for *prompt*: the address or name of a multiple-cell range, a blank cell, or a cell that contains a value.

*location* is the address or name of a cell or range. If you specify a range, 1-2-3 stores the response in the first cell of the range.

### **Notes**

The response to the prompt can include up to 511 characters, and must be a number, a numeric formula, or the address or name of a cell that contains a value.

If you enter text, a text formula, the address or name of a cell that contains a label or text formula, or press ENTER without typing anything, 1-2-3 enters ERR in *location*.

There is no time limit on a {GETNUMBER} command; the macro waits indefinitely for a response.

Although {GETNUMBER} changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a {GETNUMBER} command when worksheet recalculation is set to Automatic. To force recalculation after a {GETNUMBER} command, follow the command with ~ (tilde) or {CALC}.

### **Examples**

The following {GETNUMBER} command prompts you for your age and then enters the response in the current cell.

```
{GETNUMBER "Enter your age: ",@CELLPOINTER("coord")}
```

The following macro stores your response to the prompt in cell NEWSALES and then checks the contents of NEWSALES. If NEWSALES contains ERR (you entered a non-numeric response), the macro branches to RETRY. If NEWSALES contains a number, the macro adds the number to the current value in YTD\_SALES and stores the result in YTD\_SALES.

```
\S      {GETNUMBER "Enter month's sales: ",NEWSALES}  
        {IF @ISERR(NEWSALES)}{BRANCH RETRY}  
        {LET YTD_SALES,YTD_SALES+NEWSALES}
```

```
RETRY  {BEEP}{BRANCH \S}
```

### **Similar Commands**

{?} suspends macro execution while you use commands or enter or edit data. {FORM} suspends macro execution while you enter data in a form. {GET} suspends macro execution and retrieves a keystroke. {GETLABEL} suspends macro execution and retrieves a label.

See also:

Macro Basics

## **{GETPOS}**

{GETPOS *location*} enters a number in *location*. This number reports the current byte-pointer position in the open text file.

### **Arguments**

*location* is the address or name of a cell or a range. If you specify a range, 1-2-3 enters the number in the first cell of the range.

### **Uses**

Use {GETPOS} to track how much data has been read from a text file. For example, if you want to read the first 100 bytes from a text file when you are not sure how many bytes at a time will be read, use {GETPOS} in the loop that reads and processes the bytes. When *location* contains a number greater than 100, branch out of the loop.

### **Notes**

After it successfully executes a {GETPOS} command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after {GETPOS} in the same cell. If {GETPOS} returns an error (for example, if no text file is open), the macro continues in the same cell as {GETPOS}.

You must open a text file with the {OPEN} command before using {GETPOS}.

The first position in a text file is reported as 0, not 1. Thus, if the byte pointer is on the first byte in the file, {GETPOS} enters 0 in *location*; if the byte pointer is on the tenth byte, {GETPOS} enters 9, and so on.

Although {GETPOS} changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a {GETPOS} command when worksheet recalculation is set to Automatic. To force recalculation after a {GETPOS} command, follow the command with ~ (tilde) or {CALC}.

### **Examples**

The following line from a macro records the current position of the byte pointer in cell POINTER. If the {GETPOS} command succeeds, the macro continues in the next cell. If a text file is not open, the macro branches to FAIL, which contains further instructions.

```
{GETPOS POINTER}{BRANCH FAIL}
```

### **Similar Commands**

{FILESIZE} determines the number of bytes in an open text file. {SETPOS} moves the byte pointer to a specified position in an open text file.

See also:

Macro Basics



## **{GRAPHOFF} and {GRAPHON}**

{GRAPHON [*named-graph*],[*nodisplay*]} has three possible results, depending on the syntax you use:

- \* {GRAPHON} with no arguments displays a full-screen view of the current graph while the macro continues to run.
- \* {GRAPHON *named-graph*} makes *named-graph* the current graph, and displays a full-screen view of *named-graph* while the macro continues to run.
- \* {GRAPHON *named-graph*,*nodisplay*} makes *named-graph* the current graph without displaying it.

{GRAPHON} remains in effect until 1-2-3 reaches {GRAPHOFF}, {INDICATE}, {?}, {GETLABEL}, {GETNUMBER}, {MENUBRANCH}, {MENUCALL}, or the end of the macro.

{GRAPHOFF} removes a graph displayed by a {GRAPHON} command from the screen.

### **Arguments**

*named-graph* is an optional argument that specifies an available, named graph.

*nodisplay* is an optional argument that specifies that you want *named-graph* to be current, but not displayed.

### **Examples**

The following macro displays three named graphs (LINE, BAR, and PIE) at two-second intervals.

```
{GRAPHON LINE}  
{WAIT @NOW+@TIME(0,0,2)}  
{GRAPHON BAR}  
{WAIT @NOW+@TIME(0,0,2)}  
{GRAPHON PIE}  
{WAIT @NOW+@TIME(0,0,2)}  
{GRAPHOFF}
```

See also:

[Macro Basics](#)

## {IF}

{IF *condition*} evaluates *condition* as true or false. If *condition* is true, 1-2-3 continues with the next instruction immediately following the {IF} command in the same cell. If *condition* is false, 1-2-3 goes immediately to the next cell in the column, skipping any further instructions in the same cell as the {IF} command.

### Arguments

*condition* is usually a logical formula or the name or address of a cell that contains a logical formula. However, you can use any formula, number, text, or cell name or address as *condition*. 1-2-3 evaluates any *condition* that does not equal 0 as false. Blank cells, text, and ERR and NA values all equal 0 when used as *condition*.

### Uses

Use the {IF} command to implement if-then-else processes like those in programming languages.

### Notes

If you use {IF} to implement if-then-else processing in a macro, be sure to include a {BRANCH} or {RETURN} command at the end of the "then" instructions (the instructions that follow the {IF} command in the same cell). This keeps 1-2-3 from continuing to the "else" instructions (the instructions that start in the cell below the {IF} command).

### Examples

In the following macro, if the entry in the cell named DATE is between 21002 and 31959 (the date numbers for July 1, 1957, and July 1, 1987, respectively), the macro copies the contents of DATE to the current cell and ends. If not, the macro continues to the {BRANCH} command in the cell below.

```
{IF DATE>21002}{IF DATE<31959}{ALT}eqDATE~{QUIT}
{BRANCH INVALID_DATE}
```

The following macro creates mailing labels from the records in a database table. First, the macro checks to see whether the current cell is blank. (A blank cell indicates the end of the database table.) If so, the macro branches to subroutine PRINT, which contains the macro instructions for printing the mailing labels. If not, it calls subroutine MAKE\_A\_LABEL, which contains the macro instructions for creating a mailing label, then moves the cell pointer down one cell and repeats macro \A from the beginning.

```
\A      {IF @CELLPOINTER("type")="b"}{BRANCH PRINT}
        {MAKE_A_LABEL}
        {DOWN}{BRANCH \A}
```

See also:

Macro Basics

## **{INDICATE}**

{INDICATE [*string*]} displays *string* as the mode indicator. The indicator continues to display *string* until 1-2-3 reaches another {INDICATE} command or until you end the 1-2-3 session.

### **Arguments**

*string* is an optional argument that specifies any text that fits in the format line, the address or name of a cell that contains a label, or a text formula.

### **Notes**

Using an empty string as *string* -- {INDICATE ""} -- removes the mode indicator entirely.

{INDICATE} with no argument restores standard operation of the mode indicator. The indicator displays READY, EDIT, WAIT, and so on, depending on the current operation.

### **Examples**

The following command displays Database Maintenance Macro as the mode indicator; the mode indicator's width expands to 26 characters.

```
{INDICATE "Database Maintenance Macro"}
```

The following command displays the contents of a cell named MSG as the mode indicator:

```
{INDICATE MSG}
```

See also:

[Macro Basics](#)

## {LAUNCH}

{LAUNCH *command*,[*window*]} starts a Windows application.

### Arguments

*command* is the command string that starts the Windows application, including the path and any command-line arguments. *command* is text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

For example, to start Lotus Notes from the directory \NOTES on drive C:, *command* is "C:\NOTES\NOTES".

*window* is an optional argument that controls the initial state of the application. *window* is any integer from 0 to 9, or the address or name of a cell that contains an integer from 0 to 9.

The following table shows the possible values of *window* and their effects on the application you want to start.

**Note** Not all values for *window* are supported by all Windows applications.

Argument	Action
0	Hides the application window and activates another window.
1	Activates and displays the application window. If the window is minimized or maximized, restores it to its original size and position.
2	Activates and minimizes the application window.
3	Activates and maximizes the application window.
4	Displays the application window in its most recent size and position. 1-2-3 remains the active application.
5	Activates the application window and displays it in its current size and position.
6	Minimizes the application window and activates the top-level window in the window-manager's list.
7	Minimizes the application window. 1-2-3 remains the active application. This is the value 1-2-3 uses if you do not include a <i>window</i> argument.
8	Displays the application window in its current state. 1-2-3 remains the active application.
9	Activates and displays the application window. If the window is minimized or maximized, restores it to its original size and position.

### Examples

The following excerpt from a macro starts and minimizes Ami Pro, and opens the Ami Pro file UPDATE.DOC.

```
{LAUNCH "C:\AMI\AMIPRO c:\AMI\DATA\UPDATE.DOC"}
```

See also:

[Macro Basics](#)

## **{LET}**

{LET *location,entry*} enters a number or left-aligned label in *location*.

### **Arguments**

*location* is the address or name of a cell or a range. If you specify a range, 1-2-3 enters the number or label in the first cell of the range.

*entry* is a number, text, a formula, or address or name of a cell that contains a number, a label, or a formula.

### **Uses**

Use {LET} with {IF} to vary cell contents depending on a condition or to change entries in a database table when you know the actual cell address of the entries you want to change.

### **Notes**

If you use a formula for *entry*, 1-2-3 evaluates the formula and enters the result in *location*. {LET} does not enter formulas.

You can add one or two suffixes -- :string or :value (or an abbreviation of string or value, as long as the first letter is s or v, respectively) -- to *entry*. The suffix tells 1-2-3 explicitly whether to treat the argument as a literal string (enter the argument verbatim) or to evaluate the argument before entering it.

The :string suffix tells 1-2-3 to store the argument as a left-aligned label, even if the argument looks like a number, formula, or cell or range address.

The :value suffix tells 1-2-3 to evaluate the argument before storing it. If the argument is a number, 1-2-3 stores it as a number. If the argument is a formula, 1-2-3 evaluates the formula, and stores the result either as a left-aligned label (for a text formula) or a number (for a numeric formula). If the argument is a cell address or range name, 1-2-3 evaluates the contents of the referenced cell and stores the result as a label or number.

Although {LET} changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a {LET} command when worksheet recalculation is set to Automatic. To force recalculation after a {LET} command, follow the command with ~ (tilde) or {CALC}.

### **Examples**

In the following macro, the {LET} command enters the result of 1.5 times the value in QTR\_1 in the cell named QTR\_2 if QTR\_1 is a defined range name. If it is not, the {LET} command enters ERR in the cell named QTR\_2.

```
{LET QTR_2,1.5*QTR_1:v}
```

The following macro enters 1.5\*QTR\_1 as a label in the cell named QTR\_2:

```
{LET QTR_2,"1.5*QTR_1"}
```

The following macro enters the result of the text formula +"Ms." &NAME in the cell named CUSTOMER. If NAME is not a defined range name, the macro enters ERR in the cell named CUSTOMER.

```
{LET CUSTOMER,+"Ms. "&NAME:v}
```

### **Similar Commands**

{PUT} enters a number or label in a cell according to the cell's row and column position within a range.

See also:

[Macro Basics](#)

## {LINK-ASSIGN}

{LINK-ASSIGN *link-name,range,[property1],[property2],[property3]*} specifies a range to link to (a destination range).

### Arguments

*link-name* is the name for the link specified in [{LINK-CREATE}](#), entered as text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If *link-name* does not refer to an existing link, {LINK-ASSIGN} returns an error.

*range* is a range address or name that specifies the destination range.

**Caution** When the destination range is not big enough to hold the incoming data, 1-2-3 clips the incoming data that does not fit into the destination range and resizes a graph that only partially fits into the destination range.

*property1*, *property2*, and *property3* are optional arguments that specify what to clear from the destination range before every update.

If you do not include *property* arguments, 1-2-3 clears all properties in the destination range.

*property* arguments are words from the table below, entered as text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

Argument	Action
contents	Deletes the contents of all cells in the selected range but leaves cell format intact.
formats	Deletes all cell formats created with <a href="#">Range Format</a> for the selected range and resets the cell formats to the default set for the worksheet with <a href="#">Worksheet Global Settings Format</a> .
styles	Deletes all formatting done with the <a href="#">Style</a> commands (except left, center, and right label alignment) for the selected range; returns the font settings to the default font set for the worksheet file with <a href="#">Style Font</a> ; and returns the color settings to the defaults set for the worksheet window with <a href="#">Window Display Options</a> .
graphs	Deletes a graph from the selected range, but does not delete the graph name from memory or from disk, and does not affect the data on which the graph is based.

### Notes

If *link-name* refers to an active link, 1-2-3 updates data from the server application when it reaches a {LINK-ASSIGN} command, even if the link-update mode is manual.

You cannot assign more than one destination range to any one link.

### Examples

See {LINK-ASSIGN} in Example 4 of [Sample DDE Macros](#).

See also:

[Linking Files](#)  
[Macro Basics](#)





## {LINK-CREATE}

{LINK-CREATE *link-name,app-name,topic-name,item-name,[format],[mode],[branch-location]}*}, without using the [Clipboard](#), creates a [link](#) between the current worksheet file and another Windows application that supports [DDE](#) as a server.

### Arguments

*link-name* is a name you specify to identify the link, entered as text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

Keep the following rules in mind when you enter *link-name*:

- \* *link-name* can be up to 15 characters long. 1-2-3 does not distinguish between uppercase and lowercase letters in link names.
- \* Do not start *link-name* with ! (exclamation point), and do not include spaces, commas, semicolons, periods, or any of the following characters in *link-name*:  
+ \* - / & > < @ # { ?
- \* Do not create names that look like cell addresses, such as P12 or EX100, or names that begin with numbers, such as 20DEC. Do not use @function names, key names, or macro command keywords as link names.
- \* If the *link-name* you specify is already in use, {LINK-CREATE} returns an error.

*app-name* is the name of a Windows application. *app-name* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

*topic-name* is the name of the application worksheet or file to link to. *topic-name* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

*item-name* is the name of the topic item to link to. This is the item in the application worksheet or file whose data you want transferred through the link. *item-name* is text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

*format* is an optional argument that specifies one of the Clipboard formats (for example, Text, Metafilepict, or Bitmap). *format* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If you do not include the *format* argument, 1-2-3 uses the Clipboard Text format.

See your Windows 3.0 documentation for information about Clipboard formats.

*mode* is an optional argument that specifies when data is updated. *mode* is one of the words from the table below, entered as text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

Argument	Action
automatic	Updates data in the destination range each time the source item is updated.
manual	Updates data in the destination range only when you use <a href="#">{LINK-UPDATE}</a> .

If the server application file does not support the requested mode, data is updated in the mode supported by the server file.

If you do not include the *mode* argument, 1-2-3 uses automatic.

*branch-location* is an optional argument that specifies a location where macro execution will start when the data from the link is updated. *branch-location* is the address or name of a cell or range.

You can use any of the optional arguments without using the ones that precede it by inserting an extra argument separator as a placeholder. For example, to use *format* and *branch* without *mode*, use this syntax:

```
{LINK-CREATE link-name,app-name,topic-name,item-name,format,,branch}
```

The extra argument separator between *format* and *branch* tells 1-2-3 that you omitted *mode*.

## Notes

If the DDE section of your 123W.INI file contains the line

```
AUTOSTART=1
```

and the application specified by *app-name* is not active, {LINK-CREATE} tries to launch the application with a concatenation of *app-name* and *topic-name*.

After it successfully executes an {LINK-CREATE} command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after {LINK-CREATE} in the same cell. If {LINK-CREATE} cannot establish a conversation, the macro continues in the same cell as {LINK-CREATE}.

## Examples

See {LINK-CREATE} in Examples 4 and 5 of [Sample DDE Macros](#).

See also:

[Linking Files](#)  
[Macro Basics](#)

## **{LINK-DEACTIVATE}**

{LINK-DEACTIVATE *link-name*} deactivates a link in the current worksheet, but leaves the link intact. When a link is inactive, 1-2-3 does not update values in the destination range.

### **Arguments**

*link-name* is the name for the link specified in [{LINK-CREATE}](#), entered as text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If *link-name* does not refer to an existing link, {LINK-DEACTIVATE} returns an error.

### **Notes**

In addition to the link specified by *link-name*, {LINK-DEACTIVATE} deactivates all the links in the same conversation. To deactivate a single link, set its update mode to manual.

Use [{LINK-UPDATE}](#) to reactivate a link.

### **Examples**

See {LINK-DEACTIVATE} in Example 5 of [Sample DDE Macros](#).

See also:

[Linking Files](#)  
[Macro Basics](#)

## **{LINK-DELETE}**

{LINK-DELETE *link-name*} erases a link in the current worksheet, but leaves the values obtained through the link in the worksheet.

### **Arguments**

*link-name* is the name for the link specified in {LINK-CREATE}, entered as text enclosed in " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If *link-name* does not refer to an existing link, {LINK-DELETE} returns an error.

### **Notes**

If a destination range was specified for the link you want to delete, 1-2-3 automatically disassociates the destination range from the link, but does not delete the data in the destination range.

When the last link on a conversation is deleted, the conversation ends.

### **Examples**

The following macro deletes a link between 1-2-3 and Ami Pro named AMILINK2.

```
{LINK-DELETE "AMILINK2"}
```

See also:

[Linking Files](#)  
[Macro Basics](#)

## **{LINK-REMOVE}**

{LINK-REMOVE *link-name*} removes the currently used destination range for a DDE link, but does not delete the data in the range.

### **Arguments**

*link-name* is the name for the link specified in {LINK-CREATE}, entered as text enclosed in " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If *link-name* does not refer to an existing link, {LINK-REMOVE} returns an error.

### **Notes**

{LINK-REMOVE} does not delete links. Use {LINK-DELETE} to delete links.

If no destination range has been assigned to the link with a {LINK-ASSIGN} command, {LINK-REMOVE} returns an error.

### **Examples**

The following macro changes the current destination range for the link AMILINK2 to MAY\_PAYMENT.

```
{LINK-REMOVE "AMILINK2"}  
{LINK-ASSIGN "AMILINK2","MAY_PAYMENT"}
```

See also:

[Linking Files](#)  
[Macro Basics](#)

## {LINK-TABLE}

{LINK-TABLE *location*} creates a table of all DDE links associated with the current file.

### Arguments

*location* is the address or name of the the top left cell of the range to receive the table. The table will occupy eight columns and as many rows as there are links associated with the file plus one blank row.

**Caution** 1-2-3 writes over any existing data when it creates the table, so make sure the range does not contain data you need.

### Notes

The table contains the following information for each link: link name, application, topic, item, format, update mode, link status, and destination range. For example:

AMILINK1	Ami Pro	D:\DOCS\LOAN_A.SAM	PAYMENT	Text	Automatic	Active	B32..B32
AMILINK2	Ami Pro	D:\DOCS\LOAN_B.SAM	PAYMENT	Text	Manual	Active	B35..B35

### Examples

The following macro creates a table of links associated with the current file. The table starts in cell LINKS.

```
{LINK-TABLE "LINKS"}
```

See also:

[Linking Files](#)

[Macro Basics](#)

## **{LINK-UPDATE}**

{LINK-UPDATE *link-name*} updates DDE links, or activates and updates links deactivated with {LINK-DEACTIVATE}.

### **Arguments**

*link-name* specifies the name for a link specified in {LINK-CREATE}. *link-name* is text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

If *link-name* does not refer to an existing link, {LINK-UPDATE} returns an error.

### **Notes**

If you assigned a destination range to the link with {LINK-ASSIGN}, 1-2-3 updates the destination range with current information from the source file.

### **Examples**

See {LINK-UPDATE} in Example 5 of Sample DDE Macros.

See also:

[Linking Files](#)  
[Macro Basics](#)

## **{LOOK}**

{LOOK *location*} checks the typeahead buffer for keystrokes and records the first keystroke (if any) as a left-aligned label in *location*. If the buffer is empty, 1-2-3 enters ' (apostrophe label-prefix character) in *location*.

### **Arguments**

*location* is the address or name of a cell or range. If you specify a range, 1-2-3 records the keystroke in the first cell in the range.

### **Uses**

Use {LOOK} to stop a long macro, break out of an infinite loop, or tell a macro to branch elsewhere. The macro keeps running unless the {LOOK} command records a character that tells the macro to do something else.

### **Notes**

{LOOK} records ALT+F7 (APP1), ALT+F8 (APP2), and ALT+F9 (APP3) keystrokes only if a 1-2-3 for Windows add-in is attached to the corresponding key.

1-2-3 does not remove a keystroke it records with {LOOK} from the typeahead buffer, so a subsequent {LOOK} command will record the same keystroke. To remove the first keystroke from the typeahead buffer, follow the {LOOK} command with a {GET} command. For example, the sequence {LOOK LOC1}{GET LOC2}{LOOK LOC2} records the first keystroke in the typeahead buffer in cell LOC1, removes that keystroke from the typeahead buffer, and records the next keystroke in the typeahead buffer in cell LOC2.

Although {LOOK} changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a {LOOK} command when worksheet recalculation is set to Automatic. To force recalculation after a {LOOK} command, follow the command with ~ (tilde) or {CALC}.

### **Examples**

The TASK macro below is part of a longer macro that requires a user to perform specific tasks. The macro begins by erasing the contents of the cell named KEYCELL. Later, the macro beeps twice and checks whether the user has typed a character. If the typeahead buffer is empty, the macro loops back to the beginning of TASK. If the typeahead buffer contains a character, the macro branches to the subroutine NEWTASK.

```
TASK      {BLANK KEYCELL}
          ...
          {BEEP 4}{BEEP 2}
          {LOOK KEYCELL}
          {IF KEYCELL=""}{BRANCH TASK}
          {BRANCH NEWTASK}
```

### **Similar Commands**

{GET} suspends macro execution and retrieves a keystroke.

See also:.

Macro Basics



## **{MENUBRANCH} and {MENUCALL}**

{MENUBRANCH *location*} displays in the 1-2-3 Classic window the macro menu that starts in the first cell of *location*, waits for you to select an item from the menu, and then branches to the macro instructions associated with the menu item you select.

{MENUCALL *location*} displays in the 1-2-3 Classic window the macro menu that starts in the first cell of *location*, waits for you to select an item from the menu, and then performs a subroutine call to the macro instructions associated with the menu item you select.

### **Arguments**

*location* is the address or name of the first cell of a row that contains the menu items (branch or subroutine names).

### **Notes**

A macro menu is a menu you set up for use during a macro (the setup procedure is described below). When the macro menu is activated, the menu items appear in the first line of the window and the description of the highlighted menu item appears in the second line. A macro menu can include up to eight items.

After you select an item from a macro menu that {MENUBRANCH} activated, macro control branches to the associated macro instructions in the third line of the macro menu. Because this is a branch, macro control does not return to the original macro location when 1-2-3 completes the macro menu instructions.

After you select an item from a macro menu that {MENUCALL} activated, 1-2-3 performs the associated macro instructions as a subroutine; macro control returns to the original macro location when 1-2-3 completes the instructions.

Pressing ESC when a macro menu appears cancels the {MENUBRANCH} or {MENUCALL} command that activated the menu. Macro control returns to the location from which the {MENUBRANCH} or {MENUCALL} command was issued, and the macro continues at the instruction that follows the {MENUBRANCH} or {MENUCALL} command.

A macro menu appears in the 1-2-3 Classic window even after a {PANELOFF} command.

### **To Create a Macro Menu**

1. Decide on a location for the macro menu. The menu does not have to be in the same file as the macro that uses it, but the file it is in must be active when you run the macro that uses it. If you put the menu in a different file from the macro that uses it, remember to include a file reference in the {MENUBRANCH} or {MENUCALL} *location* argument.
2. Enter up to eight menu items in consecutive cells in the first row of *location*. Leave the cell after the final menu item blank.

You can enter labels, numbers, or formulas as the menu items. If you enter a formula, 1-2-3 displays the formula's result as the menu item.

Make sure each menu item starts with a different letter or number so you can select an item by pressing the first character. If two or more menu items have the same first character, 1-2-3 selects the first item (reading from left to right) when you press that character.

Try to make each menu item a single word. If you use multiple-word items, connect the words with a - (hyphen), for example, First-Quarter. Otherwise, a user might think the words are separate menu items.

Each menu item can include up to 512 characters. However, if the total characters in all the menu items, plus the spaces on either side of each item, exceed the width of the

window, 1-2-3 displays as many of the menu items as possible and uses an arrow at the end of the menu line to indicate that more items are off to the right. Also, if the number of characters in any single menu item exceeds the screen width, 1-2-3 truncates the item when displaying the menu.

3. Enter the description for each menu item in the cell directly below the menu item. You can enter labels, numbers, or formulas as menu-item descriptions.

A menu-item description can include up to 512 characters. However, you should limit the description to the width of the window because 1-2-3 truncates descriptions whose length exceeds the width of the window.

4. Immediately below the menu-item descriptions (that is, starting in the third row of the macro menu range), enter the macro instructions that 1-2-3 performs if you select that menu item. Or, enter a `{BRANCH}` or `{subroutine}` command that directs 1-2-3 to a set of macro instructions.
5. Use Range Name Create to assign a range name to *location* (the first cell of the macro menu).

### Examples

The following macro displays the macro menu that starts in cell MACROMENU. When you select one of the menu items, 1-2-3 branches to the macro instructions associated with that item. 1-2-3 executes the `{BEEP}` command only if you press ESC instead of selecting a menu item.

```
{MENUBRANCH MACROMENU}  
{BEEP}
```

The following macro displays the macro menu that starts in cell MACROMENU. When you select one of the menu items, 1-2-3 performs a subroutine call to the macro instructions associated with that menu item. When it completes those instructions, 1-2-3 saves the revised file, and then the macro ends. If you press ESC instead of selecting a menu item, 1-2-3 saves the file and the macro ends.

```
{MENUCALL MACROMENU}  
{ALT}fs  
{QUIT}
```

See also:

Macro Basics

## **{ONERROR}**

{ONERROR *branch-location*,[*message-location*]} traps and handles errors that occur while a macro is running.

Normally, when an error occurs while a macro is running, 1-2-3 displays an error message and, except for background errors, changes the mode indicator to ERROR and ends the macro. However, if an {ONERROR} command is in effect when the error occurs, 1-2-3 returns to READY mode and branches to *branch-location* for further macro instructions. If the {ONERROR} command includes the optional *message-location* argument, 1-2-3 records the error message in *message-location*.

### **Arguments**

*branch-location* is the address or name of the cell or range that contains the macro instructions to which 1-2-3 branches after an error occurs. If you specify a range, 1-2-3 branches to the first cell in the range.

*message-location* is an optional argument that specifies the address or name of a cell or range you specify to store the error message. If you specify a range, 1-2-3 uses the first cell in the range.

### **Uses**

Use {ONERROR} before any point at which there is a possibility of an error. To continue trapping errors, include another {ONERROR} command in the instructions at *branch-location*.

### **Notes**

Each {ONERROR} command can handle only one error. An {ONERROR} command remains in effect until an error occurs, until 1-2-3 executes another {ONERROR} command, or until the macro ends.

{ONERROR} traps all types of errors except macro syntax errors (typing errors in macro instructions that prevent 1-2-3 from interpreting the instructions). When 1-2-3 encounters a macro syntax error, it ends the macro and displays an error message that describes the error.

{ONERROR} clears the subroutine stack. This means that if the error occurs in a subroutine, 1-2-3 does not return to the location from which the subroutine call was issued after completing the instructions in *branch-location*.

When you are using {ONERROR} to trap an error other than the one that results from pressing CTRL+BREAK, you may want to precede the {ONERROR} command with {BREAKOFF}.

Although {ONERROR} changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a {ONERROR} command when worksheet recalculation is set to Automatic. To force recalculation after a {ONERROR} command, follow the command with ~ (tilde) or {CALC}.

### **Examples**

The following excerpt from a macro branches to a subroutine named CHOICE2 if an error occurs and stores the error message in a cell named ERR\_MSG.

```
{ONERROR CHOICE2,ERR_MSG}
```

See also:

Macro Basics



## {OPEN}

{OPEN *file-name,access-type*} opens a text file for read-only processing or for read-and-write processing, depending on the type of access you specify.

### Arguments

*file-name* is the full name of a text file, including the extension, or the address or name of a cell that contains a text file name. Unless the text file is in the current directory, you must specify the path as part of *file-name* and enclose the argument in " (quotation marks), for example, "C:\PERSONAL\JOBMEMO.PRN".

*access-type* is one of the four characters r, w, m, or a (in uppercase or lowercase), or the address or name of a cell that contains one of those characters. The character specifies the type of access you have to the file once it is open:

- r Read access opens an existing file for reading only, placing the byte pointer at the beginning of the file. You can use {READ} and {READLN} but not {WRITE} and {WRITELN} with a file opened with read access.
- w Write access opens a new file for reading and writing. You can use {READ}, {READLN}, {WRITE}, and {WRITELN} with a file opened with write access.  
**Caution** If you open an existing file with write access, 1-2-3 erases the current contents of the file when it opens the file. To open an existing file for writing and retain the existing file contents, use modify or append access.
- m Modify access opens an existing file for reading and writing, placing the byte pointer at the beginning of the file. You can use {READ}, {READLN}, {WRITE}, and {WRITELN} with a file opened with modify access.
- a Append access opens an existing file for reading and writing, placing the byte pointer at the end of the file. You can use {READ}, {READLN}, {WRITE}, and {WRITELN} with a file opened with append access.

### Uses

Use {OPEN} before you use any of the other file manipulation macro commands: {CLOSE}, {FILESIZE}, {GETPOS}, {READ}, {READLN}, {SETPOS}, {WRITE}, and {WRITELN}.

### Notes

Only one text file can be open at a time. If a text file is open when 1-2-3 reaches an {OPEN} command, 1-2-3 automatically closes that text file before opening the new one. If a text file is open when a macro ends, however, 1-2-3 does not automatically close the text file. You must include a {CLOSE} command in the macro to close the file.

After it successfully executes an {OPEN} command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after {OPEN} in the same cell. If {OPEN} returns an error the macro continues in the same cell as {OPEN}.

An open text file does not appear on screen. It is open only in the sense that 1-2-3 can use it.

When opening a new file (a file that does not yet exist in the specified directory), you can use write access only. If you try to open a new file with read, modify, or append access, the {OPEN} command will fail.

### Examples

The following macro opens a new text file named PASTDUE.PRN in the root directory on drive C, enters the contents of the cell named OVERDUE as the first line of the file, and

closes the file; then the macro ends. If unable to open PASTDUE.PRN on drive C, 1-2-3 branches to CONTINUE for further instructions.

```
{OPEN "C:\PASTDUE.PRN",w}{BRANCH CONTINUE}  
{WRITELN OVERDUE}  
{CLOSE}
```

In the following macro, if the working directory contains a file named PASTDUE.PRN, 1-2-3 opens the file with read access, enters the first line of the file in the cell named OVERDUE, closes the file, and ends the macro. If the working directory does not contain a file named PASTDUE.PRN, 1-2-3 branches to CONTINUE.

```
{OPEN PASTDUE.PRN,r}{BRANCH CONTINUE}  
{READLN OVERDUE}  
{CLOSE}
```

See also:

[Macro Basics](#)

## **{PANELOFF} and {PANELON}**

{PANELOFF [clear]} freezes the control panel and status line until 1-2-3 encounters a {PANELON} command or the macro ends.

{PANELON} unfreezes the control panel and the status line.

### **Arguments**

clear is an optional argument. If you include clear, 1-2-3 clears the control panel and status line (except the SST indicator when a macro is running in STEP mode) before freezing them.

### **Uses**

Use {PANELOFF} in interactive macros to freeze or clear the control panel and status line when activity in that area would confuse users.

### **Notes**

{INDICATE} unfreezes and displays the mode indicator after a {PANELOFF} command.

### **Examples**

The following macro freezes the control panel, status line, and worksheet area so that you don't see the series of prompts and dialog boxes that normally appear during F5 (GOTO) commands.

```
{PANELOFF}  
{GOTO}DATA_ONE~  
{ALT}rfc{TAB}2{TAB 2}~  
{GOTO}DATA_TWO~  
{ALT}rfc{TAB}2{TAB 2}~  
{PANELON}
```

### **Similar Commands**

{FRAMEOFF} and {FRAMEON} suppress and restore the worksheet frame. {WINDOWSOFF} and {WINDOWSON} freeze and restore the Worksheet window.

## **{PUT}**

`{PUT location,column-offset,row-offset,entry}` enters a number or left-aligned label in a cell within *location*.

### **Arguments**

*location* is the address or name of a range of any size that contains the cell where you want to enter data.

*column-offset* and *row-offset* are offset numbers that identify the column and row position of a cell within *location*.

*entry* is a number, text, formula, or address or name of a cell that contains a number, label, or formula. If *entry* is a text formula, precede it with a + (plus sign).

### **Uses**

Use {PUT} to change entries in a database table when you know the relative position in the table but not the specific cell address.

### **Notes**

If you use a formula for *entry*, 1-2-3 evaluates the formula and enters the result in *location*.

You can add one or two suffixes -- :string or :value (or an abbreviation of string or value, as long as the first letter is s or v, respectively) -- to *entry*. The suffix tells 1-2-3 explicitly whether to treat the argument as a literal string (enter the argument verbatim) or to evaluate the argument before entering it.

The :string suffix tells 1-2-3 to store the argument as a left-aligned label, even if the argument looks like a number, formula, or cell or range address.

The :value suffix tells 1-2-3 to evaluate the argument before storing it. If the argument is a number, 1-2-3 stores it as a number. If the argument is a formula, 1-2-3 evaluates the formula, and stores the result either as a left-aligned label (for a text formula) or a number (for a numeric formula). If the argument is a cell address or range name, 1-2-3 evaluates the contents of the referenced cell and stores the result as a label or number.

Although {PUT} changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a {PUT} command when worksheet recalculation is set to Automatic. To force recalculation after a {PUT} command, follow the command with ~ (tilde) or {CALC}.

### **Examples**

The following examples refer to a range named COSTS (A1..D5) in the current worksheet.

```
{PUT COSTS,3,2,45}
```

places the number 45 in cell D3.

```
{PUT COSTS,2,0,MONTH}
```

copies the contents of the cell named MONTH to cell C1. If MONTH contains a formula, the macro copies the current value of the formula to cell C1.

```
{PUT COSTS,0,8,500}
```

results in an error. Range COSTS has only five rows, so a *row-offset* of 8 is invalid.

### **Similar Commands**

{LET} specifies the target cell by its address or name.



See also:

[Macro Basics](#)

## **{QUIT}**

{QUIT} ends a macro immediately, returning keyboard control to the user. 1-2-3 never executes any instructions that follow a {QUIT} command.

### **Notes**

If you use {QUIT} in a subroutine, the command ends the entire macro, not just the subroutine.

### **Examples**

In the following line from a macro, if the cell named YEAR contains the value 1991, the macro ends; otherwise, 1-2-3 continues to the next cell for further macro instructions.

```
{IF YEAR=1991}{QUIT}
```

In the following macro, if the value in the cell named YEAR is less than 1991, 1-2-3 branches to OLD; otherwise, the macro ends.

```
{IF YEAR<1991}{BRANCH OLD}  
{QUIT}
```

### **Similar Commands**

{RESTART} clears the subroutine stack, ending the macro when the current subroutine ends. {RETURN} ends the current subroutine and returns control to the calling macro.

See also:

Macro Basics

## **{READ}**

`{READ byte-count,location}` starts at the current byte-pointer position in the open text file, copies the number of bytes specified by *byte-count* to *location*, and advances the byte-pointer *byte-count* bytes.

### **Arguments**

*byte-count* is a value or the address or name of a cell that contains a value from 0 through 511. If the value of *byte-count* is greater than the number of bytes remaining in the file, 1-2-3 copies all of the remaining bytes to *location*. Using a negative number or a number greater than 511 as *byte-count* is equivalent to using 511.

*location* is the address or name of a cell or range. If you specify a range, 1-2-3 enters the data in the first cell of the range.

### **Notes**

After it successfully executes a `{READ}` command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after `{READ}` in the same cell. If `{READ}` returns an error (for example, if no text file is open), the macro continues in the same cell as `{READ}`.

You must open a text file with the `{OPEN}` command before using `{READ}`.

The first byte-pointer position in a text file is reported as 0, not 1.

`{READ}` copies the carriage-return and line-feed characters at the end of text lines.

Although `{READ}` changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a `{READ}` command when worksheet recalculation is set to Automatic. To force recalculation after a `{READ}` command, follow the command with ~ (tilde) or `{CALC}`.

### **Examples**

In an open text file, the byte pointer is at the first byte (position 0) of the text:

Total Sales for the Year Ending 1990

The following `{READ}` command copies the word Total and the space that follows it to the cell named CHARS, and moves the byte pointer forward to the S in Sales.

```
{READ 6,CHARS}
```

### **Similar Commands**

`{READLN}` works like `{READ}`, but does not copy carriage-return and line-feed characters.

See also:

[Macro Basics](#)

## **{READLN}**

{READLN *location* } starts at the current byte-pointer position in the open text file, copies the remainder of the current line to *location*, and advances the byte-pointer to the beginning of the next line in the file.

### **Arguments**

*location* is the address or name of a cell or range. If you specify a range, 1-2-3 enters the data in the first cell of the range.

### **Notes**

After it successfully executes a {READLN} command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after {READLN} in the same cell. If {READLN} returns an error (for example, if no text file is open), the macro continues in the same cell as {READLN}.

You must open a text file with the {OPEN} command before using {READ}.

{READLN} does not copy the carriage-return and line-feed characters at the end of text lines.

Although {READLN} changes the contents of cells, 1-2-3 does not automatically recalculate formulas after executing a {READLN} command when worksheet recalculation is set to Automatic. To force recalculation after a {READLN} command, follow the command with ~ (tilde) or {CALC}.

### **Examples**

In an open text file, the byte pointer is at the beginning of the line that contains the word January. Each line ends with a carriage-return.

January  
February

The first {READLN} command copies the word January to cell MONTH1. The next {READLN} command copies the word February to the cell MONTH2.

```
{READLN MONTH1}  
{READLN MONTH2}
```

### **Similar Commands**

{READ} works like {READLN}, but copies carriage-return and line-feed characters.

See also:

Macro Basics

## **{RECALC} and {RECALCCOL}**

{RECALC *location*,[*condition*],[*iterations*]} recalculates the values in *location*, proceeding row by row.

{RECALCCOL *location*,[*condition*],[*iterations*]} recalculates the values in *location*, proceeding column by column.

### **Arguments**

*location* is the address or name of the cell or range you want to recalculate.

*condition* is an optional argument that tells 1-2-3 to repeat the recalculation until *condition* is true. *condition* is usually a logical formula or the address or name of a cell that contains a logical formula, but it can also be a numeric formula or text formula, a number, or the address or name of a cell.

1-2-3 evaluates any *condition* that does not equal 0 as true and any condition that does equal 0 as false. A numeric formula or number is considered a true *condition* unless its value is 0; a text formula is always a true *condition*; and a reference to a cell that contains the value ERR or NA, a text formula, or a label is always a true *condition*. A reference to a blank cell is always a false *condition*.

If *condition* is the address or name of a cell that contains a formula, and the formula needs to be recalculated for the {RECALC} or {RECALCCOL} command to work correctly, be sure the cell is inside *location*.

*iterations* is an optional argument that tells 1-2-3 to perform the specified number of recalculation passes. *iterations* is a value, or the address or name of a cell that contains a value. This argument overrides the iterations setting in Tools User Setup Recalculation Manual. If *iterations* is 0, 1-2-3 performs the recalculation once.

If you include both *condition* and *iterations*, 1-2-3 repeats the recalculation until *condition* is true or until it has performed the specified number of *iterations*, whichever happens first.

You can use the *iterations* argument without the *condition* argument. To do so, use this syntax:

{RECALC *location*,,*iterations*} or {RECALCCOL *location*,,*iterations*}

The extra argument separator between the *location* and *iterations* arguments tells 1-2-3 that you omitted *condition*.

### **Uses**

Use {RECALC} to recalculate formulas located below and to the left of cells on which they depend.

Use {RECALCCOL} to recalculate formulas located above and to the right of cells on which they depend.

### **Notes**

Use {RECALC} or {RECALCCOL} only if recalculation is set to Manual (with Tools User Setup Recalculation).

When 1-2-3 recalculates with {RECALC} or {RECALCCOL}, it does not update formulas outside the range. To ensure that all your formulas are up to date at the end of a macro that uses {RECALC} or {RECALCCOL}, include a {CALC} instruction in the macro, change worksheet recalculation to Automatic, or press F9 (CALC) when the macro ends.

### **Examples**

The following excerpt from a macro first sets recalculation to Manual. Other macro instructions change the value in cell D4. (The formula in cell A9 is dependent on the value in D4.) The {RECALC} command at the end tells 1-2-3 to recalculate the range named NEWPRICES, which includes cells D4 and A9. Recalculation proceeds row by row, so 1-2-3 recalculates D4 before A9, and the result is accurate.

```
{ALT}turm~{ESC}
```

```
...
```

```
{RECALC NEWPRICES}
```

The following command recalculates the range named PAYMENT, column by column, until the value in the cell named VAL falls below 100 or the number of recalculations equals 50.

```
{RECALCCOL PAYMENT,VAL<100,50}
```

See also:

[Macro Basics](#)

## **{RESTART}**

{RESTART} clears the subroutine stack, ending the macro when the current subroutine ends.

### **Uses**

Use {RESTART} to control where macro execution continues or ends after certain subroutine tasks are performed.

### **Notes**

When 1-2-3 encounters a {RESTART} command, it executes the remaining instructions in the current subroutine, but instead of returning control to the original macro location after it completes the current subroutine, the macro ends. If the instructions that follow {RESTART} in the subroutine transfer macro control elsewhere, however, the macro does not end.

### **Examples**

The following excerpt from a subroutine combines {RESTART} with {IF} to clear the subroutine stack and branch to NEXTPLAN if the cell named STATUS contains the label Not OK. If STATUS contains anything else or is blank, macro control returns to the original macro location after 1-2-3 completes the remainder of the subroutine.

```
{IF STATUS="Not OK"}{RESTART}{BRANCH NEXTPLAN}
```

In the following example, the {FOR} command calls the subroutine BALANCE. The subroutine stores the number entered in cell PURCHASE and enters the new balance in cell BAL. If the new balance is 0 or less, {RESTART} branches to BROKE; otherwise, 1-2-3 repeats the subroutine BALANCE ten times, as specified in the {FOR} command. When the for loop is complete, 1-2-3 returns to the instruction that follows the {FOR} command in the original macro.

```
                {FOR COUNT,1,10,1,BALANCE}  
BALANCE        {GETNUMBER "Cost of purchase?",PURCHASE}  
                {LET BAL,BAL-PURCHASE}  
                {IF BAL<=0}{RESTART}{BRANCH BROKE}
```

### **Similar Commands**

{QUIT} ends macro execution.

See also:

Macro Basics

## **{RETURN}**

{RETURN} returns macro control from a subroutine to the calling macro.

### **Uses**

Use {RETURN} in a subroutine that was called by a {subroutine}, {MENUCALL}, or {FOR} command.

### **Notes**

In a subroutine called by {subroutine} or {MENUCALL}, {RETURN} immediately returns macro control from the subroutine to the location in the calling macro from which {subroutine} or {MENUCALL} was issued. In a subroutine called by a {FOR} command, {RETURN} ends the current iteration of the subroutine and immediately starts the next iteration.

If the subroutine ends with a blank cell, {RETURN} is unnecessary; macro control automatically returns to the calling macro.

When used in the main body of macro instructions rather than in a subroutine, {RETURN} is equivalent to {QUIT}: it ends the macro immediately.

### **Examples**

In the SAVE subroutine below, {GETLABEL} prompts you to type a response. If you type N or n, 1-2-3 returns immediately to the location from which the subroutine call {SAVE} was issued. If you type Y or y, 1-2-3 saves the current version of the file and then returns to the location from which the subroutine call {SAVE} was issued. If you type any other character, 1-2-3 repeats subroutine SAVE from the beginning.

```
SAVE      {GETLABEL,"Save file? (Y/N)",INPUT}~  
          {IF INPUT="N"}{RETURN}  
          {IF INPUT="Y"}{ALT}fs{RETURN}  
          {BRANCH SAVE}
```

### **Similar Commands**

{QUIT} ends macro execution. {RESTART} clears the subroutine stack, ending the macro when the current subroutine ends.

See also:

Macro Basics



## **{ROLLBACK}**

{ROLLBACK [*driver-name*],[*database-name*]} cancels pending external database transactions.

### **Arguments**

*driver-name* is an optional argument that specifies the name of the driver. *driver-name* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

*database-name* is an optional argument that specifies the name of the external database. *database-name* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

You must use both arguments or no arguments. {ROLLBACK} with arguments cancels only the transaction pending for the driver and database you specify. {ROLLBACK} with no arguments cancels all pending transactions.

### **Notes**

{ROLLBACK} works with the SQL Server driver only.

To learn more about using macros for transaction control, see [Chapter 5](#) of *DataLens Drivers for 1-2-3*.

### **Examples**

The following excerpt from a macro cancels the transaction pending for the driver SQL\_SERVER and the database named PAYROLL.

```
{ROLLBACK "SQL_SERVER","PAYROLL"}
```

### **Similar Commands**

{COMMIT} commits (finalizes) pending external database transactions.

See also:

[Macro Basics](#)

## **{SETPOS}**

`{SETPOS offset-number}` moves the byte pointer in an open text file *offset-number* bytes from the first byte in the file.

### **Arguments**

*offset-number* is an offset number that specifies the position in the file to which you want to move the byte pointer, relative to the first byte in the file.

### **Notes**

After it successfully executes a `{SETPOS}` command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after `{SETPOS}` in the same cell. If `{SETPOS}` returns an error (for example, if no text file is open), the macro continues in the same cell as `{SETPOS}`.

You must open a text file with the `{OPEN}` command before using `{SETPOS}`.

The first byte-pointer position in a text file is reported as 0, not 1.

**Caution** 1-2-3 does not prevent you from placing the byte pointer past the end of a file. If necessary, use `{FILESIZE}` to determine the size of a file before using `{SETPOS}`.

### **Examples**

If the byte pointer is at the beginning of a text file that consists of 250 bytes and begins with the text

This report contains information based on last year's performance

the command

```
{SETPOS 10}
```

moves the byte pointer to the letter t at the end of the word report.

The following command, acting on the same text file, enters the value 250 in the cell named BYTES and then moves the byte pointer to the position after the last character in the file. If no text file is open, the macro branches to NEXT.

```
{FILESIZE BYTES}{BRANCH NEXT}  
{SETPOS BYTES}
```

### **Similar Commands**

`{FILESIZE}` determines the number of bytes in an open text file. `{GETPOS}` determines the byte pointer's current position in an open text file.

See also:

Macro Basics

## **{SYSTEM}**

{SYSTEM *command*} temporarily suspends the 1-2-3 session and executes the specified operating system command.

### **Arguments**

*command* represents any DOS command, including commands that run batch files or other programs. *command* is any text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

### **Notes**

After the operating system executes *command*, the 1-2-3 session automatically resumes, and the macro continues.

If *command* sets an error level, follow {SYSTEM} with @INFO("osreturncode") to test whether *command* was completed successfully.

**Caution** Do not use {SYSTEM} to load memory-resident programs. If you do so, you may not be able to resume 1-2-3.

### **Examples**

The following command suspends the 1-2-3 session, executes a batch file called COPYFILE, and returns to 1-2-3. The macro continues after the batch file is finished.

```
{SYSTEM COPYFILE}
```

See also:

Macro Basics

## **{WAIT}**

{WAIT *time-number*} suspends macro execution and displays WAIT as the mode indicator until the time specified by *time-number*. When the specified time arrives, 1-2-3 removes the WAIT indicator and continues the macro.

### **Arguments**

*time-number* is a time number, or the address or name of a cell that contains a time number. If *time-number* represents a nonexistent time or a time that has already passed, 1-2-3 ignores the {WAIT} command and continues to the next macro instruction in the same cell. In most cases, use time @functions to specify *time-number*.

### **Uses**

Use {WAIT} to let the user read what is on the screen before moving to a new location.

### **Notes**

1-2-3 uses your computer's date and time settings to keep track of time. Be sure these settings are correct before you use {WAIT}.

During a {WAIT} command, the only keystroke 1-2-3 responds to is CTRL+BREAK. If you press CTRL+BREAK during a {WAIT} command, 1-2-3 ends the macro immediately, unless you used {BREAKOFF} earlier in the macro.

### **Examples**

The macro READCOL displays the message "Press CTRL+BREAK to stop" as the mode indicator, moves the cell pointer down one row, pauses 5 seconds, and beeps. It repeats this process until you press CTRL+BREAK. This macro is useful to examine a long column of entries or to scroll through a long document while you are reading it.

```
READCOL      {INDICATE "Press CTRL+BREAK to stop"}
PAUSE        {DOWN}
              {WAIT @NOW+@TIME(0,0,5)}
              {BEEP}{BRANCH PAUSE}
```

The following macro suspends macro execution for the amount of time specified by @TIMEVALUE(0.012), about 17.3 minutes:

```
{WAIT @NOW+@TIMEVALUE(0.012)}
```

See also:

Macro Basics

## **{WINDOW-ADJUST}**

{WINDOW-ADJUST *x,y,width,height*} moves the active window so that the upper left corner of the window is *x* pixels from the left and *y* pixels from the top corner of the 1-2-3 window, and sizes the active window to be *height* pixels high and *width* pixels wide.

### **Arguments**

*x* specifies the horizontal position, in pixels, measured from the left side of the 1-2-3 window to the left side of the window being moved. *x* is a value, a formula that results in a value or the address or name of a cell that contains a value or a formula that results in a value.

*y* specifies the vertical position, in pixels, measured from the top of the 1-2-3 window to the top of the window being moved. *y* is a value, a formula that results in a value or the address or name of a cell that contains a value or a formula that results in a value.

*width* specifies the window width, in pixels, from the left border to the right border. *width* is a value, a formula that results in a value or the address or name of a cell that contains a value or a formula that results in a value.

*height* specifies the window height, in pixels, from the top border to the bottom border. *height* is a value, a formula that results in a value or the address or name of a cell that contains a value or a formula that results in a value.

### **Uses**

Use {WINDOW-ADJUST} to position a window in the 1-2-3 window. For example, you can move a Worksheet window to see the Graph window, perform some formatting tasks in the Graph window, then move the Worksheet window back.

You can also use {WINDOW-ADJUST} to reduce and enlarge windows. Reducing a window lets the user see more of the other open windows, and enlarging a window lets the user see more of the file shown in the enlarged window.

### **Notes**

If you specify too large a value for *x* or *y*, the window moves partially or completely out of view. Use Window Tile to bring the window back into view.

### **Examples**

The following macro makes the Graph window SALES active, places it 50 pixels from the left and 30 pixels from the top of the 1-2-3 window, and makes it 215 by 215 pixels in size:

```
{WINDOW-SELECT "SALES"}  
{WINDOW-ADJUST 50,30,215,215}
```

See also:

[Macro Basics](#)

## **{WINDOW-SELECT}**

{WINDOW-SELECT *window-name*} makes the window specified by *window-name* the active window.

### **Arguments**

*window-name* is the name of an open window, as it appears in the title bar, entered as text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

You do not need to include the file extension or path as part of *window-name* unless files with the same name but different extensions are open (for example, SALES.WK1 and SALES.WK3).

If you specify a window that is not open, {WINDOW-SELECT} returns an error.

### **Notes**

When {WINDOW-SELECT} occurs in a macro, 1-2-3 activates a window and then continues executing the macro. The menu that the macro uses after a {WINDOW-SELECT} command depends on whether the active window is a Worksheet window, a Graph window, or the Transcript window.

Commands in the 1-2-3 for Windows main menu, Graph window menu, and Transcript window menu may have the same underlined letter; if the available menu is not the menu you intend, command sequences in the macro may produce unexpected results.

### **Examples**

The following macro activates the Graph window EXPENSES.WK3 GRAPH1.

```
{WINDOW-SELECT "EXPENSES.WK3 GRAPH1"}
```

The following excerpt from a macro activates the Graph window SALES, uses Chart Type Bar to change the graph type from a line graph to a bar graph, and then activates the Worksheet window EARNINGS.WK3.

```
{WINDOW-SELECT "SALES"}  
{ALT}ctb~  
{WINDOW-SELECT "EARNINGS.WK3"}
```

See also:

Macro Basics

## **{WINDOWSOFF} and {WINDOWSON}**

{WINDOWSOFF} suppresses screen updates while a macro is running.

{WINDOWSON} cancels {WINDOWSOFF} and restores normal worksheet display.

### **Uses**

Use {WINDOWSOFF} to suppress visible noninteractive macro activity (changes flashing on the screen), especially in a long macro. {WINDOWSOFF} also speeds up macro execution because 1-2-3 does not update the display.

### **Notes**

{WINDOWSOFF} remains in effect until 1-2-3 executes a {WINDOWSON} command or the macro ends.

### **Examples**

The following macro uses {WINDOWSOFF} before recalculating all the active worksheet files and then uses {WINDOWSON} when recalculation is complete. The macro continues, resuming screen updating.

```
{WINDOWSOFF}  
{CALC}  
{WINDOWSON}
```

### **Similar Commands**

{FRAMEOFF} and {FRAMEON} suppress and restore display of the worksheet frame.  
{PANELOFF} and {PANELON} freeze and restore the control panel and status line.

See also:

Macro Basics

## **{WINDOW-STATE}**

{WINDOW-STATE *state*} minimizes, maximizes, or restores the active window.

### **Arguments**

*state* is one of the words from the table below, as text enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

<b>Argument</b>	<b>Action</b>
Maximize	Maximizes the window.
Minimize	Minimizes the window.
Restore	Restores a maximized window to its previous state.

### **Notes**

{WINDOW-STATE} is equivalent to clicking the Maximize, Minimize, or Restore buttons.

### **Examples**

The following excerpt from a macro minimizes the active Worksheet window before displaying the graph named SALES in the Graph window.

```
{WINDOW-STATE "minimize"}  
{ALT}gv{ALT "g"}SALES~
```

See also:

Macro Basics



## **{WRITE}**

{WRITE *string*} copies text to the open text file, starting at the current byte-pointer position.

### **Arguments**

*string* is text, a text formula, or the address or name of a cell that contains a label or a text formula. If *string* is a text formula, 1-2-3 evaluates the formula and writes the resulting text in the file. If *string* is a value, the macro terminates with an error.

### **Notes**

1-2-3 evaluates *string* and converts the result from LMBCS codes to ASCII codes. It then copies the converted result to the file, starting at the current position of the byte pointer, and advances the byte pointer to the position just beyond the last character written. If necessary, 1-2-3 extends the length of the file to accommodate the incoming *string*.

1-2-3 for Windows maps LMBCS characters to Windows ANSI characters (using the closest match available), because Windows can only display and print ANSI characters. 1-2-3 for Windows accepts all LMNCS characters, but the actual character displayed or printed is limited by the Windows ANSI character set.

A subsequent {WRITE} or {WRITELN} command begins writing where this command stopped, unless you change the position of the byte pointer with a {SETPOS} command. If the byte pointer is in the middle of the file, the incoming *string* writes over existing data.

After it successfully executes a {WRITE} command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after {WRITE} in the same cell. If {WRITE} returns an error (for example, if no text file is open), the macro continues in the same cell as {WRITE}.

You must open a text file with the {OPEN} command before using {WRITE}.

The first byte-pointer position in a text file is reported as 0, not 1.

### **Examples**

The following line from a macro copies the text

McGuill's Dairy

to the open text file. If no text file is open, or if the file was opened with read-only access, the macro branches to FAIL.

```
{WRITE "McGuill's Dairy"}{BRANCH FAIL}
```

The following {WRITE} command copies the label from the cell named FULLNAME to a text file opened with append access earlier in the macro.

```
{WRITE FULLNAME}
```

### **Similar Commands**

{WRITELN} works like {WRITE}, but adds carriage-return and line-feed characters.

See also:

Macro Basics

## **{WRITELN}**

{WRITELN *string*} copies text to the open text file, starting at the current byte-pointer position, and adds a carriage return and line feed.

### **Arguments**

*string* is text, a text formula, or the address or name of a cell that contains a label or a text formula. If *string* is a text formula, 1-2-3 evaluates the formula and writes the resulting text in the file. If *string* is a value, the macro terminates with an error.

### **Notes**

1-2-3 evaluates *string* and converts the result from LMBCS codes to ASCII codes. It then copies the converted result to the file, starting at the current position of the byte pointer, and advances the byte pointer to the position just beyond the last character written. If necessary, 1-2-3 extends the length of the file to accommodate the incoming *string*.

1-2-3 for Windows maps LMBCS characters to Windows ANSI characters (using the closest match available), because Windows can only display and print ANSI characters. 1-2-3 for Windows accepts all LMNCS characters, but the actual character displayed or printed is limited by the Windows ANSI character set.

A subsequent {WRITE} or {WRITELN} command begins writing where this command stopped, unless you change the position of the byte pointer with a {SETPOS} command. If the byte pointer is in the middle of the file, the incoming *string* writes over existing data.

After it successfully executes a {WRITELN} command, 1-2-3 goes directly to the next cell in the macro, ignoring any macro instructions after {WRITELN} in the same cell. If {WRITELN} returns an error (for example, if no text file is open), the macro continues in the same cell as {WRITELN}.

You must open a text file with the {OPEN} command before using {WRITELN}.

The first byte-pointer position in a text file is reported as 0, not 1.

### **Examples**

The following macro writes a line to the open text file, adds a carriage return and line feed to start a new line, and writes four more lines that each end with a carriage return and line feed. If no text file is open, or if the text file was opened with read-only access, the macro branches to FAIL.

```
{WRITE "Musical Instruments in My Band"}{BRANCH FAIL}
{WRITELN " "}
{WRITELN "Keyboard"}
{WRITELN "Saxophone"}
{WRITELN "Drums"}
{WRITELN "Guitar"}
```

### **Similar Commands**

{WRITE} works like {WRITELN}, but does not add carriage-return and line-feed characters.

See also:

Macro Basics



## Using Help

Help provides information about all aspects of 1-2-3 for Windows.

### Selecting a Help Topic

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

When 1-2-3 is in READY mode, you can choose a Help command in the Help pulldown menu in 1-2-3 to gain access to broad categories of Help topics, such as Keyboard, @Functions, and Macros.

### Viewing a Definition

To view the definition of a term using the mouse, point to green text with a dotted underline. When the mouse pointer changes to a hand icon, press the mouse button. Using the keyboard, press TAB until the definition is highlighted, and then press ENTER.

The definition appears in a pop-up box and stays visible until you click the mouse button or press ENTER -- or any other key -- again.

### F1 (HELP)

When you are not in the Help window, you can press F1 (HELP) to open the Help window and get Help on what you are doing in 1-2-3.

**Note** When the Help window is the active window, pressing F1 (HELP) closes 1-2-3 for Windows Help and opens How to Use Help. To return to 1-2-3 for Windows Help Contents, select the Contents button.

### Help Features

#### Cross-References

You can select a Help topic that gives information related to the current topic.

#### Definitions and Examples

You can view definitions and examples in pop-up boxes throughout Help.

#### Help Buttons

You can use Help buttons to go directly to Help Contents, backtrack through Help topics you viewed, browse through sets of related Help topics, and search for information.

#### Help Window Commands

You can print Help topics and open the Help of other Windows applications; copy Help topics to the Clipboard; add notes to Help topics; and add topics to a pulldown menu so you can get to them quickly.

#### Search

You can use Search to find topics associated with the keyword or phrase you specify.

#### Viewing 1-2-3 and Help Together on the Screen

You can keep Help visible while you work in 1-2-3.

See also:

#### Help Keys

## Viewing 1-2-3 and Help Together on the Screen

You can arrange the 1-2-3 window and the Help window so that they overlap as little as possible and both windows remain fully visible while you work.

**Note** 1-2-3 window is the term used to refer to the window whose title bar contains the name of the application: 1-2-3 for Windows. You must manipulate the 1-2-3 window -- not a Worksheet, Graph, or Transcript window -- in the following procedures.

It's likely that at some point in this procedure, the Help window will be partly or completely hidden. You can choose File Print Topic in the Help window to print this topic.

### Moving a Range of Data (1:10) **To Arrange the 1-2-3 Window and the Help Window**

1. If the Help window fills the whole screen, click the Restore button.  
If the Maximize button of the Help window is visible, skip this step.
2. Move the Help window to the left side of the screen by pointing to its title bar and dragging it.
3. Resize the Help window to fill the left half of the screen.  
Drag a top, bottom, or side border to resize in one direction only. Drag a corner of the border to resize vertically and horizontally at the same time. The mouse pointer changes to a white two-headed arrow when you are pointing to a border.
4. Click the 1-2-3 window to make it the active window.  
The active window always appears in the foreground, so the 1-2-3 window may hide part or all of the Help window at this point.
5. If the 1-2-3 window fills the whole screen, click the Restore button.  
If the Maximize button of the 1-2-3 window is visible, skip this step.
6. Move the 1-2-3 window to the right side of the screen by pointing to its title bar and dragging it.
7. Resize the 1-2-3 window to fill the right half of the screen.

### **To Arrange the 1-2-3 Window and the Help Window**

1. If the Help window fills the whole screen, restore the Help window to a smaller size by pressing ALT+ space bar to open the Control menu and then choosing Restore.  
If the Maximize button of the Help window is visible, skip this step.
2. Move the Help window to the left side of the screen.  
Choose Move in the Control menu, use the arrow keys to move the outline of the window, and then press ENTER.
3. Resize the Help window to fill the left half of the screen.  
Choose Size in the Control menu, press an arrow key to indicate which border you want to move, use the arrow keys to move the border, and then press ENTER.
4. Make the 1-2-3 window the active window by pressing ALT+ESC until the 1-2-3 window is the active window.  
The active window always appears in the foreground, so the 1-2-3 window may hide part or all of the Help window at this point.
5. If the 1-2-3 window fills the whole screen, restore it to a smaller size by pressing ALT+ space bar to open the Control menu and then choosing Restore.  
If the Maximize button of the 1-2-3 window is visible, skip this step.

6. Move the 1-2-3 window to the right side of the screen.

Choose Move in the Control menu, use the arrow keys to move the outline of the window, and then press ENTER.

7. Resize the 1-2-3 window to fill the right half of the screen.

Choose Size in the Control menu, press an arrow key to indicate which border you want to move, use the arrow keys to move the border, and then press ENTER.

See also:

[Help and Online Books Window Commands](#)  
[Using Help](#)

## Displaying Definitions and Examples

In Help topics, you will see words and phrases that are green and have a dotted underline: Help provides definitions for these words and phrases. You will also see the word Example followed by a word or phrase that is green and has a dotted underline: Help provides an example of the item under discussion.



### To Display a Definition or Example

1. Point to a term with a dotted underline.

The mouse pointer changes to a hand icon.

2. Press the mouse button.

The pop-up box that contains the definition or example is displayed.

The pop-up box disappears when you press the mouse button again.



### To Display a Definition or Example

1. Press TAB to highlight a term with a dotted underline.

2. Press ENTER.

The pop-up box is displayed.

The pop-up box disappears when you press any key.

See also:

[Help and Online Books Window Commands](#)

[Using Cross-References](#)

[Using Search](#)

## Help Buttons

Help has seven buttons, located in the button bar, that let you move around easily in Help. If the feature is not available, its button is dimmed.

To choose a Help button, click it or press the underlined letter in the button name.

### Contents

Displays 1-2-3 Help Contents.

### Search

Lists all the keywords for Help. By typing or selecting a keyword, you can search for and go to a specific Help topic.

### Back

Displays the last topic you viewed in Help or in Online Books. You can move back one topic at a time in the order you viewed each topic until you return to the first topic you viewed. Then the button is dimmed. The record of which topics you have viewed is erased each time you minimize or close the Help window.

### History

Displays the last 40 Help and Online Books topics selected during the Windows session. The record of which topics you have selected is erased each time you minimize or close the Help window.

### Books

Displays a list of online books. You can open a book by selecting it from this list.

<<

Displays the previous topic in a series of related topics until you reach the first topic in the series. Then the button is dimmed.

>>

Displays the next topic in a series of related topics until you reach the last topic in the series. Then the button is dimmed.

See also:

[Help Keys](#)

[Help and Online Books Window Commands](#)

[Using Search](#)



## Help Keys

The following is a list of the keys you use in 1-2-3 for Windows Help.

ALT+F4

Closes the Help window. Help saves any annotations or bookmarks you created, and saves the current size and position of the Help window.

ALT+ space bar

Opens the Control menu for the Help window.

CTRL+END

Scrolls to the end of the Help topic.

CTRL+HOME

Scrolls to the beginning of the Help topic.

CTRL+INS

Copies a Help topic onto the Clipboard so you can paste it into a worksheet file or another Windows application.

F1 (HELP)

Starts 1-2-3 for Windows Help and displays 1-2-3 Help Contents, or displays Help about what you are doing in 1-2-3. If Help is an icon, pressing F1 (HELP) restores Help to a window and displays the last topic you viewed.

See also:

[Help Buttons](#)

[Help and Online Books Window Commands](#)

[Using Help](#)

## Using Search

You can have Help or Online Books search for topics associated with a keyword or phrase. For example, if you want information about ranges, select "Ranges" from the list of keywords. All the topics associated with the keyword "Ranges" are displayed. You then choose the topic you want to view.

1. Select Search in the Help or Online Books button bar.
2. Select a word or phrase from the list of keywords in the search list box.

You can use the keyboard to scroll quickly to different parts of the list. When you type a letter in the text box, the list box scrolls automatically to the keyword that most closely matches what you are typing.

For example, if you type pr in the text box, the list box scrolls to the first keyword beginning with the letters pr (or to the closest match alphabetically). To select the keyword you want, type the entire word, or press TAB to move to the list box and select the keyword.

3. Select Show Topics.  
All the topics associated with the selected keyword are displayed in the topics list box.
4. Select the topic you want to view. If necessary, use the scroll bar to view more topics.
5. Select Go To or press ENTER.

The topic is displayed.

See also:

[Help and Online Books Window Commands](#)  
[Using Cross-References](#)

## Using Cross-References

In Help and Online Books, you will often see words and phrases that are green and have a solid underline, phrases that are blue, and phrases that are purple. Green words and phrases are cross-references to Help topics related to the current topic. Blue phrases are cross-references to Show Me movies. And purple phrases are cross-references to Online Books topics.



### To Go to a Cross-Reference

1. Point to a cross-reference.

The mouse pointer changes to a hand icon.

2. Click the mouse button.

If you select a green or purple cross-reference, the topic for the cross-reference replaces the current topic in the Help or Online Books window.

If you select a blue cross-reference, the movie for the cross-reference begins playing.



### To Go to a Cross-Reference

1. Press TAB to highlight a cross-reference.

2. Press ENTER.

If you select a green or purple cross-reference, the topic for the cross-reference replaces the current topic in the Help or Online Books window.

If you select a blue cross-reference, the movie for the cross-reference begins playing.

See also:

[Help and Online Books Window Commands](#)  
[Using Search](#)

## **Help and Online Books Window Commands**

### File Commands

[Open](#)  
[Print Topic](#)  
[Printer Setup](#)  
[Exit](#)

### Edit Commands

[Copy](#)  
[Annotate](#)

### Bookmark Commands

[Define](#)  
[\(Bookmark Name\)](#)  
[More](#)

### Help Commands

[How to Use Help](#)  
[About Help](#)

## **File Open (Help and Online Books Windows)**

Reads a Help or Online Books (.HLP) file into memory, replacing the Help or Online Books file you previously had open.

You can open the .HLP file for any application that uses Windows Help. You do not have to be using the application to open its .HLP file. For example, you can be working in 1-2-3 and open the .HLP file for Program Manager and read about basic Windows skills.

1. Choose File Open.
2. Specify the name of the .HLP file you want to open.

You can enter the name of the .HLP file in the File name text box, or you can use the Files and Directories list boxes to select the file you want.

3. Select Open.

See also:

[Help and Online Books Window Commands](#)

## **File Print Topic (Help and Online Books Windows)**

Prints the topic in the Help or Online Books window. You can print entire topics only.

1. Choose File Print Topic.

See also:

[File Printer Setup](#)

[Help and Online Books Window Commands](#)

## **File Printer Setup (Help and Online Books Windows)**

Identifies the printer for Help and Online Books, which is the default printer you set up in Windows, in Control Panel Printers. If you have installed more than one printer in Windows, you can make any of your installed printers the default printer. You can also change the default printer options.

1. Choose File Printer Setup.
2. Select the printer that you want to change to in the Printer list box.
3. Select Setup to change the default printer options.  
A dialog box containing options for the printer you chose is displayed.
4. Select the options you want, and then select OK.  
The File Printer Setup dialog box is redisplayed.
5. Select OK.

When you choose File Print Topic, Help and Online Books will use the printer and options you specified.

See also:

[Help and Online Books Window Commands](#)

## **File Exit (Help and Online Books Windows)**

Closes Help and Online Books, saves any annotations or bookmarks you created, and saves the current size and position of the Help and Online Books window.

1. Choose File Exit.

See also:

[Help and Online Books Window Commands](#)



## **Edit Copy (Help and Online Books Windows)**

Copies the entire text of the current Help or Online Books topic to the [Clipboard](#).

From the Clipboard, you can paste the text into a worksheet file or another Windows application by using Edit Paste.

1. Choose Edit Copy.

See also:

[Help and Online Books Window Commands](#)

## **Edit Annotate (Help and Online Books Windows)**

Adds a note to the current Help or Online Books topic. Annotations are marked with a paper clip icon, which appears to the left of the topic heading.

1. Choose Edit Annotate.
2. Enter the text you want to add in the Annotation text box.

If you make a mistake, press BACKSPACE to erase any unwanted characters and then continue typing.

Text wraps automatically in the text box, but you can end a line before it wraps by pressing CTRL+ENTER.

3. Select OK when you have finished the annotation.

### **To View an Annotation**

1. Go to the topic that contains the annotation.
2. Click the paper clip icon, or press TAB to highlight the paper clip icon and then press ENTER.
3. Select OK or Cancel to close the Annotation dialog box.

### **To Remove an Annotation**

1. Go to the topic that contains the annotation.
2. Click the paper clip icon, or press TAB to highlight the paper clip icon and then press ENTER.
3. Select Delete.

See also:

[Help and Online Books Window Commands](#)

## **Bookmark Define (Help and Online Books Windows)**

Places a bookmark at the current topic or removes a bookmark from any topic. Once you have placed a bookmark at a topic, you can get that topic quickly from the Bookmark menu.

1. Choose Bookmark Define.

2. Specify the name of the bookmark in the Bookmark Name text box.

You can accept the name of the current topic as it appears in the text box, or you can enter a name you create.

3. Select OK.

The bookmark name you specified now appears in the Bookmark pulldown menu.

### **To Remove a Bookmark**

1. Choose Bookmark Define.

2. Select the bookmark you want to remove.

3. Select Delete.

4. Select OK.

See also:

[Bookmark \(Bookmark Name\)](#)

[Bookmark More](#)

[Help and Online Books Window Commands](#)

## **Bookmark (Bookmark Name) (Help and Online Books Windows)**

Replaces the current Help or Online Books topic with the bookmarked topic. A bookmark name appears only after you have defined a bookmark with [Bookmark Define](#). As many as nine bookmark names can appear in the Bookmark pulldown menu.

1. Choose Bookmark.
2. In the Bookmark pulldown, select the bookmark name of the topic you want to see.

See also:

[Bookmark More](#)

[Help and Online Books Window Commands](#)

## **Bookmark More (Help and Online Books Windows)**

Displays the complete list of names given to bookmarked topics. Bookmark More appears only when you have defined more than nine bookmarks.

1. Choose Bookmark More.
2. Select the topic you want in the Go To Bookmark list box.
3. Select OK.

See also:

[Bookmark \(Bookmark Name\)](#)

[Bookmark Define](#)

[Help and Online Books Window Commands](#)

## **How to Use Help (Help and Online Books Windows)**

Closes 1-2-3 for Windows Help and displays Using Help, or closes Online Books and displays Using Online Books. Choosing this command is the same as pressing F1 (HELP) while in Help or Online Books.

To return to 1-2-3 Help Contents or to the Table of Contents for the current book, select Contents in the button bar.

1. Choose How to Use Help.

See also:

[Help and Online Books Window Commands](#)

## **Help About Help (Help and Online Books Windows)**

Displays information about Windows Help, including the version number and copyright notice.

1. Choose Help About Help.
2. Select OK.

See also:

[Help and Online Books Window Commands](#)

## For Upgraders: 1-2-3 Classic

1-2-3 Classic is the command menu of 1-2-3 Release 3.1, available in 1-2-3 for Windows.

**Note** Users who are upgrading from a previous release of 1-2-3 and are familiar with 1-2-3 can read [Quick Start for 1-2-3 Upgraders](#) for a complete introduction to 1-2-3 for Windows.

### Using 1-2-3 Classic

When 1-2-3 for Windows is in READY mode and the active window is a Worksheet window, you can use 1-2-3 Classic by pressing / (slash) or < (less-than symbol). To use Wysiwyg, press : (colon). To use add-ins, press ALT+F10.

**Note** Wysiwyg is read into memory automatically whenever you start 1-2-3 for Windows.

### 1-2-3 Classic Window

The 1-2-3 Classic window contains the following:

- \* Title bar. On the left, the Control menu box contains commands to move and close 1-2-3 Classic, and to switch to another Windows application. For more information, see [Control Menu](#).
- \* Control panel. The 1-2-3 Classic control panel is the 1-2-3 Release 3.1 control panel, except that you enter and edit data in the edit line of the graphical interface. For information about entering data in 1-2-3 for Windows, see [Entering Data](#).

When you complete a command, 1-2-3 Classic disappears. To close the 1-2-3 Classic window without completing a command, do one of the following:

- \* Press ESC until you reach the main menu, and then press ESC again.
- \* Press CTRL+BREAK.
- \* Press ALT+F4.

### 1-2-3 Classic Commands

You work with 1-2-3 Classic commands just as you work when you use 1-2-3 Release 3.1.

Some Release 3.1 commands are not operable in 1-2-3 for Windows. When you highlight a command that is not operable, the following message is displayed below the 1-2-3 Classic menu: Obsolete menu option -- has no effect in 1-2-3 for Windows.

### Running 1-2-3 Release 3.1 Macros

1-2-3 for Windows can execute all 1-2-3 Release 3.1 keystroke macros by using 1-2-3 Classic. 1-2-3 for Windows ignores inoperable commands in a macro, but continues execution of the macro.

For more information about running macros created in other releases of 1-2-3, see ["Macro compatibility"](#) in Chapter 4 of *Quick Start for 1-2-3 Upgraders*.

### Pressing F1 (HELP) in 1-2-3 Classic

When you press F1 (HELP) in 1-2-3 Classic, the Help window opens and displays a table.

In the left column of the table, find the command you chose in 1-2-3 Classic. Opposite this command, in the right column, is information telling you how to complete this command in 1-2-3 for Windows.

To view a table without opening the 1-2-3 Classic window, select a main menu, Wysiwyg, or add-in command from the lists that follow. You can browse to the next topic by pressing **o** or



clicking Browse >> in the Help icon bar. Browse to the previous topic by pressing **r** or clicking Browse <<.

### **Main Menu**

/Worksheet

/Range

/Copy

/Move

/File

/Print

/Graph

/Data

/System

/Quit

### **Wysiwyg Commands**

:Worksheet

:Format

:Graph

:Print

:Display

:Special

:Text

:Named-Style

:Quit

### **Add-in Commands**

Add-in Commands

## **1-2-3 Classic Main Menu**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Worksheet commands

Range commands

Copy command

Move command

File commands

Print commands

Graph commands

Data commands

System command

Quit command

See also:

For Upgraders: 1-2-3 Classic

## **/Copy**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

You chose /Copy. In 1-2-3 for Windows, choose Edit Quick Copy.

## **/Data**

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /D**

### **In 1-2-3 for Windows, choose**

---

Distribution

[Data Distribution](#)

External

[Data Connect to External](#) or [Data External Options](#)

Fill

[Data Fill](#)

Matrix

[Data Matrix](#)

Parse

[Data Parse](#)

Query

[Data Query](#)

Regression

[Data Regression](#)

Sort

[Data Sort](#)

Table

[Data What-if Table](#)

## **/Data External**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /DE**

### **In 1-2-3 for Windows, choose**

---

Create	<u>Data External Options Create Table</u>
Delete	<u>/Data External Delete</u>
List Fields	<u>Data External Options Paste Fields</u>
List Tables	<u>/Data External List Tables</u>
Other Command	<u>Data External Options Send Command</u>
Other Refresh	<u>/Data External Other Refresh</u>
Other Translation	<u>/Data External Other Translation</u>
Quit	<u>/Data External Quit</u>
Reset	<u>Data External Options Disconnect</u>
Use	<u>Data Connect to External</u>

## **/Data Matrix**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose /DM**                      **In 1-2-3 for Windows, choose**

---

Invert Data Matrix Invert

Multiply      Data Matrix Multiply

## **/Data Query**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /DQ**

### **In 1-2-3 for Windows, choose**

---

Criteria	<u>Data Query</u>
Del	<u>Data Query Delete</u>
Extract	<u>Data Query Extract</u>
Find	<u>Data Query Find</u>
Input	<u>Data Query</u>
Modify	<u>Data Query Modify</u>
Output	<u>Data Query</u>
Quit	<u>/Data Query Quit</u>
Reset	<u>Data Query</u>
Unique	<u>Data Query Extract</u>

## **/Data Query Modify**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /DQM**

### **In 1-2-3 for Windows, choose**

---

Cancel

/Data Query Modify Cancel

Extract

Data Query Modify Extract

Insert

Data Query Modify Insert

Replace

Data Query Modify Replace



## **/Data Table**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose /DT**                      **In 1-2-3 for Windows, choose**

---

1      Data What-if Table 1-Way

2      Data What-if Table 2-Way

3      Data What-if Table 3-Way

Labeled      /Data Table Labeled

Reset Data What-if Table Reset

## **/File**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose /F** **In 1-2-3 for Windows, choose**

---

Admin File Administration

Combine File Combine From

Dir Tools User Setup

Erase /File Erase

Import File Import From

List /File List

New File New

Open File Open

Retrieve File Open

Save File Save As

Xtract File Extract To

## **/File Admin**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /FA**

### **In 1-2-3 for Windows, choose**

---

Link-Refresh

[File Administration Update Links](#)

Reservation

[File Administration Network Reserve](#)

Seal

[File Administration Seal File](#)

Table

[File Administration Paste Table](#)

## **/File Import**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose /FI**

**In 1-2-3 for Windows, choose**

---

Numbers

File Import From Numbers

Text

File Import From Text

## **/Graph**

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /G**

### **In 1-2-3 for Windows, choose**

---

A - F	<a href="#">Chart Ranges</a>
Group	<a href="#">Chart Ranges Group Range</a>
Name	<a href="#">/Graph Name</a> for more information
Options	<a href="#">/Graph Options</a> for more information
Quit	<a href="#">/Graph Quit</a>
Reset	<a href="#">Chart Clear</a>
Save	<a href="#">Obsolete</a>
Type	<a href="#">Chart Type</a> or <a href="#">Chart Ranges</a>
View	<a href="#">Graph View</a>
X	<a href="#">Chart Ranges</a>

## **/Graph Name**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /GN**

### **In 1-2-3 for Windows, choose**

---

Create	<u>Graph New</u>
Delete	<u>Graph Name Delete</u>
Reset	<u>Graph Name Delete</u>
Table	<u>Graph Name Paste Table</u>
Use	<u>Graph View</u>

## **/Graph Options**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /GO**

### **In 1-2-3 for Windows, choose**

---

Advanced	<u><a href="#">/Graph Options Advanced</a></u> for more information
B&W	<u><a href="#">/Graph Options B&amp;W</a></u>
Color	<u><a href="#">/Graph Options Color</a></u>
Data-Labels	<u><a href="#">/Graph Options Data-Labels</a></u> for more information
Format	<u><a href="#">Chart Options Lines</a></u>
Grid	<u><a href="#">Chart Borders/Grids</a></u>
Legend	<u><a href="#">Chart Legend</a></u>
Quit	<u><a href="#">/Graph Options Quit</a></u>
Scale	<u><a href="#">Chart Axis</a></u>
Titles	<u><a href="#">/Graph Options Titles</a></u> for more information

## **/Graph Options Advanced**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /GOA**

### **In 1-2-3 for Windows, choose**

---

Colors

Chart Options Colors

Hatches

Chart Options Hatches

Quit

/Graph Options Advanced Quit

Text

Chart Options Fonts or Chart Options Colors



## **/Graph Options Data-Labels**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /GOD**

### **In 1-2-3 for Windows, choose**

---

A - F

Chart Data Labels

Group

Chart Data Labels Group Range

Quit

/Graph Options Data-Labels Quit

## **/Graph Options Titles**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose /GO**

**In 1-2-3 for Windows, choose**

---

Titles

Chart Headings

Chart Axis X Options

Chart Axis Y Options

Chart Axis 2nd Y Options

## **/Graph Type Features**

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /GTF**

### **In 1-2-3 for Windows, choose**

---

Drop-Shadow	<a href="#">Chart Type</a>
Frame	<a href="#">Chart Borders/Grids</a>
Horizontal	<a href="#">Chart Type</a>
100%	<a href="#">Chart Axis Y</a> or <a href="#">Chart Axis 2nd Y</a>
Quit	<a href="#">/Graph Type Features Quit</a>
Stacked	<a href="#">Chart Type</a>
2Y-Ranges	<a href="#">Chart Ranges</a>
3D	<a href="#">Chart Type</a>
Table	<a href="#">Chart Type</a>
Vertical	<a href="#">Chart Type</a>
Y-Ranges	<a href="#">Chart Ranges</a>

## **/Move**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

You chose /Move. In 1-2-3 for Windows, choose Edit Move Cells.

## **/Print**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**Note** To make any /Print command effective in 1-2-3 for Windows, you must complete the entire print operation using only /Print commands.

### **You chose /P**

### **In 1-2-3 for Windows, choose**

---

Cancel	<u>Windows Print Manager</u>
Encoded	<u>Windows Control Panel Printers Configure</u>
File	<u>File Extract To</u>
Printer	<u>File Print</u>
Quit	<u>/Print Quit</u>
Resume	<u>Windows Print Manager</u>
Suspend	<u>Windows Print Manager</u>

## **/Print [Encoded, File, Printer]**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**Note** To make any /Print command effective in 1-2-3 for Windows, you must complete the entire print operation using only /Print commands.

### **You chose /P [E,F,P]**

### **In 1-2-3 for Windows, choose**

---

Align	<u>/Print [E,F,P] Align</u>
Clear	<u>File Page Setup Restore</u>
Go	<u>File Print</u>
Hold	<u>Windows Print Manager</u>
Image	<u>Obsolete</u>
Line	<u>/Print [E,F,P] Line</u>
Options	<u>/Print [E,F,P] Options</u> for more information
Page	<u>/Print [E,F,P] Page</u>
Quit	<u>/Print [E,F,P] Quit</u>
Range	<u>File Print</u>
Sample	<u>Obsolete</u>

## **/Print [Encoded, File, Printer] Options**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**Note** To make any /Print command effective in 1-2-3 for Windows, you must complete the entire print operation using only /Print commands.

### **You chose /P [E,F,P]O      In 1-2-3 for Windows, choose**

---

Advanced AutoLF	<u>/Print [E,P] Options Advanced AutoLF</u>
Advanced Quit	<u>/Print [E,P] Options Advanced Quit</u>
Borders	<u>File Page Setup Borders</u>
Footer	<u>File Page Setup Header/Footer</u>
Header	<u>File Page Setup Header/Footer</u>
Margins	<u>File Page Setup Margins</u>
Name	<u>File Page Setup Save</u> and <u>File Page Setup Retrieve</u>
Other	<u>/Print [E,F,P] Options Other</u>
Pg-Length	<u>File Printer Setup</u> ; then choose Setup
Quit	<u>/Print [E,F,P] Options Quit</u>
Setup	<u>/Print [E,P] Options Setup</u>

## **/Quit**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

You chose /Quit. In 1-2-3 for Windows, choose File Exit.



## **/Range**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /R**

### **In 1-2-3 for Windows, choose**

---

Erase	<u>Edit Clear</u>
Format	<u>Range Format</u>
Input	<u>/Range Input</u>
Justify	<u>Range Justify</u>
Label	<u>Style Alignment</u>
Name	<u>Range Name</u>
Prot	<u>Range Protect</u>
Search	<u>Edit Find</u>
Trans	<u>Range Transpose</u>
Unprot	<u>Range Unprotect</u>
Value	<u>Edit Quick Copy</u>

## **/Range Name**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /RN**

### **In 1-2-3 for Windows, choose**

---

Create	<u>Range Name Create</u>
Delete	<u>Range Name Delete</u>
Labels	<u>Range Name Label Create</u>
Note	<u>/Range Name Note</u>
Reset	<u>Range Name Delete</u>
Table	<u>Range Name Paste Table</u>
Undefine	<u>Range Name Delete</u>

## **/System**

You chose /System. This 1-2-3 Classic command has no equivalent in the graphical interface. You can choose this command only from 1-2-3 Classic. Help is not available for this command.

## **/Worksheet**

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /W**

### **In 1-2-3 for Windows, choose**

---

Column	<a href="#">/Worksheet Column</a> for more information
Delete	<a href="#">/Worksheet Delete</a> for more information
Erase	<a href="#">File Close</a>
Global	<a href="#">/Worksheet Global</a> for more information
Hide	<a href="#">/Worksheet Hide</a> for more information
Insert	<a href="#">Worksheet Insert</a>
Page	<a href="#">Worksheet Page Break</a>
Status	<a href="#">Obsolete</a>
Titles	<a href="#">Worksheet Titles</a>
Window	<a href="#">/Worksheet Window</a> for more information

## **/Worksheet Column**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose /WC**                      **In 1-2-3 for Windows, choose**

---

Column-Range      Worksheet Column Width

Display            Worksheet Unhide

Hide      Worksheet Hide

Reset-Width      Worksheet Column Width

Set-Width        Worksheet Column Width

## **/Worksheet Delete**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose /WD** **In 1-2-3 for Windows, choose**

---

Column Worksheet Delete

File File Close

Row Worksheet Delete

Sheet Worksheet Delete

## **/Worksheet Global**

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /WG**

### **In 1-2-3 for Windows, choose**

---

Col-Width	<a href="#">Worksheet Global Settings Column Width</a>
Default	<a href="#">/Worksheet Global Default</a> for more information
Format	<a href="#">Worksheet Global Settings Format</a>
Group	<a href="#">Worksheet Global Settings Group Mode</a>
Label	<a href="#">Worksheet Global Settings Align Labels</a>
Prot	<a href="#">Worksheet Global Settings Protection</a>
Recalc	<a href="#">Tools User Setup Recalculation</a>
Zero	<a href="#">Worksheet Global Settings Zero Display</a>

## **/Worksheet Global Default**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose /WGD**

### **In 1-2-3 for Windows, choose**

---

Autoexec	<u>Tools User Setup</u>
Dir	<u>Tools User Setup</u>
Ext	<u>/Worksheet Global Default Ext</u>
Graph	<u>/Worksheet Global Default Graph</u>
Other	<u>/Worksheet Global Default Other</u> for more information
Printer	<u>File Page Setup</u> or <u>File Printer Setup</u>
Quit	<u>/Worksheet Global Default Quit</u>
Status	<u>Obsolete</u>
Temp	<u>Obsolete</u>
Update	<u>Tools User Setup</u>



## **/Worksheet Global Default Other**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose /WGDO                      In 1-2-3 for Windows, choose**

---

Beep Tools User Setup

Clock Tools User Setup

Help Obsolete

International Tools User Setup International

Undo Tools User Setup

## **/Worksheet Hide**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose /WH**

**In 1-2-3 for Windows, choose**

---

Enable

Worksheet Hide

Disable

Worksheet Unhide

## **/Worksheet Window**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose /WW**                      **In 1-2-3 for Windows, choose**

---

Clear Window Split

Display        Obsolete

Graph Graph View

Horizontal    Window Split

Map    Obsolete

Perspective Window Split

Sync Window Split

Unsync        Window Split

Vertical        Window Split

## **Wysiwyg Commands**

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

[:Worksheet commands](#)

[:Format commands](#)

[:Graph commands](#)

[:Print commands](#)

[:Display commands](#)

[:Special commands](#)

[:Text commands](#)

[:Named-Style commands](#)

[:Quit command](#)

See also:

[For Upgraders: 1-2-3 Classic](#)

## **:Display**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :D**

### **In 1-2-3 for Windows, choose**

---

Colors	<u>Window Display Options Colors</u>
Default	<u>Window Display Options</u>
Font-Directory	<u>Obsolete</u>
Mode	<u>Window Display Options</u>
Options	<u>:Display Options</u> for more information
Quit	<u>:Display Quit</u>
Rows	<u>Obsolete</u>
Zoom	<u>Window Display Options Zoom</u>

## **:Display Options**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :DO**

### **In 1-2-3 for Windows, choose**

---

Cell-Pointer

:Display Options Cell-Pointer

Frame

Window Display Options Frame

Grid

Window Display Options Options

Intensity

Obsolete

Page-Breaks

Window Display Options Options

Quit

:Display Options Quit

## **:Format**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :F**

### **In 1-2-3 for Windows, choose**

---

Bold	<u>Style Font</u>
Color	<u>Style Color</u>
Font	<u>Style Font</u>
Italics	<u>Style Font</u>
Lines	<u>Style Border</u>
Quit	<u>:Format Quit</u>
Reset	<u>Edit Clear Special</u>
Shade	<u>Style Shading</u>
Underline	<u>Style Font</u>

## **:Graph**

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :G**

### **In 1-2-3 for Windows, choose**

---

Add	<a href="#">:Graph Add</a> for more information
Compute	<a href="#">Graph Refresh</a>
Edit	<a href="#">:Graph Edit</a> for more information
Goto	<a href="#">Graph Go To</a>
Move	<a href="#">Graph Size</a>
Quit	<a href="#">:Graph Quit</a>
Remove	<a href="#">Edit Clear Special</a>
Settings	<a href="#">Style Display Options</a>
View	<a href="#">:Graph View</a>
Zoom	<a href="#">:Graph Zoom</a>



## **:Graph Add**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :GA**

### **In 1-2-3 for Windows, choose**

---

Blank

Range Annotate

Current

Graph Add to Sheet

Metafile

Graph Import

Named

Graph Add to Sheet

PIC

Graph Import

## **:Graph Edit**

To select a [Help topic](#) using the mouse, point to green text with a solid underline. When the mouse pointer changes to a [hand icon](#), click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :GE**

### **In 1-2-3 for Windows, choose**

---

Add	<a href="#">:Graph Edit Add</a> for more information
Color	<a href="#">Style Color</a>
Edit	<a href="#">:Graph Edit Edit</a> for more information
Options	<a href="#">:Graph Edit Options</a> for more information
Quit	<a href="#">:Graph Edit Quit</a>
Rearrange	<a href="#">:Graph Edit Rearrange</a> for more information
Select	<a href="#">Edit Select</a>
Transform	<a href="#">:Graph Edit Transform</a> for more information
View	<a href="#">:Graph Edit View</a> for more information

## **:Graph Edit Add**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :GEA**

### **In 1-2-3 for Windows, choose**

---

Arrow

Draw Arrow

Ellipse

Draw Ellipse

Freehand

Draw Freehand

Line

Draw Line

Polygon

Draw Polygon

Rectangle

Draw Rectangle

Text

Draw Text

## **:Graph Edit Edit**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose :GEE                      In 1-2-3 for Windows, choose**

---

Arrowheads Style Lines

Centering Style Alignment

Font Style Font

Line-Style Style Lines

Smoothing Style Lines

Text Obsolete

Width Style Lines

## **:Graph Edit Options**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose :GEO**

**In 1-2-3 for Windows, choose**

---

Cursor

:Graph Edit Options Cursor

Font-Magnification

Style Font

Grid

Style Display Options

## **:Graph Edit Rearrange**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :GER**

### **In 1-2-3 for Windows, choose**

---

Back	<u>Layout Fall Back</u>
Copy	<u>Edit Replicate</u>
Delete	<u>Edit Delete</u>
Front	<u>Layout Send Forward</u>
Lock	<u>Layout Lock</u>
Move	<u>Obsolete</u>
Restore	<u>Edit Undelete</u>
Unlock	<u>Layout Unlock</u>

## **:Graph Edit Transform**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :GET**

### **In 1-2-3 for Windows, choose**

---

Clear	<u>Rearrange Clear</u>
Horizontal	<u>Rearrange Skew Horizontal</u>
Quarter-Turn	<u>Rearrange Quarter-Turn</u>
Rotate	<u>Rearrange Turn</u>
Size	<u>Rearrange Adjust Size</u>
Vertical	<u>Rearrange Skew Vertical</u>
X-Flip	<u>Rearrange Flip Vertical</u>
Y-Flip	<u>Rearrange Flip Horizontal</u>

## **:Graph Edit View**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :GEV**

### **In 1-2-3 for Windows, choose**

---

Down	<u>Window Enlarge</u> , <u>Window Reduce</u> , or <u>Window Zoom</u> ; then use the vertical scroll bar
Full	<u>Window Full</u>
In	<u>Window Zoom</u>
Left	<u>Window Enlarge</u> , <u>Window Reduce</u> , or <u>Window Zoom</u> ; then use the horizontal scroll bar
-	<u>Window Reduce</u>
Pan	<u>Window Enlarge</u> and <u>Window Reduce</u>
+	<u>Window Enlarge</u>
Right	<u>Window Enlarge</u> , <u>Window Reduce</u> , or <u>Window Zoom</u> ; then use the horizontal scroll bar
Up	<u>Window Enlarge</u> , <u>Window Reduce</u> , or <u>Window Zoom</u> ; then use the vertical scroll bar



## **:Named-Style**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose :N**

**In 1-2-3 for Windows, choose**

---

Define

Style Name

1 - 8

Style (Named Style)

## **:Print**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :P**

### **In 1-2-3 for Windows, choose**

---

Configuration	<u><a href="#">:Print Configuration</a></u> for more information
File	<u><a href="#">Windows Control Panel Printers Configure</a></u>
Go	<u><a href="#">File Print</a></u>
Info	<u><a href="#">:Print Info</a></u>
Layout	<u><a href="#">File Page Setup</a></u>
Preview	<u><a href="#">File Preview</a></u>
Quit	<u><a href="#">:Print Quit</a></u>
Range	<u><a href="#">File Print</a></u>
Settings	<u><a href="#">:Print Settings</a></u> for more information

## **:Print Configuration**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :PC**

### **In 1-2-3 for Windows, choose**

---

Bin	<u>File Printer Setup</u> ; then choose Setup
1st-Cart	<u>File Printer Setup</u> ; then choose Setup
Interface	<u>Windows Control Panel Printers</u>
Orientation	<u>File Page Setup Orientation</u>
Printer	<u>File Printer Setup</u>
Quit	<u>:Print Configuration Quit</u>
Resolution	<u>File Printer Setup</u> ; then choose Setup
2nd-Cart	<u>File Printer Setup</u> ; then choose Setup

## **:Print Settings**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :PS**

### **In 1-2-3 for Windows, choose**

---

Begin	<u>File Print</u>
End	<u>File Print</u>
Frame	<u>File Page Setup Options</u>
Grid	<u>File Page Setup Options</u>
Quit	<u>:Print Settings Quit</u>
Reset	<u>File Page Setup Restore</u>
Start-Number	<u>File Print</u>
Wait	<u>Obsolete</u>

## **:Special**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose :S**

**In 1-2-3 for Windows, choose**

---

Copy

Edit Quick Copy

Export

:Special Export

Import

:Special Import

Move

Edit Move Cells

## **:Text**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose :T**

### **In 1-2-3 for Windows, choose**

---

Align

Style Alignment

Clear

:Text Clear

Edit

:Text Edit

Reformat

Range Justify

Set

:Text Set

## **:Worksheet**

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

**You chose :W** **In 1-2-3 for Windows, choose**

---

Column Worksheet Column Width

Page Worksheet Page Break

Row Worksheet Row Height

## **:Quit**

You chose :Quit. The 1-2-3 Classic command you chose has no equivalent in the graphical interface. You can choose this command only from 1-2-3 Classic. Help is not available for this command.



## Add-in Commands

To select a Help topic using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

### **You chose ALT+F10**

### **In 1-2-3 for Windows, choose**

---

Clear	<u>Tools Add-in Remove All</u>
Invoke	<u>ALT+F10 Invoke</u>
Load	<u>Tools Add-in Load</u>
Quit	<u>ALT+F10 Quit</u>
Remove	<u>Tools Add-in Remove</u>
Settings	<u>ALT+F10 Settings</u>
Table	<u>ALT+F10 Table</u>
Table Applications	<u>ALT+F10 Table Applications</u>
Table @Functions	<u>ALT+F10 Table @Functions</u>
Table Macros	<u>ALT+F10 Table Macros</u>

This command has no effect in 1-2-3 for Windows.

See also:

[For Upgraders: 1-2-3 Classic](#)

The 1-2-3 Classic command you chose has no equivalent in the graphical interface. You can use this command only in 1-2-3 Classic.

Help is not available for this command.

See also:

[For Upgraders: 1-2-3 Classic](#)

For more information about Windows operations, see the *Microsoft Windows User's Guide*, or choose Help in the group or program item window.

See also:

[Control Menu](#)

[Exiting and Ending 1-2-3 for Windows](#)

[For Upgraders: 1-2-3 Classic](#)

## Error Message Index

To see Help for a specific error message, select a letter and then select the error message. To move through the alphabet, use Browse.

To select a letter using the mouse, point to a green letter with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
<u>F</u>	<u>G</u>	<u>H</u>	<u>I</u>	<u>J</u>
<u>K</u>	<u>L</u>	<u>M</u>	<u>N</u>	<u>O</u>
<u>P</u>	<u>Q</u>	<u>R</u>	<u>S</u>	<u>T</u>
<u>U</u>	<u>V</u>	<u>W</u>	X	Y
Z				

## **A**    Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

A range name cannot begin with <<>>

Add-in "add\_in\_name" already in memory

Add-in "add\_in\_name" not in memory

"Add-in error message"

Add-in not listed on settings sheet

Add-ins nested too deeply

Adjustable cell entry is invalid

Advise is already in effect for this DDE item

Advise is not in effect for this DDE item

All constraints are binding for this answer

All constraints are satisfied, but optimal cell equals ERR or NA

All modified files must be reserved before saving

Ambiguous field reference in query

Application not found

At least one variable range must be specified

## **B**    Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Backup file exists in memory

Backup unsuccessful due to file error

Bad DDE link name

Bin range cannot span worksheets

Break

## C Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Cannot add graphic

Cannot convert extension. File already exists in memory.

Cannot create file

Cannot create format file

Cannot create names from a range of labels that is not in memory

Cannot create temporary file

Cannot create the report file

Cannot define a named style from a graphic

Cannot delete all visible worksheets

Cannot delete all worksheets

Cannot erase file

Cannot erase file. It is in use or has read-only access

Cannot execute query with a circular reference

Cannot export to this format from a multiple-worksheet file

Cannot find an optimal answer

Cannot find an optimal answer -- the optimal cell is unbounded

Cannot find any more answers

Cannot find "file\_name"

Cannot find library file "library\_file\_name"

Cannot finish solving this problem

Cannot finish solving this problem -- an @function has too many arguments

Cannot finish solving this problem -- formula is too complicated

Cannot finish solving this problem -- formula is too long

Cannot finish solving this problem -- it is too complicated

Cannot go to a range that is not in memory

Cannot have more than 256 worksheets in memory

Cannot hide all columns

Cannot hide last visible worksheet

Cannot import - file is in use

Cannot invert matrix

Cannot invoke operating system

Cannot justify text if worksheet protection enabled

Cannot launch application

Cannot load driver "L1WEM"



Cannot load driver "L1WRT"

Cannot modify a range that is not in memory

Cannot move data between files

Cannot move graph beyond worksheet boundaries

Cannot move or copy data beyond worksheet boundaries

Cannot move or copy formats beyond worksheet boundaries

Cannot open printer driver

Cannot optimize a constraint cell

Cannot paste DDE link

Cannot print ranges that are not in memory

Cannot read "file\_name"

Cannot read Help file

Cannot read locked Symphony worksheet file

Cannot retrieve library file

Cannot search range

Cannot solve this problem

Cannot solve this problem -- @LOOKUP function offset is not constant

Cannot solve this problem -- formulas are contradictory

Cannot solve this problem -- unsupported @function in cell "cell address"

Cannot undo this operation

Cannot undo this series of add-in operations

Cannot use both Edit Undo and /Data External Refresh Automatic

Cannot use computed columns with Data Query Modify

Cannot use ranges that are not in memory

Cannot use :Text Edit on a hidden range

Cannot use this command in text display mode

Cannot write a value into protected cell "cell address"

Cannot write over data with APPEND commands

Cell "cell address" refers to an unsupported string

Cell format not available for Answer table report

Cell format not available for How solved report

Column hidden

Constraint cell entry is invalid

Constraints and the optimal cell must not refer to constraint cells

Could not find a solution -- try changing By changing cell value

Criteria and output ranges cannot overlap

Criteria must contain field reference

Criteria range must be in an active file

Criteria too complex

## **D** Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Data Parse ranges cannot span worksheets

Data Query Find works only in active files

Data Query Modify Extract canceled or not performed

Data range and sort keys must be in memory

Data What-if Table and Data Query commands are disabled

Database @functions more than 8 levels deep in criteria

DDE conversation not open

DDE link is already assigned

DDE protocol error, can't post messages to server application

DDE server not responding

Destination range full or invalid

Difference amount must be a number

Directory does not exist

Directory entry update error

Disk drive not ready

Disk error

Disk full

Disk is write-protected

Driver cannot perform this database operation

## **E**     Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Each variable must have an input cell

ERR values are not allowed in the output range

Error accessing temporary file

Error initializing add-in "file\_name"

Error loading add-in "file\_name"

Error loading add-in resource file

Error loading driver file

Error loading fallback table

Error reading file

Error reading format file

Error replacing extracted records

Error running add-in macro

Error saving file

Error storing the By changing cell value

Error while writing file

Error writing file

Error writing 123W.INI file

Estimated number of answers must be an integer between 1 and 999

External database data type not allowed in worksheet

External table ranges not allowed

External table was not created

## **F**     Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Field names must be unique within an input table

File already exists

File already exists in memory

File already in use

File and/or extension converted

File contention prevented accessing the file

File does not exist

File is already sealed

File is not sealed

File is read-only

File is sealed

File name already exists on disk

First answer number is either non-numeric or invalid

Formula label range cannot be blank

Formula range and formula label range are required

Formula too complex

## **G** Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

General spooler error

Global protection is enabled

Graph error - not enough memory to draw graph

Graph name already exists

Graph name does not exist

Graph not found

Graph too big to be edited

Guess value must be a number

## **H**    Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Hidden columns not allowed in title region

## I Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Incompatible character set

Incompatible database driver

Incompatible worksheet information lost during saving

Incompatibility with previous versions of 1-2-3

Incorrect file name or path syntax

Incorrect function syntax in cell "cell address"

Incorrect password

Input and output ranges cannot overlap

Input line too long

Input range must be in an active file

Insufficient precision available when using cell "cell address"

Internal error

Internal error (Solver)

Invalid application or topic name

Invalid application, topic or item

Invalid argument specified in {EDIT-CLEAR} command

Invalid By changing cell

Invalid cell or range address

Invalid cell or range address (Solver)

Invalid character in extension

Invalid character in file name

Invalid Clipboard format

Invalid configuration file

Invalid criteria range

Invalid date

Invalid DDE update mode

Invalid disk name

Invalid expression

Invalid external database data type

Invalid extra sort-key number

Invalid field name

Invalid file operation

Invalid FORBREAK

Invalid format line



Invalid FORMBREAK

Invalid formula in query

Invalid formula label range

Invalid input range specified

Invalid item

Invalid library file

Invalid Make cell

Invalid matrix

Invalid \nnn code in Setup String

Invalid number

Invalid number input

Invalid output range

Invalid print range

Invalid range

Invalid string argument

Invalid type

Invalid use of database @function in criteria

Invalid use of macro menu command

Invalid use of range in cell "cell address"

Invalid value

Invalid window state

Invalid worksheet variable range

Invalid X range

Invalid /X command in macro

Invalid Y range

## **J**     Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Justify range is full or line too long

## **K**    Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Key column outside sort range

## **L**     Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Left margin equals or exceeds right margin

## **M**    Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Macro: missing argument

Margins equal or exceed page size

Margins, header and footer equal or exceed page length

Matrix too large for inversion

Matrixes incompatible for multiplication

Matrixes too large for multiplication

Maximum command line length exceeded

Memory full

Missing sort key

More than one file has the same range name

More than 75 X variables

Must specify a down or across variable range

## **N**     Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Name too long

Named field does not exist

Named range not found in worksheet file

Named table does not exist

No active file to get reservation

No add-in application assigned

No add-in applications in memory

No add-ins in memory

No answers exist to put in the worksheet

No application in add-in "add\_in\_name"

No criteria range specified

No external database drivers are loaded

No external databases are in use

No external table specified for creation

No external tables are available

No files of specified type on disk

No input range specified

No macro file for custom icon

No more matching strings

No output range specified

No print range specified (:Print)

No print range specified (/Print)

No printer driver installed

No significant difference exists between these two answers

No table definition range exists to create table

No unprotected cells in input range

No valid adjustable cells were specified

No valid constraint cells were specified

Not a square matrix

Not a valid icon palette file

Not a valid worksheet file

Not enough memory to load driver file

Not enough memory to print

Not enough worksheets in To range

Number is too large

Number too large/small to pass to external table

Number is too small

## ○ Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Only one input range is allowed

Optimal cell must be a single cell that depends on an adjustable cell

Out of memory

Out of memory (Solver)

Out of memory. Edit Undo disabled.

Output range must contain more than one row



## **P**     Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Parse format line can only be created for labels

Parse input range must start with format line

Part of combine file lost

Part of file is missing

Passwords do not match

Print job canceled from spooler

Print settings name does not exist

Problem refers to undefined range name or a worksheet on disk

Protected cell

Protected cell

## **R**    Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Range cannot span worksheets

Range name already exists

Range name does not exist

Range specified is outside variable range

## **S**     Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Second answer number is either non-numeric or invalid

Settings sheet is empty

Settings sheet is full

Solver cannot create its work files

Solver cannot delete its work files

Solver cannot read its work files

Spooler out of disk space

Spooler out of memory

Stack overflow in "file\_name"

String not found

Syntax error in macro key/range name

System error

## **T**     Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Table definition range contains invalid information

Table definition range must contain six columns

Table results area not fully defined

Temporary file record too long

Text range full

The Clipboard is empty

The file on disk is different from the one retrieved

The worksheet file has no reservation

The worksheet file is already reserved

This answer has no inconsistent constraints

This command is available only after solving

This command requires a guessable attempt in the worksheet

This command requires an answer in the worksheet

This command requires an answer or attempt in the worksheet

This command requires an attempt in the worksheet

Too few observations for number of variables

Too many arguments

Too many characters in extension

Too many characters in file name

Too many characters in path

Too many graph names; cannot create new one

Too many open files

Too many print settings names; cannot create new one

Too many records for output range

Too many report files already exist

## **U**    Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Unable to access output device

Unable to locate the database

Unable to print

Unable to reserve file: it has read-only access

Unable to reserve file: it is already reserved

Undo not enabled, or no operation to undo

Unrecognized key/range name

Unsupported character set

## **V**    Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

Variable ranges and formula labels overlap

## **W** Error Message Index

To select an error message using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

What-if limits couldn't be computed

Window not found or not unique

Worksheet full

Worksheet hidden

**Add-in "add\_in\_name" already in memory**

You attempted to read into memory an add-in file that was already loaded.

**Add-in "add\_in\_name" not in memory**

You attempted to invoke an add-in application or remove an add-in that you have not read into memory.

Choose Tools Add-in Load and specify the add-in file to read into memory.

**"Add-in error message"**

An error occurred while loading or invoking the add-in you specified.

See the documentation for this add-in or contact the add-in developer.

**Add-in not listed on settings sheet**

You tried to cancel an add-in file that is not on a settings sheet.



**Add-ins nested too deeply**

You used a macro in your add-in that invokes another add-in, that itself invokes another add-in, and so on.

If you are a developer, rewrite your add-in so that it does not nest add-ins so deeply. Otherwise, contact the add-in developer.

**Cannot find "file\_name"**

1-2-3 cannot find the add-in file (a file with an .ADW or .DLL extension).

Make sure you typed the file name correctly and that 1-2-3 can find the file. 1-2-3 looks for add-in files in the path you specify. Otherwise, 1-2-3 looks first in the default add-in directory (if you set one up).

**Cannot find library file "library\_file\_name"**

You did not copy a library file included in your application into the 1-2-3 directory.

If you are a developer and "library\_file\_name" is a library you wrote, the library file may have an invalid header format and cannot be identified; you must correct the header format. If you are a user and you copied the file, or the file was not included with the add-in, contact the add-in developer.

**Cannot load driver "L1WEM"**

The following conditions could have caused this error:

- \* Not enough memory was available to read L1WEM into memory.
- \* L1WEM was damaged or deleted from your hard disk.
- \* You are already using the maximum number of files your operating system allows.

**Cannot load driver "L1WRT"**

The following conditions could have caused this error:

- \* Not enough memory was available to read L1WRT into memory.
- \* L1WRT was damaged or deleted from your hard disk.
- \* You are already using the maximum number of files your operating system allows.

**Cannot read "file\_name"**

The file may have been damaged, or a hardware error occurred -- for example, the door of your disk drive was open while you attempted to read a file from the disk.

**Error initializing add-in "file\_name"**

This error occurred during execution of AdnInitialize.

Contact the add-in developer.

**Error loading add-in "file\_name"**

The following conditions could have caused this error:

- \* Not enough memory was available to read into memory the file named in the error message.
- \* The file named in the error message was damaged or deleted from your hard disk.
- \* You are already using the maximum number of files your operating system allows.

**Error loading add-in resource file**

The following conditions could have caused this error:

- \* Not enough memory was available to read the add-in resource file into memory.  
Free some memory and try the add-in operation again.
- \* You are already using the maximum number of files that your operating system allows.

**Error running add-in macro**

1-2-3 could not run an add-in macro command to completion.

If you are a developer, use the macro command procedure in an add-in application to generate a more specific error message. Otherwise, contact the add-in developer.

**No add-in application assigned**

You pressed ALT+F7, ALT+F8, or ALT+F9 to invoke an application, but no application was assigned to the key.

Select Load or Settings System from the ALT+F10 (ADDIN) menu to assign the application to a key.

**No add-in applications in memory**

You attempted to invoke an application when none was loaded.

Choose Tools Add-in Load and specify the add-in file to read into memory.

**No add-ins in memory**

You attempted to remove an add-in from memory when no add-ins were loaded.

**No application in add-in "add\_in\_name"**

You attempted to invoke an add-in application using an add-in file that contains only @functions or macro commands.

**Settings sheet is empty**

You selected Settings System Cancel or Settings File Cancel when there were no add-in files listed on the settings sheet.

**Settings sheet is full**

You attempted to add the name of an add-in file to a full settings sheet.

Use Settings File or Settings System from the ALT+F10 (ADDIN) menu to delete files from the settings sheet you want to modify.

**Stack overflow in "file\_name"**

Your add-in uses too much program memory to run in 1-2-3.

If you are a developer, you must edit your program so it requires less memory, or use compiler option stack Size, which makes more memory available to your program. Otherwise, contact the add-in developer.

**Bin range cannot span worksheets**

You specified a three-dimensional bin range when using Data Distribution.  
Specify a single-sheet, single-column bin range.

## Cannot invert matrix

The following conditions could have caused this error:

- \* You chose Data Matrix Invert or Data Regression X-range and entered a range that contains two identical columns of values.  
Change a value in one of the two columns.
- \* You chose Data Matrix Invert or Data Regression X-range and entered a range that contains a column or row of zeros.  
Enter a value that is greater than or less than zero in the row or column.
- \* You chose Data Matrix Invert or Data Regression X-range and entered a range that contains a column of values, all of which would equal the values in another column in the range, if multiplied by a constant. For example, if column A in range A:A1..A:C3 contains the values 2, 6, and 8, and column C contains the values 4 ( $2*2$ ), 12 ( $6*2$ ), and 16 ( $8*2$ ), 1-2-3 cannot invert the matrix.  
Change a value in one of the two columns.
- \* You chose Data Matrix Invert or Data Regression X-range and entered a range that it is not mathematically possible to invert or a range that 1-2-3 cannot invert without producing inaccurate results.  
Specify another range, or change the values in the current range.

### **Cannot use ranges that are not in memory**

The following conditions could have caused this error:

- \* You specified a range in a file on disk or the range name of an external table. For this command, the range you specify must be in an active file.

Specify a range in an active file.

- \* You specified an undefined range name.

Use Range Name Create to create the range name you used in the command.



**Data Parse ranges cannot span worksheets**

You specified a 3-D range when using Data Parse Input column.  
Specify a single-sheet, single-column range.

### **Data range and sort keys must be in memory**

The following conditions could have caused this error:

- \* You specified a primary, secondary, or extra sort key that was in a file on disk.  
Use Data Sort Primary key, Secondary key, or Extra keys and specify a sort key in the range you are sorting.
- \* You specified a primary, secondary, or extra sort key that was in an active file, but you used a file reference that did not include a path.  
Choose Data Sort Primary key, Secondary key, or Extra keys again. Press F3 (NAME) and select the file name from the list box. 1-2-3 automatically includes the path when you use this method to create the file reference.

## **Error loading driver file**

The following conditions could have caused this error:

- \* Not enough memory was available to load the printer or database driver you specified. To free memory, do one or more of the following:

Use File Save As to save your active worksheet files, close the files, and then use File Open to read the files back into memory.

If the undo feature is turned on, use Tools User Setup to turn the undo feature off.

Delete worksheets, files, and data that you no longer need in memory.

If you have programs in memory besides 1-2-3, end one or more of those programs. For additional information on freeing memory, see Appendix C of the *User's Guide*.

- \* You tried to use a Data External command and specified an invalid or nonexistent database driver name. You may have misspelled the name of the database driver.

Specify the name of an existing database driver and make sure you use the correct spelling.

- \* You tried to use a Data External command, and the driver file for the database driver you specified with the command was missing.

See the documentation for the database driver for the name of the driver file, then make sure the file is on your hard disk.

**External table ranges not allowed**

You specified the range name of an external table. For this command, the range you specify must be in an active file.

Specify a range in an active file.

**Note** You may also be able to specify a range in a file on disk. See Help for the command you are using for information on the types of ranges you can specify.

**Formula reference overlaps split layer**

## **Invalid date**

The following conditions could have caused this error:

- \* You tried to use Data Fill to fill a range with dates and specified a date with a date number less than 1 (January 1, 1900) or greater than 73050 (December 31, 2099) as the start value.

Specify a date that has a date number from 1 to 73050 as the start value.

- \* You tried to use a date that does not exist, such as February 29, 1990, with a Data Query command. You may have typed a date incorrectly.

Specify an actual date and use the Data Query commands again.

### **Invalid format line**

You chose Data Parse and the input column you specified contained an invalid format line. After the | (vertical bar), format lines can contain only the following characters:

L V D T S > \*

Use F2 (EDIT) and the editing keys to correct the invalid format line.

**Note** 1-2-3 accepts uppercase and lowercase letters in format lines.

**Invalid matrix**

You specified a matrix that contains blank cells or labels.

Specify a matrix that contains only numbers or formulas that evaluate to numbers.



## **Invalid output range**

The following conditions could have caused this error:

- \* You used Data Regression and did not specify an output range or specified an output range that is too small.

Choose Data Regression Output range and specify either a single-cell output range or a multiple-cell output range that has nine rows and a minimum of four columns, with an additional column for each X variable after the second X variable.

- \* You used Data Distribution and specified a bin range that is in the rightmost column of a worksheet or whose bottommost cell is in the last row of a worksheet.

Specify a bin range that is separated from the right and bottom edges of a worksheet by at least one column and one row.

- \* You used Data Parse Output range and specified the range name of an external table.

Specify a range in an active file.

**Invalid sort range or sort key**

## **Invalid X range**

The following conditions could have caused this error:

- \* You did not specify an X range.

Choose Data Regression X-range and specify an X range.

- \* You selected OK in the Data Regression dialog box without specifying any of the necessary ranges (the X, Y, and output ranges).

Choose Data Regression and specify an X range, Y range, and output range.

- \* You specified an X range that contained labels, formulas, or blank cells, for which 1-2-3 cannot calculate a value.

## **Invalid Y range**

The following conditions could have caused this error:

- \* You did not specify a Y (dependent variable) range.  
Choose Data Regression Y-range and specify a Y range.
- \* You specified a Y range more than one column wide.  
Choose Data Regression Y-range and specify a single-column Y range.
- \* The number of rows (number of observations) in the Y range does not equal the number of rows in the X range.  
Choose Data Regression Y-range and specify a Y range with the correct number of rows.
- \* You specified a Y range that contains labels, formulas, or blank cells, for which 1-2-3 cannot calculate a value.

### **Key column outside sort range**

- \* You used Data Sort Primary key, Secondary key, or Extra keys to specify one or more sort-key fields that were not in the data range you were sorting.

Choose Data Sort Data range and specify a data range that includes the fields you want to sort by.

Or, choose Data Sort Primary key, Secondary key, or Extra keys and specify sort-key fields that are in the data range you are sorting.

**Matrixes incompatible for multiplication**

You chose Data Matrix Multiply and specified two matrix ranges that are incompatible.

Specify the ranges so that the number of columns in the first matrix equals the number of rows in the second matrix.

### **Matrixes too large for multiplication**

You chose Data Matrix Multiply and specified two matrix ranges that are too large.

Specify the ranges so that the number of rows in the first matrix multiplied by the number of columns in the second matrix is less than or equal to 6553.

**Matrix too large for inversion**

You chose Data Matrix Invert and specified a range with more than 80 columns or rows.  
Specify a range with no more than 80 columns or rows.



**Missing sort key**

You tried to specify a secondary sort key without a primary sort key, or an extra key field without a primary key and/or secondary sort key.

Choose Data Sort and specify both a primary and secondary sort key.

**More than 75 X variables**

You chose Data Regression X-range and specified an X range that has more than 75 columns (the maximum number of independent variables).

Choose Data Regression X-range and specify an X range with no more than 75 columns.

**Not a square matrix**

You chose Data Matrix Invert and specified a range in which the number of columns does not equal the number of rows.

Specify a range with the same number of columns and rows.

**Parse format line can only be created for labels**

The cell pointer was in a blank cell or a cell containing a value when you chose Data Parse Create and entered a label in the Format line text box to create a format line.

Move the cell pointer to a cell containing a label, or enter a label prefix (' " or ^) in the current cell. Then choose Data Parse Create and enter a label in the Format line text box.

**Parse input range must start with format line**

You selected OK in the Data Parse dialog box and the first cell in the input column does not contain a format line.

Choose Data Parse Create to create a format line above the first long label you want to parse. Then choose Data Parse Input column and specify an input column that includes the new format line.

### **Too few observations for number of variables**

- \* After you chose Data Regression X-range, you specified an X (independent variable) range with an insufficient number of rows (number of observations). The X range must have at least one row more than the number of its columns and must have an additional row if you plan to select Y-intercept Compute.

Choose Data Regression X-range and specify an X range of sufficient size.

**Data Query Modify Extract canceled or not performed**

You chose Data Query Modify Extract, canceled the command or chose another Data Query command, and then chose Data Query Modify Replace.

To use Data Query Modify Replace, you must first use Data Query Modify Extract.

### **Ambiguous field reference in query**

You tried to extract records from two or more database tables, and the criteria or output range contains a field name that appears in two or more database tables in the input range.

Precede the field name in the criteria or output range with the range name of one of the tables in which it appears. For example, if the output range contains the field name SALES, and tables REGION1 and REGION2 in the input range both contain a field with the name SALES, enter REGION1.SALES or REGION2.SALES in place of SALES in the output range.

**Note** If two database tables in the input range have the same range name, and if a field name in the criteria or output range appears in both database tables, precede the field name in the criteria or output range with a file name and range name. For example, <<QUARTER1.WK3>>REGION1.SALES refers to the field SALES in the range REGION1 in the file QUARTER1.WK3.



**At least one variable range must be specified**

You tried to create a data table labeled without specifying a variable range. You need at least one variable range to create a data table labeled.

Use /Data Table Labeled Down, Across, or Sheets to specify a row, column, or worksheet variable range, and the corresponding input cells.

Then choose /Data Table Labeled Go to create the data table.

**Cannot create a table with EXTENDED data types**

**Cannot execute query with a circular reference**

A formula in the criteria range contained a circular reference.

Choose Help About 1-2-3 to identify the circular reference, and correct it before you use Data Query.

**Cannot open database input range**

**Cannot read or write LONG data**

**Cannot reset database when tables are in use**

**Cannot retrieve records from input range**

**Cannot unload driver when databases are in use**



**Cannot update a database with a nonunique record**

**Cannot use computed columns with Data Query Modify**

You tried to use Data Query Modify Extract or Insert when the first row of the output range contained a formula.

Specify an output range that does not contain a formula and choose Data Query Modify Extract again.

**Criteria and output ranges cannot overlap**

You specified overlapping criteria and output ranges when using Data Query.

Choose Data Query again and select criteria or output ranges so that they do not overlap.

### **Criteria must contain field reference**

The following conditions could have caused this error:

- \* You tried to perform a data query operation when the criteria range contained a formula that was missing a field name or valid cell address.

Edit the formula so that it includes either a field name or the address of a cell immediately below a field name in the input range.

- \* You tried to perform a data query operation when the criteria range contained a formula that used the cell address of a field name in the input range.

Edit the formula so that it refers to a cell immediately below a field name in the input range.

- \* You tried to perform a data query operation when the criteria range contained a formula that used a field name that is also a range name.

Precede the field name in the formula with the range name of the input range. For example, JAN.SALES refers to field SALES in the input range JAN.

### **Criteria range must be in an active file**

The following conditions could have caused this error:

- \* You chose Data Query and specified a criteria range that was not in an active file.  
Either open the file you want to use or specify a criteria range in an active file.
- \* You chose Data Query and specified a criteria range in an active file, but you used a file reference that did not include a path.

Choose Data Query Criteria range. Press F3 (NAME) and select the file name from the list box. 1-2-3 automatically includes the path when you use this method to create the file reference.

**Criteria too complex**

You tried to perform a data query operation when the criteria range contained more AND or OR statements than 1-2-3 could calculate, or when the criteria range contained more rows or columns of search criteria than 1-2-3 could process.

Use multiple queries to extract, find, or delete records. For example, edit the criteria range to simplify the search criteria, and perform the query. Then specify the remaining search criteria in a second query operation, using the output range from the first query as the input range for the second.

### **Data Query Find works only in active files**

The following conditions could have caused this error:

- \* You specified an input range that was an external table or was in a file on disk.  
Either open the file you want to use or specify an input range that is in an active file. You cannot use Data Query Find with external tables.
- \* You specified an input range that was in an active file, but you used a file reference that did not include a path.  
Choose Data Query Input range, press F3 (NAME) and select the file name from the list box. 1-2-3 automatically includes the path when you use this method to create the file reference.

### **Data What-if Table and Data Query commands are disabled**

You could not change Data What-if Table or Data Query settings because you chose /Data External Other Refresh Automatic.

Choose /Data External Other Refresh Manual and then change your Data What-if Table or Data Query settings.



**Database has read-only access**

**Database is full**

**Database name is not in the correct format**

**Database not correctly positioned**

**Database @functions more than 8 levels deep in criteria**

You have nested more than eight database @functions in a criteria range.

Edit the formula in the criteria range so that you have no more than eight database @functions nested in the criteria range.

**Datatype mismatch on output**

**Delete works only on database with one table**

## **Destination range full or invalid**

You tried to enter a table, table definition, or list of information in one of the following types of locations:

- \* A range too close to the bottom or right edge of a worksheet to accommodate the entire table, table definition, or list.

Choose the command again and specify a range beginning far enough away from the bottom or right edge of the worksheet to accommodate all the information.

- \* A range in a file on disk. 1-2-3 cannot enter data in a file on disk.

Choose the command again and specify a range in an active file as the range in which you want 1-2-3 to enter the table, table definition, or list.

- \* A protected range.

1-2-3 cannot enter data in a protected range. Reselect the command and specify an unprotected range as the range in which you want 1-2-3 to enter the table, table definition, or list.

- \* You specified an external range name as a location for a table definition or list.

Specify a range in an active file.



**Driver cannot perform this database operation**

While you were working with an external table, you tried to perform a task that the database driver could not support.

Not all database drivers can perform all the [Data External Options](#) and [Data Query](#) commands. For information on the capabilities of your database driver, see the documentation for the driver.

### **Each variable must have an input cell**

The following conditions could have caused this error:

- \* You entered a variable range and then used ESC to return to the previous menu without specifying all the input cells for the range.  
Specify input cells for the variable range, and then select Go or press F8 (TABLE) to create the data table.
- \* You inserted additional rows or columns in one or more variable ranges after you specified the variable ranges for a data table labeled.  
Specify input cells for the new input values in the variable range or ranges, and then select Go or press F8 (TABLE) to create the data table.

### **ERR values are not allowed in the output range**

The following conditions could have caused this error:

- \* You have ERR values in the output range.

Examine the output range and remove any ERR values.

- \* The external database contained unsupported data types. This caused 1-2-3 to return ERR in the output range.

When using Data Query Modify Extract and Data Query Modify Replace, do not specify columns in the external database that use unsupported data types.

## **Error accessing temporary file**

1-2-3 creates and uses temporary files to perform some types of Data Query or Data Sort commands.

The following conditions could have caused this error:

- \* You tried to perform a Data Query or Data Sort command, and the disk containing the directory you designated as your temporary file directory was full.

Free disk space on that disk and repeat the Data Query or Data Sort command.

- \* You tried to perform a Data Query or Data Sort command, and 1-2-3 encountered a hard disk failure when it tried to access the temporary file.

See your technical support person for assistance.

- \* The door to the disk drive was open.

Close the drive door and try the operation again.

**External database data type not allowed in worksheet**

You tried to extract records from an external table that has a data type 1-2-3 does not recognize.

Be sure that 1-2-3 can recognize the data types in the external table before trying to extract records.

**End of database input range reached**

**External table was not created**

You cannot create a table in this external database.

**External table was not deleted**



### **Field names must be unique within an input table**

The following conditions could have caused this error:

- \* You tried to extract records from, or delete or find records in, a database table that contained duplicate field names.

Edit the duplicate field names to create unique names, and if necessary, change the corresponding field names in the output and criteria ranges. Repeat the data query operation by pressing F7 (QUERY) or choosing a Data Query command.

- \* You tried to extract records from, or delete or find records in, a database table that has a field name that is a formula, for example, @AVG(SALES).

Enter a field name that is not a formula and repeat the data query operation.

**Formula label range cannot be blank**

You tried to create a data table labeled without entering formula labels in the formula label range.

You must have at least one formula label in the formula label range. Copy the formula label or labels from the formula range to the formula label range, and then choose /Data Table Labeled Go to create the data table.

### **Formula range and formula label range are required**

The following conditions could have caused this error:

- \* You tried to create a data table labeled without specifying a formula range and formula label range.

Choose /Data Table Labeled Formulas to specify the formula and formula label range, and then /Data Table Labeled Go to create the data table.

- \* You tried to create a data table labeled without specifying any of the necessary ranges.

Choose /Data Table Labeled Formulas and /Data Table Labeled Down, Across, or Sheets to specify the ranges for the data table, and then choose Go to create the data table.

**Incompatible database driver**

You tried to specify a database driver with a version number that 1-2-3 does not support.  
Use a database driver with a version number that 1-2-3 supports.

**Input and output ranges cannot overlap**

You specified overlapping input and output ranges when using Data Query.

Choose Data Query and specify the input and output ranges so that they do not overlap.

**Input and output ranges must be different**

**Input field names cannot be qualified**

**Insert works only on databases with one table**



**Insufficient privilege to perform database operation**

**Invalid criteria range**

You tried to perform a data query operation using a single-cell or single-row criteria range. Specify a criteria range that contains a row of field names and at least one row of search criteria.

**Invalid external database data type**

You tried to create a table definition for a new external table using a model table range that contained a data type that the database driver does not support.

For information on the data types you can use in a table definition with the current database driver, see the documentation for the database driver.

**Invalid extra sort key number**

You specified an extra sort key number greater than the number of existing extra sort keys.  
Specify a number that is one greater than the number of the previous extra sort key.

**Invalid field name**

## **Invalid field name**

The following conditions could have caused this error:

- \* You tried to perform a data query operation when the first row of the output range was blank.

Copy some or all of the field names in the input range to the first row of the output range.

- \* You tried to perform a data query operation when the first row of the input range was blank.

Enter field names in the first row of the range.

- \* You tried to perform a data query operation when none of the field names in the first row of the output range matched a field name in the input range.

Copy some or all of the field names in the input range to the first row of the output range.

## Invalid formula in query

The following conditions could have caused this error:

- \* You tried to perform a data query operation when the criteria or output range contained an invalid formula.

Edit the formula or formulas in the criteria or output range.

- \* You tried to perform a data query operation when the output range contained a computed column and an aggregate column, but the field name or names used in the formula in the computed column did not appear in the output range as field names that were not part of formulas.

Enter the field names in the output range.

- \* You tried to use [Data Query](#) Extract unique only when the output range contained a computed column, but the field name or names used in the formula in the computed column did not appear in the output range as field names that were not part of formulas.

Enter the field names in the output range.

- \* You tried to perform a data query operation when a formula in an aggregate column in the output range referred to a field and was not in the form @FUNCTION\_NAME(FIELD\_REFERENCE).

A field reference can be a field name, range name, or cell address. Edit the formula in the output range.

- \* You tried to perform a data query operation when the output range contained a formula that used one of the following @functions: @@, @CELL, @COLS, @HLOOKUP, @INDEX, @INFO, @IRR, @N, @NPV, @ROWS, @S, @SHEETS, @STD, @STDS, @VAR, @VARS, @VLOOKUP, and the database @functions.

Do not use these @functions in the output range.

- \* You tried to perform a data query operation when a formula in the criteria range contained the address of a range within a database table in a file on disk.

Either read the file containing the database table into memory or use field names in place of range addresses in the formula.

- \* You tried to perform a data query operation when a formula in the criteria range contained the address of a range within a database table and the input range contained more than one database table.

You must use one or more field names in place of the range address in the formula.

## **Invalid formula label range**

The following conditions could have caused this error:

- \* You tried to create a data table labeled using a formula label range that did not contain as many cells as there were columns in the column variable range, if the formula label range was in a row; as many cells as there were rows in the row variable range, if the formula label range was in a column; or as many cells as there were worksheets in the worksheet variable range, if the formula label range was in a three-dimensional range.

Specify a formula label range that has the correct number of cells.

- \* You tried to create a data table labeled using a formula label range that contained more than one row, column, or three-dimensional group of cells.

Specify a formula label range that is in one row or column or, if the formula label range is a three-dimensional range, includes no more than one cell in each worksheet in the range. For example, A:A1..C:A1 is a valid three-dimensional formula label range; A:A1..C:B1 is not.



## Invalid input range specified

The following conditions could have caused this error:

- \* You used Data External Options Create Table and specified a model range that was a single-cell or one-row range in an active file or a range in a file on disk. The model range must be either an external table or a range that is in an active file and contains a row of field names and at least one row of data.

Respecify the model range and the location for the table definition.

- \* You selected OK in the Data Parse dialog box after you specified an input column that was an undefined range name or the range name of an external table, or after you specified a range in a file on disk and used a nonexistent or invalid file name.

Choose Data Parse and specify a range in an active file or, if you tried to specify a range in a file on disk, specify the path and file name, using the correct spelling.

- \* You tried to perform a data query operation when the input range was an external table, but the input range you specified with Data Query was no longer in use.

Choose Data Connect to External to reassign the range name to the external table you want to use as the input range name, or use Data Query to specify an input range name that is currently in use.

- \* You specified a range in a file on disk, but the range was too large to fit in memory.

Read the file containing the range into memory or specify a smaller range.

**Invalid name for field or table**

**Invalid use of database @function in criteria**

You tried to perform a data query operation when the criteria range contained a database @function that used an invalid input range, offset number or field name, or criteria range.

Edit the input range, offset number or field name, or criteria range in the database @function and repeat the data query operation.

**Invalid worksheet variable range**

You specified a worksheet variable range in which the input values were arranged incorrectly.

To set up a valid worksheet variable range, you must enter the input values so that the input values in any one worksheet in the worksheet variable range are in adjacent cells in a single row or column. For example, A:A1..C:D1 and A:A1..A:A4 are valid worksheet variable ranges, but A:A1..C:B2 is not.

**Must specify a down or across variable range**

You tried to create a data table labeled that had a formula range, a worksheet variable range, and a single-cell formula label range. 1-2-3 cannot determine where to place the data table results when the data table contains only these ranges with these dimensions.

Enter input values in a column or row, specify a row (down) or column (across) variable range with /Data Table Labeled Down or Across, and then select Go to create the data table.

**Named field does not exist**

A formula in the criteria range contained a field name that did not match a field name in the input range.

Edit the formula in the criteria range and repeat the data query operation.

### **Named table does not exist**

The following conditions could have caused this error:

- \* You tried to connect to or delete an external table that did not exist.  
You may have misspelled the table name. When you specify the table name again, make sure you use the correct spelling.
- \* You tried to connect to, delete, or use as a model range an external table that you did not have access privileges to.  
Do not connect to, delete, or use as a model range an external table to which you do not have rights of access.
- \* You tried to connect to, delete, or use as a model range an external table that was a hidden or protected file.  
Specify an external table that is not a hidden or protected file.

**No criteria range specified**

You tried to perform a data query operation without specifying a criteria range.

Set up a criteria range, choose Data Query, specify the criteria range, and then repeat the data query operation by pressing F7 (QUERY) or choosing a Data Query command.



**No external database drivers are available**

**No external databases are available**

**No external databases are in use**

You tried to use Data External Options Send Command or /Data External Other Translation when no external database was in use.

Do not send a command to or select a character set for an external database that is not in use. Choose Data Connect to External to connect to a table in the external database you want to send a command to or select a character set for, and then choose Data External Options Send Command or /Data External Other Translation.

**No external database drivers are loaded**

You tried to use Data External Options Send Command or /Data External Other Translation without first using Data Connect to External to connect to an external table in the database you wanted to send a command to or select a character set for.

Use Data Connect to External to connect to a table in an external database and then choose Data External Options Send Command or /Data External Other Translation.

### **No external table specified for creation**

The following conditions could have caused this error:

- \* You chose Data External Options Create Table to create an external table, but did not specify a name for the external table.

Use Data External Options Create Table to specify a table name.

- \* You selected OK in the Data External Options Create Table dialog box without specifying the table name.

Specify the table name before selecting OK.

**No external tables are available**

You tried to use Data Connect to External to connect to an external table, but the external database you specified did not contain any tables.

Choose Data Connect to External and specify another external database.

**No external tables are in use**

### **No input range specified**

The following conditions could have caused this error:

- \* You tried to perform a data query operation without specifying an input range.  
Choose Data Query and specify an input range, then repeat the data query operation by pressing F7 (QUERY) or choosing a Data Query command.
- \* You tried to parse a column of long labels without specifying an input column.  
Choose Data Parse, specify the column of labels you want to parse in the Input column text box, and then select OK.



### **No output range specified**

The following conditions could have caused this error:

- \* You tried to perform a data query operation without specifying an output range.  
Choose Data Query to specify an output range, and repeat the data query operation by pressing F7 (QUERY) or choosing a Data Query command.
- \* You tried to parse a column of long labels without specifying an output range.  
Choose Data Parse, specify an output range, and then select OK.

**No records found for this database operation**

**No table definition range exists to create table**

You tried to create an external table without specifying a table definition.

Choose Data External Options Create Table to create a table definition or Data External Options Paste Fields to specify an existing table definition.

**Null field values not allowed in this database**

**Number too large/small to pass to external table**

You tried to modify an external table with a record containing a number that was either too small or too large for 1-2-3 to send to the database driver.

Edit the number to make it larger or smaller and repeat the data query operation.

**Only one input range is allowed**

You specified more than one database table in the input range and then used Data Query Delete, Data Query Find, or Data Query Modify. You cannot use more than one table with these commands.

Choose Data Query and specify one external table or a 1-2-3 database table as the input range.

**Output range must contain more than one row**

You specified a one-row output range and then chose Data Query Modify Insert. Data Query Modify Insert requires an output range that contains a row of field names and at least one row of data.

Choose Data Query and respecify the output range.

**Range cannot span worksheets**

You specified an input, criteria, or output range that spans more than one worksheet.

Choose Data Query and respecify the input, criteria, and output ranges so that each one is on a single worksheet and they do not overlap.



**Range name already exists**

You chose Data Connect to External and specified a range name that you have already assigned to an external table or to a range in a worksheet.

Specify a range name that you have not already assigned to an external table or to a range in a worksheet.

**Range specified is outside variable range**

You chose /Data Table Labeled Down, Across, Sheets, or Input-Cells and tried to specify a set of input values that was not in the variable range or ranges.

If you chose /Data Table Labeled Down, specify a set of input values within the column variable range. If you chose /Data Table Labeled Across, specify a set of input values within the row variable range. If you chose /Data Table Labeled Sheets, specify a set of input values within the worksheet variable range. If you chose /Data Table Labeled Input-Cells, specify a set of input values within any of the variable ranges you specified for the data table.

**Syntax error in database driver registration file**

**Table definition range contains invalid information**

You tried to use Data External Options Create Table to create an external table, and the table definition contains a data type, field width, column label, field description, or field creation string that the database driver does not recognize.

Check the spelling or format of the entries in the table definition, make the necessary changes, and then choose Data External Options Create Table to create the table. For information on the data types, field widths, column labels, field descriptions, and field creation strings you can use in a table definition, see the documentation for the database driver.

**Table definition range must contain six columns**

You tried to create an external table using a table definition that contains fewer than six columns.

Use [Data External Options Create Table](#) to specify a six-column table definition.

**Table name is not in the correct format**

**Table results area not fully defined**

You tried to create a data table labeled when the bottom row of the column variable range, the rightmost column of the row variable range, or the bottom or rightmost group of cells in the worksheet variable range did not contain input values.

Enter input values in the bottom row of the column variable range, the rightmost column of the row variable range, or the bottom or rightmost group of cells in the worksheet variable range; or specify a column, row, or worksheet variable range that does not include a row, column, or group of blank cells.

### **Temporary file record too long**

1-2-3 creates and uses temporary files to perform some types of data query operations. The temporary file 1-2-3 created for the data query operation you tried to perform was not large enough to accommodate one of the records in the database table you were using.

If you are running low on memory, make more memory available and repeat the data query operation. If you are not running low on memory, specify an input or output range that contains fewer fields or, if one field contains a very long entry, shorten that entry. Then repeat the data query operation.



## **Error replacing extracted records**

The following conditions could have caused this error:

- \* You chose Data Query Modify Extract, edited the contents of any row in the input or criteria range or the contents of the first row of the output range, and then chose Data Query Modify Replace.

Choose Data Query Modify Extract again, edit only those records in the output range that you want to change, and then choose Data Query Modify Replace.

- \* You chose Data Query Modify Replace when the range address of the output range included more rows than there were records in the output range.

Specify a one-row output range in the Data Query dialog box, select Modify, select Extract, edit the records in the output range, then choose Data Query Modify Replace again.

**Too many computed-column formulas in output range**

**Too many records for output range**

You specified a multiple-row output range for a data query operation, but did not specify enough rows to accommodate all the records that match the criteria in the criteria range.

Specify an output range containing more rows or, if it is safe to do so, specify a one-row output range. Keep in mind that 1-2-3 erases all data below the output range if you specify a one-row output range.

## Unable to locate the database

The following conditions could have caused this error:

- \* You chose a Data External command and specified an external database that did not exist. You may have misspelled the external database name.

When you specify the external database again, make sure you use the correct spelling.

- \* You chose Data External Options Send Command or /Data External Other Translation and specified the name of an external database that did not exist or was not in use.

Specify the name of an existing external database or, if the database exists but is not in use, choose Data Connect to External to connect to an external table in that database and then choose Data External Options Send Command or /Data External Other Translation.

**Unable to locate the table**

**Cannot use both Edit Undo and /Data External Refresh Automatic**

You tried to choose /Data External Other Refresh Automatic when the undo feature was on, or you tried to turn on the undo feature after you chose /Data External Other Refresh Automatic.

Do not have the undo feature turned on and /Data External Other Refresh set to automatic at the same time. Use [Tools User Setup](#) to disable Edit Undo.

**Unsupported character set**

You tried to select a character set that the database driver does not support.

Choose /Data External Other Translation again and select a character set from the list on the screen.

**Unsupported database function call**



### **Variable ranges and formula labels overlap**

You tried to create a data table labeled when the formula label range or all or part of a variable range was in a row or column that also contained part of another variable range. 1-2-3 cannot enter the results of a data table calculation in a cell at the intersection of a row containing an input value or formula label and a column containing an input value or formula label if that cell also contains an input value or formula label.

Move the ranges so that none is in a column or row that contains all or part of another range, or expand one of the ranges by one row or column and rearrange the input values or formula labels in the range so that the cell that is in the same row or column as the formula label range or part of another variable range is blank. For example, if the formula label range is in A:B4..A:C4 and the row variable range is in A:D2..A:D9, you can expand the row variable range to A:D2..A:D10 and move the values in A:D4..A:D9 to A:D5..A:D10, leaving A:D4 blank. Then recalculate the data table using /Data Table Labeled Go or F8 (TABLE).

**Error loading driver file**

The DataLens driver you are attempting to use was designed for a previous version of Windows. You should obtain an updated version of the driver that is compatible with Windows 3.0 386 Enhanced Mode.

To use the current driver press ESC. Then save your work and restart Windows 3.0 in Real Mode or Standard Mode by typing WIN R or WIN S.



**Advise is already in effect for this DDE item**

You used {DDE-ADVISE} to link a 1-2-3 macro to a data item in the source application, but the data item is already linked to another macro.

To unlink the data item from the macro to which it is already linked, use {DDE-UNADVISE}. Then use {DDE-ADVISE} to link the data item to a new macro.

**Advise is not in effect for this DDE item**

You used {DDE-UNADVISE} to remove a link between a 1-2-3 macro and a data item in the source application, but the link does not exist.

Remove the {DDE-UNADVISE} command from the macro.

## **Application not found**

An error occurred when 1-2-3 tried to start the application specified in a {LAUNCH} command. The following conditions could have caused this error:

- \* The application is not installed in Windows.  
Install the application and try again.
- \* You specified the application name incorrectly.  
Specify the application again, making sure to use the correct application name.
- \* You did not specify the correct command string for starting the application.  
Specify the command string again, making sure to include all required information.

**Bad DDE link name**

You specified an invalid link name in an Edit Link Options Create, Edit Link Options Edit, {LINK-ASSIGN}, {LINK-CREATE}, {LINK-DEACTIVATE}, {LINK-DELETE}, {LINK-REMOVE}, or {LINK-UPDATE} command.

Specify the macro command again and include a valid link name.

## **Cannot launch application**

An error occurred when 1-2-3 tried to start the application specified in a {LAUNCH} command. The following conditions could have caused this error:

- \* The application is not installed in Windows.  
Install the application and try again.
- \* You specified the application name incorrectly.  
Specify the application again, making sure to use the correct application name.
- \* There is not enough memory to start the application.  
Remove unnecessary files from memory and try again.



### **Cannot paste DDE link**

You tried to create a link by using {EDIT-PASTE-LINK}, but 1-2-3 was unable create the link for one of the following reasons:

- \* There was no link information on the Clipboard.

Access the source application and copy the information you want to the Clipboard. Then return to 1-2-3 and specify the macro again.

- \* The source application you specified does not support DDE paste linking through the Clipboard.

Use Edit Link Options Create to create a link to the source application.

- \* The source application you specified does not support DDE as a server.

You cannot use {EDIT-PASTE-LINK} to copy information from the source application to 1-2-3.

**DDE advise request failed, server application busy**

DDE protocol error. For more information, see the documentation for the source application.

**DDE advise request failed, server did not acknowledge**

DDE protocol error. For more information, see the documentation for the source application.

**DDE advise request failed, server refused request**

DDE protocol error. For more information, see the documentation for the source application.

## **DDE conversation not open**

The following conditions could have caused this error:

- \* You specified a {DDE-ADVISE}, {DDE-EXECUTE}, {DDE-POKE}, {DDE-REQUEST}, or {DDE-UNADVISE} command, which can execute only when a DDE conversation is open, but no conversation was open.

Make sure the source application is installed in Windows, or use {LAUNCH} to start the application. Then open the conversation you want with a {DDE-OPEN} command, and specify the {DDE-ADVISE}, {DDE-EXECUTE}, {DDE-POKE}, {DDE-REQUEST}, or {DDE-UNADVISE} command.

- \* You specified a {DDE-USE} command and then a {DDE-ADVISE}, {DDE-EXECUTE}, {DDE-POKE}, {DDE-REQUEST}, or {DDE-UNADVISE} command, but the conversation you referred to in the {DDE-USE} command is not open.

Open the conversation you want with a {DDE-OPEN} command or change the reference in the {DDE-USE} command to an open conversation, and then specify the {DDE-ADVISE}, {DDE-EXECUTE}, {DDE-POKE}, {DDE-REQUEST}, or {DDE-UNADVISE} command.

**DDE data request failed, server application busy**

DDE protocol error. For more information, see the documentation for the source application.

**DDE data request failed, server did not acknowledge**

DDE protocol error. For more information, see the documentation for the source application.

**DDE data request failed, server refused request**

DDE protocol error. For more information, see the documentation for the source application.



**DDE execute string failed, server application busy**

DDE protocol error. For more information, see the documentation for the source application.

**DDE execute string failed, server did not acknowledge**

DDE protocol error. For more information, see the documentation for the source application.

**DDE execute string failed, server refused request**

DDE protocol error. For more information, see the documentation for the source application.

### **DDE link is already assigned**

You used {LINK-ASSIGN} to assign a link name to a destination range, but the link name is already assigned to another range.

To unassign the link name from the range to which it is already assigned, use {LINK-REMOVE}. Then use {LINK-ASSIGN} to assign the link name to a new range.

**DDE poke request failed, server application busy**

DDE protocol error. For more information, see the documentation for the source application.

**DDE poke request failed, server did not acknowledge**

DDE protocol error. For more information, see the documentation for the source application.

**DDE poke request failed, server refused request**

DDE protocol error. For more information, see the documentation for the source application.

**DDE protocol error, can't post messages to server application**

The source application cannot process DDE messages.

Check the source application for problems.



### **DDE server not responding**

An error occurred when 1-2-3 tried to start the application specified in a {DDE-OPEN} command. The following conditions could have caused this error:

- \* The application is not installed in Windows.  
Install the application and try again.
- \* You specified the application name incorrectly.  
Specify the application again, making sure to use the correct application name.
- \* The topic you specified is not available in the application.  
Specify a topic that is available in the application, or open the topic in the application.

**DDE termination request failed, extra server did not acknowledge**

DDE protocol error. For more information, see the documentation for the source application.

**DDE termination request failed, server did not acknowledge**

DDE protocol error. For more information, see the documentation for the source application.

**DDE unadvise request failed, server application busy**

DDE protocol error. For more information, see the documentation for the source application.

**DDE unadvise request failed, server did not acknowledge**

DDE protocol error. For more information, see the documentation for the source application.

**DDE unadvise request failed, server refused request**

DDE protocol error. For more information, see the documentation for the source application.

**Invalid application or topic name**

In a {DDE-OPEN} command, you specified an invalid application or topic name, or you specified the name of an application or topic that is not open or is not available.

Specify the {DDE-OPEN} command again, making sure to use the correct application and topic names. If the named application is not open, open it and then specify the command again, or use the {LAUNCH} command to start the application.

**Invalid application, topic or item**

You used Edit Link Options Create, Edit Link Options Edit, or {LINK-CREATE} and specified an invalid application, topic, or data item name or the name of an application that is not open or is not available.

Specify Edit Link Options Create, Edit Link Options Edit, or {LINK-CREATE} again, making sure to use the correct application, topic, and data item names. If the named application is not open, open it and then specify the command again.



### **Invalid DDE update mode**

In a {LINK-CREATE} command, you specified an invalid update mode.

The two valid modes are AUTOMATIC, which updates data in the destination range each time the source item is updated, and MANUAL, which updates data in the destination range only when you use {LINK-UPDATE} or Edit Link Options Update.

**Invalid item**

In a {DDE-ADVISE}, {DDE-POKE}, {DDE-REQUEST}, or {DDE-UNADVISE} command, you specified an invalid data item name.

Specify the macro command again, making sure to use a valid data item name.

### **All modified files must be reserved before saving**

You used File Save As and selected Save All, but you did not have the reservation for one or more of the files you tried to save. 1-2-3 cannot save a file with its existing name if you do not have the reservation.

Choose File Administration Paste Table to check the reservation status of each active file.

When you identify the read-only (RO) files, move the cell pointer to each file and choose File Administration Network Reserve and select Get to try to get the reservation. If you get the reservation for a file, the RO indicator disappears from the title bar of the Worksheet window.

If you get reservations for all files, choose File Save As and select Save All. If you do not get the reservation for every file, you can save individual files for which you have the reservation.

**Backup file exists in memory**

You chose File Open to read a .BAK file into memory and then tried to save the file using File Save As Backup. You cannot use File Save As Backup with a file whose extension is already .BAK.

Use File Save As Replace to save a file whose extension is .BAK.

### **Backup unsuccessful due to file error**

You used File Save As Backup to save and backup a file that was marked read-only on disk. You cannot delete or save data in a read-only file.

Choose File Administration Network Reserve and select Get to try to get the reservation. If you get the reservation, choose File Save As Backup to save the file. If you cannot get the reservation, you can use File Save As to save the file under a different file name, or you can go to the operating system, use the operating system ATTRIB command to clear the read-only attribute from the file and then return to 1-2-3, and save the file.

**Cannot convert extension. File already exists in memory.**

- \* You used File Open to read a 1-2-3 Release 1A or Symphony file into memory, and the file name matched the name of an active file. 1-2-3 could not convert the file to .WK3 format because you had an active file by that name. Before you try to read the file into 1-2-3, you can do one of the following:

Delete the active file from memory with File Close.

Use File Save As to save the active file with a different name.

Rename the Release 1A or Symphony file on disk.

## **Cannot create file**

The following conditions could have caused this error:

- \* You tried to save too many files on a disk.  
Save the file on another disk or in another directory.
- \* The file you specified was hidden on disk.  
Save the file on another disk or in another directory.
- \* You used File New and specified a directory that did not exist.  
Respecify the directory.
- \* You tried to save a file with the disk drive door open.  
Close the disk drive door and try again.
- \* You entered an invalid character in a file name. Your operating system determines the characters allowed in a file name.  
See Naming a 1-2-3 File or your operating system manual for more information.

**Cannot erase file. It is in use or has read-only access.**

The following conditions could have caused this error:

- \* You tried to erase a file on disk when the file was active and you had the reservation.

Choose File Administration Network Reserve and select Release to release the reservation, and then use /File Erase to erase the file on disk.

- \* You tried to erase a file on disk when the file was marked read-only on disk. You cannot erase or save a read-only file.

Choose File Administration Network Reserve and select Get to try to get the reservation. If you get the reservation, then you can erase the file on disk using /File Erase. If you cannot get the reservation, you can use File Save As to save the file under a different file name, or you can go to the operating system, use the operating system ATTRIB command to clear the read-only attribute from the file, and then return to 1-2-3 and use /File Erase.



**Cannot import - file is in use**

You used File Import From to copy data from a text file that was not closed on disk. Someone else may have been saving changes to the file on disk.

Wait for 1-2-3 to close the file and then repeat File Import From.

**Cannot read Help file**

The Help file (123W.HLP) may be damaged or may not be in the 1-2-3 for Windows program directory.

Check that 123W.HLP is in your 1-2-3 for Windows program directory.

If you cannot locate the file, or the file is damaged, use the Install program to reinstall your program files. For information on how to start Install, see the booklet that came with your CD-ROM package.

**Cannot read locked Symphony worksheet file**

1-2-3 for Windows cannot read a Symphony file that has been locked using the Services Settings Security Lock command within Symphony.

Use Symphony to unlock the file, and then use File Open to read the file into 1-2-3.

**Directory does not exist**

The following conditions could have caused this error:

- \* You specified a directory that did not exist.  
Respecify the directory name or path.
- \* You entered an invalid character in a file name. Your operating system determines the characters allowed in a file name.  
See [Naming a 1-2-3 File](#) or your operating system manual for more information.

**Disk drive not ready**

You tried to read from or save a file on a disk drive that did not contain a disk or had its door open.

Correct the problem and try again.

**Disk error**

1-2-3 was unable to save a file on or read a file from disk. The disk may be damaged, or the disk-drive head may be out of alignment.

If you are trying to save a file on a disk, try another formatted disk.

If you cannot save the file on the second disk, have the alignment of the disk-drive head checked.

If you are trying to read the file, try using another computer.

**Disk full**

You tried to save a file on a disk that did not have enough room for the file.

**Caution** If you selected Replace after choosing File Save As or File Extract To, 1-2-3 erased the version of this file on disk. You must save the file on another disk so you do not lose the file.

Either use File Extract To to save a portion of the file on the disk, or save the entire file on another formatted disk.

**Disk is write-protected**

You tried to save a file on a disk with a write-protect tab, or on a disk manufactured without a write-protect notch. This error can occur during File Save, File Save As, File Extract To, File Page Setup, Style Font Replace, Window Display Options, or Tools User Setup operations.

Remove the tab or replace the disk with one that is not write-protected.



## **Error reading file**

The following conditions could have caused this error:

- \* 1-2-3 cannot open a blank file. 1-2-3 creates a blank file on disk when you use File New, or when you use File Open with a 1-2-3 Release 1A or Symphony file. The blank file acts as a place holder on disk until you save the file.

Use DOS or the Windows File Manager to check the size of the file on disk to ensure that you are not trying to read a blank file into memory.

- \* 1-2-3 could not read the file from disk because the file may have been corrupted. Clear the error message by pressing ESC and then press ENTER to see if 1-2-3 has read any of the file.

**Error saving file**

You were running a macro with the {OPEN} command. 1-2-3 could not write data to the file because the file was in a directory that contained the maximum number of files.

Either delete some files from the directory or move the file to a directory that contains fewer files.

**File already exists**

You used /File New and specified a file name that already existed on disk.  
Specify a different file name.

**File already exists in memory**

You used File Open, File Save As, or File Extract To and specified a file that was already active. If you used File Save As, the file was active but it was not the current file.

To replace an active file with the version of the file on disk, choose File Close and select No to close the file without saving your changes. Then use File Open to read the version of the file on disk into memory.

**File and/or extension converted**

When you use File Open to read a 1-2-3 Release 1A or Symphony file into memory, 1-2-3 for Windows converts the file by creating a blank worksheet file with the same name and a .WK3 extension on disk and in memory. When 1-2-3 converts the file to .WK3 format, it leaves the original file unchanged on disk.

**Note** You cannot read the converted .WK3 file on disk into memory because it is a place holder for the file and has no data in it. You must save the converted file before you can read it into memory.

**File close error**

You were printing a text or encoded file to a disk and opened the drive door or removed the disk from the drive before you closed the print job.

Before you remove the disk, you must select Print [E,F,P] Quit, or press CTRL+BREAK or ESC to close the print job.

## **File contention prevented accessing the file**

The following conditions could have caused this error:

- \* You tried to read or save a file at the same time that someone else was using the file. This error can occur during File Combine From, File Open, File Save, or File Extract To operations.

Wait a few minutes and then try to complete the operation.

- \* You used a file name that is reserved by the operating system when you were saving or extracting a file.

See your operating system manual for a list of reserved file names. Save the file with a different name.

**File does not exist**

The following conditions could have caused this error:

- \* You specified a file on disk that did not exist in the specified directory.  
Use DOS or the Windows File Manager to find out what files are in the current directory, or use [File Administration Paste Table](#) to list active files.
- \* You specified an active file that is not stored in the current directory.  
Choose the command again and enter the path and the file name.



**File is already sealed**

You chose File Administration Seal File when the file or the reservation setting was already sealed.

**File is not sealed**

You chose File Administration Seal File and selected Disable all restrictions when the file was not sealed.

## **File is read-only**

You tried to save a file that was marked read-only on disk. You cannot save data in a read-only file.

Choose File Administration Network Reserve and select Get to try to get the file reservation. If you get the reservation, choose File Save or File Save As to save the file. If you cannot get the reservation, you can use File Save As to save the file under a different file name, or you can go to the operating system, use the operating system ATTRIB command to clear the read-only attribute from the file, and then return to 1-2-3 and save the file.

## **File is sealed**

The following conditions could have caused this error:

- \* You tried to change a sealed file. When a file is sealed using File Administration Seal File, you cannot change the reservation setting and you cannot use any of the following commands to change the file: Graph Name Delete, Graph Add to Sheet, Graph New, Range [Format, Protect, Unprotect], Range Name [Create, Delete, Label Create], Style Alignment, Worksheet [Column Width, Hide, Unhide], Worksheet Global Settings.

Choose File Administration Seal File and select Disable all restrictions to unseal the file. You must know the password that was used to seal the file in order to unseal it.

- \* You tried to extract data from a sealed file.

Choose File Administration Seal File and select Disable all restrictions to unseal the file before using File Extract To. You must know the password that was used to seal the file in order to unseal it.

**File name already exists on disk**

You tried to read a 1-2-3 Release 1A or Symphony file into memory when a 1-2-3 for Windows file with the same name already existed on disk. When 1-2-3 reads a Release 1A or Symphony file into memory, it converts the file to 1-2-3 for Windows format by creating a blank new file with the same file name and a .WK3 extension. You cannot have two files with the same file name and extension in the same directory.

Copy the 1-2-3 Release 1A or Symphony file to a different directory or rename the file before you read it into memory.

**Incompatible worksheet information lost during saving**

You saved a 1-2-3 for Windows file in Release 2 (.WK1) format, but the file contained new 1-2-3 for Windows features that could not be saved in the file.

Save the file as a .WK3 file to retain all data in the file.

For more information, see [Saving Files in 1-2-3 Release 2 \(.WK1\) Format.](#)

### **Incompatibility with previous versions of 1-2-3**

The following conditions could have caused this error:

- \* You could not save a 1-2-3 for Windows file as a .WK1 file because the file contained more than one worksheet.

Use the Translate utility to convert the file to .WK1 format. See [Appendix A](#) of the *User's Guide* for information on Translate.

- \* You could not save a 1-2-3 for Windows file as a .WK1 file because the file was sealed.

Choose File Administration Seal File and select Disable all restrictions to unseal the file before you try to save it. To unseal the file, you must know the password that was used to seal the file.

**Incorrect file name or path syntax**

You entered an incorrect file name or an incorrect path for a file on disk.

Respecify the file name or the path. If you do not specify a path, 1-2-3 searches the current directory for the file you specify. Use [Tools User Setup](#) to change the current directory to the directory that contains the file, or specify the entire path when you enter the file name.



## **Incorrect password**

The following conditions could have caused this error:

- \* You entered the wrong password when you tried to read a password-protected file using File Combine From or File Open.

Re-enter the password.

- \* You entered the wrong password when you chose File Administration Seal File and selected Disable all restrictions to unseal a file.

Re-enter the password.

A password can include up to 15 characters. 1-2-3 is case-sensitive for passwords, so you must remember the exact combination of uppercase and lowercase letters you used to create the password.

## **Input line too long**

The following conditions could have caused this error:

- \* You used File Import From with a text file that had a line longer than 511 characters. This error occurs when the file you are importing does not have a carriage return at the end of each line. As a result, 1-2-3 cannot find the end of the file's lines.

Use the text editor with which the file was created to shorten the lines by entering carriage returns.

- \* You used Edit Find to replace a string of text with a longer string, but making that replacement in the highlighted cell would have created an entry longer than 511 characters. Do one of the following:

Use a shorter replacement string.

Specify a search range that does not include that cell.

Select Find Next in the Edit Find dialog box when 1-2-3 highlights that cell to skip the replacement in that cell.

**Input range must be in an active file**

You used File Extract To and specified a range that was in a file on disk.

You can only extract data from an active file.

**Invalid character in extension**

You entered an invalid character in the extension. Your operating system determines the characters allowed in an extension.

See [Naming a 1-2-3 File](#) or your operating system manual for more information.

**Invalid character in file name**

You entered an invalid character in a file name. Your operating system determines the characters allowed in a file name.

See [Naming a 1-2-3 File](#) or your operating system manual for more information.

## **Invalid disk name**

The following conditions could have caused this error:

- \* You specified a disk drive name that either was not between A and Z (uppercase or lowercase) or did not exist on your computer.  
Specify a valid disk drive name.
- \* You tried to save a file on an unformatted disk.  
Format the disk.
- \* You specified a disk drive that was not ready.  
Check that you inserted the disk correctly and that the drive door is closed.

**Invalid file operation**

You were trying to save a file to a network that has read-only access.

**No active file to get reservation**

You cannot choose File Administration Network Reserve and select Get to get a reservation for the worksheet because it has never been saved in a file.

Save the worksheet and then choose the command again.

**Note** If file reservation is set to automatic, you will automatically get the reservation when you save the file.



**No files of specified type on disk**

1-2-3 could not find any files of the type you specified.

Use DOS or the Windows File Manager to see a complete list of files in the directory you specified.

**Not a valid worksheet file**

You specified an invalid worksheet file when you used File Combine From or File Open.  
Use only worksheet files created with 1-2-3 or Symphony.

**Part of combine file lost**

You used File Combine From to combine a range from a file on disk, and the data in the specified range extended beyond the worksheet boundaries. When you selected OK, 1-2-3 combined the data that fit in the available rows and columns, but the data that did not fit in the worksheet was lost.

When you use File Combine From, select an area of the worksheet that is large enough to hold all the incoming data.

**Part of file is missing**

The following conditions could have caused this error:

- \* The file you specified may have been truncated.
- \* The file you specified may be missing the end-of-file character.
- \* Your disk may be damaged.
- \* The disk-drive head may not be properly aligned.

Clear the error message by pressing ESC. Press ENTER. If possible, 1-2-3 will read some or all of the file into memory.

**Password required**

**Passwords do not match**

You used File Save As or File Administration Network Seal and tried to password-protect the file or seal, but the password you entered to verify your password did not match the first one you entered.

Repeat the command and enter the password again. A password can include up to 15 characters. 1-2-3 is case-sensitive for passwords, so you must remember the exact combination of uppercase and lowercase letters you used to create the password.

### **The file on disk is different from the one retrieved**

You chose File Administration Network Reserve and selected Get to try to get a reservation for the current file, but the version of the file on disk has changed since you retrieved it. 1-2-3 will not give you the reservation if the file on disk is different from the file you are using.

Use File Open to read the most recent version of the file into memory. If the file is read-only, use File Administration Network Reserve again to try to get the reservation.

**The worksheet file is already reserved**

You chose File Administration Network Reserve and selected Get to get a reservation when you already had the reservation for the file.



### **The worksheet file has no reservation**

The following conditions could have caused this error:

- \* You tried to save a file and you did not have the reservation. You must have the reservation to save a file.

Choose File Administration Network Reserve and select Get to try to get the reservation.

- \* You tried to release the reservation by choosing File Administration Network Reserve and selecting Release when you did not have the reservation. You are already using a read-only file.

For more information on file reservations, see Reserving a File.

**The worksheet file has not been named**

**Too many characters in extension**

You entered more than the allowed number of characters in the file extension. Your operating system determines the number of characters allowed in an extension.

Make sure you have not specified a default extension that is too long.

See [Naming a 1-2-3 File](#) or your operating system manual for more information on file extensions.

**Too many characters in file name**

You specified too many characters in the file name. Your operating system determines the number of characters allowed in a file name.

See [Naming a 1-2-3 File](#) or your operating system manual for more information.

**Too many characters in path**

You specified too many characters in the path. Your operating system determines the number of characters allowed in the path.

See your operating system manual for more information.

### **Too many open files**

You had too many files in memory with reservations when you used a File, Graph, Print, or Database command that creates or opens files, or when you chose Style Font Replace Save or File Page Setup Save.

Save your work, and either use File Close to delete some active files or choose File Administration Network Reserve and select Release to release the reservation for one or more active files.

**Unable to reserve file: it is already reserved**

You chose File Administration Network Reserve and selected Get when someone else was using the file with the reservation.

You can get the reservation if no one else has it and if the file has not changed on disk since you read it into memory. Try again later to get the reservation.

**Unable to reserve file: it has read-only access**

You chose File Administration Network Reserve and selected Get to try to get a reservation for a file that was marked read-only on disk, or you tried to save a file that is marked read-only on disk.

You can clear the read-only attribute from the file on disk by using the operating system ATTRIB command. Then you can read the file into 1-2-3, get the file's reservation, and save the file.



**Worksheet file revision out of date**



**Cannot use offset number for field**

**Directory entry update error**

You used File Save As or File Extract To to save a file on disk, and the network software did not update the directory.

Reconfigure the network so that directory updates are not deferred.

**Formula too complex**

You tried to enter a formula that was too long or too complicated.

Break the formula into one or more smaller formulas.

**Invalid number input**

You specified an invalid number for the command you were using.

Enter a number within the range indicated, or see Help for specific information.

**Number is too large**

You specified a number that was too large for the command you were using.

Enter a number within the range indicated, or see Help for specific information.

**Number is too small**

You specified a number that was too small for the command you were using.

Enter a number within the range indicated, or see Help for specific information.



**System error**

You entered a formula that contained too many nested levels or an @function that contained too many arguments.

Break the formula into one or more smaller formulas.

## **Worksheet full**

One of the following conditions could have caused this error:

- \* You used a command that copies or moves data, but the range you specified to copy or move did not fit within the worksheet borders.

Make sure the destination range is large enough to hold the data you want to copy or move.

- \* You tried to insert a column or columns using Worksheet Insert, but 1-2-3 could not complete the command because the number of columns you tried to insert exceeded the number of blank columns at the right worksheet border.

A blank column contains no data, formatted cells, or unprotected cells. Delete unneeded data, formatting, and protection to increase the number of blank columns or try to insert fewer columns.

**Internal error - invalid command parameter**



**Graph name already exists**

You used Graph New to create a new graph, but specified a graph name that is already in use.

Specify the graph name again, making sure the name is not already in use.

**Graph name does not exist**

You chose Graph View or Graph Name Delete and specified a nonexistent graph name.

Choose Graph View or Graph Name Delete again to see a complete list of graph names in the current file and the names of other active files. If you are trying to view or delete a named graph in the current file, select the appropriate name from the list. If you are trying to view or delete a named graph in another active file, select the file name from the list and then specify the appropriate graph name.

**Too many graph names; cannot create new one**

You tried to create a named graph with Graph New, but the current file already contains the maximum number of named graphs.

Use Graph Name Delete to delete an existing named graph in the current file and then reselect Graph New.

## **Name too long**

The following conditions could have caused this error:

- \* You chose Graph New or /Print [E, F, P] Options Name Create and specified a graph or page settings name longer than 15 characters.

Choose Graph New or /Print [E, F, P] Options Name Create again and specify a name that does not exceed 15 characters.

- \* When specifying a range for a command, you typed a name of more than 15 characters. Range names cannot exceed 15 characters. Either you misspelled the range name you wanted to use or, if you were specifying multiple ranges, you left out an argument separator between two or more ranges.

- \* For a Data External command, you specified an external table name of more than 80 characters. A full table name (which includes a driver name, database name, and table name) cannot exceed 80 characters.

Use a shorter driver, database, and/or table name for the external table. To shorten the driver name, edit the DN="drivername" statement in your LOTUS.BCF file.



### **Graph error - not enough memory to draw graph**

- \* You tried to view a graph, but not enough memory was available for 1-2-3 to display it. To solve this problem, do one or more of the following:

Free some memory and then try to display the graph. For ways to free memory, see [Increasing Available Memory](#).

Use [Graph View](#) to display another named graph that is less complex.



**Cannot add graphic**

There is not enough memory to add the specified graphic. For information on increasing memory, see [Increasing Available Memory](#) or [Appendix C](#) in the *User's Guide*.

**Cannot create format file**

1-2-3 cannot create a format file (.FM3) because there is not enough disk space, the directory has read-only access, or the disk is write-protected.

**Cannot create temporary file**

There is not enough disk space to create the temporary files 1-2-3 uses for printing.

**Cannot define a named style from a graphic**

You cannot define a named style from the specified cell.

Specify a cell outside the graphic.

**Cannot erase file**

1-2-3 cannot erase the specified file because it has read-only access.

**Cannot export to this format from a multiple-sheet file**

You tried to use :Special Export to export to an .FMT or .ALL file from a multiple-sheet file. You can save only an .FM3 file from a multiple-sheet file.

### **Cannot move graph beyond worksheet boundaries**

You tried to move a graph in the worksheet using :Graph Move, but the To range you specified would place the graphic beyond the last column or row in the worksheet.

### **Cannot move or copy formats beyond worksheet boundaries**

One of two conditions caused this error:

- \* You tried to move or copy formats, but the range you specified to copy or move occupied either more rows or columns than the total number of remaining rows or columns in the worksheet or more worksheets than the total number of remaining worksheets in the file.
- \* You chose [File Import From Styles](#) and specified a format file that contains more worksheets than the total number of remaining worksheets in the file.

**Cannot retrieve library file**

1-2-3 could not open a file on disk containing named page settings or a named font set because the file is damaged.

**Cannot use :Text Edit on a hidden range**

The range you specified is hidden or is in a hidden worksheet.

Use Worksheet Unhide to redisplay the hidden range or worksheet.

**Cannot use this command in text display mode**

You must use graphic display mode for File Preview, Graph View, :Text Edit, and :Graph Zoom.

To turn graphic display mode on, choose Window Display Options Options and remove the check from the Draft check box, or choose :Display Mode Graphics Quit.

**Directory does not exist**

You specified the name of a directory that does not exist.

**Error reading format file**

Either the format file 1-2-3 tried to read into memory is damaged, or you chose File Import From Styles and specified the name of a format file that does not exist.

**Error writing file**

1-2-3 cannot save the file containing named page settings or a named font set because there is not enough disk space, the directory has read-only access, or the disk is write-protected.

**File already in use**

You tried to use :Special Export to export to a format file that is not closed on disk.

**File is sealed**

You tried to change a sealed file. When a file is sealed using File Administration Seal File, you cannot change it with any of the following commands: Graph Name Delete, Graph Add to Sheet, Graph New, Range [Format, Protect, Unprotect], Range Name [Create, Delete, Label Create], Style Alignment, Worksheet [Column Width, Hide, Unhide], Worksheet Global Settings.

Choose File Administration Seal File and select Disable all restrictions to unseal the file. You must know the password that was used to seal the file in order to unseal it.

**Global protection is enabled**

You cannot use [File Import From Styles](#) if global protection is turned on.  
Use [Worksheet Global SettingsProtection](#) to turn global protection off.

**Graph not found**

You specified the name of a graph that does not exist, or you specified a range that does not contain a graph.

**Graph too big to be edited**

You tried to edit a graphic in the worksheet, but the graphic is too large.

Choose [Graph Size](#) and specify a smaller range for the graphic to occupy. Then try to edit the graphic again.

**Invalid library file**

You used [File Page Setup Retrieve](#) or [Style Font Replace Retrieve](#) and specified an incorrect file name for a file containing named page settings or a named font set.

**Invalid print range**

You specified a print range that is not in an active file.

Specify one or more ranges in an active file as the print range, or open the file containing the range you tried to print.

**Invalid range**

You specified a range that is not in an active file.

**Margins equal or exceed page size**

1-2-3 cannot print if the combined left and right margin settings are greater than the width of the paper or if the combined top and bottom margin settings are greater than the length of the paper.

Use [File Page Setup Margins](#) and change the left and/or right margins or the top and/or bottom margins.

**No print range specified**

Specify a print range with :Print Go and :Print Preview.

**Not enough memory to print**

Not enough memory is available to print.

For information on freeing memory, see [Increasing Available Memory](#) or [Appendix C](#) of the *User's Guide*.

**Out of memory**

You must free enough memory to perform the operation that caused this error message.

For information on freeing memory, see [Increasing Available Memory](#) or [Appendix C](#) of the *User's Guide*.



**Out of memory. Edit Undo disabled.**

You must free enough memory to perform the operation that caused this error message.

For information on freeing memory, see [Increasing Available Memory](#) or [Appendix C](#) of the *User's Guide*. To turn on Edit Undo, use [Tools User Setup](#).

**Protected cell**

You cannot use [Graph Add to Sheet](#), [Edit Clear Special](#), [Style Display Options \(Graph Window\)](#), [Range Justify](#), or :Text Edit in a range that contains protected cells.

You must unprotect the protected cells with [Range Unprotect](#) or turn off global protection with [Worksheet Global Settings Protection](#).

**Text range full**

The text range you specified for :Text Edit or :Text Set is too small.

Specify a larger text range with :Text Set.

**Too many characters in path**

You specified too many characters in the path. Your operating system determines the number of characters allowed in the path.

See your operating system manual for more information.

**Break**

You pressed CTRL+BREAK while a macro was running. 1-2-3 did not complete the macro.

## Cannot invoke operating system

You chose /System or were running a macro that included a /S keystroke instruction or {SYSTEM} command, and one of the following problems occurred:

- \* 1-2-3 could not locate the COMMAND.COM file.

If your COMMAND.COM file is on a floppy disk, make sure the disk is in the disk drive and then choose /System or rerun the macro.

- \* 1-2-3 could not access the COMMAND.COM file because you were already using the maximum number of files your operating system allowed.

To solve this problem, use File Close to delete one or more of your active files; use File Administration Network Reserve to release the reservation of one or more active files; or end another application program, if one is running. Then choose /System or rerun the macro.

- \* You have insufficient memory to invoke the operating system.

See Increasing Available Memory for more information.

### **Cannot write over data with APPEND commands**

You were running a macro that uses an {APPENDBELOW} or {APPENDRIGHT} command to copy data to the end of a range, but the cells to which the data would be copied already contained data. 1-2-3 does not allow {APPENDBELOW} and {APPENDRIGHT} commands to write over existing data.

Check the {APPENDBELOW} or {APPENDRIGHT} command in the macro to see what range you specified as the target location. (The target-location argument is the first argument in both of these commands.) Then either erase that range or use a different target location for the command.

## **Invalid expression**

You were running a macro and one of the following problems occurred:

- \* A repetition factor in a macro keystroke instruction did not evaluate to a number.
- \* For a macro command that requires a number argument, the argument did not evaluate to a number.
- \* For a {FOR} command, the start, stop, or step argument evaluated to ERR or NA.
- \* For a {RECALC} or {RECALCCOL} command, the condition argument was either an invalid cell reference (for example, an undefined range name) or a literal string. The condition argument must be a formula, a number, or a reference to a cell that contains a formula, number, or label.

## **Invalid FORBREAK**

You were running a macro and 1-2-3 encountered a {FORBREAK} command somewhere other than within a subroutine called by a {FOR} command.

{FORBREAK} commands are allowed only within {FOR} subroutines.

Remove the {FORBREAK} command from the macro, or if it is within a subroutine, use a {FOR} command instead of a {subroutine} command to call that subroutine.

## **Invalid string argument**

You were running a macro and one of the following problems occurred:

- \* For an {OPEN} command, the access-type argument was an empty string ("").  
You must use the letter r, w, m, or a (or a reference to a cell that contains one of those letters) as the access-type argument.
- \* For a macro command that requires a string argument, the argument was a number, numeric formula, or reference to a cell that contains a number or numeric formula.
- \* For a {DISPATCH} command, the range name used as the location argument was undefined or did not exist, or the specified location was blank or contained a numeric value.

## Invalid type

You were running a macro and one of the following problems occurred:

- \* For a macro command that uses a string argument, the argument included a colon followed by a character other than S or V and was not enclosed in quotation marks.
- \* For a macro command that uses a number argument, the argument included a colon followed by a character other than S or V.
- \* For a {DEFINE} command, one of the location arguments ended with a colon followed by a character other than S or V.
- \* For a macro command that requires a string argument, the argument was either a string enclosed in quotation marks and followed by :V, a string that 1-2-3 did not recognize as a range name followed by :V, or an unquoted literal string that includes a : (colon).
- \* An address used as a location argument in a macro command included a worksheet letter for a nonexistent worksheet (for example, C:C1 in a single-sheet file).



### **Invalid use of macro menu command**

- \* You were running a macro that includes a {MENUBRANCH} or {MENUCALL} command and the first cell of the range specified as the location argument for that command was blank. The {MENUBRANCH} or {MENUCALL} location argument tells 1-2-3 where to find the macro menu for the command.

The macro menu should start in the upper left corner of the range specified as the location argument.

A macro menu usually consists of at least three rows: The first includes the menu items (up to eight), the second includes descriptions for each menu item, and the third includes macro instructions for each menu item.

For more information on creating macro menus, see [{MENUBRANCH}](#) and [{MENUCALL}](#).

## **Invalid value**

You were running a macro and one of the following problems occurred:

- \* For a macro command that requires a number argument, the argument was a string, string formula, or reference to a cell that contains a label or string formula.
- \* During a /XN command in a macro, you tried to enter a label instead of a number, or you pressed ENTER without typing anything. 1-2-3 suspended the macro temporarily.

To continue the macro, press ENTER or ESC to clear the error message and then enter a number.

### **Invalid /X command in macro**

You were running a macro and one of the following problems occurred:

- \* The macro contained /X followed by a character other than the letter C, G, I, L, M, N, Q, or R. The sequence did not represent one of the /X commands (/XC, /XG, /XI, /XL, /XM, /XN, /XQ, and /XR).
- \* The macro used the letter X to specify a menu selection, but none of the items in that menu started with X.

## **Macro: missing argument**

You were running a macro and one of the following problems occurred:

- \* A macro command that uses one or more arguments included fewer than the required number of arguments.
- \* A `{DEFINE}` command in a subroutine that was called by a `{subroutine}` command included fewer arguments than the `{subroutine}` command.

A `{DEFINE}` command must include the same number of arguments as the corresponding `{subroutine}` command.

### **Maximum command line length exceeded**

You used {SYSTEM} to execute an operating system command, but the length of the command line generated by {SYSTEM} was too long. The command line cannot exceed 128 characters.

Make the command line shorter and run the macro again.

**Note** Included in the 128-character limit is the following string, which {SYSTEM} appends to the command line: "<path>COMMAND.COM /C " where path is supplied by the DOS COMSPEC setting. The appended string is a reference to your COMMAND.COM file, including the path, followed by the DOS command /C surrounded by spaces. Thus, the length of the *command* argument must be no more than 128 characters minus the number of characters in the appended string.

### **Syntax error in macro key/range name**

You were running a macro and 1-2-3 encountered an error in one of the macro instructions. Check for these possible errors:

- \* No } (closing brace) in a macro key name or macro command
- \* A missing argument separator in a macro command
- \* No closing quotation mark in a literal string used as a macro command argument
- \* Unequal number of opening and closing parentheses in a macro command argument

**Too many arguments**

You were running a macro that uses a {subroutine} command, and the {DEFINE} command in the specified subroutine included more arguments than the {subroutine} command.

A {DEFINE} argument in a subroutine must include the same number of arguments as the {subroutine} command that calls the subroutine.

## **Unrecognized key/range name**

You were running a macro and one of the following problems occurred:

- \* 1-2-3 did not recognize the first word after an open brace as a macro key name, advanced macro command keyword, or subroutine range name.

Check for these problems: An incorrectly spelled key name, keyword, or subroutine range name; a missing space between a macro command keyword and the command's first argument, or between a key name and the repetition number; or an undefined or nonexistent subroutine range name.

- \* For a {FORM} command, the include list, the exclude list, or the first column of the call table included something that 1-2-3 did not recognize as a key name (for example, a macro command).



**Panels area has been disabled**

**Worksheet area has been disabled**

## **Invalid FORMBREAK**

You were running a macro and 1-2-3 encountered a {FORMBREAK} command somewhere other than within a {FORM} call-table subroutine. {FORMBREAK} commands are allowed only within a {FORM} call-table subroutine.

Remove the {FORMBREAK} command from the macro, or if it is within a subroutine, either move the {FORMBREAK} command to the {FORM} call-table subroutine or use the {BRANCH} or {DISPATCH} command to transfer control from the {FORM} call-table subroutine to the subroutine location.



## Memory full

- \* You must free enough memory to perform the operation that caused this error message. To free memory, do one or more of the following:

Use File Save As to save your active worksheet files, close the files, and then use File Open to read the files back into memory.

If Edit Undo is turned on, use Tools User Setup to turn it off.

**Note** When 1-2-3 displays this error message, it erases the undo history.

Delete worksheets, files, and data that you no longer need in memory.

If you have programs in memory besides 1-2-3, end one or more of those programs.

For additional information on freeing memory, see [Appendix C](#) of the *User's Guide*.

### **Not enough memory to load driver file**

- \* Not enough memory was available to load the printer or database driver you specified. To free memory, do one or more of the following:

Use File Save As to save your active worksheet files, close the files, and then use File Open to read the files back into memory.

If Edit Undo is turned on, use Tools User Setup to turn it off.

Delete worksheets, files, and data that you no longer need in memory.

If you have programs in memory besides 1-2-3, end one or more of those programs.

For additional information on freeing memory, see [Appendix C](#) of the *User's Guide*.

You can prevent this error message from occurring in the future by making the driver your default driver. To make the driver your default driver:

- \* If the driver is a printer driver, use File Printer Setup to select the correct printer and port.



**A network error has occurred**



**Invalid or unsupported file search attribute**

**No license directories were found**

**No licenses are currently available**

**No licenses were found**

**Unable to write to log file**



**Cannot open printer driver**

You chose File Printer Setup or File Print and selected OK. However, the Windows printer driver could not be loaded into memory.

Install the printer driver from the Windows Control Panel, or choose File Printer Setup and select another printer.

### **Cannot print ranges that are not in memory**

The following conditions could have caused this error:

- \* You tried to print a range from a file that is not in memory or from an external database table.

You can print ranges only from active files.

- \* You used a print range that included a file reference but did not include a path.

You must include a path in a file reference, unless the file is stored in the 1-2-3 default directory.



**Device driver not installed**

**Error loading fallback table**

The file specified in the statement "fallback table =" in the [PRINTER] section of 123W.INI was damaged or deleted from your hard disk.

Make sure the file name is correct, and recopy the file if necessary.

**General spooler error**

A problem with your printer occurred.

Be sure your printer is turned on, is on line, and has paper in it. Also, be sure that you are using the correct printer cable and that the cable is firmly attached to your printer and your computer. Then try to print again.

If the problem persists, make sure that Windows is set up properly for printing. For more information, see the *Microsoft Windows User's Guide*.

**Invalid \nnn code in Setup String**

You entered an invalid setup string.

Be sure each backslash in the setup string is followed by at least three digits. See your printer manual to be sure the setup string you entered represents a printer control code.

**Left margin equals or exceeds right margin**

1-2-3 cannot print if the left margin equals or is wider than the right margin.

Select /Print [E,F,P] Options Margins and change the left and/or right margins.

**Margins, header and footer equal or exceed page length**

The combined length of the top and bottom margins and the header and footer equals or is longer than a full page, leaving no space on the page for the print range.

Select /Print [E,F,P] Options Margins and change the top and/or bottom margins, or select /Print [E,F,P] Options Pg-Length and change the page length. If you have not specified header or footer text, you can also select /Print [E,P] Options Other Blank-Header.

**No printer driver installed**

You do not have any printer drivers installed in your Windows configuration.  
Install one or more printer drivers from the Windows Control Panel.

**No print range specified**

You selected /Print [E,F,P] Go without specifying a print range.

Before you select /Print [E,F,P] Go, use /Print [E,F,P] Range to tell 1-2-3 what to print.



**Print job canceled from spooler**

Windows could not complete your print job.

Make sure that Windows is set up properly for printing. For more information, see the *Microsoft Windows User's Guide*.

**Print settings name does not exist**

You used /Print [E,F,P] Options Name Use or Delete and entered a print settings name that does not exist.

Check to be sure you spelled the print settings name correctly. If you are not sure of the correct spelling, select /Print [E,F,P] Options Name Use or Delete and press F3 (NAME) to see a list of the print settings names in the current file. Then select the correct name.

**Spooler out of disk space**

There is not enough space on your disk to store the temporary files necessary for printing. Delete any unnecessary files from your disk and then try to print again.

**Spooler out of memory**

Not enough memory is available to print.

For information on freeing memory, see [Increasing Available Memory](#) or [Appendix C](#) in the *User's Guide*.

**Too many print settings names; cannot create new one**

You tried to create a print settings name when you have already created the maximum number of print settings names (254).

Use /Print [E,F,P] Options Name Delete to delete any print settings names you no longer need. Then use /Print [E,F,P] Options Name Create to create the new print settings name.

### **Unable to access output device**

The following conditions could have caused this error:

- \* The printer you selected is not connected to a port.

Use the Windows Control Panel to assign the printer to a valid output port, or make the printer active on an output port.

- \* There are not enough Windows system resources to print. There may be other applications running in Windows.

Exit some of the currently running applications, and try printing again.

### **Unable to access output device**

The following conditions could have caused this error:

- \* The printer you selected is not connected to a port.

Use the Windows Control Panel to assign the printer to a valid output port, or make the printer active on an output port.

- \* There are not enough Windows system resources to print. There may be other applications running in Windows.

Exit some of the currently running applications, and try printing again.

**Unable to print**

The Windows printer driver file is damaged.

Install the device driver from the Windows Control Panel, or choose [File Printer Setup](#) and select another printer.



### **A range name cannot begin with << >>**

The following conditions could have caused this error:

- \* For Range Name Create, you specified a range name that started with << >> (double angle brackets).
- \* For Range Name Label Create, the labels range you specified contained a label that started with << >>.
- \* For Data External Options Create Table or Data Connect to External, you specified an external table range name that started with << >>.

Range names cannot begin with double angle brackets because 1-2-3 uses those characters to denote file references. To name a range in another active file, move the cell pointer to that file before selecting Range Name Create.

**Cannot create a named range that spans files**

### **Cannot create names from a range of labels that is not in memory**

You were using Range Name Label Create and one of the following problems occurred:

- \* You specified a range in a file on disk as the labels range. The labels range must be in an active file.

Before you use Range Name Label Create, use File Open to read into memory the file that contains the labels range.

- \* When specifying a labels range in another active file, you used a file reference that did not include a path or extension.

Choose Range Name Label Create and select the Range text box. Then press (F3) NAME and select the appropriate file name from the list box. 1-2-3 automatically includes the path and extension when you use this method to create the file reference.

**Cannot delete a range that is not in memory**

**Cannot justify text if worksheet protection enabled**

You were using Range Justify and one or more worksheets in the justify range were globally protected.

Use Worksheet Global Settings to turn off global protection for all worksheets in the justify range before using Range Justify.

## **Cannot modify a range that is not in memory**

You were using a 1-2-3 command and one of the following problems occurred:

- \* Instead of specifying a range in an active file, you specified a range in a file on disk or a range name assigned to an external table.

Specify a range in an active file.

- \* You used a file reference to specify a range in another active file, but the reference did not include a path or extension.

Choose the command, select the Range text box, press (F3) NAME and select the file name from the list box. 1-2-3 automatically includes the path and extension when you use this method to create file references.

- \* One of the settings used by the selected command is an undefined range name. For example, you could have selected Data Query Extract when the range name specified as the data query output range was undefined.

To solve the problem, either change the setting that caused the error or redefine the undefined range name with Range Name Create or Range Name Label Create.

## Cannot search range

1-2-3 could not complete an Edit Find command for one of these reasons:

- \* You specified a range in a file on disk as the search range.  
Read the file into memory before using Edit Find.
- \* You specified a range name for an external table as the search range.  
Use Data Query Extract to extract the external table to a worksheet, and search the extracted range.
- \* You specified a search range in another active file, but you omitted the path or the extension from the file reference.

Choose Edit Find, select the Range text box, press (F3) NAME, and select the appropriate file name from the list box. 1-2-3 automatically adds both a path and an extension when you use this method to create a file reference.

## **Invalid cell or range address**

The following conditions could have caused this error:

- \* For a cell or range specification, you used a nonexistent address, such as JV4 or A1..Z9000; a range address that was syntactically incorrect, such as <<QTR\_1.WK3>>D1..<<QTR\_1.WK3>>G20; or a nonexistent or undefined range name.
- \* When specifying an external table range name, you used a name that started with \$ or !; a name that included a period; or a name that duplicated a cell address.
- \* When specifying a cell or range in a file on disk, you did not include a path or extension in the file reference.
- \* A cell specified as the location argument for a {DISPATCH} macro command contained an entry that did not evaluate to a location.



## Invalid range

The following conditions could have caused this error:

- \* The range name you specified for a Data External command was not an external table range name.
- \* For an advanced macro command that uses a location argument, whatever you used as the argument did not evaluate to a location.
- \* The range you specified as the {FORM} input-location argument included hidden columns or worksheets.
- \* For a {PUT} command, the column-offset or row-offset value was either negative or represented a column or row outside of the target location.
- \* When using Tools Macro Run or ALT+F3 (RUN), either you specified a range that is not in an active file, or you specified a range in another active file, but did not include a path or extension in the file reference.
- \* When using Tools SmartIcons Customize Assign Macro to assign a macro to a custom icon, the range name you specified is invalid or is in an external table.

### **Justify range is full or line too long**

1-2-3 could not complete a Range Justify command for one of these reasons:

- \* You specified a single-row justify range, and too few rows remained in the worksheet either to hold all the justified labels or to hold subsequent data in the column that 1-2-3 had to move down in order to perform the justification.

Choose Range Justify again and specify either a wider single-row justify range or a multiple-row justify range.

- \* You specified a multiple-row justify range, and either the range is too small to hold all the justified labels or one of the labels in the justify range is too long for 1-2-3 to complete the justification.

Choose Range Justify again and specify either a larger multiple-row justify range or a single-row justify range.

**More than one file has the same range name**

In a command, you tried to specify a range by typing <<?>> (the wild-card file reference) in front of a range name, but more than one active file contained that range name. You can use the wild-card file reference to specify a range only when the range name that follows it is unique among all active files.

When more than one file contains the same range name, you must type the appropriate file name in the file reference.

### **Named range not found in worksheet file**

For File Combine From, the range name you specified as the source did not exist in the file you specified. You may have misspelled the range name.

Choose Range Name Paste Table to create a table of range names in the specified file, and check for the correct spelling of the name.

**No more matching strings**

You were using Edit Find, and 1-2-3 found no more occurrences of the search string in the search range.

### **No unprotected cells in input range**

The following conditions could have caused this error:

- \* The input range you specified for /Range Input contained no unprotected cells.  
Choose Range Unprotect to unprotect some of the cells in the input range before using /Range Input.
- \* The range you used as the {FORM} input-location argument in a macro contained no unprotected cells.  
Choose Range Unprotect to unprotect some of the cells in the range before running the macro.

**Range must contain at least one unhidden column**

## **Range name does not exist**

The following conditions could have caused this error:

- \* For Range Name Delete, /Range Name Note Create, or /Range Name Note Delete, you specified a range name that either did not exist or was undefined.

To delete an undefined range name, or to create or delete a note for an undefined range name, you must first reassign the name to a range with Range Name Create or Range Name Label Create.

- \* You used Range Go To or F5 (GOTO).

The active file you specified as the cell-pointer destination is not stored in the current directory or does not have the default file save extension, or you did not include a path or extension in the file reference.

Respecify the cell-pointer destination, adding the appropriate path or extension to the file reference.



### **String not found**

You were using Edit Find and one of the following occurred:

- \* You selected Labels or Formulas as the type of entry to search, and 1-2-3 found no occurrences of the search string in entries of that type in the search range.
- \* You selected Both as the type of entry to search, and 1-2-3 found no occurrences of the search string anywhere in the search range.
- \* All columns in the search range that contained the specified search string were hidden.

Choose Worksheet Unhide to redisplay the hidden columns before using Edit Find.



## **Solver and Backsolver Error Message Index**

To select an error message below using the mouse, point to green text with a solid underline. When the mouse pointer changes to a hand icon, click the mouse button. Using the keyboard, press TAB until the topic is highlighted, and then press ENTER.

[Adjustable cell entry is invalid](#)

[All constraints are binding for this answer](#)

[All constraints are satisfied, but optimal cell equals ERR or NA](#)

[Cannot create the report file](#)

[Cannot find an optimal answer](#)

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[Cannot finish solving this problem](#)

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[Cannot finish solving this problem -- formula is too complicated](#)

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[Cannot solve this problem -- formulas are contradictory](#)

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No answers exist to put in the worksheet

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Problem refers to undefined range name or a worksheet on disk

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This answer has no inconsistent constraints

This command is available only after solving

This command requires a guessable attempt in the worksheet

This command requires an answer in the worksheet

This command requires an answer or attempt in the worksheet

This command requires an attempt in the worksheet

Too many report files already exist

What-if limits couldn't be computed

**Adjustable cell entry is invalid**

The range of cells you specified contains a syntax error, such as an undefined range name or invalid character.

Specify the adjustable cell entry again, making sure to specify one or more cells that contain numbers (not formulas) and are unprotected.

**All constraints are binding for this answer**

You selected Unused constraints in the Solver Report dialog box, but there are no unused constraint cells for the current answer.

**All constraints are satisfied, but optimal cell equals ERR or NA**

This attempt satisfies all of the constraints you specified, but it is not considered to be an answer because the optimal cell evaluated to ERR or NA.

**Cannot create the report file**

The Solver is unable to create a new worksheet file for the report you specified. You may be out of memory or at the maximum number of worksheets 1-2-3 allows.

**Cannot find an optimal answer "reason"**

The Solver cannot find an optimal answer to the problem, either because the optimal cell is not constrained or because something else prevented the Solver from choosing an answer as optimal.

Try adding an additional constraint to the problem that limits the value of the optimal cell.

**Cannot find any more answers**

You selected Solve, but the Solver could not find any additional answers to the problem.

If you require additional answers to the problem, alter the value in one or more of the problem cells and then solve the problem again.

**Cannot finish solving this problem "reason"**

The Solver cannot finish finding answers to this problem, either because an @function in one of the problem cells has too many arguments, because a formula in one of the problem cells is too long, or because the problem itself is too complicated.

Change the problem so that it is smaller and less complex, and then try to solve it again.

**Cannot optimize a constraint cell**

You selected one of the problem's constraint cells as the optimal cell. You cannot use the optimal cell as a constraint cell (though you can use it as an adjustable cell).

**Cannot solve this problem "reason"**

The Solver cannot solve this problem, either because the formulas are contradictory, because the @LOOKUP function offset is not constant, or because there is an unsupported @function in one or more of the problem cells.

Adjust or remove the formula causing the error and then try to solve the problem again.

**Cannot write a value into protected cell "cell address"**

The Solver cannot display an answer it has found to the problem because one of the adjustable cells is protected and global protection is turned on.

Choose [Worksheet Global Settings Protection](#) and remove the check from Protection to disable global protection or use [Range Unprotect](#) to turn off the protection on the adjustable cells.

**Cell "cell address" refers to an unsupported string**

The Solver cannot use the formula in this cell because it contains a string argument or is dependent on another cell that contains a string argument or a label.

**Cell format not available for Answer table report**

The Answer table report is available in table format only.

**Cell format not available for How solved report**

The How solved report is available in table format only.

**Constraint cell entry is invalid**

The range of cells you specified contains a syntax error (such as an undefined range name or an invalid character), or the range does not include any cells that contain formulas that are valid constraints. Valid constraints are simple logical formulas that use the logical operators = >= <= > and < (for example, +A1+A2>=C1/D4).

**Constraints and the optimal cell must not refer to constraint cells**

Constraint cells and the optimal cell cannot contain formulas that refer to other constraint cells.



**Difference amount must be a number**

You specified a difference amount that is not a valid number.

Specify a value or a formula that results in a value in the For differences  $\geq$  text box.

**Estimated number of answers must be an integer between 1 and 999**

You requested an invalid number of answers.

Specify an integer between 1 and 999.

**First answer number is either non-numeric or invalid**

You specified an answer number that is not within the range 1 to n, where n is the number of answers the Solver found.

Specify an integer that corresponds to a valid Solver answer number.

**Guess value must be a number**

You entered a guess containing an illegal character.

Specify a value or a formula that results in a value as the guess value.

**Incorrect function syntax in cell "cell address"**

The formula in the cell contains an @function that has an invalid range as an argument, for example, 3+@SIN(A1..A2).

**Insufficient precision available when using cell "cell address"**

The Solver cannot solve the problem because you specified a problem that uses numbers that exceed the floating point precision on your computer.

If the values in the worksheet are very large, you can express them in a different metric by dividing all the cells by 1,000 (or some other scaling amount), or you can adjust or remove the formula causing the error and then try to solve the problem again.

**Internal error**

The Solver could not finish solving the problem due to an internal error. Please record the error message 1-2-3 displays and contact Lotus Customer Support.

**Invalid cell or range address**

For a cell or range specification, you used a nonexistent address, such as JV4 or A1..Z9000; a range address that was syntactically incorrect, such as <<QTR\_1.WK3>>D1..<<QTR\_1.WK3>>G20; or a nonexistent or undefined range name.

**Invalid use of range in cell "cell address"**

The formula in the cell contains an invalid range (for example, 3+A1..A2).

**No answers exist to put in the worksheet**

You selected Next, First, or Original in the Solver Answer dialog box, but the Solver was not able to find any answers to the problem or 1-2-3 discarded the answers when a change to the worksheet file made 1-2-3 recalculate the file.

**No significant difference exists between these two answers**

You selected Differences in the Solver Report dialog box, but the two answers you specified differ by less than the value you specified for all problem cells.

Specify a lower comparison value and select Differences again.

**No valid adjustable cells were specified**

You selected Solve before you specified the adjustable cells in the problem, or the cells you specified were protected, blank, or did not contain values.

Specify the adjustable cells in the Adjustable cells text box before you try to solve the problem, and make sure that the cells you specify are not protected or blank and do not contain formulas or labels.

**No valid constraint cells were specified**

You selected Solve before you specified the constraint cells in the problem, or the cells you specified did not contain logical formulas.

Specify the constraint cells in the Constraint cells text box before you try to solve the problem and make sure the cells you specify contain logical formulas.

**Optimal cell must be a single cell that depends on an adjustable cell**

You specified an optimal cell that does not depend on the value in any of the adjustable cells, or you specified a multiple-cell range as the optimal cell.

**Out of memory**

You must free enough memory to perform the operation that caused this error message. For information on freeing memory, see [Increasing Available Memory](#) or [Appendix C](#) of the *User's Guide*.

**Problem refers to undefined range name or a worksheet on disk**

One or more of the problem cells is in a worksheet file on disk, or one or more of the problem cells is in a range whose name is no longer valid.

Make sure that all worksheet files referenced in the problem are open and that all range names contained in problem cells are defined.

**Second answer number is either non-numeric or invalid**

You specified an answer number that is not within the range 1 to n, where n is the number of answers the Solver found.

Specify an integer that corresponds to a valid Solver answer number.

**Solver cannot create its work files**

The Solver cannot create the temporary files it needs to solve the problem. You may be running low on available disk space or the Solver may be attempting to write the temporary files to a write-protected disk.

**Solver cannot delete its work files**

The Solver cannot erase from your disk the temporary files it uses to solve the problem. You may be running low on available disk space.

**Solver cannot read its work files**

The Solver cannot read the temporary files it uses to solve the problem. You may be running low on available disk space or there may be a problem with the disk.

**This answer has no inconsistent constraints**

You selected Inconsistent constraints in the Solver Report dialog box, but the currently displayed answer to the problem does not contain any inconsistent constraints.

**This command is available only after solving**

You selected a command that the Solver cannot execute until you select Solve to find answers to the problem.

**This command requires a guessable attempt in the worksheet**

You selected a command that the Solver cannot execute unless an attempt that requires guesses is displayed in the worksheet.

Select First or Next in the Solver Answer dialog box until an attempt that requires guesses is displayed in the worksheet. Then select the command again.

**This command requires an answer in the worksheet**

You selected a command that the Solver can execute only if an answer (not an attempt) is displayed in the worksheet.

Select First or Next in the Solver Answer dialog box to display an answer in the worksheet and then select the command again. Do not select the command if the Solver found attempts instead of answers.

**This command requires an answer or attempt in the worksheet**

You selected a command that the Solver can execute only if an answer or attempt is displayed in the worksheet.

Select First or Next in the Solver Answer dialog box and then select the command again.

**This command requires an attempt in the worksheet**

You selected a command that the Solver can execute only if an attempt (not an answer) is displayed in the worksheet.

Select First or Next in the Solver Answer dialog box to display an attempt in the worksheet and then select the command again. Do not select the command if the Solver found answers instead of attempts.

**Too many report files already exist**

The Solver cannot create another table report because you have the maximum number of worksheet files open that 1-2-3 allows.

**What-if limits couldn't be computed**

You selected What-if limits in the Solver Report dialog box, but the Solver cannot determine the minimum or maximum limits for the current answer.

**Could not find a solution -- try changing By changing cell value**

The Backsolver cannot find an answer to your problem. Change the value in the By changing cell and then try to solve the problem again.

**Error storing the By changing cell value**

The Backsolver could not replace the value in the By changing cell, either because the cell is protected or because you are out of memory.

**Invalid By changing cell**

You did not specify a cell in the By changing cell text box or the cell you specified is not blank or does not contain a value. The By changing cell must be blank or contain a value.

**Invalid Make cell**

You did not specify a Make cell or the cell that you specified does not contain a formula.

**Invalid number**

You did not specify the value you want the formula to return or the number you specified is not a valid 1-2-3 value.

**Out of memory**

You must free enough memory to perform the operation that caused this error message. For information on freeing memory, see [Increasing Available Memory](#) or [Appendix C](#) of the *User's Guide*.

**Cannot initialize system driver**



**Cannot initialize Windows environment**

**Cannot load Clipboard driver (L1ACFTXT.DLL)**

**Cannot load Event Manager driver (L1WEM.DLL)**

**Incompatible character set**

This is a .WK1 file that contains a character set other than LICS (Lotus International Character Set).

**Caution** Do not save the file. Saving the file could cause loss of data because 1-2-3 will overwrite your existing file using LICS.

**Cannot copy data to the Clipboard**

**Cannot paste data from the Clipboard**

### **Invalid Clipboard format**

The format argument you specified for a {DDE-ADVISE}, {DDE-POKE}, {DDE-REQUEST}, {DDE-UNADVISE}, {EDIT-COPY}, {EDIT-CUT}, {EDIT-PASTE}, or {LINK-CREATE} command is not valid or is not supported by 1-2-3 or the server application.

Specify a valid format argument for the command. The format argument must be a supported Clipboard format (for example, BITMAP, DIB, Lotus123Graph, METAFILEPICT, TEXT, Wk1, or Wk3). If the format argument includes spaces, make sure to enclose it in " " (quotation marks). For more information about Clipboard formats, see the Microsoft Windows documentation.

**The Clipboard is empty**

You ran a macro that includes an {EDIT-PASTE} command, but there is nothing in the Clipboard to paste.

Make sure the Clipboard contains data and then run the macro again.



**Cannot open Clipboard or desired format is unavailable**

**Invalid argument specified in {EDIT-CLEAR} command**

The property argument you specified for an {EDIT-CLEAR} command is not valid.

Specify a valid property argument for the {EDIT-CLEAR} command. The property argument must be one of four words (contents, formats, styles, or graphs) enclosed in " " (quotation marks) or a formula that results in text, or the address or name of a cell that contains a label or a formula that results in a label.

**Invalid window state**

The state argument you specified for a {WINDOW-STATE} or {APP-STATE} command is not valid.

Specify a valid state argument for the {WINDOW-STATE} or {APP-STATE} command. The state argument must be one of three words (Maximize, Minimize, or Restore) enclosed in " " (quotation marks), a formula that results in text, or the address or name of a cell that contains a label or formula that results in a label.

**Window not found or not unique**

The window-name argument you specified for a {WINDOW-SELECT} command is not valid. Specify a valid window-name argument. If you have more than one window with the same name open, make sure that the window-name argument includes the path and file extension. If the window-name argument includes spaces, make sure to enclose it in " " (quotation marks).

**Unable to get profile string**

**Cannot undo this operation**

1-2-3 cannot create an undo record for a formula you are erasing because the formula is too long or complex. Choosing Edit Undo after you erase the formula will not recover the formula.

### **Edit Undo not enabled, or no operation to undo**

One of the following conditions could have caused this error:

- \* You chose Edit Undo to use the undo feature, but undo is currently turned off.  
To turn undo on so you can use the feature for the rest of the 1-2-3 session, choose Tools User Setup, select Enable Edit Undo, and then select OK.  
To have 1-2-3 start up with undo automatically turned on in future sessions, select Update from the Tools User Setup dialog box after selecting Enable Edit Undo.
- \* You chose Edit Undo after clearing a 'Memory full' error message.  
When the memory full error occurred, 1-2-3 erased the undo history, so you cannot undo operations you performed prior to that error.
- \* You chose Edit Undo without having performed an undoable operation since the last time you chose Edit Undo or since 1-2-3 last erased the undo history.

For more information about Edit Undo, see Using Edit Undo.

### **Cannot delete all worksheets**

You chose Worksheet Delete, selected Sheet and tried to delete all the worksheets in a file. A file must contain at least one worksheet.

If you are trying to delete an entire active file from memory, use File Close.



### **Cannot delete all visible worksheets**

You chose Worksheet Delete and selected Sheet, but the range of worksheets you specified to delete included all displayed worksheets in the file. A file must contain at least one displayed worksheet.

To delete the range of worksheets you specified, choose Worksheet Unhide if any worksheets are hidden. Then respecify the range of worksheets to be deleted. Or, specify fewer worksheets to be deleted.

### **Cannot go to a range that is not in memory**

You were using F5 (GOTO) and one of the following problems occurred:

- \* You specified a file that is not in memory as the cell-pointer destination.  
You can move the cell pointer to cells in active files only.
- \* The active file you specified as the cell-pointer destination is not stored in the current directory, but you did not include a path in the file reference.  
Respecify the cell-pointer destination using a path in the file reference.
- \* The active file you specified as the cell-pointer destination does not have the default file save extension, but you did not include an extension in the file reference.  
Respecify the cell-pointer destination using an extension in the file reference.

## **Cannot have more than 256 worksheets in memory**

The following conditions could have caused this error:

- \* You chose Worksheet Insert and selected Sheet, but inserting the number of worksheets you specified would have caused the total number of active worksheets to exceed 256.
- \* You chose File Open, but reading the file you specified into memory would have caused the total number of active worksheets to exceed 256.
- \* You chose File New, but 256 worksheets were already active.

Save your active worksheet files, and then choose Worksheet Delete and select Sheet to remove worksheets from memory, or choose File Close to remove entire worksheet files from memory. Or, specify fewer worksheets to be added.

**Cannot hide all columns**

You chose Worksheet Hide and specified a range that included all of a worksheet's displayed columns.

A worksheet must have at least one displayed column, so before you can hide the columns you specified, you must use Worksheet Unhide to redisplay another column that is currently hidden (if there is one).

**Cannot hide last visible worksheet**

You chose Worksheet Hide and specified a range that includes all of a file's displayed worksheets.

A file must have at least one displayed worksheet, so before you can hide the worksheets you specified, you must use Worksheet Unhide to redisplay another worksheet that is currently hidden (if there is one).

### **Cannot move data between files**

You chose Edit Move Cells and specified a To range that is in a different file from the From range.

To transfer data from one file to another, use Edit Quick Copy or File Combine From to copy the data to the new file, and then use Edit Clear to remove the data from the original file.

## **Cannot move or copy data beyond worksheet boundaries**

The following conditions could have caused this error:

- \* You chose Worksheet Insert and selected Row, but the number of rows you specified to insert exceeded the number of blank rows at the bottom of the worksheet. (A blank row contains no data, formatted cells, or unprotected cells.)

Repeat the command, but specify fewer rows.

- \* You chose /Worksheet Page, but the last row in the worksheet contains data, formatted cells, or unprotected cells, preventing a new row with a page-break symbol from being inserted.

Make sure the last row in the worksheet is blank before using /Worksheet Page.

- \* You tried to move or copy data, but the range you specified to copy or move occupied either more rows than the total number of remaining rows in the worksheet or more worksheets than the total number of remaining worksheets in the file.

Repeat the command, but specify a smaller range.

- \* You chose File Combine From, but the range you specified to combine included more worksheets than the total number of remaining worksheets in the file.

Repeat the command, but specify a smaller range.

## **Column hidden**

You tried to move the cell pointer to a hidden column using F5 (GOTO).

To move the cell pointer to a hidden column, you must first redisplay the column with Worksheet Unhide.



## **Error writing 123W.INI file**

You chose Tools User Setup and selected Update to update the 123W.INI file, or you pressed ALT+F10 (ADDIN) and selected Settings System Update to update the 123W.INI file, and 1-2-3 could not complete the command for one of these reasons:

- \* The 123W.INI file is write-protected.

Remove write-protection from the file, if possible, and repeat the command.

- \* The disk that contains the configuration file is full.

You need to delete one or more files from that disk before you can update the 123W.INI file.

- \* 1-2-3 could not access the configuration file because you are already using the maximum number of files your operating system allows.

Use File Close to delete one or more of your active files; use File Administration Network Reserve and select Release to release the reservation of one or more active files; close some active files; or end another application program, if one is running.

### **Hidden columns not allowed in title region**

You chose Worksheet Titles and selected Vertical or Both when one or more columns between the cell pointer and the first displayed column were hidden.

Use Worksheet Unhide to redisplay any hidden columns in the titles area before using Worksheet Titles and selecting Vertical or Both. After setting the titles, you can use Worksheet Hide to hide those columns again.

## Invalid configuration file

The following conditions could have caused this error:

- \* When you started 1-2-3, it located a 123W.INI file that was not a valid 1-2-3 for Windows 123W.INI file.

End 1-2-3. If the PATH statement in your AUTOEXEC.BAT file includes the program directory for a previous release of 1-2-3, you must delete that directory from the PATH statement. If you leave your previous 1-2-3 directory in the PATH statement, 1-2-3 for Windows will write over the 123W.INI file in that directory when you use Tools User Setup to change any default settings.

- \* When you started 1-2-3, it located the 123W.INI file, but the directory specified in the file as the 1-2-3 default directory or the 1-2-3 temporary directory did not exist.

To see the current default directory, choose Tools User Setup. If you want to change the default directory, or any other information in the Tools User Setup dialog box, make the appropriate changes and then select Update to update the 123W.INI file with the new settings.

**Not enough worksheets in To range**

You chose Range Transpose, but the transposed data required more worksheets than the total number of worksheets remaining in the file.

Use Worksheet Insert and select Sheet and After to add as many worksheets to the end of the file as you need to transpose the data.

## **Protected cell**

You were working in a protected worksheet and one of the following problems occurred:

- \* You tried to enter or edit data in a protected cell.

Before you can enter or edit the data, you must unprotect the cell with Range Unprotect or turn off worksheet protection by choosing Worksheet Global Settings and selecting the Protection check box to remove the check.

- \* You tried to use a command that moves columns or rows, such as Worksheet Delete, Worksheet Insert, or /Worksheet Page.

Before you can use one of these commands, you must turn off worksheet protection by choosing Worksheet Global Settings and selecting the Protection check box to remove the check.

**Worksheet hidden**

You tried to move the cell pointer to a hidden worksheet using F5 (GOTO).

To move the cell pointer to a hidden worksheet, you must first redisplay the worksheet with Worksheet Unhide.

**Cannot undo this series of add-in operations**

An add-in prevented 1-2-3 from undoing the operation you requested for one of the following reasons:

- \* An add-in you used since 1-2-3 was last in READY mode may not support the undo feature.
- \* An action you performed since 1-2-3 left READY mode may not be undoable.





