

9 Spreadsheets

The first software package for the personal computer, VisiCalc, was a spreadsheet program. It became wildly successful and made people realize that perhaps there was money in selling software. Twenty years later, spreadsheets have grown up quite a bit. Used for more than just addition and subtraction, spreadsheets now solve complex financial analysis problems, create 3-D graphs, and automatically generate monthly reports. We'll tell you just what you can expect from today's spreadsheets, get you started with some spreadsheet basics, and give you a collection of tips you can use with your favorite spreadsheet software package.

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What's All This About Spreadsheets?

Imagine an accountant's worksheet filled with columns and rows of numbers. Now put that worksheet inside a computer, add the ability to change inputted and calculated values instantly, and throw in a few extra features—such as built-in formulas, charting capabilities, and database sorting. What you'll have when you're finished is a spreadsheet.

Spreadsheets Explained

(ML)

Spreadsheet software is like a word processor for numbers. You use it to neatly organize, calculate, and present numerical information. The resulting document is usually a spreadsheet—sometimes called a *worksheet* file—but it can also be a chart.

Like a paper worksheet, an electronic worksheet is laid out in a grid. *Rows*, which are labeled with numbers, and *columns*, which are labeled with letters, intersect at *cells*. Each cell has an *address* or *reference* that consists of the letter of the column and the number of the row. So you'd find cell C16 at the intersection of column C and row 16.

To use a spreadsheet you enter *values* and *formulas* into cells. A value can be text, a number, a date, or a time. It's often called a *constant value* because it won't change unless you change it. A formula is a calculation that you want the spreadsheet to perform for you. You begin a formula with an equals sign (=) and follow it with a combination of values, cell references, operators, and functions—more on those later.

The beauty of a spreadsheet is that if it's properly constructed, it can calculate the results of complex formulas in less time than it takes to bat an eye. And if you change any of the values that are referenced by a formula, the results change instantly. It sure beats an accountant with pencil-stained fingers and a 10-key calculator.

“Real-World” Spreadsheets

The best way to see what spreadsheet software is all about is to look at some real-life examples. With spreadsheets like the ones on the next few pages, you can calculate totals and averages, create a loan amortization table, perform a “what-if” analysis, manage and report data, and create charts. These examples are just a small sampling of what's possible—with a little imagination and practice, you'll soon be taking spreadsheets to their limits.

Totals column adds the numbers from January, February, and March. The formula in cell E2, for example, is =B2+C2+D2.

The Averages column computes the average of the values in the white cells, row by row, with a formula like the one in F2: =AVERAGE(B2..D2). The "dot-dot" notation means "and everything in between." Thus, B2..D2 means "B2, C2, and D2." Note that this is only true for ClarisWorks; Microsoft Excel denotes the same range of cells as "B2:D2." It's still "dot-dot" notation, except these dots are stacked vertically.

1st Quarter Expenses (\$\$)						
	A	B	C	D	E	F
		January	February	March	Totals	Averages
2	Dining	\$109	\$62	\$37	\$208	\$69
3	Hotels	\$269	\$301	\$67	\$637	\$212
4	Car rentals	\$121	\$209	\$125	\$455	\$152
5	Air fare	\$633	\$541	\$344	\$1,518	\$506
6	Telephone	\$287	\$198	\$174	\$659	\$220
7	Postage	\$46	\$95	\$61	\$202	\$67
8	Totals	\$1,465	\$1,406	\$808	\$3,679	\$1,226

The formulas in the Totals row add the cells above them. But rather than use a formula in B8 like =B2+B3+B4+B5+B6+B7, we used a shorter one: =SUM(B2..B7). As you can see, the dot-dot notation can save some typing.

This simple ClarisWorks spreadsheet calculates totals and averages for the numbers entered into the white cells.

Simple calculations (CB). Here's a simple little spreadsheet that does some straightforward mathematics. When you enter expense information into the white cells, the spreadsheet calculates totals and averages for each category (the light gray cells), and totals for each month (the darker gray cells).

Complex calculations (EG/ML). Not every formula you write or spreadsheet you create will be simple. By combining simple formulas and more advanced functions, you can create more complex spreadsheet models, such as the following loan amortization table.

Car Loan Payments			
2	Loan Amount		\$15,000.00
3	Annual Interest Rate		8%
4	Number of Years		2
5	Monthly Payment		\$ 678.41
6			
7	Pmt#	Interest	Payment
8	0		\$15,000.00
9	1	100.00	\$ 678.41
10	2	96.14	\$ 678.41
11	3	92.26	\$ 678.41
12	4	88.35	\$ 678.41
13	5	84.42	\$ 678.41
14	6	80.46	\$ 678.41
15	7	76.47	\$ 678.41
16	8	72.46	\$ 678.41
17	9	68.42	\$ 678.41
18	10	64.36	\$ 678.41
19	11	60.26	\$ 678.41
20	12	56.14	\$ 678.41
21	13	51.99	\$ 678.41
22	14	47.82	\$ 678.41
23	15	43.61	\$ 678.41
24	16	39.38	\$ 678.41
25	17	35.12	\$ 678.41
26	18	30.83	\$ 678.41
27	19	26.51	\$ 678.41
28	20	22.17	\$ 678.41
29	21	17.79	\$ 678.41
30	22	13.39	\$ 678.41
31	23	8.96	\$ 678.41
32	24	4.49	\$ 678.41

Using good spreadsheet design, this one includes an input or assumption area where you enter the amounts you already know: the amount or principal of the loan, interest rate, and loan term.

The monthly payment formula in cell D5 uses one of Excel's built-in financial functions: PMT. The formula is: =PMT(D3/12,D4*12,D2). This says to find the periodic payment for a loan based on its interest rate, number of periods, and principal. Because we want a monthly payment amount, we divide the interest rate by 12 and multiply the number of periods by 12.

The rest of the table calculates and displays the interest, payment, and ending balance for each period of the loan. Cell D8 carries forward the principal in cell D2 with the formula =D2. Cell C10 carries forward the monthly payment calculated in cell D5 with the formula =D5. By using formulas rather than values, we can change the loan amount in one cell (D2) and the rest of the spreadsheet will change automatically.

Cell B9 calculates the interest for the first month with the formula =D8*(D3/12).

Cell D9 calculates the ending balance with the formula =D8-(C9-B9). This takes the principal and subtracts the difference between the payment and the interest, which is the amount of principal paid.

You can build a loan amortization table by combining simple and complex formulas, taking advantage of Excel's built-in financial functions.

Using Data Tables for What-If Analyses

(EG)

Another way to approach the car loan scenario is to build a data table showing ranges of interest rates and different terms. The following spreadsheet, for instance, shows different monthly payments for a car loan based on interest rates ranging from 5 percent to 15 percent, and loan terms ranging from one year to five years.

A data table is based on a formula—in this example, the one in cell B8 which calculates monthly loan payments.

The loan term and interest rate in cells E5 and E4 don't change ...

BIBLE.HLS						
	A	B	C	D	E	F
1	Car Payment by Interest Rate & Loan Period					
2						
3		Loan Amount		\$	15,000	
4		Annual Interest Rate		8%		
5		Number of Years		2		
6						
7		Years				
8		678.41	1	2	3	4
9	I	5%	\$ 1,284.11	\$ 658.07	\$ 449.56	\$ 345.44
10	H	6%	\$ 1,291.00	\$ 664.81	\$ 456.33	\$ 352.28
11	T	7%	\$ 1,297.90	\$ 671.59	\$ 463.16	\$ 359.19
12		8%	\$ 1,304.83	\$ 678.41	\$ 470.05	\$ 366.19
13	R	9%	\$ 1,311.77	\$ 685.27	\$ 477.00	\$ 373.28
14	A	10%	\$ 1,318.74	\$ 692.17	\$ 484.01	\$ 380.44
15	T	11%	\$ 1,325.72	\$ 699.12	\$ 491.08	\$ 387.68
16	E	12%	\$ 1,332.73	\$ 706.10	\$ 498.21	\$ 395.01
17		13%	\$ 1,339.76	\$ 713.13	\$ 505.41	\$ 402.41

... but you can change the loan amount in cell E3, the rates in cells B9 through B17, or, terms in cells C8 through G8, and the table will update based on the new information.

Use a data table to see a range of car loan monthly payments based on different interest rates and lengths of loans.

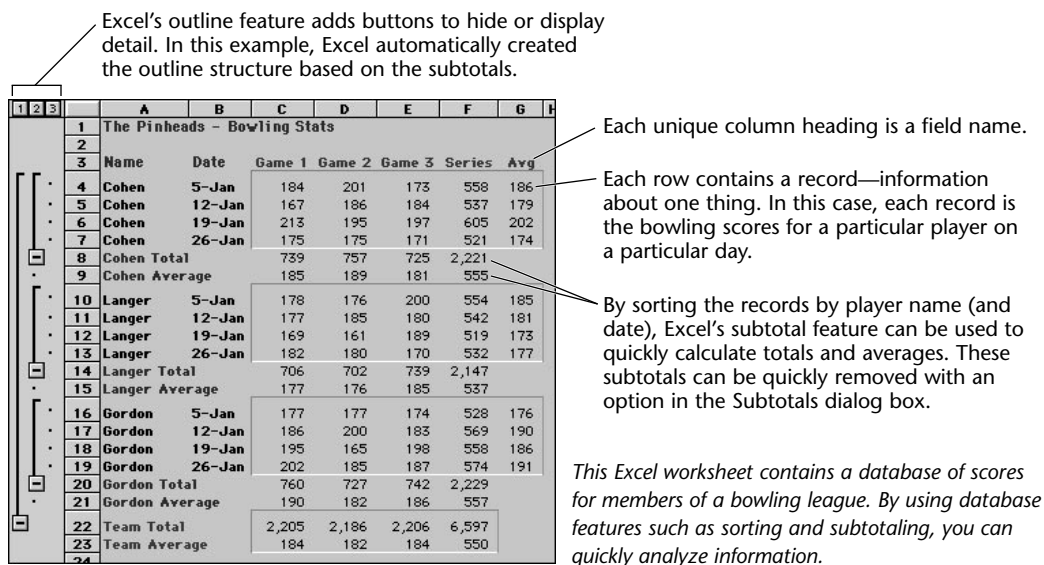
What-if analysis (EG/ML). Probably the most powerful feature of a spreadsheet is its ability to recalculate results quickly when you make changes to it. This is known as *what-if analysis* because by changing a value, you're saying, "What happens if this number changes?"

Based on the previous loan amortization table, what if you decide to buy a cheaper car? Or change the loan term? Or find a better interest rate?

It's easy to see how these changes will affect the monthly payment. Just change the information in the appropriate cell and—presto!—your change is reflected throughout the spreadsheet.

	A	B	C	D
1	Car Loan Payments			
2	Loan Amount		\$	12,000.00
3	Annual Interest Rate		8%	
4	Number of Years		2	
5	Monthly Payment		\$	542.73
6				
7	Pmt#	Interest	Payment	Balance
8	0			\$ 12,000.00
9	1	80.00	\$ 542.73	\$ 11,537.27
10	2	76.92	\$ 542.73	\$ 11,071.46
11	3	73.81	\$ 542.73	\$ 10,602.54
12	4	70.68	\$ 542.73	\$ 10,130.50
13	5	67.54	\$ 542.73	\$ 9,655.31
14	6	64.37	\$ 542.73	\$ 9,176.95
15	7	61.18	\$ 542.73	\$ 8,695.40
16	8	57.97	\$ 542.73	\$ 8,210.64
17	9	54.74	\$ 542.73	\$ 7,722.65
18	10	51.48	\$ 542.73	\$ 7,231.41
19	11	48.21	\$ 542.73	\$ 6,736.89
20	12	44.91	\$ 542.73	\$ 6,239.08
21	13	41.59	\$ 542.73	\$ 5,737.94
22	14	38.25	\$ 542.73	\$ 5,233.47
23	15	34.89	\$ 542.73	\$ 4,725.63
24	16	31.50	\$ 542.73	\$ 4,214.41
25	17	28.10	\$ 542.73	\$ 3,699.78
26	18	24.67	\$ 542.73	\$ 3,181.71
27	19	21.21	\$ 542.73	\$ 2,660.20
28	20	17.73	\$ 542.73	\$ 2,135.21
29	21	14.23	\$ 542.73	\$ 1,606.71
30	22	10.71	\$ 542.73	\$ 1,074.70
31	23	7.16	\$ 542.73	\$ 539.13
32	24	3.59	\$ 542.73	\$ (0.00)

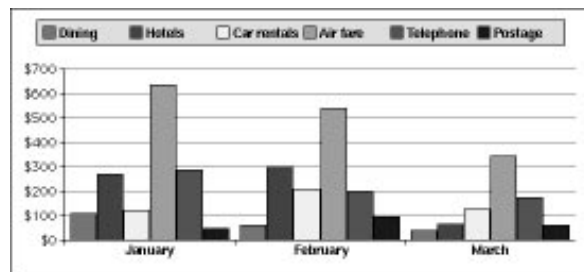
Playing "what if," if you change the amount of the loan in cell D2, the entire worksheet changes instantly.



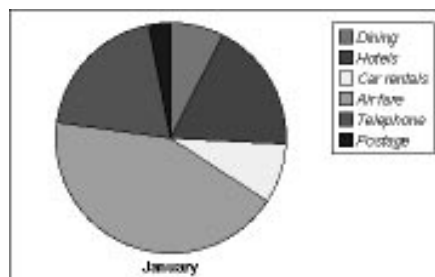
Database management (DC/ML). Spreadsheets are also useful for simple database functions. By setting up columns for different categories or *fields* of information and rows for the data or *records*, you can organize, sort, summarize, and otherwise analyze data. The spreadsheet in the above example shows the scores for the members of a bowling league.

Charting (CB). A picture's worth a thousand words, and when the picture stands in for numbers it's probably worth even more. You can use the charting features of spreadsheet software to make sense of what could otherwise be just a bunch of numbers. The column and pie charts shown here illustrate two examples of how you can graphically display a spreadsheet's results.

Because most spreadsheet packages can create several kinds of charts, you can use different charts for different purposes. It's usually as easy as selecting the data you want to chart and clicking a chart button on a toolbar.



The column chart quickly tells you that Air fare is the biggest expense, that telephones and hotels are the next biggest, and that the rest of the expenses hardly make a difference. Try getting information like that as quickly from raw numbers!



The pie chart makes it easy to see that Air fare is nearly half of the total expenses for January.

Using Spreadsheets

(CB)

“Fine,” you’re saying. “I’m sold. But how do I make the dang thing work?” Read this section and you’ll soon be using spreadsheets with style and verve, at least to the point that you’ll impress your friends and pets.

Moving around. You can’t put anything into a cell until you select it. You can tell that a cell is selected by noticing the border around it. When the border is thick, the cell is selected. When it isn’t, it isn’t. Selecting a cell can be accomplished in two ways:

- Position the mouse pointer over a cell and click once. You have to click. Just moving the mouse pointer over a cell does not select it.
- Use a keyboard key to move to a cell. Here are the most commonly used key-strokes; they should work in most spreadsheet programs:

This key...	Selects this cell...
→ or Tab	The cell to the right of the current cell
← or Shift Tab	The cell to the left of the current cell
↓ or Return	The cell below the current cell
↑ or Shift Return	The cell above the current cell

Cell references. When you select a cell the spreadsheet program dutifully reports the cell reference in the upper-left corner of the window. As mentioned earlier, the cell reference consists of the letter (or letters) of the cell’s column and the number of the cell’s row.

Despite the ability to select more than one cell at a time by dragging through several cells at once, only one cell is active at a time. The cell reference area never displays the reference for more than a single cell.

There are alternative ways to describe cell locations but nobody uses them because they confuse the issue. We’ll stick with the standard notation here.

Entering information. There are two kinds of entries: the kind that you merely type in (values), and the kind that compute values (formulas).

Entering values is easy: just select the cell you want to put information into, type what you want to put in the cell, and then do one of the following:

- Press **Return**. The value is entered and the next cell down becomes selected.
- Press **Enter**. The value is entered and the cell remains selected.

When You Enter Too Much ...

(CB/ML/DC)

For long entries, the cell width determines what appears in the cell:

- If you type a number (or date or time) that doesn't fit into a cell, the cell's contents turn into repeated pound signs (#####).
- If you type more text than can fit in the cell and there is nothing in the cell to its right, the text overflows to the right so you can see all of it. Even if text appears to overflow into other cells, that text is still contained in only one cell.
- If you type more text than can fit in the cell and there is something entered into the cell to its right, the text appears truncated in the cell in which you entered it. This doesn't mean the text is cut off—it isn't. It just doesn't show.

**HOT TIP**

In most cases you can properly display lengthy numbers or text by making the column wider. Just drag the right boundary of the column heading at the top of the column.

Another way you can make lengthy text fit in a cell is to turn on the word wrap feature for that cell. Although not all spreadsheets offer this feature, both Excel and ClarisWorks do.

- Press **[Tab]**. The value is entered and the next cell to the right becomes selected.
- Click the check mark button next to the X near the top of the window. That's the Enter button and it's the same as pressing **[Enter]**. The value is entered and the cell remains selected.

**HOT TIP**

If you make a mistake while entering a value (or a formula, for that matter) you can start over by clicking the X button beside the check mark near the top of the window. That's the Cancel button. If you prefer keyboard keys, **[Esc]** does the same thing.

Editing entries. You can change the contents of a cell in two ways:

- Select the cell and type something different into it.
- Select the cell, click in the *formula bar* at the top of the window where the cell's contents are displayed, and use standard word processing techniques to edit what's there.

No matter how you edit an entry, don't forget to press **[Return]** or **[Enter]** or click the Enter button to complete it.

Creating formulas. Putting numbers and words into neat rows and columns is fine, but spreadsheets are built to compute. You can tell your spreadsheet to add two cells, calculate sales tax, or figure out what day of the week it will be 100 days from now.

In fact, you can do just about anything that involves math—and some things that don't. But to do these fancy things, you must know how to create formulas.

There's one thing you must remember to successfully enter a formula: All formulas start with an equals sign (=). No exceptions!



HOT TIP

To enter a formula, select the cell where you want the formula's results displayed, type an equals sign, type the formula, and complete the formula by pressing **Return** or **Enter**, or by clicking the Enter button.

Here's an example. Let's say you have a number in cell A1 and another number in cell A2. You want to add them and put the answer in cell A3. Here's what you do: Select cell A3, type `=A1+A2` (no spaces), and press **Return**. As soon as you press **Return**, the result appears in cell A3.

There are other ways to enter the parts of formulas. For example, if you like clicking, you can enter a cell reference in a formula by clicking it. To write the above formula by clicking, do this: Click in cell A3, type an equals sign, click on cell A1, click on cell A2, and click the Enter button. The answer appears in cell A3.

This method is especially useful for preventing typing errors—the less you type, the less chance you have of making a typo!

As you may have noticed, the plus sign is added by default if you click a cell without first specifying an operator. What you may also notice is that if you forget to complete the formula by *not* pressing **Return** or **Enter** or clicking the Enter button, any cell you click on will be added to the formula in the formula bar. That's why it's important to complete each entry properly before continuing to other cells.



HOT TIP

Those Darned Error Messages

(EC/ML)

When you write a formula incorrectly, the spreadsheet program usually tells you by displaying a dialog box with an error message or an error message within the cell. Here's a table of some of Excel's error messages—other spreadsheets offer similarly vague messages.

#DIV/0!	Your formula is trying to divide by zero, which is a no-no.
#N/A	One of the referenced values is not available.
#NAME?	You've used a cell or range name that isn't recognized. If you didn't mean to use a name, you've probably spelled a function name incorrectly.
#NUM!	Your formula uses a number incorrectly.
#REF!	Your formula references an invalid cell. This can happen after the formula has been written if you've deleted cells.
#VALUE!	Your formula uses an incorrect argument or operator. Check for extra or missing commas and parentheses and for proper function name.

$$2 + 3 + 5 * 10 = ?$$

(EG/ML)

The answer is 55. Why? Well, mathematical operations don't happen in the order of appearance—they have a specific order, which is shown in the table below. In the example above, the spreadsheet multiplies 5 by 10 first, then adds 2 and 3 to get 55.

Operation	Operator
Parentheses	()
Exponents	^
Multiplication	*
Division	/
Addition	+
Subtraction	-



HOT TIP

To force an operation to occur first, put it in parentheses. In the example above, to add 3 and 5 first, the formula would be $2+(3+5)*10$. The spreadsheet would first add 3 and 5 to get 8, multiply that by 10, and then add 2. The result: 82. See what a difference the parentheses can make?

Beyond the Basics

So far, we've given you enough information to get you started with just about any spreadsheet program. But here are a few additional techniques and concepts to consider as you hone your spreadsheet skills.

Functions (CB). Remember high school math? No? Fortunately, the people who make spreadsheet software do remember, and they've loaded their programs with handy calculations called *functions*. Here are some of my favorites, the ones I use over and over again. You saw some of them in action earlier in this chapter.

- *SUM* sums (adds) a bunch of numbers. It's especially handy for totaling a column or a row.
- *AVERAGE* calculates the average of a range of cells. As with most functions, it's a lot easier to use the function than to calculate averages yourself.
- *MAX* looks at a range of cells and returns the largest value. You could do this by looking at the cells yourself, but the *MAX* function is faster, and it never makes mistakes.
- *MIN* determines which cell in a range is the smallest.
- *IF*—my favorite—gives you supreme power and flexibility. It evaluates a condition (such as, “Is B10 greater than 5,000?”) and performs a calculation (or returns a result)

based on whether the condition is met (true) or not met (false). Using this function creatively can add intelligence to your spreadsheets.

- *PROPER* changes the first character of text to a capital letter.
- *SIN*—as in “sine,” not “Thou Shalt Not.” It’s trigonometry, the high school math subject you either understood completely or not at all. Fortunately, spreadsheets excel (hey, a spreadsheet pun!) at trigonometry. Given an angle, the sine is a function away. *COS* gives you cosines, and *TAN* produces tangents.
- *WEEKDAY* returns the day of the week that a certain date falls on. The answer you’ll get is a number from 1 to 7 that represents the day of the week. (The actual result depends on the settings in the Date & Time control panel.)
- *SQRT*—that’s “square root,” not “squirt”—a function that calculates square roots.
- *PMT* figures out how much the periodic payments will be when you borrow a certain amount of money at a certain rate of interest for a certain length of time.

Why Use Cell References?

(ML)

A well-constructed spreadsheet includes cell references whenever possible in its formulas. Why? So the spreadsheet is easier to modify.

The two samples below illustrate how cell references in formulas can make it easier to modify spreadsheets.

You can write formulas that include the percentage rate as a constant within the formula, like this: =B2*15%.

	A	B	C
		Sales	
1	Name	Amount	Commission
2	Christian	145.00	21.75
3	Eve	95.00	14.25
4	Dennis	79.00	11.85
5	Maria	130.00	19.50
6	Jeremy	201.00	30.15
7	Roslyn	138.00	20.70
8	Nancy	123.00	18.45

If you want to change the commission rate in this spreadsheet, you need to edit the contents of the formulas in cells C2 through C8. That’s seven changes! And if you forget to make a change, the spreadsheet’s results will be incorrect!

But it’s a lot more convenient to write formulas that reference a cell containing the percentage rate, like this: =B4*C1.

	A	B	C
1	Commission Rate:		15%
2		Sales	
3	Name	Amount	Commission
4	Christian	145.00	21.75
5	Eve	95.00	14.25
6	Dennis	79.00	11.85
7	Maria	130.00	19.50
8	Jeremy	201.00	30.15
9	Roslyn	138.00	20.70
10	Nancy	123.00	18.45

In this spreadsheet, you’d only have to change the contents of cell C1 to properly recalculate all commissions in column C. That’s one change that’s impossible to miss. Which would you prefer?



Copying formulas (ML). You can create a spreadsheet like the expense summary or loan amortization table shown earlier without entering each and every formula down the columns. How? By copying similar formulas. The spreadsheet software automatically changes cell references as necessary so the copied formulas are correct. Of course, there are limitations to this (see the “[Absolute References](#)” sidebar), so check the formulas you copy to make sure they’re correct.

Macros (EG). Many spreadsheet packages give you the ability to write and use macros that automate repetitive tasks or create custom functions.

Here’s an example. Say you’ve been keeping track of the scores for your bowling league. Each week, you create a stacked bar graph that puts each bowler’s scores into a bar and color codes the scores for each game. Rather than go through the steps to create the chart manually each week, you can create a macro to do it automatically.



HOT TIP

When you first get started with macros, use the software’s macro recorder to have it write the macro for you. This is a nice—although limited—use of macros that can help familiarize you with the macro language.

Formatting (ML). Of course, all spreadsheet software offers the ability to format your spreadsheets and charts with different fonts, colors, styles, borders—you name it. The spreadsheets shown throughout this chapter offer good examples. With a little creativity, you can make a spreadsheet look like a million bucks—even if it’s reporting a \$68 million loss.

Printing (ML). When you print a spreadsheet, what emerges from your printer depends on several factors:

- Did you specify a print area? A *print area* is the rectangular selection of cells that will print. If you don’t specify a print area, most spreadsheet packages will print the entire spreadsheet, inserting page breaks wherever necessary to get it all on paper.
- Did you insert manual page breaks? You can specify where you want one page to end and the next to begin to eliminate page break surprises.

Absolute References (EG)

You can use two kinds of references in your formulas: *relative* (such as D5) or *absolute* (such as \$D\$5). The only time the kind of reference matters is when you copy a formula. A relative reference will automatically change relative to where you paste it. An absolute reference will always refer to the same cell no matter where you paste it. This is probably the most complex concept when dealing with spreadsheets, but once mastered, it can help you create error-free spreadsheets very quickly.

- Did you set page orientation, margins, or scale? By fiddling around with these page setup options, you can squeeze a relatively large spreadsheet onto standard-size paper—or magnify spreadsheet cells for use in a presentation.
- Did you turn off gridlines and headings? Some spreadsheets, such as Excel, will print spreadsheet gridlines unless you manually turn them off.
- Did you set print titles? If your spreadsheet is lengthy it may include *print titles* that you want to print on each page. Unless you tell the spreadsheet software which column(s) or row(s) to use as titles, it will only print them on the first page.

These options vary from one spreadsheet package to another. Explore the Page Setup and Print dialog boxes of your spreadsheet software to see how their settings affect your printouts.

Spreadsheet Software

Contrary to popular belief, there is more than one program out there that can create spreadsheets and charts. (There used to be a lot more, but let's not dwell on the past.) Let's take a look at them.

Microsoft Excel

(ML)

Microsoft Excel (\$300) is undoubtedly the most feature-packed spreadsheet software package around. It goes beyond the basics of spreadsheets and charts by offering hundreds of built-in functions, extensive database features, drawing tools, a wide range of formatting capabilities, and a comprehensive macro language.

The power of Excel goes beyond what it *can* do to *how* it does it. It is a well-thought-out package that includes many features to make data entry easier or more error-free. Its dialog boxes are well organized and easy to use and understand (with a few exceptions that aren't worth detailing here). It includes extensive on-line help with hypertext links, making it easy to navigate from topic to topic to find the information you need. And unlike another Microsoft product (which I won't mention by name), its heavy load of features does not affect its performance.

Although some people think I'm partial to Excel because I wrote three books about it in a year, that's not true. I can objectively look at Excel and its alternatives and tell you that Excel is the best and most powerful spreadsheet package around. But is it for everyone? Of course not! The vast majority of folks who use their Macs at home or

Spreadsheet Templates (EC/ML)

Companies like Baarns Publishing offer spreadsheet templates that you can use even if you haven't fully figured out your spreadsheet program. Each template is a spreadsheet file created to perform a specific function. You simply enter the information in the spaces provided and the predefined formulas, charts, and macros do the rest. Although the templates are usually in Excel format, you can often open them with other spreadsheet software. Why reinvent the wheel when someone with experience has already built a good one for you?

school don't need even half of Excel's bells and whistles. If you're one of these folks, be sure to read about the other packages in this section. But if you're in corporate finance, science, or other industries where heavy-duty number crunching and presentation is a must, I doubt if you'll find a better spreadsheet software package for your needs than Excel.

However, the power of Excel will cost you in terms of dollars, disk space, and RAM. You'll pay about \$300 for the software, which will take up at

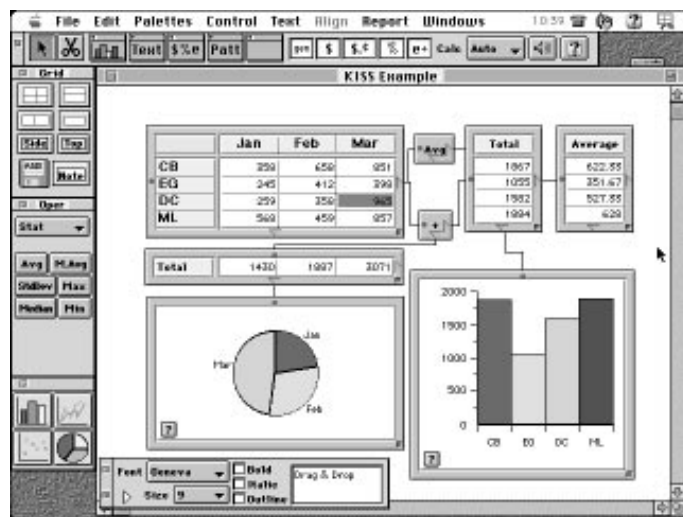
least 10MB of hard disk space and 4MB of RAM. But for serious number crunchers, this is a small price to pay for Excel's power.

Let's Keep It Simple Spreadsheet

(ML)

A newcomer to the spreadsheet market is **Let's Keep It Simple Spreadsheet** (Let's KISS) by Casady & Greene. Although still in the final stages of beta testing when this book was in production, I got a chance to work with it—and liked what I saw.

Let's KISS is a spreadsheet package that lets you create documents by dragging components into a blank window. You start by adding a grid to the window and sizing it to contain your data. Then drag Top and Side labels onto the grid to add cells for descriptive text. Type the labels and values into the cells. To total a row, drag a Column part into position in the window and add a Top label to it. Then drag a



With *Let's Keep It Simple Spreadsheet*, all formulas are "written" with your mouse pointer—just drag and drop spreadsheet and chart parts on a window and connect them to create relationships, total columns and rows, or perform other calculations.

Plus operator into the window. Using your mouse, connect the grid containing the rows you want to total to the Plus operator and then connect that to the Column part. The totals appear instantly. No formulas, no cell references, no calculation errors due to typos.

Although KISS might not appeal to experienced spreadsheet users who have already mastered and grown comfortable with cell references, formulas, and functions, it's sure to be a hit with folks who are intimidated by these things. Its drag-and-drop techniques make it easy to solve problems, create spreadsheet models, make charts, apply formatting, and prepare nice-looking reports. And it's kind of *fun* to use, too!

While lighter in features than a spreadsheet king like Excel, KISS is also lighter in price—the expected retail price is \$130. It requires a Mac with a 68020 or better processor running System 7 or later and uses 3.5MB of RAM.

BiPlane Deluxe

(EC/ML)

BiPlane Deluxe is a great little spreadsheet package from Night Diamonds Software. It has all the standard spreadsheet features, including over 100 functions, formatting control, and charting capabilities. It can read Excel 4 and SYLK format spreadsheet files. It should meet the needs of most users and you certainly can't beat the price: \$60.

BiPlane Deluxe is especially good for folks with older Macs or PowerBooks with limited RAM or disk space because it fits on one 800K disk, uses only 1MB of RAM, and is compatible with System 6.



POWERBOOK

Spreadsheets and Charts Without Spreadsheet Software

(ML)

Spreadsheet software packages aren't the only products that create spreadsheets and charts. You'll find mathematical and charting capabilities in a wide variety of packages. **Claris Impact** (\$90) and **Microsoft PowerPoint** (\$300) are two presentation software packages that include spreadsheet-like tables and charts. Microsoft Word and WordPerfect are two word processing packages with table and math capabilities that you can use to make simple spreadsheets. Even database applications such as FileMaker Pro offer mathematical features that make them handy for creating calculated tables of data.

If all you're after is charts, check out DeltaPoint's **DeltaGraph Pro** (\$140). This charting package offers more kinds of charts than most people will use in a lifetime—including many chart types you won't find anywhere else.

Integrated Software

(DC/ML)

An important component of any integrated software package is its spreadsheet module. Here are some spreadsheet specifics for the top two contenders, ClarisWorks and Microsoft Works ([see Chapter 12](#) for more details on integrated software).

- ClarisWorks' spreadsheet is fast, versatile, and powerful. It provides basic spreadsheet capability, a large number of built-in functions, nicely integrated 2- and 3-D charting capabilities, and extensive formatting control.
- Microsoft Works' spreadsheet is a scaled-down version of Excel with Excel's look and feel and many of its features.

Tips

Because there's more than one spreadsheet package out there, we've done our best to come up with a few generic tips that you can use with any software package. But Excel and ClarisWorks users won't be disappointed with the application-specific tips we've rounded up.



HOT TIPS

Generic Spreadsheet Tips

Use arrow keys to change the active cell but use the scroll bar to change the view of the spreadsheet (ML). Although you can use the scroll bars to change your view of a spreadsheet, using the scroll bars does not change the active cell.

Pay attention to the mouse pointer (CB/ML). Spreadsheets change the mouse pointer to provide visual clues about things you can do.

- The mouse pointer appears as a white cross (or plus sign) when it's in the spreadsheet area—click to select a cell, row, or column; drag to select multiple cells; or click to add a cell to a formula if the formula bar is active.
- The mouse pointer appears as a standard I-beam when it's in the formula bar—click to edit the contents of the formula bar.
- The mouse pointer appears as a thick black bar with arrows when it's between column or row headings—drag to change the width of the column or height of the row.
- The mouse pointer appears as a standard arrow pointer when you move it out of the spreadsheet window—use it to pull down a menu, scroll with a scroll bar, move or resize a window, or switch to another open window or application.

Turn a formula into a text value (CB). If you're having trouble entering a formula correctly and your spreadsheet keeps beeping at you each time you try to move on to another cell, delete the equals sign from the beginning of the formula and press **Enter**. The spreadsheet accepts what remains as mere text, allowing you to move on to other things. Later, you can come back (older and wiser) to fix the thing up. Why not just delete the formula and start from scratch later? Because often you'll get very close to getting a formula right—to throw it all away is to waste the time and effort you've already put into it.

Use shift-click to select cells (CB). Select the first cell of a range, then hold down **Shift** and click in the last cell of the range or use the arrow keys to extend the selection.

Create a data entry area (CB/ML). Select the range of cells in which you want to enter data. Then, when you complete an entry by pressing **Return** or **Enter**, you'll automatically move to the next cell in the selection. This is quicker than selecting each cell, one at a time.

Understand the difference between relative and absolute references (ML). You indicate that all or part of a cell reference is absolute by putting a dollar sign (\$) before it. To help remember what that symbol means in a cell reference, think of the word *always*. So, for example, \$D\$5 can be thought of as *always D always 5*—or *always D5*!

Use drawing tools to annotate spreadsheets and charts (DC). You can draw attention to spreadsheet results by drawing circles and arrows right on the spreadsheet. Use a text box tool, if available, to add notes.

Excel Tips

Edit directly in the cell (EC). If you want to change the contents of a cell without having to use the formula bar, double-click the cell.

Move cells with drag and drop (EC). You can drag a cell or a range of cells by its border to move it to a new position. Hold down **Shift** while dragging to insert it between other cells. Hold down **Option** while dragging to copy it to the new location.

Use AutoFill to enter data into adjacent cells (EC/ML). Enter a value or formula into the first cell, press **Enter** to complete the entry, and then drag the fill handle (the little box in the bottom-right corner of the cell) to extend a box around the other cells you want to contain the same value or formula. If the original cell contains a day, month, or other familiar series, Excel completes the series for you.

Enter the current time or date quickly (EC). To enter the current time in a cell, press **Ctrl+Shift+T**. To enter the current date, press **Ctrl+Shift+D**.





HOT TIPS

Use AutoSum to add columns or rows (EC/ML). Select the cell at the bottom of a column or the right side of a row you want to total. Then double-click the AutoSum button (the one with the sigma (Σ) on it). Excel “guesses” which cells you want to total and writes a formula with the SUM function and references to the cells. You can use this feature in a variety of ways—even to total more than one column or row at a time.

Use the Function Wizard to write complex formulas (EG/ML). The Function Wizard not only provides on-line help to help you understand functions, but it takes you every step of the way through the creation of a formula with one or more functions.

Change relative references to absolute references with a keystroke (EC). If you’ve already entered a cell reference in a formula and want to change the reference type, select the cell reference and press $\text{Ctrl}+\text{Shift}+\text{T}$ until Excel places the absolute reference dollar sign(s) where you want them.

Split the screen so headings stay put (CB). Excel has a little black bar at the very top of the vertical scroll bar. Drag the bar down as far as you wish to split the screen—you can then scroll either the top *or* bottom half of the window. Splitting the screen into left and right sections works the same way—look for the split bar to the left of the horizontal scroll bar.

Use shortcut menus (CB/ML). Hold down the $\text{Ctrl}+\text{Shift}$ and Option keys at the same time and click on a selection. A pop-up menu with commands that can be used on the selection appears. If you hold down $\text{Ctrl}+\text{Shift}$ and Option and click on a toolbar, you’ll get a pop-up menu of other toolbars you can display.

Float a toolbar (CB). Position the mouse pointer anywhere on a toolbar other than on a button and drag the toolbar down from the top of the screen. You’ll get a floating toolbar that you can put anywhere you like. Drag it back up (or down or to the side) to “dock” it again.

Make a column the best width (CB). To automatically make a column just wide enough to display the longest item in the column, double-click on the line to the right of the column letter in the column heading area.

Rename sheets (EC). You can change the name of a worksheet in an Excel workbook by double-clicking the sheet tab for the sheet and then entering a new name in the Rename dialog box that appears.

ClarisWorks Tips

(CB)



Put some color in your spreadsheets. Select a range of cells to color, then use the color pop-up (next to the paint bucket in the toolbar) to choose a color. Can't see black text against your colored background? Pick a text color for selected cells with the Text Color command from the Format menu.

Show the Shortcuts palette. There are all kinds of time-saving buttons on it: one to format numbers as currency, another to format them as percentages, another to add them up. Choose Shortcuts from the File menu.

Zoom out to see more of your work at once. Click the small mountains button at the bottom left of a spreadsheet window to zoom out; click the big mountains button to zoom in. In addition to displaying your current magnification level, the number in the bottom left corner of the window lets you zoom as far as you want to in a single move. Just click on the number, hold the mouse button down, slide to the desired zoom percentage, and let go.

Use the Fill Special command to type stuff for you. Need to enter a series of months into adjacent cells? Click in a cell that contains the first month of the series and drag to the right or down as far as you want to go. Then choose Fill Special from the Calculate menu. This works for all kinds of series.

Copy and paste formatting. Select a cell with formatting you want to copy to other cells. Then choose Copy Format from the Edit menu. Now select the cells you want to copy the format to and choose Paste Format from the Edit menu. The formatting of the first cell is copied to the other cells. This is much easier than choosing formatting options such as font, size, color, or style by hand and it always works perfectly.

Split the screen, so headings stay put when you scroll. ClarisWorks, like Excel, has a little black bar at the very top of the vertical scroll bar. Drag the bar down as far as you wish—whatever is above the bar will be frozen as everything else scrolls below. Horizontal splitting works similarly—look for the split bar to the left of the horizontal scroll bar.

Make a column the best width. This works just like Excel—to automatically make a column just wide enough to display the longest item in the column, double-click on the line to the right of the column letter in the column heading area.

Use the Lock Title Position command to keep column titles in sight (DC). Not only does this prevent column titles from scrolling out of the window, but it ensures that column titles print on each page. It's also a handy way to identify a range of cells.

Editors' Poll: For What Do You Use Spreadsheet Software Most Often?

SA: Quick budget-type things (for both work and home stuff); recently, a more complex worksheet to calculate promotion rankings for a university promotions committee!

TA: Keeping track of my comic books, income status, and invoicing.

DC: Keeping my laboratory and tutor/TA ledgers (at the University of Chicago Department of Computer Science).

JC: I use ClarisWorks spreadsheets for various things—almost none of them financial. I've used it to create a quick sign-up form. Also for creating home budgets and even for creating lists of things to do. You gotta love those nice clean lines!

MC: Keeping track of assets in the multimedia project on which I'm working.

BF: I don't use a spreadsheet.

KT: I use spreadsheets for two completely different sorts of tasks.

1. The normal stuff—I have a complex estimating sheet for quoting design jobs; it took years to develop. I also keep other financial information in other spreadsheets—cost basis for inherited stocks, for example.
2. As an interim tool for doing database publishing. Export data from a d/b program as tab-delimited text, set it up in a spreadsheet, introduce new columns of cells and use them to enter style tags, export again as tab-delimited text, delete the tab character between the tag delimiters (>) and tagged text, and place the text in QuarkXPress or, now, at last, PageMaker.

JH: I don't use Spreadsheets.

ML: Tracking telephone expenses and business miles.

SS: Two things: tracking personal tax data and cleaning up address data before importing it into yet another PIM.

BW: I use Excel mainly to create product/feature tables for magazine articles and books. I also use it to keep a running tally of my estimated State and Federal income taxes. With the spreadsheet, I don't estimate my tax, I *know*, day by day, and I pay what I owe, not what I'm supposed to have estimated based on previous years.

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