BizWiz Help Index
This is an listing of BizWiz' function categories.   For *context-sensitive* help, press Shift+F1 while using BizWiz.   Then click on the desired function key.

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Arithmetic

Addition: To add 2 numbers, key in the first number and press $\boxed{\text{ENTER}}$.   Then key in the second number and press $\boxed{+}$.   To add another number to this result, key in the number and press $\boxed{+}$.

Subtraction: To subtract 2 numbers, key in the first number and press $\boxed{\text{ENTER}}$.   Then key in the number to be subtracted and press $\boxed{-}$.

Example: To add the numbers 20.3 and 36, key in 20.3 and press $\boxed{\text{ENTER}}$.   Then key in 36 and press $\boxed{+}$.   The result is 56.3.   To subtract 5 from this result, key in 5 and press $\boxed{-}$.

Multiplication: To multiply 2 numbers, key in the first number and press $\boxed{\text{ENTER}}$.   Then key in the second number and press $\boxed{\times}$.

Division: To divide 2 numbers, key in the first number (dividend) and press $\boxed{\text{ENTER}}$.   Then key in the second number (divisor) and press $\boxed{\div}$.

Negation: To change the sign of a number, press $\boxed{\text{CHS}}$.   Do not use the $\boxed{-}$ key, it is used for subtraction.

Storage Registers

BizWiz has 20 general purpose memory storage registers.   To store a number in a memory register, key in the number and press [STO] followed by a number (0 through 9 or .0 through .9).   Numbers are stored in financial registers in the same manner.   These registers are the
[PV]
[FV]
[i]
[n] and
[PMT] registers.   To recall a number from a storage register, press
[RCL] followed by a number (0 through 9 or .0 through .9).

Example: To store the number 55.67 in memory register 1, key in 55.67, press [STO] and key in 1.   To recall the number from register 1, press
[RCL] and key in 1.

You can also perform simple arithmetic with storage registers using the [+]
[−]
[×] and
[÷] function keys.

Example: To add 49.03 to the contents of memory storage register 1 you would key in 49.03 and press [STO]
[+] 1

Exponential Notation

Use exponential notation to enter very large or very small numbers into BizWiz.   The ⌈EEX⌉ key is used to enter the exponent.

Example: To enter the number 12,000,000,000, key in 12 and press ⌈EEX⌉ and key in 9.   To change the sign of the exponent, press ⌈CHS⌉.

Keyboard Help

Although BizWiz is intended to be used with a mouse, some of it's elementary operations can be done with the keyboard as well.   For instance, the numbers 0 through 9 and the decimal point can be typed at the keyboard.   The functions +, -, *, /, and the Enter key also function as you would expect.   In addition, the following keyboard characters are used:

'c'   substitute for the CLx function key
'e'   substitute for the EEX function key
'n'   substitute for the CHS function key

Clearing Numbers

Clear a number in the display by pressing ⌷CLx⌷.   BizWiz is now ready to accept another entry.   BizWiz does not require a separate key for clearing a number and a different key for clearing the last entry.

To clear the last digit entered, press the ⌷⇐⌷ key.   For example, if you wished to enter 123.45 and accidently entered 123.46, you would press
⌷⇐⌷ and key in 5.

BizWiz also contains other function keys to clear the following:

⌷Σ⌷   Clear Sum.   Clear statistical registers.
⌷PRGM⌷ Clear program.   Clear program memory.   Only works in <u>program mode</u>.
⌷FIN⌷   Clear financial registers.
⌷REG⌷   Clear registers, stack, memory, and financial registers.

File Commands
New
Open
Save
Save As

New

Erase all program memory in preparation for creating a new program.   BizWiz allows for programs of up to 999 steps.   Program memory can also be cleared by pressing the PRGM function key while in program mode

Open

Open a BizWiz program file which was previously saved using the <u>Save</u> or <u>Save As</u>
commands.   When the program is loaded, any program(s) previously in memory will be lost.

Save

Save current program memory as a disk file.   The file will be saved under the filename given during a previous <u>Open</u> or <u>Save As</u> command.

Save As

Save a program(s) in memory under a new or different file name.

Edit - Clipboard Functions

The Edit menu is used for numbers between BizWiz and other application programs.   To transfer a number from BizWiz to the clipboard, select <u>Copy</u>.   To transfer a number into BizWiz from the clipboard, select <u>Paste</u>.

Edit Copy

Copy a number shown in the display into the clipboard.   The number can then be <u>pasted</u> into another application

Edit Paste

Copy a number from the clipboard into BizWiz.   Used to transfer numbers into BizWiz from other applications.

Options - Configurable Parameters

Digits
Other

Options Digits

Used to display the number of digits following the decimal point.   Result will be rounded to the number of decimal point digits set.   Defaults to 2 digits.   BizWiz calculations are internally significant to 18 decimal point digits.

Other Options

Separator: Used to set the separator characters.   Default is English/American where the decimal point is shown as a period '.' and each 3 digits to the left of the decimal point are separated by a comma.   European separators are the opposite.

Date Format: Used to set the entry/output format for date calculations.   Default is M.DY. In this mode, a month is entered/displayed as MM.DDYYYY.   For example, 8-27-1958 would be entered as 08.271958.   In D.MY mode, this would be 27.081958.   This option can also be set using the D.MY or
M.DY function keys.   See Date Calculations for more information.

Odd Period Interest: This option allows the use of either simple or compound interest in calculations involving partial periods.   The calculation only affects the interest during the partial periods.   This function can also be toggled by pressing the 2 function keys STO
EEX. See Odd Period Calculations for more information.

Payment Mode.   This option provides for compound interest calculations to be calculated assuming the payment is made at the beginning of the payment period or the end of the payment period.   These options can also be set using the BEG and
END function keys.

Financial Functions

BizWiz contains a large number of financial registers.   These registers are used for both storing values and computing compound interest calculations.   The financial registers are summarized below:

PV	Store/Calculate Present Value
FV	Store/Calculate Future Value
i	Store/Calculate Interest Rate
n	Store/Calculate Number of Periods

For more information and specific examples using compound interest calculations, see the Compound Interest section.

Additional function keys used for financial calculations include:

Amortization
AMORT Calculate Amortization

Simple Interest Calculations
INT   Calculate Simple Interest

Discounted Cash Flow Analysis
NPV   Calculate Net Present Value
NFV   Calculate Net Future Value
IRR   Calculate Internal Rate of Return
MIRR Calculate Modified Internal Rate of Return

Actuarial Functions
spPV   Calculate Single Payment Present Value
spFV   Calculate Single Payment Future Value
usPV   Calculate Uniform Series Present Value
usFV   Calculate Uniform Series Future Value

Bond Calculations
PRICE   Calculate Bond Price
YTM   Calculate Bond Yield

Depreciation Calculations
DB   Calculate Declining Balance depreciation
SL   Calculate Straight Line depreciation
SOYD Calculate Sum of Years Digits depreciation

Cash Flow Convention

Compound interest calculations involve both the paying and receiving of monies.   For example if you take out a loan, you initially receive money from the bank, then you must pay money to the bank at periodic intervals.   Likewise if you deposit money into a savings account, you are paying money into that account and receiving money later in terms of what you have earned as interest.

There is a convention used within BizWiz to designate the paying and receiving of monies. Money paid is always a negative number, since it is being subtracted from a source. Similarly, money received is a positive number.   Thus when calculating using the $\boxed{n}$ or $\boxed{n}$ or $\boxed{n}$ registers, you should observe the proper sign convention.

Amortization

Provides for determining the amount applied toward the principal and toward the interest for a loan payment or series of payments.

To amortize a loan payment, follow the following steps:

1.   Clear the financial registers by pressing ⬚n.
2.   Key in the loan amount and then press ⬚n.
3.   Key in the interest rate and press ⬚n.
4.   Key in the payment amount and press ⬚n ⬚n.
5.   Key in the number of payments you wish to have amortized and press ⬚n.
6.   The amount applied towards interest is now shown in the display.

Example: Suppose you have purchased an automobile for $23,000 at 7.5% interest compounded monthly on a 4 year loan.   Find the amount you will have paid in interest and principal on the loan after 10 months.

1.   Press ⬚n to clear the financial registers.
2.   Press ⬚n for end mode mode.
3.   Key in 23000 and press ⬚n to enter the loan amount.
4.   Key in 7.5 and press 12÷ to enter the interest compounded monthly.
5.   Key in 4 and press 12x to enter the number of months.
6.   Press ⬚n.   The monthly payment is 556.11.   Notice the <u>cash flow convention</u> is negative.
7.   Key in 10 and press ⬚n.   The interest paid after 10 months is $1,319.57.
8.   Press X$Y.   The principal paid after 10 months is $4,241.53.
9.   Press ⬚n ⬚n.   The remaining balance after 10 months is 18,758.47.

Depreciation

BizWiz provides the capability to calculate the depreciation on an asset using the Straight Line, Sum of Years Digits, or Declining Balance methods.

To calculate depreciation using any method:

1.   Key in the price of the asset and press $\boxed{n}$
2.   Key in the salvage value and press $\boxed{n}$
3.   Key in the length of time (in years) of the asset's usefulness and press $\boxed{n}$
4.   If you are using the declining balance method, key in the percentage declining balance factor and press $\boxed{n}$
5.   Key in the length of time (in years) to calculate the depreciation on and press either $\boxed{SL}$ or
$\boxed{DB}$ or
$\boxed{SOYD}$.

Example: Compute the depreciation on a $7500 computer workstation after 1 year.   Assume the workstation will be depreciated over 5 years and that the Sum of Years Digits method will be used.

1.   Key in 7500 and press $\boxed{n}$
2.   Key in 0 and press $\boxed{n}$.   (Note: This assumes the workstation will have no salvage value).
3.   Key in 5 and press $\boxed{n}$.
4.   Key in 1 and press $\boxed{SOYD}$.   The depreciation for the first year is $2,500.
5   Press $\boxed{X\$Y}$.   The remaining depreciable value is 5,000.

To compute the depreciation after the 2nd year, key in 2 and press $\boxed{SOYD}$, and so on.

Simple Interest Calculations

Simple interest calculations are computed for both 360 day and 365 day years.   Enter the principal amount in the [n] register, the annual interest rate in the [n] register, and the number of days in the [n] register.

Example: Compute the simple interest on a $1500 loan at 7% for 90 days.

1.   Key in 1500 and press [n] [n].
2.   Key in 7 and press [n].
3.   Key in 90 and press [n].
4.   Press [n] to compute the interest.

The interest is $26.25 when computed on a 360 day basis.   To compute the interest on a 365 day basis, press [R↓] and then [X$Y].

Compound Interest Calculations

Compound interest calculations involve monies where interest is compounded at regular intervals.   A compounding period may be a day, month, year, etc.

BizWiz uses the [n]
[n]
[n]
[n] and
[n] registers in compound interest calculations.   Any of four of the variables must be known and the fifth one can then be calculated.   When performing compound interest calculations, the proper <u>cash flow convention</u> should be used.   Note: calculations for
[n],
[n], and
[n] are always rounded to two decimal places.   Calculations for
[n] are rounded up to the nearest integer, and calculations for
[n] are calculated as accurately as possible.

In calculations where the compounding period is monthly and/or the length is given in years, BizWiz provides 2 shortcut function keys.   The [12x] key is used to store the number of years and the
[12÷] key is used to store the annual interest rate compounded monthly.

The [n] and
[n] function keys are used for calculations where interest is to be compounded at the beginning of a compounding period (annuity due) or end of the compounding period (ordinary annuity) respectively.   BizWiz defaults to "end" mode.   To change to "begin" mode, press
[n].   To change back to end mode, press
[n].

To clear the financial registers in preparation for a new compound interest calculation, press
[n].

The following categories of compound interest examples are available:

<u>Savings</u>   Examples for saving money.
<u>Mortgages</u>   Examples for mortgage loans.
<u>Loans</u>   Examples for other loans such as car loans.

Savings Calculations Examples

Example: Suppose you have $9,600 in a savings account.   You have just received a raise and are able to make monthly deposits of $400 into this account.   How long will it be before you have $17,000 if your account earns 6.5% interest compounded monthly?

1.   Press ⬚n to clear the financial registers.
2.   Key in 9,600 and press ⬚n
⬚n to enter the beginning amount.
3.   Key in 400 and press ⬚n
⬚n to enter the monthly deposit.
4.   Key in 6.5, press ⬚12÷ to enter the interest rate per compounding period.
5.   Key in 17,000 and press ⬚n to enter the future value.
6.   Press ⬚n to calculate the number of periods.

The result is 16 months.   BizWiz rounds up the number of months in calculations for ⬚n if a result is not exact.   This is because it is more-than-likely that after 15 months the amount would be somewhat less than the desired $17,000 and after 16 months it would be somewhat more.

Example: Calculate the actual amount in the account after 16 months.

1.   Key in 16 and press ⬚n
2.   Press ⬚n to calculate the final amount.

The result is $17,133.36.

Example: Assume you wish to set up an in an annuity or other investment that pays regular dividends of 6.5% and that you can make payments into the investment of $2000 each year. What will be the amount you will have in the investment after 20 years?   Assume the dividends are taxed as ordinary income and that you're in the 23% tax bracket.

1.   Key in 6.5, press ⬚n , key in 23, press
⬚%
⬚n
⬚n .   This represents the net interest rate the investment will yield after taxes.
2.   Key in 20 and press ⬚n to enter the number of payments.
3.   Press ⬚n to accrue interest starting at the beginning of each period.
4.   Key in 2,000 and press ⬚n
⬚n to enter the annual payment.
5.   Key in 0 and press ⬚n since the initial investment amount is zero.
6.   Press ⬚n to calculate the future amount.

The result is $69,478.52.   To determine what this amount represents in terms of today's dollars, assuming a 7% overall rate of inflation:

1.   Key in 7 and press ⬚n
2.   Key in 0 and press ⬚n
3.   Press ⬚n

In terms of today's dollars at a 7% inflation rate, the investment represents a present-value

amount of $17,954.57.

Example: A savings account has a $200,000 balance and earns 7% interest compounded monthly.   How long will it take before the account is depleted   if regular monthly withdrawls of $1500 are made at the beginning of each month?

1.   Press ⌊n⌋
⌊n⌋ to clear the financial registers and select begin mode.
2.   Key in 200,000 and press ⌊n⌋ to enter the balance.
3.   Key in 7 and press ⌊12÷⌋ to enter the interest rate per compounding period.
4.   Key in 1500 and press ⌊n⌋
⌊n⌋ to enter the monthly withdrawl.
5.   Press ⌊n⌋ to calculate the number of months to deplete the account.   The result is 256 months (21.33 years).

Example: A savings account has $330,000 and earns 7% compounded monthly.   How much will be left in the account after 5 years if at the beginning of every quarter withdrawls of $10,000 are made?

This problem is complicated by the fact that the compounding period is not the same as the period the withdrawls are made.   Steps 1 through 7 convert the interest rate with monthly compounding into an equivalent interest rate with quarterly compounding.

1.   Press ⌊n⌋
⌊n⌋ to clear the financial registers and select begin mode.
2.   Key in 7 and press ⌊NOM%⌋ to enter the nominal interest rate.
3.   Key in 12 and press ⌊P⌋ to enter the number of compounding periods.
4.   Press ⌊EFF%⌋ to calculate an effective interest rate using 12 compounding periods.
5.   Key in 4 and press ⌊P⌋ to enter the new number of periods.
6.   Press ⌊NOM%⌋ to calculate an equivalent interest rate using 4 compounding periods.
7.   Key in 4 and press ⌊n⌋
⌊n⌋ to enter the interest rate per compounding period.
8.   Key in 330,000 and press ⌊n⌋ to enter the account balance.
9.   Key in 10,000 and press ⌊n⌋
⌊n⌋ to enter the withdrawl amount.
10.   Key in 20 and press ⌊n⌋.   This represent 20 withdrawls (5 years * 4 withdrawls per year).
11. Press ⌊n⌋ to calculate the resulting balance.   The result is $230,560.02.

Mortgage Calculations Examples

Example: How much would your monthly payments be for a home costing $140,000 at 10.5% compounded monthly on a 30 year loan?

1.   Press ⬜n⬜
⬜n⬜ to clear the financial registers and use end mode.
2.   Key in 140,000 and press ⬜n⬜ to enter the purchase price.
3.   Key in 10.5 and press ⬜n⬜ to enter the interest rate per compounding period.
4.   Key in 30 and press ⬜n⬜ to enter the number of periods.
5.   Press ⬜n⬜ to compute the monthly payment.   The result is $1,280.64.   The result is negative because it represents an amount paid out.

Example: Assume in the above example that there was a provision in the loan to allow the purchaser to pay off the loan in a final balloon payment after 15 years.   What would the amount of the balloon payment be?

1.   Key in 15 and press ⬜n⬜
2.   Press ⬜n⬜ to calculate the amount remaining on the loan after 15 years.
3.   Press ⬜n⬜
⬜n⬜
⬜n⬜ to add in the monthly payment to the amount remaining.   The result is $117,131.22

Example: Calculate the Annual Percentage Rate (APR) on a 20 year home loan of $125,000 at 9.5% interest if the loan fee is 1.5 points.

1.   Press ⬜n⬜ to clear the financial registers.
2.   Key in 125,000 and press ⬜n⬜ to enter the loan amount.
3.   Key in 9.5 and press ⬜n⬜ to enter the monthly interest.
4.   Key in 20 and press ⬜n⬜ to enter the number of months.
5.   Press ⬜n⬜ to calculate the monthly payment.
6.   Press ⬜n⬜
⬜n⬜, 1.5
⬜n⬜
⬜n⬜
⬜n⬜ to enter the loan amount minus the loan fee.
7.   Press ⬜n⬜ to calculate the monthly interest.
8.   Key in 12 and press ⬜n⬜ to calculate the APR interest.   The result is 9.72%

Example: Calculate the payments for the first 2 years of a variable rate mortgage if the interest rate is 10.5% for the first year and 11% for the second year.   The loan amount is $140,000 and has a 15 year term.

1.   Press ⬜n⬜
⬜n⬜ to clear the financial and select end mode.
2.   Key in 140,000 and press ⬜n⬜ to enter the loan amount.
3.   Key in 15 and press ⬜n⬜ to enter the number of compounding periods.
4.   Key in 10.5 and press ⬜n⬜ to enter the 1st year's interest rate
5.   Press ⬜n⬜ to calculate the payments for the 1st year.   The result is $1,547.56.

6.   Key in 1 and press $\boxed{\text{n}}$
$\boxed{\text{n}}$ to calculate the remaining balance after the 1st year.   The result is $135,937.48.
7.   Press $\boxed{\text{n}}$
$\boxed{\text{n}}$ to store the new loan amount.
8.   Key in 14 and press $\boxed{\text{n}}$ to enter the new number of compounding periods.
9.   Key in 11 and press $\boxed{\text{n}}$ to enter the new interest rate.
10.   Key in 0 and press $\boxed{\text{n}}$ since the loan will be paid off at the end.
11.   Press $\boxed{\text{n}}$ to calculate the 2nd year's payments.   The result is $1589.15.

Loan Calculations Examples

Example: Suppose you wish to take out a home improvement loan.   Calculate the monthly payment if your loan is for $7,500 at 9% interest compounded monthly for 4 years.

1.   Press [n] to clear the financial registers.
2.   Key in 7,500 and press [n] to enter the loan amount.
3.   Press [n] to make sure end-mode is being used.
4.   Key in 9 and press [n] to enter the interest rate per period.
5.   Key in 4 and press [n] to enter the number of compounding periods.
6.   Press [n].   The monthly payment is $186.64.

Example: How much could you afford to pay for a new car if you could afford $300 monthly payments?   Assume a 4 year loan with 9% interest compounded monthly.

1.   Press [n]
[n] to clear the financial registers and set end mode.
2.   Key in 300 and press [n]
[n] to enter the monthly payment amount.
3.   Key in 9 and press [n] to enter the interest rate per period.
4.   Key in 4 and press [n] to enter the number of periods.
5.   Press [n] to calculate the purchase price.   The amount you could afford to pay for the car is $12,055.43.

Example: If you wish to buy a $17,000 boat which requires 60 payments of $180 each, what is the annual percentage rate you are paying?

1.   Press [n]
[n] to clear the financial registers and set end mode.
2.   Key in 17,000 and press [n] to enter the purchase price.
3.   Key in 60 and press [n] to enter the number of periods.
4.   Key in 180 and press [n]
[n] to enter the payment amount.
5.   Press [n] to calculate the interest rate per compounding period.
6.   Key in 12 and press [n] to calculate the annual interest rate.   The result is 12.70%

Function Key Help

To key in a number or perform a BizWiz function, click on the desired function key.   Function keys are the buttons which appear on the calculator, as well as the text functions which appear above and below a button.   No *prefix keys* are required.

To obtain context-sensitive help for a particular function key, press Shift+F1 (hold down the shift key and press F1).   The mouse cursor will change into an arrow with a question mark.   Then click on the desired function key.

Percentage Calculations

Percent of a Number

The [n] function is used to calculate a percentage of a number.

Example: Compute 8.1% of 359.08:

1. Type 359.08 and press [n]
2. Type 8.1 and press [n]. The result is 29.09.

Example: Assuming the sales tax rate in your area is 7.8%, what is the total price of an item costing $79.69?

1. Type 79.69 and press [n]
2. Type 8.1 and press [n] and then
[n]. The result is $85.91.

Percent Difference

The ⌨△% function is used to calculate the difference between 2 numbers.   The base number is the number that the other number is being compared against.   It is entered first.

Example: If the price of gasoline rose last month from $1.08 to $1.32, what is the percent difference?

1.   Key in 1.08 and press ⌨n to enter the base number.
2.   Key in 1.32 to enter the other number and press ⌨△%.   The result is 22.22%.

Percent of Total

The $\boxed{\%T}$ function is used to calculate the percentage one number is of another.

Example: If a gasoline tank holds 12 gallons, what percentage full is the tank if the tank has only 1.8 gallons of gas left?

1. Key in 12 and press $\boxed{n}$
2. Key in 1.8 and press $\boxed{\%T}$.   The result is 15%.

Date Calculations

The date calculations provided are generally used in conjunction with Bonds but can also be used to calculate a past or future date given a base date and a number of days from that date, and the number of days between 2 dates.

Dates are entered in either Month-Day-Year format or Day-Month-Year format.   By default, BizWiz uses the Month-Day-Year format.   If you with to change to the Day-Month-Year format, press ⌑n.   To change back to Month-Day-Year, press ⌑n.

Example: Calculate what day will it be 120 days from June 1, 2001.   First key in the date by entering the number 6.012001   (if you are in Day-Month-Year mode, enter the number 1.062001 instead), followed by pressing ⌑n.   Next key in 120 and press DATE.   The result is 9,29,2001   6.   That is, September 29, 2001.   The trailing 6 means the day of the week is Saturday (1=Monday, 2= Tuesday, etc.).

Example: Calculate the number of days between Jan 1, 1992 and June 30, 1992.   Key in 1.011992 and press ⌑n.   Then key in 6.301992 and press ΔDYS.   The result is 181 days.

Bond Calculations

The [n] and
[n] functions calculate the price and yield to maturity of a semi-annual coupon bond. Calculations are made on the a 30/360 basis using a par value of 100.

Example: You are interested in purchasing an 8.5% semi-annual coupon bond at 94 1/2. Determine the yield this bond will produce if you purchased it on Nov. 15, 1987 and it matures on April 7, 1996.

1. Press [n] to use Month-Day-Year format.
2. Key in 8.5 and press [n] to enter the coupon rate.
3. Key in 94.5 and press [n] to enter the bond price.
4. Key in 11.151987 and press [n] to enter the purchase date.
5. Key in 4.071996 and press [n] to calculate the yield to maturity.

The bond will yield 9.46%.

Example: Assume you desire a yield of 8.75% on a bond that reaches maturity on August 4, 1998. If the bond is a 7.25% treasury bond, how much should you pay for it on October 11, 1988?

1. Press [n] to use Month-Day-Year format.
2. Key in 7.25 and press [n] to enter the coupon rate.
3. Key in 8.75 and press [n] to enter the desired yield.
4. Key in 10.111988 and press [n] to enter the purchase date.
5. Key in 8.041998 and press [n] to calculate the price.

You should pay $90.24 for the bond.

Discounted Cash Flow Analysis

The Net Present Value, Net Future Value, Internal Rate of Return, and Modified Internal Rate of Return functions allow you to compute compound interest problems at regular intervals where the payment (positive or negative) amount is irregular.   In addition, if a number of the amounts are regular, you can "group" them together.   You must observe the <u>cash flow convention</u> when entering the payment amounts.

The ☐n☐ function calculates the net present value of a series of cash flows made at regular intervals.   It is most commonly used to perform an analysis between a variety of investment opportunities.   A negative NPV represents a loss on an investment.   (Note: BizWiz rounds NPV and NFV calculations to 2 decimal point digits).

Example: Suppose you are considering purchasing a hotel for an initial payment of $110,000.   You predict that cash flows for the first 3 years to be $45,000 each year, $55,000 for the 4th year, and $60,000 for the 5th year.   You desire a 20% return on investment. Can this amount be realized?

1.   Press ☐n☐
☐n☐ to clear the financial and storage registers.
2.   Key in 110,000 and press ☐n☐
☐CFo☐ to enter the initial cash outlay.
3.   Key in 45,000 and press ☐CFi☐. To enter the 2nd cash flow.
4.   Key in 3 and press ☐Ni☐ to "group" 3 cash flows at 45,000.
5.   Key in 55,000 and press ☐CFi☐ to enter the 4th cash flow.
6.   Key in 60,000 and press ☐CFi☐ to enter the 5th cash flow.
7.   Key in 20 and press ☐n☐ to enter the interest rate.
8.   Press ☐n☐ to calculate the net present value.

Since the result is positive, the desired 20% return would be achieved.

The Internal Rate of Return is a discount rate which equates the present value of the expected cash outlays with the present value of the expected cash income.   It is the rate an investment is expected to return.

Example: Calculate the Net Future Value and Internal Rate of Return for the example above.

1.   Press ☐n☐ to calculate the Net Future Value.   The result is $88,156.80.
2.   Press ☐n☐ to calculate the Internal Rate of Return.   The investment would yield 33.19%.

The Modified Internal Rate of Return (MIRR) is calculated using a different interest rate for the positive cash flows than for the negative ones.   Negative cash flows are calculated using a "safe" rate and positive flows using a "reinvestment" or comparable risk rate.   The safe rate is keyed into the I register and the reinvestment is entered into the X register when performing the MIRR calculation.

Example: Assume an opportunity for an investment required/produced the following cash flows: -$100,000 1st month, $20,000 next 3 months, -$18,000 next 2 months, $180,000 next month.   Calculate a MIRR using a safe rate of 7% and a reinvestment rate of 11%.

1. Press [n] to clear the financial and storage registers.
2. Key in 100,000 and press [n]
[CFo] to enter the 1st cash flow.
3. Key in 20,000 and press [CFi] to enter the next cash flow.
4. Key in 3 and press [Ni] to enter a total of 3 cash flows at this rate.
5. Key in 18,000 and press [n]
[CFi] to enter the next cash flow amount.
6. Key in 2 and press [Ni] to enter a total o 2 cash flows at this rate.
7. Key in 180,000 and press [CFi] to enter the last cash flow.
8. Key in 7 and press [n] to enter the safe rate per compounding period.
9. Key in 11 and press [n].   Key in 12 and press
[n] to enter the reinvestment rate per compounding period into the X register.
10 Press [n] to calculate the Modified Internal Rate of Return.   The result is 10.22%.

Interest Rate Conversions

BizWiz can convert between a nominal interest rate and an effective interest rate using either periodic compounding or continuous compounding. Interest rate conversions are required for compound interest problems where the compounding period is different from the payment period.

To convert an interest rate, key in the number of compounding periods per year and press [n]. For continuous compounding, key in 0 as the number of compounding periods. Then key in the known value for either the nominal rate and press [n], or the effective rate and press [n]. Finally, to convert to a nominal rate press [n], or to convert to an effective rate press [n].

Example: What is the effective rate of 7.2% compounded monthly?

1. Key in 12 and press [n] for the number of compounding periods per year.
2. Key in 7.2 and press [n] to enter the nominal rate.
3. Press [n] to calculate the effective rate. The result is 7.44%.

Example: Assume you are able to make monthly deposits of $100 into a savings account which earns 6.5% interest with daily compounding. How much will you have in the account after 5 years?

1. Press [n] [n] to clear the financial registers and select begin mode.
2. Key in 365 and press [n] to enter the number of compounding periods.
3. Key in 6.5 and press [n] [n] to enter the nominal rate and calculate the effective rate. The result is 6.72%.
4. Key in 12 and press [n] to enter the number of deposits per year.
5. Press [n] [n] to calculate the equivalent nominal rate at monthly compounding and enter this as the new interest rate per compounding period.
6. Key in 100 and press [n] [n] to enter the monthly payment amount.
7. Key in 5 and press [n] to enter the number of periods.
8. Press [n] to calculate the future value. The result is $7071.32.

Business Functions

The $\boxed{\text{CST}}$
$\boxed{\text{PRC}}$
$\boxed{\text{mu\%c}}$ and
$\boxed{\text{mu\%p}}$ function keys are used to calculate markup as a percentage of cost or price.   They can also calculate the cost or price of an item given its markup and one variable of either cost or price.

Example: If a store buys an item from a wholesaler for $15.00 and sells the item for $22.50, what is the markup as a percentage of price?

1.   Key in 15 and press $\boxed{\text{CST}}$
2.   Key in 22.5 and press $\boxed{\text{PRC}}$
3.   Press $\boxed{\text{mu\%p}}$ to obtain the markup as a percentage of price.   The result is 33.33%.

Example: If a retailer wishes to have a markup of 70% on a certain product.   What should they price the product at if it costs $47.00?

1.   Key in 47 and press $\boxed{\text{CST}}$
2.   Key in 70 and press $\boxed{\text{mu\%c}}$
3.   Press $\boxed{\text{PRC}}$ to obtain the price.

The retailer should price the item at $79.90

Math Functions

BizWiz provides the following math functions:

π	Calculates the value of Pi (3.14159...) to 18 significant digits
LOG	Calculates the log (base 10) of a number in the display
LN	Calculates the natural log of a number in the display
e^x	Calculates the exponential, *e* to the power given in the display
10^x	Calculates 10 to the power given in the display
1/x	Calculates the reciprocal of the number in the display
n!	Calculates the factorial of the number in the display
$\sqrt{x}$	Calculates the square root of a number in the display
RND	Rounds the number in the display to the number of digits shown in the display
y^x	Raises a number in the y register to the power in the x register.
INTG	Returns the integer portion of the number in the display
FRAC	Returns the fractional portion of the number in the display

Example: To calculate the square root of 2, key in 2 and press $\boxed{\sqrt{x}}$.   The result is 1.41.

Example: To raise the number 2 to the 3rd power (i.e., 2 * 2 * 2), key in 2 and press $\boxed{n}$.
Then key in 3 and press
$\boxed{y^x}$.   The result is 8.

Statistics

BizWiz can perform common statistical calculations including mean and standard deviation. Results can be calculated using both one and two variables.   The ⌊Σ+⌋ key is used to enter data into the statistical registers.   When entering single variable data points, the number is keyed in and the
⌊Σ+⌋ key is pressed.   With 2 variable analysis, the 2nd data point is keyed in and the
⌊ n ⌋ key is pressed.   Then the first data point is entered and
⌊Σ+⌋ is pressed.   The following statistical function keys are available:

⌊Σ+⌋	Enter data points into the statistical registers.
⌊Σ-⌋	Remove an incorrectly entered data point(s) from the statistical registers.
⌊x̄⌋	Calculate the mean.
⌊S⌋	Calculates the standard deviation
⌊x̄w⌋	Calculates the weighted mean.
⌊x̂,r⌋	Calculates the linear estimate and correlation coefficient for a a first (X) variable.
⌊ŷ,r⌋	Calculates the linear estimate and correlation coefficient for a second (Y) variable.

When the ⌊Σ+⌋ function key is used, memory storage registers 1 through 6 hold intermediate values.   You can use the
⌊ n ⌋ function key to view these values.   The values held in these memory storage registers are summarized below:

⌊ n ⌋ 1 Displays the number of data items entered thus far.
⌊ n ⌋ 2 Displays the sum of all the first variable values.
⌊ n ⌋ 3 Displays the sum of the squares of the first variable values.
⌊ n ⌋ 4 Displays the sum of the second variable values.
⌊ n ⌋ 5 Displays the sum of the squares of the second variable values.
⌊ n ⌋ 6 Displays the sum of the products of the first variables and the second variables.

Example: Suppose you are a teacher with 5 students.   The student's scores on their last math test were 80, 63, 77, 94, and 79.   Find the mean and the standard deviation of the test scores.

1.   Press ⌊ n ⌋ to clear the statistical registers.
2.   Key in 80 and press ⌊Σ+⌋ to enter the 1st student.
3.   Repeat step 2 substituting the numbers 63, 77, 94, and 79.
4.   Press ⌊x̄⌋ to calculate the mean.   The result is 78.6.
5.   Press ⌊S⌋ to calculate the standard deviation of the second (history) data group of data points.   The result is 11.01

Example: Suppose the same students above had history test scores of 69, 64, 73, 90, and 66.   Find the mean and the standard deviation for the history scores.

1.   Press ⌊ n ⌋ to clear the statistical registers.
2.   Key in 80, press ⌊ n ⌋, key in 69, and press
⌊Σ+⌋ to enter the math and history data for the 1st student.
3.   Key in the remaining data pairs as in step 2 above using the data pairs (63, 64), (77,73), (94,90), (79,66).
4.   Press ⌊S⌋ to calculate the standard deviation of the second data points (history).

The result is again 10.41.

5.   Press ⬚n to calculate the standard deviation of the first data points (math).   The result is again 11.01.

Example: Using the values entered for the students above, compute an estimate for a student's history score given that the student had a math score of 80.   Also compute the correlation coefficient for this value.

1.   Key in 80 and press ⬚ŷ,r to calculate the best-guess second (Y) value based upon a first (X) value of 80.   The result is 85.51.
2.   Press ⬚n.   The correlation coefficient is 0.86.

Example: Find the average cost per minute of your monthly long distance calls if you were charged for the following: 3 minutes at $0.35 per minute, 13 minutes at $0.70 per minute, and 9 minutes at $0.56 per minute.

1.   Press ⬚n to clear the statistical registers.
2.   Key in .35 and press ⬚n.   Key in 3 and press ⬚n.
3.   Key in .70 and press ⬚n.   Key in 13 and press ⬚n
4.   Key in .56 and press ⬚n.   Key in 9 and press ⬚n.
5.   Press ⬚n to calculate the weighted mean.   The result is an average of 66 cents per minute.

Programming

Programming BizWiz is a process whereby you "teach" the calculator a series of keystroke steps.   BizWiz allows up to 999 program steps.   In addition, you can have a program follow a different path based upon values contained in registers.   For example, the program could jump to a different location if the value in the X register (the display) was greater-or-equal to the value in the Y register.   This is known as "conditional branching".   Programming also allows you to repeat given sequences a certain number of times.   This is known as "looping".

The following additional programming categories are available:

Entering a Program
Program Looping and Branching
Editing a Program
Loading and Saving Programs
Additional Programming Functions

Additional Program Functions

The $\boxed{\text{R/S}}$ key has a number of similar functions.   When in <u>program mode</u>, this function key is used to insert a Run/Stop instruction in the program.   This instruction is used to end program execution, or to suspend program execution to allow the user to key in additional input.   When not in program mode, this key is used to start the execution of a program.

The $\boxed{\text{PSE}}$ function key is used to temporarily suspend program execution for several seconds so that the user can view an intermediate result.   This function is only operational in program mode.

Entering a Program

To enter a program, BizWiz must be placed in *program mode* by pressing $\boxed{n}$.   When in program mode, subsequent keystrokes are stored in the calculator's internal memory.   The $\boxed{P/R}$ function key toggles between program and run (normal) modes.

When first entering program mode, the display shows the value 000-.   This represents the current program line number, in this case 000.   Line 000 represents the beginning of program memory.   Let's enter a simple program.

1.   Press $\boxed{P/R}$ to put BizWiz into program mode.   The display shows 000-
2.   Press $\boxed{n}$ to clear the program memory.
3.   Key in 1.   The display shows   001- 1.
4.   Key in 0.   The display shows 002- 0.
5.   Press $\boxed{n}$.   The display shows 003- Enter.
6.   Key in 5.   The display shows 004- 5.
7.   Press $\boxed{n}$.   The display shows 005 +.
8.   Press $\boxed{P/R}$ to return to run mode.
9.   Press $\boxed{R/S}$ to run the program.   The result is 15.00.

The above program simply adds the numbers 10+5 and then finishes.

Program Looping and Branching

BizWiz provides for looping absolute branching, and conditional branching in programs.

Absolute branching is performed using the $\boxed{\text{GTO}}$ function.   To go to a specific line number, the
$\boxed{\text{GTO}}$ function is pressed (while in program mode), followed by a 3 digit number.   BizWiz allows for programs up to 999 lines in length.

NOTE: HP-12C programs can be up to 99 keystrokes in length while BizWiz can be up to 999.   Therefore, the $\boxed{\text{GTO}}$ function is followed by 2 digits in the HP-12C and 3 digits in BizWiz.

BizWiz can perform conditional branching based upon the values contained in the X and Y registers.   When running a program, a conditional instruction will perform a test and will execute the next instruction in the program if the condition is true, or skip over it if the condition is false.   The conditional instructions are as follows:

$\boxed{x \leq y}$ True if X is less than or equal to Y
$\boxed{x=0}$ True if X is equal to 0

You can execute a series of instructions a number of times within a loop using the above functions to determine the number of times to execute the loop.

Example: Write a program which will add the numbers 1 through 5 in a loop and store the result in memory register 1.

1.   Press $\boxed{\text{P/R}}$ to put BizWiz in program mode.
2.   Press $\boxed{\text{n}}$ to clear program memory.
3.   Key in 0 and press $\boxed{\text{n}}$ 1 to clear memory register 1.
4.   Key in 5 and press $\boxed{\text{n}}$
$\boxed{\text{n}}$ 1   to enter the value 10 in memory register 1.
5.   Key in 1
6.   Press $\boxed{\text{n}}$ Instructions 5 and 6 subtract 1 from the X register.
7.   Press $\boxed{x=0}$ to test and see if the X register is 0.
8.   Press $\boxed{\text{R/S}}$.   When X is 0, this instruction will be executed and the program will stop.
9.   Press $\boxed{\text{GTO}}$ 004.   When X is not 0, a jump to instruction 004 will be performed.
10.   Press $\boxed{\text{n}}$ to put the calculator back in normal mode.

To run the program, press $\boxed{\text{n}}$.   The result is 15.00 and will be contained in memory register 1.

Program Editing

There are a number of ways to edit a BizWiz program.   When in program mode, the $\boxed{\text{SST}}$ and
$\boxed{\text{BST}}$ function keys are used to move forward and backward respectively throughout a program.   You can insert a new program line by moving to the desired location and entering the desired keystroke.   The keystroke will be inserted following the line number in the display.

To replace a keystroke while in program mode, press $\boxed{n}$ followed by the 3 digit program line number you wish to replace.   Then key in the desired keystroke.

When in run mode, you can move to a desired program line number by pressing $\boxed{n}$ followed by the desired 3 digit line number.   You can then switch to program mode by pressing
$\boxed{n}$ and BizWiz will be displaying the line number you entered.

Loading and Saving a Program

BizWiz programs can be saved as disk files.   When you select "Save..." from the File menu, BizWiz will prompt you for a filename.   Enter a desired DOS file name.   BizWiz uses the extension **.WIZ** by default.   To load programs previously saved, use the "Open..." command from the File Menu.

BizWiz program files are stored as ordinary ASCII text files.   You can use any ASCII editor, such as the Windows notepad.exe to examine programs you have saved.

Stack Operations

The ⬚ⁿ exchanges the contents of the X and Y registers.

The ⬚ⁿ "rolls down" the stack.   The T register is copied into the Z register.   The Z register is copied into the Y register, and the Y register is copied into the X register.   The X register is "rolled around" into the T register.

The `LSTx` function is not technically part of the stack.   It is used to recover numbers entered just before a mathematical operation was performed on the stack.

Actuarial Functions

BizWiz provides a number of actuarial functions.   These functions require an interest rate to be keyed into the I register and the number of periods to be keyed into the N register.   The functions are listed below.

| n | Calculates the present value of $1 to be received after a number of periods at a certain compounding rate.

| n | Calculates the future value of $1 received in the present after a number of periods at a certain compounding rate.

| n | Calculates the present value of a series of $1 payments at regular intervals after the last payment has been made.

| n | Calculates the future value of a series of $1 payments at regular intervals after the last payment has been made.

Example: How much is a promise to pay $1 in 15 years worth assuming 8% compound interest?

1.   Key in 8 and press | n |
2.   Key in 15 and press | n |
3.   Press | n | to calculate the Single Payment Present Value function.   The result is 32 cents.

Leasing Calculations With Advance Payments

BizWiz provides a function for calculating the payment amount of a compound interest problem where advance payments are made.   This often occurs in leasing calculations where several payments are made at the end of the lease.

An advance payment calculation is similar to other <u>compound interest</u> calculations that calculate a payment amount except that the number of advance payments is keyed in and
[AdvP] is pressed (instead of pressing
[n]).   A future value amount can optionally be entered if the asset has a residual value at the end of the term.   The
[n] and
[n] functions have no effect on the advance payment calculation.

Example: Assume an automobile is to be purchased on a 4 year lease and that 3 advance payments will be made.   If the purchase price is $18,000 and the interest rate is 12% compounded monthly, what is the monthly payment amount?

1.   Press [n] to clear the financial registers.
2.   Key in 18,000 and press [n] to enter the loan amount.
3.   Key in 12 and press [n] to enter the interest rate per compounding period.
4.   Key in 4 and press [n] to enter the number of compounding periods.
5.   Key in 3 and press [AdvP] to calculate the payment amount.   The result is $460.42.

Odd Period Calculations

In compound interest calculations which involve partial periods, BizWiz provides for 2 different methods to calculate the interest during that partial period.   By default, BizWiz uses simple interest to calculate the partial (odd) period.   BizWiz can toggle between simple and compound interest during the odd period by pressing $\boxed{n}$ $\boxed{n}$ or by selecting the Options menu and selecting "Other" and clicking on the odd period interest radio buttons.

When performing odd period calculations, the partial period is expressed as a fraction and entered using the $\boxed{n}$ function key.   For example, a compound interest calculation involving fifteen and one-half periods would be entered as 15.5.   In calculations where whole numbers are entered in the $\boxed{n}$ register, the result will be the same regardless of whether simple or compound odd period interest is used since there is no odd period.

BizWiz (tm)   Financial Calculator

Thank you for examining this shareware edition of BizWiz. BizWiz is fully compatible with the famous Hewlett-Packard HP-12C (tm) handheld calculator while incorporating additional features not found in the HP-12C.

This full featured edition of BizWiz is shareware. You are authorized to examine this software program for up to 60 days. After that, you are required to register the program or else discontinue its use.

Registration has many benefits! You will receive the latest commercial version of BizWiz and a copy of the book "The HP-12C Pocket Guide: Just In Case", by Grapevine Publications. You will also receive notification and discounts on product updates, and qualify for technical support. You may optionally order Grapevine's "An Easy Course in Using the HP-12C", an in-depth manual/tutorial with lots of examples.

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RPN Basics

RPN stands for Reverse Polish Notation and is a style of arithmetic calculations that doesn't require an '=' key.   RPN has an advantage over algebraic calculators when performing multiple calculations involving intermediate results.

With an ordinary algebraic style calculator, you would enter a calculation just as it is written. For example, to add the numbers 4 and 3, you would enter 4 + 3 =.   When you pressed the '=' key, the result, 7, would be shown in the display.   Now if you wanted to multiply this result by 7, you would press * 7 = to yield your result.

With an RPN calculator, the same equation would be entered as 4 $\boxed{n}$ 3
$\boxed{n}$.   To again multiply this result by 7 you would now enter 7
$\boxed{n}$.   With each new step, the result of the last step becomes the first number of the next step.   One other function key you should know about is the
$\boxed{n}$ key.   It is used to clear the value in the display.   There are several additional functions which are used for <u>stack operations</u>.

Example: solve the equation 3 + (4 * 2).

1.   Key in 4 and press $\boxed{n}$.   The number 4 is now in the Y register (and the X register).
2.   Key in 2 and press $\boxed{n}$.   The number in the Y register (4) is multiplied by the number in the X register (2) and the result is displayed in the X register (8).
3.   Key in 3 and press $\boxed{n}$.   The final result, 11.00, is displayed.

The way BizWiz (as well as HP calculators) implement RPN is with a stack.   The stack consists of 4 registers; X, Y, Z, and T.   It is generally not necessary to understand all the details of the stack but for completeness it will be discussed briefly below.

A number displayed in the calculator is said to be in the X register.   When the $\boxed{n}$ key is pressed, a number in the X register is "pushed" into the Y register and the previous number in the Y register is pushed into the Z register.   The previous number in the Z register is pushed into the T register.   T stands for "top" and represents the top of the stack of numbers.   The previous value in the T register is lost.   When a function key such as the
$\boxed{n}$ key is pressed, the value held in the Y register is added to the X register and this result is now stored in the X register.   Pressing
$\boxed{n}$ does one other thing, it leaves the stack disabled.   This means that a number entered after the
$\boxed{n}$ key is pressed is not pushed on the stack, it remains in the X register.   Most operations enable the stack so that when a new number is entered, the previous contents of the X register are pushed into the Y register.   The most notable exceptions to this rule are the
$\boxed{n}$ and the
$\boxed{n}$ function keys.

Error Conditions

BizWiz will display a message box with an error number when it encounters an error during operation.   The error codes are as follows:

ERROR 0:   Illegal math operation such as divide by 0 or square root of a negative number.

ERROR 1:   Number too large.

ERROR 2:   Illegal statistical operation.

ERROR 3:   Solution for IRR cannot be determined.

ERROR 4:   Program is too large or contains a logical error.

ERROR 5:   Amortization or depreciation error.   Either PV and FV have the same sign or n=0.

ERROR 6:   More than 20 grouped cash flows have been entered or more than 99 non-grouped cash   flows.

ERROR 7:   IRR error.   All the IRR cash flows have the same sign

ERROR 8:   Date arithmetic error

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