Money Math Help Contents

Help is available for any of the items listed below. Use the mouse to click on an item or use the Tab key and Enter key to select an item.

Introduction

Calculation Menu Items

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Keyboard

Annual Rate

The Annual Rate is the yearly interest rate in percent (%) for an investment or loan. Do **not** enter as a decimal. Six percent is entered as 6 not .06.

Present Value

Present Value is the amount of your initial investment in dollars. If you are borrowing, it is the amount you borrow. This amount is often called the "Principal".

Future Value

Future Value is the total amount, in dollars, that you have at the end of your investment. Usually, Future Value is the amount of the original investment plus the earnings over a period of time. If you are borrowing, Future Value is the amount you pay back at the end of the loan.

Start Date

Start Date is the date you make the first deposit for an investment. If you are borrowing, it is the date the loan is originated or begun.

Enter Start Date as month, day, year in the form MO/DA/YR where MO and DA are one or two digits, and YR is four digits, i.e., 12/12/1995 or 1/1/1996. Be sure to include a delimiter (/, -, or Space) to separate the digits.

End Date

End Date is the date you withdraw the initial deposit plus interest from an investment. If you are borrowing, it is the date the loan is due to be paid. If this date occurs on a bank holiday, the loan will be extended to the next working day.

Enter End Date as month, day, year in the form MO/DA/YR where MO and DA are one or two digits, and YR is four digits, i.e., 12/12/1995 or 1/1/1996. Be sure to include a delimiter (/, -, or Space) to separate the digits.

Number of Days

The Number of Days is the exact number of days between the Start Date and End Date of the investment or loan including holidays. An extra day is added during a leap year if February 29 is within the loan period.

Financial Analysis

Financial analysis is used by all professionals engaged in managing the assets of a company or an individual. The foundation of financial analysis is mathematical but requires experience and practice beyond just understanding and using the equations. Since some of the equations are difficult and tedious to solve, it can be very beneficial to have software available to handle the mathematics quickly and accurately. Money Math tries to meet those needs.

A serious attempt has been made to keep field name terminology similar to those commonly used in financial textbooks. To further clarify field name terminology, all field definitions are defined in the Help section for each Calculation dialog box.

Money Math can improve and speed up your investment analysis. Comparing different types of investments to obtain the best returns can be readily accomplished. You can better manage your investments by assuring that the proceeds are correctly calculated, however Money Math can not guarantee that all banks and financial institutions will calculate proceeds the same as Money Math.

Money Math has eleven different Calculation dialog boxes, each providing the capability to calculate from one to five unknowns. Overall, more than 45 different unknown variables can be calculated.

Money Math Calculation dialog boxes can be used to solve a variety of problems. The Calculation Menu items are listed below along with possible useful types of calculations. To review an example of each type of calculation, click on the example below or move to the example with the Tab key and press Enter:

Simple Interest

This menu item performs the standard calculations for "Exact Simple Interest" and "Bankers' Rule Simple Interest". The exact number of days between any two entered dates is computed. Simple Interest can be used for:

Checking Accounts that bear interest (NOW)
Days between dates
Federal Funds
Promissory Notes
Example 1
Short term loans usually less than one year

Bank Discount

This menu item performs the calculations using standard "Bank Discount" equations. The exact number of days between any two entered dates is computed. Bank Discount can be used for:

Bank Loans
Bankers Acceptance
Commercial Paper
Days between dates
Discounted Notes
Promissory Notes
Treasury Bills
Example 2

Compound Interest

This menu item performs calculations using standard "Compound Interest" equations. Compound Interest can be used for:

Bank Savings Accounts
Example 3
Credit Unions
Money Market Accounts
Trusts
Zero Coupon Bonds

Ordinary Annuity (Periodic payments at end of the period)

This menu item performs calculations using standard equations for an "Ordinary Annuity". This common annuity calculation is used for:

Balloon Loans
Home Equity Loans
Home mortgages
Example 4
Installment payments
Loans
Second Mortgages
Sinking fund
Example 5

Annuity Due (Periodic payments at beginning of the period)

This menu item performs calculations using standard equations for an "Annuity Due". This common annuity calculation is used for:

Insurance
Lease
Example 6
Rent
Savings
Example 7

Corporate Bond

This menu item performs calculations for "Corporate Bonds" using annuity equations. Money Math can calculate "Yield to Maturity" and "Accrued Interest" on this type of bond. This common bond calculation is used for:

Convertible bonds
Corporation bonds
Example 8
Debentures
First Mortgage bonds
Municipal bonds

Treasury Bond

This menu item performs calculations for "Treasury Bonds" using annuity equations. Money Math can calculate "Yield to Maturity" and "Accrued Interest" on this type of bond. This common bond calculation is used for:

US. Treasury Bonds
Example 9
US. Treasury Notes

Certificate of Deposit (CD)

This menu item performs calculations on an interest bearing promissory note from a bank or other type of financial institution. Many individuals purchase CD's and this calculation will allow detail planning and tracking of results.

Certificates of Deposit (CD)
Example 10

Discounted Cash Flow

This menu item performs calculations where "Discounted Cash Flow" techniques are used. Results of the calculations will show Net Present Value, Profitability Index, Discounted Payback, Internal Rate of Return, and Return on Investment. Discounted Cash Flow calculations are typically used for:

Annuities with Unequal Payments
Capital Investment Evaluation
Example 11
Project Proposal Economics

Loan Amortization

This menu item prepares an Amortization Schedule for a Home Mortgage or Loan for a client. The Schedule can be printed.

Mortgage Amortization Schedule
Example 12
Loan Amortization Schedule

List of Financial Calculations

Type of Financial Calculation	Money Math Menu Item Name
Amortization Schedule	Loan Amortization
Annuities with Unequal Payments	Discounted Cash Flow
Balloon Loans	Ordinary Annuity
Bank loans	Bank Discount
Bank Savings Accounts	Compound Interest
Bankers Acceptance	Bank Discount
Bonds, Corporation	Corporate Bond
Bonds, Municipal	Corporate Bond
Bonds, US Treasury	Treasury Bond
Capital Investment Evaluation	Discounted Cash Flow
Certificate of Deposit (CD)	Certificate of Deposit
Commercial Paper	Bank Discount
Credit Unions	Compound Interest
Days between Dates	Simple Interest
Debentures	Corporate Bond
Discounted Notes	Bank Discount
Federal Funds	Simple Interest
Home Equity Loans	Ordinary Annuity
Home Mortgages	Ordinary Annuity
Installment Payments	Ordinary Annuity
Insurance	Annuity Due
Lease	Annuity Due
Loan Amortization	Loan Amortization
Loans	Ordinary Annuity
Money Market Accounts	Compound Interest
NOW Checking accounts	Simple Interest
Project Proposal Economics	Discounted Cash Flow
Promissory Notes	Bank Discount
Promissory Notes	Simple Interest
Rent	Annuity Due
Savings	Annuity Due
Second Mortgages	Ordinary Annuity
Short term loans	Simple Interest
Sinking fund	Ordinary Annuity
Treasury Bills	Bank Discount
Trusts	Compound Interest
US Treasury Notes	Treasury Bond
Zero Coupon Bonds	Compound Interest

Financial Problem Solving

Bond, Certificate of Deposit, and Loan Amortization solve specific types of financial problems. You will recognize the commonly used name and be able to get answers quickly using Money Math.

On the other hand, Annuity, Bank Discount, Compound Interest, Discounted Cash Flow, and Simple Interest can be used to solve hundreds of different types of financial problems. Still other types of problems can be solved using combinations of these calculations. In these cases, how do you know which type of calculation to use?

The first thing to do is to refer to the Help Item, "List of Financial Calculations", to find the name of a specific type of calculation. Thirty-eight specific types of financial calculations are named. Set up your problem in the Calculation dialog box recommended, select the unknown, fill in the rest of the data, and press the Enter key to get the answer.

Relating Problems to Solution Method

If your specific calculation is not named in the Help Item, "List of Financial Calculations", you must analyze the data you have on hand to determine which Calculation dialog box to use for the solution method.

If the data you have involves only one period of time, you probably have a Simple Interest or Bank Discount calculation. If you are borrowing, try to get your lender to use Simple Interest. You will pay more interest if Bank Discount is used. You have your choice if you are the lender.

Use Compound Interest if interest is paid for more than one period of time and no payments are involved. Make sure that interest is not withdrawn when paid but is allowed to accumulate in the investment.

Use Annuity if you have a series of **equal** payments and **equal** payment time intervals. Remember that in an Ordinary Annuity, the payments are at the end of the period and in an Annuity Due the payments are at the beginning of the period.

Use Discounted Cash Flow if you have a series of **unequal** payments and **equal** payment time intervals. This type of analysis is almost always used for economic evaluations with cash flowing in and out of the investment situation.

Once the solution method is selected, look at the Calculation dialog box involved to determine what variables are needed. Decide which of the variables is the "Unknown". Then, gather data for the known variables and enter that data into the proper fields in the dialog box. Press the Enter key to get the answer.

Calculation Dialog Boxes

Dialog Box Design

Money Math Calculation dialog boxes are designed to obtain information from the user to perform a specific type of calculation. The dialog box knows what information it needs to do the calculation. Each dialog box can calculate several unknowns as shown in the "Unknown" frame. You must enter all information requested except the Unknown variable to make a calculation. Each dialog box has the same number of equation sets as it has Unknowns. An equation set requires all the variables except the Unknown for a solution.

The Calculation dialog boxes consist of three basic parts: data entry fields in a framed rectangle, "Radio" buttons to select the Unknown to calculate, and the display of the calculation results in a data entry field.

Generic Calculation

To perform a calculation, start entering data in the first data entry field and progress down the fields by pressing the Tab key, entering data as you go.

Upon reaching the Radio buttons in the Unknown frame, select the Unknown you wish to calculate using either the mouse or the Up and Down Arrow keys. The Radio button arrow points to the name of the Unknown variable. Continue pressing Tab and fill in the remaining fields with data. Note that as you enter data, you cannot Tab to the Unknown field you selected so it remains empty.

Once the data is all entered, press the Enter key to perform the calculation. The result will appear in the framed rectangle of the Unknown data entry field.

You can continue to work with the data already entered by pressing Tab to move to a field for editing or selecting a new Unknown. Pressing Shift+Tab moves backwards to a previous field.

Some Calculation dialog boxes have additional fields that show other calculation results in an area next to the field name. This data supplements the primary calculation and may be useful to the user.

Edit Controls

The data entry fields in a framed rectangle are called "Edit Controls" or "Edit boxes". Most of the numbers and dates you enter will be inside an Edit box. Money Math will try to keep you from entering incorrect data into the Edit boxes. For example, you must not enter an alphabetical character in a box that requires a number. Money Math will not accept the incorrect character and will beep at you.

Money Math limits the size of the numbers that will fit in each of the Edit boxes to reasonable values. Hopefully, this limitation will not be reached in any of the work that you do. The limitation is required to prevent displaying a number that is too large or small to fit in the Edit box. Seemingly innocent calculations involving compounding can create enormous numbers to display.

Pressing the Enter key is the same as pushing the Calculate button. You must use the Tab key to move to the next Edit box. If you press Enter by mistake, Money Math will beep at you and ask you to "Please Enter Data" . Just press the "OK" button to continue. After an error, you will find the cursor at the first incorrect Edit box.

When you first move to a field using the Tab key, the data in the field is highlighted. Highlighted fields will delete their data if you press a regular key. To retain the data for editing, press an Arrow key to remove the highlighting.

Dates are entered using the Month/Day/Year format, i.e., 12/25/1995 or 1/1/1996. The year is entered as four digits and must be between 1900 and 2199. The character that separates month, day, and year is

called a delimiter and can be a slash (/) as shown above, a dash (-), or a Space. Money Math will help you enter valid dates. For example, you cannot enter 31 days for June.

If you edit an existing date, do not delete the delimiter or Money Math will delete the whole date. If editing creates a year outside the range given above, the whole date will also be deleted.

Radio Button Frames

The most common Radio button frame encloses the group of Unknown variable buttons. These Radio buttons are circles with a short arrow pointing to the name of the Unknown. The button is active when it has a black dot in the center and a dotted frame around the arrow. Only one button in a frame can be active at a time. You change the active button using the Up and Down arrow keys. The active button arrow points to the current Unknown variable name.

Several other Radio button frames are used in Money Math. They do not have an arrow but use text to indicate the selection. All annuities use a frame to select Present Value or Future Value for the calculation. In Simple Interest, you can select 360 or 365 days per year for the calculation. Certificate of Deposit uses a frame to select the Type of CD with a choice of either Simple or Compound Interest.

List Boxes

"List" boxes contain preset words to use for setting some of the common parameters in a calculation. For example, words are used, in some List boxes, to indicate the frequency that payments are made (Monthly, Quarterly, Semiannually, or Annually).

The currently selected word in a List box is highlighted. After moving to the List box with the Tab key, you may select another word using the Up and Down arrow keys. Using the mouse, click on the tiny arrows on the right side until the proper word appears in the box, then, click on it to select it. The word will then be highlighted indicating that it is selected.

Push Buttons

All of the Calculation dialog boxes contain a "Calculate" and a "Cancel" push button. In addition, Loan Amortization contains a "Schedule" push button. You press a push button by moving to it with the Tab key and pressing the Space bar or clicking on it with the mouse.

Pressing the Calculate push button makes the computer solve the equations for the Unknown you have selected. If you have provided all the required data, the answer will appear in the Unknown Edit box. If not, you will receive notification of a problem. Pressing the Enter key is the same as pressing the Calculate button.

Pressing the Cancel button closes the Calculation dialog box. You should print results before pressing Cancel since all data in the box is lost when it is closed. Pressing the Esc key or the Alt-F4 key combination will also close the dialog box.

Simple Interest

All interest is Simple Interest. If the interest remains in the account, it is said to be converted to principal and is compounded when interest is computed again at the end of the period. Simple Interest is calculated by multiplying the Present Value (principal) times the Interest Rate for the period of time involved. Several practices have evolved for calculating the time element of this equation.

"Exact" simple interest is calculated on the basis of 365 days per year. "Bankers' Rule" simple interest is calculated assuming 360 days per year. Other than changing these constants, the equations used are the same. At the top of the Calculation dialog box you must select either 365 or 360 days per year for your calculation. Note that the calculation box title changes, depending on your selection, to "Exact Simple Interest" or "Bankers' Rule Simple Interest."

The common practice in commercial banks is to use Bankers' Rule simple interest for loans. This uses the exact number of days for the loan and assumes 360 days per year. Exact simple interest, using 365 days per year, produces the lowest interest for the borrower .

If the Start Date and the End Date for the investment or loan are entered, the Number of Days will be automatically calculated, including the day of the week of the End Date. Conversely, if the End Date is left blank and the Number of Days for the loan is entered, the End Date will be automatically calculated.

The Simple Interest Calculation contains four data entry rectangle boxes one of which is the unknown you wish to calculate. For a description of each data entry box, click on the box name below or move to the name with the Tab key and press Enter:

Start Date
End Date
Number of Days
Annual Rate
Present Value
Future Value

See: Example 1

Example 1

The Computer Shop has an opportunity to purchase 12 computers at a good discount. John figures the purchase would cost $10,000. He knows the bank will charge him 10% interest on a short term loan. John believes he could sell all the computers within 90 days and pay back the loan. How much will John pay back if the bank uses Bankers' Rule for their promissory notes?

Hint: **Menu Item:** Simple Interest
Select for Calculation: 360 days per year
Tab over Start and End dates
Leave Unknown button on Future Value
Number of days: 90
Annual Rate (%): 10
Present Value ($): 10000

Answer: Future Value: $ 10250.00

Bank Discount

Bank Discount is normally used by banks and other financial firms to make short term loans. Commercial Paper and Promissory Notes sold between firms often use Bank Discount. US Treasury Bills use Bank Discount.

When Bank Discount is used to make a loan, the interest is deducted in advance and is based on the final amount of the loan (Future Value). The amount received by the borrower (Present Value) is often referred to as the "Proceeds". Since the lender is really only lending the Present Value but has calculated the interest based on the Future Value, the interest rate (Discount Rate) is actually higher compared to Simple Interest. Using Bank Discount results in a larger interest amount for the lender compared to Simple Interest.

The time calculations are based on 360 days per year similar to Bankers' Rule simple interest. The total Number of Days for the loan is the exact difference in days between the Start Date and the End Date.

If the Start Date and the End Date for the investment or loan are entered, the Number of Days will be automatically calculated, including the day of the week of the End Date. Conversely, if the End Date is left blank and the Number of Days for the loan is entered, the End Date will be automatically calculated.

The Bank Discount Calculation contains four data entry rectangle boxes one of which is the unknown you wish to calculate. For a description of each data entry box, click on the box name below or move to the name with the Tab key and press Enter:

Start Date
End Date
Number of Days
Discount Rate
Present Value
Future Value

See: Example 2

Discount Rate

The Discount Rate is the yearly interest rate in percent (%) for an investment or loan. Do **not** enter as a decimal. Six percent is entered as 6 not .06.

Present Value

Present Value is the amount of your initial investment in dollars. If you are borrowing, it is the amount you borrow. This amount is often called the Proceeds.

Example 2

Robert, a bank executive, needs to purchase a 91 day Treasury Bill because of bank excess funds. He will bid 98.1 for a $1,000,000 bill at the auction on 6/1/1993. The bank will pay $981,000 for the bill. What Discount Rate will the bank earn on its money and what date will the bill be due?

Hint: **Menu Item:** Bank Discount

Start Date:	6/1/1993
End Date:	(leave blank)
Move Unknown button to Discount Rate	
Number of Days:	91
Present Value:	$981000.
Future Value:	$1000000.

Answers:

Discount Rate:	7.516%
End Date:	8/31/1993

Compound Interest

Compounding increases the interest earned during a period and will result in greater earnings than with simple interest. A Savings account is an example of an account that generates compound interest. It is usually compounded monthly, quarterly, or semiannually during a year.

The initial deposit in the Savings account is often called the principal. In Money Math it is called the Present Value. Compound Interest occurs when the amount of simple interest earned, for a period of time, is added to the Present Value in your account. The new amount (Present Value plus interest for 1st period) earns interest for the next period of time. At the end of the next period, the simple interest earned is again added to the amount in the account (Present Value plus interest for 1st period **plus** interest for 2nd period).

This continues for the number of periods that the account retains funds. The final amount in the account is called Future Value. If the interest earned after each period is withdrawn, compounding of interest does not occur and the amount in the account remains equal to the Present Value.

The Compound Interest Calculation contains five data entry rectangle boxes one of which is the unknown you wish to calculate. For a description of each data entry box, click on the box name below or move to the name with the Tab key and press Enter:

Compounding Periods per Year
Number of Periods
Annual Rate
Present Value
Future Value

See: Example 3

Compounding Periods

In a bank Savings account, the Compounding Period is the number of times (frequency) during a year that the bank calculates the interest and posts the amount to your account.

Normal Compounding Periods per year are:

Daily	365
Monthly	12
Quarterly	4
Semiannually	2
Annually	1

Number of Periods

The Number of Periods is the total number of compounding periods in your calculation. For example, if you have a Savings account that is compounded quarterly (4 Compounding Periods per Year) and you wish to project the Future Value of your account in 5 years, you would enter 20 (4 × 5) for the Number of Periods.

Example 3

Anna Marie received a $20,800 inheritance from her Grandfather. Anna Marie intends to save the money by putting it in a bank savings account. The bank Anna Marie is considering is paying 5.5% interest compounded quarterly. How much will Anna Marie have in 5 years if she invests with this bank?

Hint: **Menu Item:** Compound Interest
Compounding Periods per Year: 4
Leave Unknown button at Future Value

Number of Periods:	4 × 5 years = 20
Annual Rate (%):	5.5
Present Value ($):	20800

Answer: Future Value: $27,332.58

Annuity

An "Annuity" is defined as a series of **equal** payments made at **equal** intervals of time. The payments can be made **by you** to someone else as in an automobile loan. The payments can also be made **to you** by someone else as in the semiannual interest received from a bond.

The payments are calculated using compound interest methods and are usually made annually, semiannually, quarterly, or monthly. Examples of annuities are home mortgages, leases, automobile loans, and installment payment plans.

Money Math can calculate two types of annuities. Both are classified as "Annuity Certain" because the annuities begin and end on specific dates. The two annuities are further classified as to when the payments are made.

In an "Ordinary Annuity", the payments are made at the **end** of each payment interval. The payments are made at the **beginning** of each payment interval in an "Annuity Due". Money Math can calculate an Ordinary Annuity or an Annuity Due.

The two annuities are further classified if a Present Value or a Future Value amount is needed in the calculation. In general, two basic types of annuities are provided in Money Math with an option to use Present Value or Future Value in each.

The Present Value (PV) or Future Value (FV) option is selected at the start of each Annuity calculation dialog box. The table on the next page summarizes the types of calculations performed by each type of annuity in Money Math.

The table below summarizes the types of calculations performed by each type of annuity in Money Math:

Menu Item: Ordinary Annuity (Loan)
(Payments at end of period)

Ordinary Annuity (PV)	**Ordinary Annuity (FV)**
Loan	Sinking Fund
Mortgage	Example 5
Example 4	

Menu Item: Annuity Due (Savings)
(Payments at beginning of period)

Annuity Due (PV)	**Annuity Due (FV)**
Lease	Savings
Example 6	Example 7
Rent	Insurance

The Annuity calculation contains six data entry rectangle boxes one of which is the unknown you wish to calculate. For a description of each data entry box, click on the box name below or move to the name with the Tab key and press Enter:

"Select for Calculation" Frame
Payments per Year
Number of Payments
Annual Rate

Present Value
Future Value
Periodic Payment
Balloon Payment

"Select for Calculation" Frame

Ordinary Annuity(Loan) is set to calculate a loan using Present Value when the Calculation dialog box is opened. To use Future Value in an Ordinary Annuity calculation, use the Arrow key to select the Future Value Radio button or click on the button with the mouse. Note that the dialog box title changes to "Sinking Fund" which is a common calculation when Future Value is involved. This mode is also used to calculate the Future Value of savings if payments are made at the end of a period instead of the beginning.

Annuity Due(Save) is set to calculate savings using Future Value when the Calculation dialog box is opened. This mode is used to calculate the Future Value of savings if payments are made at the beginning of a period instead of the end. To use Present Value in an Annuity Due calculation, use the Arrow key to select the Present Value Radio button or click on the button with the mouse. Note that the dialog box title changes to "Lease" which is a common calculation when Present Value is involved.

Payments per Year

Payments per Year is the number of times during a year (frequency) that payments are made by you or to you.

Normal Payments per Year are:

Monthly	12
Quarterly	4
Semiannually	2
Annually	1

Number of Payments

The Number of Payments is the total number of payments you will make during the life of a loan. For example, if you are analyzing a 5 year automobile loan with monthly payments (12 payments per year), you would enter 60 (5 × 12) for the Number of Payments. For an investment, it is the total number of payments you will receive during the life of the investment.

Periodic Payment

The Periodic Payment is the dollar amount you pay on a regular basis. For example, if you pay $350 per month on an automobile loan, the Periodic Payment is $350.

Balloon Payment

A Balloon Payment is the dollar amount you have agreed to pay at the end of a loan or lease in addition to the regular payment. This field is active only when Present Value is used in the calculation. If you have no Balloon Payment, set it equal to zero.

If your Unknown is Number of Payments, an amount may appear in the Balloon Payment Edit box after the calculation is made. Number of Payments is computed as a round number (integer) and any fractional part of a payment is placed in the Balloon Payment Edit box. The final payment for your calculation will be the Periodic Payment plus the Balloon Payment. Balloon Payment may be negative and would be subtracted from the Periodic Payment in that case.

Example 4

Vicki and Robert are discussing the purchase of a home. They feel they could handle a $600 per month mortgage payment. Mortgage rates at their bank are now at 8%. Assuming they obtain a 30 year mortgage from their bank, what is the maximum amount they could borrow and not exceed their desired monthly payment?

Hint: **Menu Item:** Ordinary Annuity (Loan)
Select for Calculation: Present Value
Payments per Year: 12
Move Unknown button to Present Value
Number of Payments: 30 × 12 = 360
Annual Rate (%): 8
Periodic Payment ($): 600
Balloon Payment ($): 0

Answer: Present Value: $ 81,770.10

Example 5

A company wants to be able to replace their copy machine in 5 years. They decide to make a deposit at the **end** of each month to accumulate the replacement cost of $12,000. How much should they deposit each month in an account earning 7% annually compounded monthly?

Hint: **Menu Item:** Ordinary Annuity (Loan)
Select for Calculation: Future Value
Payments per Year: 12
Move Unknown button to Periodic Payment
Number of Payments: 5 × 12 = 60
Annual Rate (%): 7
Future Value ($): 12000
Balloon Payment ($): 0

Answer: Periodic Payment: $ 167.61 per month

Example 6

An automobile dealer leases a luxury car for four years at $950 a month paid at the **beginning** of each month. The car cost $45,000 new and is worth $15,000 at the end of the lease period. What yield is the dealer making on the lease?

Hint: **Menu Item:** Annuity Due (Save)
Select for Calculation: Present Value
Payments per Year: 12
Move Unknown button to Annual Rate
Number of Payments: 4 × 12 = 48
Present Value ($): 45000
Periodic Payment ($): 950
Balloon Payment ($): 15000

Answer: Annual Rate: 12.735%

Example 7

Betty and Harold want to save for their daughter's college education. They want to have $40,000 in 18 years by making monthly payments to a Savings Account. The interest rate paid on their account is projected to be 7% annually compounded monthly. How much are the monthly payments?

Hint: **Menu Item:** Annuity Due (Save)
Select for Calculation: Future Value
Payments per Year: 12
Move Unknown button to Periodic Payment
Number of Payments: 12 × 18 = 216
Annual Rate (%): 7
Future Value ($): 40000

Answer: Periodic Payment: $ 92.33 per month

Bond

Bonds are issued by corporations or government units for the purpose of borrowing funds from an investor. The investor expects the issuing party to repay the amount borrowed (Par Value) on a future date (Maturity Date) and provide periodic income (Periodic Payment) in the form of interest during the life of the investment.

Since interest is paid at the end of each period, a bond is an Ordinary Annuity with a Balloon Payment at the end of the loan (Par Value).

For Corporate Bonds, select in the "Interest is Paid" List box, the number of times a year (frequency) that the bond will pay interest. Corporate Bonds usually pay semiannually. Since Treasury Bonds and Notes only pay interest semiannually, the "Interest is Paid" List box is disabled.

The Corporate and Treasury Bond Calculation dialog boxes produce the same results except for Accrued Interest. This is calculated differently for each type of bond. Accrued Interest is an amount paid to the previous owner of a bond if purchased between interest payment dates. The Yield to Maturity calculation ignores any accrued interest you may have paid which is customary in the trade.

Be sure to use Par Value and Present Value in the same units. If the Par Value of a **single** bond is entered as $1000, then Present Value is entered as the current price of a **single** bond which might be $1025. If your order is for 20 bonds with a Par Value of $1000 each, enter $20000 for Par Value and enter whatever you paid for the 20 bonds in Present Value less accrued interest and commission.

If the current price of a single bond is $1025.00, it would be quoted in a financial paper as 102.16 which means 102 16/32% of $1000 (Par Value). Note that $1000 × 102 16/32% = $1025.00.
After you have calculated the Unknown, a display of the bond Periodic Payment (interest), the Number of Payments you will receive, and the Accrued Interest is shown in the lower part of the Calculation dialog box.

The Bond calculation contains one list box, three information boxes, and six data entry rectangle boxes one of which is the unknown you wish to calculate. For a description of each box, click on the box name below or move to the name with the Tab key and press Enter:

"Interest is Paid" List Box
Par Value
Coupon Rate
Maturity Date
Date Purchased
Present Value
Yield to Maturity
Periodic Payment
Number of Payments
Accrued Interest

See: Example 8 for Corporate Bond and
Example 9 for Treasury Bond

"Interest is Paid" List Box

In this List box, select the number of times during a year (frequency) that the bond will pay interest. The selections are Annually, Semiannually, Quarterly, and Monthly. Interest is usually paid Semiannually (twice a year) on a Corporate Bond. Treasury Bonds and Notes always pay interest Semiannually.

Par Value

The Par Value is the face value or redemption value in dollars that a bond will pay on the Maturity Date. Note that this is not the Call Price. The Par Value of most bonds is $1000.

Be sure to use Par Value and Present Value in the same units. If the Par Value of a **single** bond is entered as $1000, then Present Value is entered as the current price of a **single** bond which might be $1025. If your order is for 20 bonds with a Par Value of $1000 each, enter $20000 for Par Value and enter whatever you paid for the 20 bonds in Present Value less accrued interest and commission.

Coupon Rate

The Coupon Rate is the yearly interest rate in percent (%) paid by the bond to the investor. Do **not** enter as a decimal. Six percent is entered as 6 not .06.

Date Purchased

The Date Purchased is the Settlement date shown on the Order Confirmation for the bond purchase. Do not enter the Trade date.

Enter Date Purchased as month, day, year in the form MO/DA/YR where MO and DA are one or two digits, and YR is four digits, i.e., 12/12/1995 or 1/1/1996. Be sure to include a delimiter (/, -, or Space) to separate the digits.

Accrued Interest

Accrued Interest is the amount paid to the previous owner of a bond if purchased between interest payment dates. Assume that a bond pays interest semiannually on June 1 and December 1 and you purchase the bond on August 1. You will owe two months of accrued interest from June 1 to August 1 to the previous owner. On December 1, you will receive an interest payment for six months of interest that includes the two months of accrued interest you paid earlier. Although the difference is small, Accrued Interest on Corporate Bonds is not computed the same as it is on Treasury Bonds and Notes.

Yield to Maturity

Yield to Maturity is the annual interest rate in percent earned on a bond from the Purchase date to the Maturity Date considering the bond as an Ordinary Annuity. Yield to Maturity can be used to compare various types of bonds to determine the best overall investment.

Maturity Date

Maturity Date is the date the bond issuer pays back the amount borrowed along with the last interest payment. The amount paid back is the Par Value.

Enter Maturity Date as month, day, year in the form MO/DA/YR where MO and DA are one or two digits, and YR is four digits, i.e., 12/12/1995 or 1/1/1996. Be sure to include a delimiter (/, -, or Space) to separate the digits.

Number of Payments

The Number of Payments is the total number of interest payments you will receive during the life of the bond.

Periodic Payment

The Periodic Payment is the dollar amount you receive in interest on the bond periodically, usually every six months.

Present Value

Present Value is the amount you paid for the bonds in dollars. Be sure to use Par Value and Present Value in the same units. If the Par Value of a **single** bond is entered as $1000, then Present Value is entered as the current price of a **single** bond which might be $1025. If your order is for 20 bonds with a Par Value of $1000 each, enter $20000 for Par Value and enter whatever you paid for the 20 bonds in Present Value less accrued interest and commission.

Example 8

In 1986, Bob had an opportunity to buy some non-callable high yield corporate bonds quoted at 108 7/8. The bond pays 14 1/2% interest with a maturity date of 12/1/94. Interest payments are every six months. Bob purchased the bonds and settled on 3/26/86. What is his Yield to Maturity?

Hint: **Menu Item:** Corporate Bond
Select Interest is Paid: **Semiannually**
Par Value: 1000
Coupon Rate: 14.5
Maturity Date: 12/1/1994
Date Purchased: 3/26/1986
Move Unknown button to Yield to Maturity
Present Value ($): 108 7/8% × 1000 = 1088.75

Answer: Yield to Maturity: 12.81%

Example 9

Lois has a Savings account in a local bank. The interest rate on the account has been falling and is expected to continue to fall. Lois's banker told her that Treasury Bonds were still yielding about 8%. Lois decided to invest most of her Savings account in Treasury Bonds. She purchased $25,000 in Treasury Bonds paying 7 5/8% interest with a Maturity Date of 2/15/07. She paid $24,148.44 for the bonds which did not include accrued interest or commission. She settled on 12/12/90. Was Lois's banker right about the Yield to Maturity?

Hint: **Menu Item:** Treasury Bond

Par Value:	25000
Coupon Rate:	7.625
Maturity Date:	2/15/2007
Date Purchased:	12/12/1990
Move Unknown button to Yield to Maturity	
Present Value ($):	24148.44

Answers:

Yes, the banker was right	
Yield to Maturity:	8.000%
Periodic Payment:	$953.13
Number of Payments:	33
Accrued Interest:	$616.42

Certificate of Deposit

A Certificate of Deposit (CD) is an interest bearing promissory note from a bank or other type of financial institution. CD's are calculated using either Simple or Compound interest equations. The desired calculation mode can be selected in the CD calculation dialog box using the "CD Type" radio buttons. Normally, CD's that earn compound interest bring higher returns.

To calculate a CD, first select the CD Type using the Up and Down arrow keys or the mouse. Your CD should state whether simple or compound interest is used. If not, you will need to ask your bank.

From the "Compounding Period" List box, select either Monthly, Quarterly, Semiannually, or Annually using the Up and Down arrow keys or the mouse. Be sure your selection is highlighted. With the mouse, click on the visible word to highlight it.

Select either Days, Months, or Years for the CD units of time in the "CD Term" list box using the same technique as above. Once the units of time have been selected, move to the next field with the Tab key and enter the number of days, months, or years for the CD term. As an example, an 18 month CD will have "Months" selected in the List box and the number 18 entered in the CD Term framed Edit box.

After you have calculated the Unknown, a display of the Interest Earned on the CD, the Yield to Maturity, and the Maturity Date is shown in the lower part of the Calculation dialog box.

The CD calculation contains two list boxes, three information boxes, and five data entry rectangle boxes one of which is the unknown you wish to calculate. For a description of each box, click on the box name below or move to the name with the Tab key and press Enter:

"CD Type" Frame
"Compounding Period is" List Box
CD Term
CD Issue Date
Annual Rate
Present Value
Future Value
Interest Earned
Yield to Maturity
Maturity Date

See: Example 10

"CD Type" Frame

If interest is posted to your CD periodically such as Annually, Semiannually, Quarterly, and Monthly, select the "Compound" Radio button using the Arrow keys or the mouse. If interest is posted only once on the Maturity Date of your CD, select the "Simple Interest" Radio button. When you purchase your CD ask whether Simple or Compound interest is used.

"Compounding Period is" List Box

In this List box, select the number of times during a year (frequency) that interest will be added (posted) to the Certificate of Deposit (CD) amount. The selections are Annually, Semiannually, Quarterly, and Monthly.

CD Issue Date

The CD Issue Date is the date you purchased the Certificate of Deposit (CD) and it begins to earn interest.

Enter CD Issue Date as month, day, year in the form MO/DA/YR where MO and DA are one or two digits, and YR is four digits, i.e., 12/12/1995 or 1/1/1996. Be sure to include a delimiter (/, -, or Space) to separate the digits.

CD Term

The CD Term List box selects the **units of time** (days, months, or years) that will be used for the CD Term. The CD Term is the **number** of days, months, or years between the CD Issue Date and the Maturity Date. This **number** is entered in the CD Term framed Edit box and uses the same units of time (days, months, or years) that you selected in the CD Term List box.

Annual Rate

The Annual Rate is the yearly interest rate in percent (%) paid on the Certificate of Deposit to the investor. Do **not** enter as a decimal. Six percent is entered as 6 not .06.

Present Value

Present Value is the initial amount you invested in the Certificate of Deposit in dollars.

Future Value

Future Value is the total amount, in dollars, that you have on the Maturity Date of the Certificate of Deposit (CD). This includes the amount of the original investment (Present Value) plus all of the interest earned over the life of the CD.

Interest Earned

Interest Earned is the amount of interest in dollars that the Certificate of Deposit earned during its term or life.

Yield to Maturity

Yield to Maturity is the equivalent annual interest rate in percent earned on a Certificate of Deposit (CD) from the Purchase date to the Maturity Date. Yield to Maturity can be used to compare various types of CD's to determine the best overall investment.

Maturity Date

Maturity Date is the date the Certificate of Deposit (CD) investment is closed out or completed. It is also the Rollover Date and the time you can withdraw the investment without penalty.

Enter Maturity Date as month, day, year in the form MO/DA/YR where MO and DA are one or two digits, and YR is four digits, i.e., 12/12/1995 or 1/1/1996. Be sure to include a delimiter (/, -, or Space) to separate the digits.

Example 10

Buffa sold a restored truck for $10,000 in cash on 9/10/87. He decided to invest the full amount in a six month CD at his bank until he could find a better investment. The bank paid interest quarterly on its CD's and the rate was 6 3/4%. How much was the CD worth when it matured?

Hint: **Menu Item:** Certificate of Deposit

Select CD Type:	**Compound Interest**
Compounding Period is:	**Quarterly**
Select CD Term in:	**Months**
CD Term in **Months**	6
CD Issue Date:	9/10/1987
Annual Rate:	6.75
Move Unknown button to Future Value	
Present Value:	10000

Answers:

Future Value:	$10,339.53
Interest Earned:	$339.53
Yield to Maturity:	6.923%
Maturity Date:	3/10/1988

Discounted Cash Flow

Discounted Cash Flow analysis is an important tool for economic evaluations. Projecting the cash flows associated with proposed courses of action can be very useful in comparing business alternatives.

Cash flow analysis is similar to analyzing an Ordinary Annuity. Suppose a business makes a $20,000 investment (Present Value) for facilities to make a new product. The financial analyses show that the venture should return $5,500 (Periodic Payment) a year for the next 10 years (Number of Payments) at which time the equipment will be worn out and worthless. You can find the Annual Rate of return on this investment using Ordinary Annuity (Loan) and it will be 24.402%.

The same business investment can be converted to a Discounted Cash Flow problem. The initial investment of $20,000 is entered as a Cash Flow Out that occurs **now**, usually called "Year 0". The $5,500 coming in at the end of each year for the next 10 years is considered Cash Flow In. The total Number of Cash Flows will be 11 which includes the one at Year 0. The investment return is called Internal Rate of Return (IRR) instead of Annual Rate. This problem can be calculated using the Ordinary Annuity or Discounted Cash Flow Calculation dialog boxes. Similar equations are used for each.

The periodic Cash Flows for an investment analysis are usually not equal. The advantage of the Discounted Cash Flow Calculation dialog box is that the Cash Flows can be unequal for each period. Each periodic cash flow is composed of two components designated as Cash Flow Out and Cash Flow In. Cash Flow Out can be an investment or an expense while Cash Flow In is income generated from the investment.

Cash Flows for each period are entered on a single line in the Cash Flow multiple line Edit box. The Cash Flow Out is entered first followed by the Cash Flow In. They are separated with a Space. Press the Enter key to move to the next line. The first line is considered year zero of the venture. The second line is year one, the third line is year two, and so on. A more detailed description is given in the definition for Cash Flows.

The Number of Cash Flows increments as you enter lines. Be sure that this number is equal to the number of cash flows you have actually entered. Press Tab to leave this field before pressing the Enter key to perform the calculation.

You can enter a Discount Rate of zero if you only want to calculate Internal Rate of Return (IRR) and Return on Investment (ROI). Enter a non-zero Discount Rate if you want to calculate Net Present Value (NPV), Profitability Index (PI), and Discounted Payback.

After you have performed the calculation, five investment performance numbers are shown in the lower part of the Calculation dialog box.

The Discounted Cash Flow calculation contains six information boxes and three data entry rectangle boxes. For a description of each box, click on the box name below or move to the name with the Tab key and press Enter:

Cash Flows per Year
Cash Flows
Number of Cash Flows
Discount Rate
Net Present Value (NPV)
Profitability Index (PI)
Discounted Payback
Internal Rate of Return (IRR)
Return On Investment (ROI)

See: Example 11

Cash Flows per Year

The Cash Flows per Year is the number of times during a year that a cash flow will be received. Cash Flows per Year is usually equal to 1 assuming annual cash flows.

Normal Cash Flows per Year are:

Daily	365
Monthly	12
Quarterly	4
Semiannually	2
Annually	1

Cash Flows

The periodic Cash Flows (CF) are composed of two components designated as Cash Flow Out and Cash Flow In. Cash Flow Out can be an investment, development cost, maintenance cost, or other expense. Cash Flow In can be earnings generated from the investment, depreciation, or funds from the sale of old equipment.

Cash Flows Out and In are entered for each period, usually a year, on a single line as follows:

For Line 1, Enter: 1000 0
For Line 2, Enter: 0 400

The Cash Flow Out is entered first followed by the Cash Flow In. They are separated with a Space. On the first line of the example above, the CF Out is $1000 and the CF In is zero. On the second line, the CF Out is zero and the CF In is $400.

Press the Enter key to move to the next line to enter a new Cash Flow. The first line is considered Year 0 of the venture and is not discounted. The second line is year one, the third line is year two, and so on. The Cash Flows are considered to occur at the end of each period.

Number of Cash Flows

The Number of Cash Flows is calculated by Money Math by counting the number of lines used to enter the Cash Flows in the Cash Flow Edit box. One line must be used for each periodic Cash Flow. Blank lines are not allowed.

Discount Rate

The Discount Rate (percentage) is the average cost of funds available to a business for investment opportunities. The calculation of a business Discount Rate is often complex but can be as simple as the current rate to borrow money from a local bank. An investment is usually not justified if the Investors Rate of Return (IRR) is not greater than the Discount Rate.

Net Present Value (NPV)

The Net Present Value is the sum of the Present Value of all the Cash Flows Out and all the Cash Flows In. The Cash Flows Out are considered negative and the Cash Flows In are positive. The Present Value of each cash flow is calculated using the current Discount Rate before they are summed together. Higher NPV's indicate better investments. If the NPV is negative, the investment will lose money when invested at the Discount Rate.

Profitability Index (PI)

The Profitability Index is the ratio of the sum of the Present Value's of the Cash Flows In to the sum of the Present Value's of the Cash Flows Out. Present Values are calculated using the current Discount Rate.

Higher PI's indicate more attractive investments. If the PI equals 1.0, the Internal Rate of Return (IRR) for the investment is equal to the Discount Rate.

Discounted Payback

The Discounted Payback is the number of periods, expressed in years, it takes to recover the investments and expense (Cash Flows Out) plus a return on the investment at the Discount Rate. It is a measure of the risk and liquidity of an investment. Short Payback periods with respect to the life of the investment show less risk and greater liquidity.

Internal Rate of Return (IRR)

The Internal Rate of Return is an annual interest rate that makes the sum of the Present Values of the Cash Flows Out equal to the sum of the Present Values of the Cash Flows In.

The attractiveness of an investment is measured by the extent that the IRR exceeds the current Discount Rate.

Return On Investment (ROI)

The Return On Investment is the ratio of the average Cash Flow Out per year to the total Cash Flow In expressed as a percentage. ROI is an older method of measuring an investment return and is not as useful as other indicators because the time value of money is not considered.

Example 11

Carol's son Bradley will be out of school for the summer in a few weeks and they are now discussing summer work. Bradley wants to make money by caring for neighborhood yards but does not have the right equipment. Carol feels that Bradley would be good at yard work because he has done their yard in a professional way for the last two years. Carol has enough in her Savings Account to purchase the equipment. These funds now earn 6% per year. Since Carol has cash flow analysis experience, they decide to analyze this investment further. Together, they work out the following data about the investment:

Purchase Equipment

Lawn Tractor	$ 3800
String Trimmer	$ 150
Power Blower	$ 160
Total	$ 4110

The Trimmer and Blower will have to be replaced after 2 years.

Expenses

Fuel & Oil	$ 2 per yard to start
Maintenance	$ 50 per year to start
Bradley's Salary	$ 100 per week to start

Income

Bradley will do 2 yards per day for 5 days per week or 10 yards per week.

He will work 18 weeks from May to September.

He will charge $25 per yard and raise this to $30 after two years

10 × 18 × $25 = $4500 per year income
10 × 18 × $30 = $5400 per year income

Carol and Bradley assume that the next four summers will be spent on this endeavor. She arranges the information in a cash flow table as shown below:

Cash Flow Out	Year 0	Year 1	Year 2	Year 3	
Equipment	4110		310		
Fuel & Oil	360		370	380	390
Maintenance	50		100	75	125
Salary	1800	2000	2200	2400	
Total	**6320**	**2470**	**2965**	**2915**	
Cash Flow In					
Income	**4500**	**4500**	**5400**	**5400**	

Is this a good investment and how does Carol determine that?

Hint: **Menu Item:** Discounted Cash Flow
Cash Flows per Year: 1
Cash Flows:
Enter as follows:
6320 4500
2470 4500
2965 5400
2915 5400
Note Number of Cash Flows is 4
Discount Rate: 6

Answers:

Net Present Value:	$ 4348.69
Profitability Index:	1.32
Discounted Payback:	.95
IRR:	107.641%
ROI:	33.742%

Carol concludes that this is a good investment. The numbers are all high and indicate strong returns. However, Carol notes that the Net Present Value of the investment is little more than the initial investment in equipment that she will pay. Equipment Present Value costs are $4110 and the Present Value of the investment is $4348.69, a difference of $238.69 to her benefit. Carol realizes the she could leave her money in the Savings account and do about as well. However, Carol can sell all the equipment at the end of four years to gain additional profit.

Bradley has benefited from Carol's investment by earning an average of $2100 a year over the four year period. This is a good example of how investment creates jobs.

Loan Amortization

Loan Amortization means to pay off a debt by means of a set of regular equal payments. The Ordinary Annuity equations are used because the payments are made at the end of each period. The purpose of this Calculation dialog box is to prepare a loan Amortization Schedule for a client. The Amortization Schedule is a printed document that shows the client the date each payment is due, a breakdown of the interest and principal portion of the payment, and the remaining principal.

The Loan Amortization Calculation dialog box contains data needed to prepare an Amortization Schedule commonly used for a Home Mortgage or loans of that type. To calculate the Periodic Payment, enter data into the six Edit boxes and select how frequently Payments are Made in the List box. Press the Enter key or the Calculate button to calculate the Periodic Payment.

After completion of a successful calculation, the Schedule button will become active. Note that this button was dimmed before the calculation. You can now press the Schedule button (Space bar or Mouse) and Money Math will start to create the Amortization Schedule.

Next, a small window will appear when the Amortization Schedule is ready. You may expand the window to fill the screen by selecting Maximize from the Control Menu or by clicking on the up arrow in the upper right corner of the window.

You can edit data in the first section of most small Schedules (32K limit for editing) by using the normal Windows keys for Edit controls. Obviously, you should not alter the numbers in the schedule. To print the Schedule, select Print from the File Menu item. Use the Alt+F6 key combination to go to the File Menu from the keyboard.

The maximum size of the Amortization Schedule is limited to 64,200 characters but may be reduced further if Money Math can not obtain the memory required from your system.

The Loan Amortization calculation contains six data entry rectangle boxes, one list box to select how frequent Payments are Made, and the Periodic Payment amount at the bottom of the box. For a description of each box, click on the box name below or move to the name with the Tab key and press Enter:

Prepared for
First Payment Due Date
Payments are Made
Number of Payments
Annual Rate
Loan Principal
Balloon Payment
Periodic Payment

See: Example 12

Prepared for

Enter the name of the client who will receive the Amortization Schedule. You can edit data in the first section of most small Schedules (32K limit for editing) by using the normal Windows keys for Edit controls.

First Payment Due Date

Enter the date your client will make the first payment on the loan. Usually, this date is one payment period after the date the loan was closed.

Enter First Payment Due Date as month, day, year in the form MO/DA/YR where MO and DA are one or two digits, and YR is four digits, i.e., 12/12/1995 or 1/1/1996. Be sure to include a delimiter (/, -, or Space) to separate the digits.

Payments are Made

Select from the List box the number of times (frequency) during a year that Payments are Made. Selections available are Annually, Semiannually, Quarterly, and Monthly.

Number of Payments

The Number of Payments is the total number of payments you will make during the life of a loan. For example, if you are making an Amortization Schedule for a 30 year home loan with monthly payments (12 payments per year), you would enter 360 (30 × 12) for the Number of Payments.

Annual Rate

The Annual Rate is the yearly interest rate in percent (%) for the loan. Do **not** enter as a decimal. Six percent is entered as 6 not .06.

Loan Principal

The Loan Principal is the amount of money the client is borrowing and will be paying back in accordance with the Amortization Schedule being generated. It is defined the same as the Present Value.

Balloon Payment

A Balloon Payment is the dollar amount you have agreed to pay at the end of the loan in addition to the regular payment. If you have no Balloon Payment, set it equal to zero.

Periodic Payment

The Periodic Payment is the dollar amount you pay on a regular basis to reduce a loan to zero.

Example 12

John and Shirley Wilson, friends of yours, recently purchased a condominium. Their bank did not give them an Amortization Schedule. He asked if you could do one for him and gave you the following information: The $42,000 loan is for 20 years at 8 ½% interest and the first monthly payment was due on 6/15/92.

Hint: **Menu Item:** Loan Amortization

Prepared for:	John Wilson
First Payment Due Date:	6/15/1992
Select Payments are Made:	**Monthly**
Number of Payments:	20 × 12 = 240
Annual Rate:	8.5
Loan Principal:	42000
Balloon Payment:	0
Calculate Periodic Payment:	$364.49

Press the Schedule button for an Amortization Schedule
From File Menu item, select Print

Print

All data from any of the calculations can be printed with exception of Loan Amortization. In that case, the Loan Amortization Schedule that appears when you press the Schedule button can be printed and contains the same data.

The Print menu item is not activated until a Calculation dialog box is selected from the Calculation menu. You may only print data from the active Calculation dialog box. Once a Calculation dialog box is closed, the data is lost.

The print output is sent to the default printer you have previously selected. This can be changed when the printer dialog box appears. Also, you may select the number of copies to print or you may print to a file.

Exit

Selecting Exit from the File Menu closes Money Math. You can also use the Alt-F4 key combination to do the same thing.

Money Math Keys

To maneuver in Money Math, use the same keys that you use in Microsoft® Windows™. For more information on using Windows keys, see your Windows manual Appendix C. A summary of Windows key usage is described in the next few paragraphs.

All of the Calculation edit boxes that have a rectangle frame respond similarly to a word processor or text editor. A summary of these editing keys is given below:

Key	Action
Backspace	Delete character to the left of the cursor.
Delete	Delete character to the right of the cursor.
Arrows	Right and Left arrow keys move horizontally. Up and Down arrow keys move vertically.
End	Move cursor to the end of a line.
Home	Move cursor to the beginning of a line.
Insert	Toggle from Insert mode to Overwrite mode.

The following keys are used to maneuver within the Calculation dialog box and the Main window:

Key	Action
Tab	Moves to the next data entry field or button.
Shift+Tab	Moves to the previous data entry field or button.
Enter	Calculates the Unknown variable. This is the same as pushing the Calculate button.
Arrows	Selects Radio buttons within the framed groups. The Unknown is selected using the Up and Down Arrow keys.
Esc	Closes the current calculation. This is the same as pushing the Cancel button.
Alt+F4	Closes the current calculation. This is the same as pushing the Cancel button.
Alt+F6	Moves control between current windows.
Alt	Select a Menu item by pressing the Alt key plus the underlined letter of the Menu item.
Space	Push a button if it is active.

Contents

Selecting this menu item displays the Money Math Help Contents. You will find all of the primary menu items listed. For a full description of each menu item, click on the underlined name or move to the name with the Tab key and press Enter.

The Search menu item on the Help window will bring up a list of over 200 commonly used financial words and phrases. By selecting a word or phrase and pressing the "Show Topics" button, you will see all of the locations in Money Math Help where that word or phrase is used. You may then select that location and press the "Go To" button to obtain more detailed information about the word or phrase. If the word or phrase is a data entry field used by Money Math, you will be given a complete definition of that field.

Keyboard

Selecting this menu item displays the Money Math Help section that describes the common keys used by Money Math. This includes the keys used in Calculation data entry boxes and the keys used to maneuver within a Calculation dialog box.

Using Help

Selecting this menu item displays the Windows tutorial on using Help. If you are not familiar with using Help, this will assist you in learning the features.

About

Selecting this menu item displays information about the company that produced Money Math. The Help line phone number is also given.