



*Finance Pack
for powerOne™ Products*

Version 1.0

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www.infinitysw.com

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1 Interface Overview

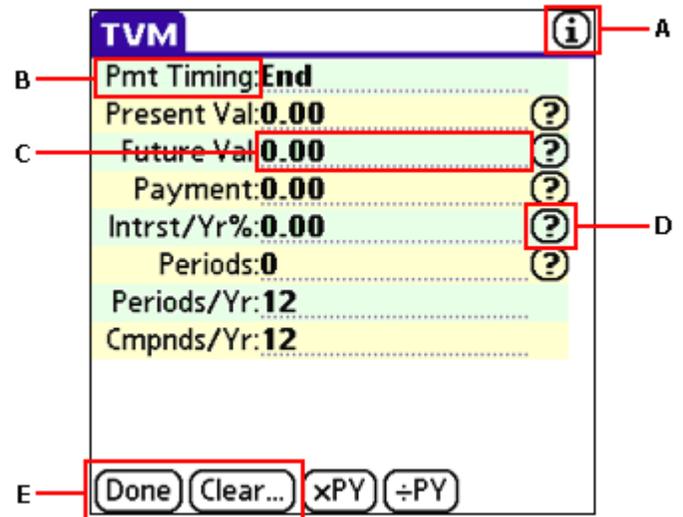
All templates are similar in design. The template itself is broken into 3 columns: the first describes the variable, the second is the variable's data and the third indicates which variables can be calculated. To use any template, enter the known variables by selecting the Data column and entering each. If a table of data is required, choose or create one by selecting the label for that variable. To calculate the unknown variable, select the "?" button on its row.

For details not noted here and examples on how to use individual templates, see the desired template in the Included Templates section.

A. Template Notes: select this button to display notes about the template. Notes generally describe what the template is used for, a description of each variable and any special template instructions.

B. Variable Label: describes the variable's contents. Generally, the label is nothing more than a text description, but sometimes labels can be selected. Labels that can be selected are surrounded by a dotted border and exist for one of two reasons:

- Select a Table: some templates require a table and offer the ability to use any table, including those already created using My Data. Examples are 2-variable statistics and ANOVA templates. See the Types of Variable Data section for more information on selecting and using a table.



- Change the Data View: some variable's can be entered or viewed in multiple ways. For example, the variable Diff H.MM in the Time template. In this case, select the variable's label to enter and calculate the same data item a different way. In the Time template, the difference in time can be entered in hour-minute (Diff H.MM) or fractional hour (Diff Hrs) format.

C. Variable Data: the value or data for the variable. To enter data, select its value and enter it. The data can be entered if it is underlined; otherwise it can only be calculated. Data can be shown in multiple ways. See the Types of Variable Data section for more information.

D. Calculate "?": indicates that the variable can be calculated. Select it to perform the calculation.

E. Buttons: while there may be more than two buttons, these two exist in every template:

- Done or OK: exits the template.
- Clear or C: clears the contents of the template. This reverts the data to its defaults.

2 Types of Variable Data

There are 5 variable data types currently available. Variable data appears in the middle column of the template and can be selected and edited if it is underlined (otherwise it can only be calculated). Each variable data type is discussed here:

Numbers

Numbers are entered using the pop-up calculator. To enter a number:

- select the variable's data.
- enter the number with the keypad or use the calculator to compute it.
- select the "✓" (save button) to return to the template and save the number or choose "x" (cancel button) to return to the template without saving.

Lists

Lists show a set of defined options. To choose an item from a list:

- select the variable.
- choose an option from the list, scrolling if necessary.

Tables

Tables, or sets of data, come in two types. The first type is available for use in any template, while graphing or for calculation in the main calculator. It is considered global. The second type is available only to the selected template. This type is considered local. Global tables always have a dotted box around the variable's label.

To choose a global table for use in the template:

- select the variable's label. It will have a dotted box around it.
- next to table, choose "None Selected" then a table name or, to create a new table, select "New".
- once a table is selected, Column appears. Choose a column number or range of numbers if applicable.
- select "OK" to save the table selection or "Cancel" to throw out any new selection.

If more than one table column is required, often a template will guess at the additional table's columns. To change that guess, follow the same process for the additional templates.

To edit local or global table data:

- select the variable.
- enter data into the table by selecting each cell and entering data with the same pop-up calculator used with Numbers described above.
- select "OK" to save the data and return to the template. If the table is global, any changes are saved with the global table as well as with the template's copy.

Dates

Dates are entered using a selector similar to other applications. On Palm OS handhelds, however, the year can be changed directly and in the range 1900 to 3000. To choose a date:

- select the variable.
- choose a year.
- choose a month.
- choose a day.

Times

Times are entered using a selector similar to other applications. To choose a time:

- select the variable.

-
- choose the hour by highlighting it and using the up/down scroll arrows.
 - choose minutes by selecting each box in turn and using the up/down scroll arrows.
 - choose am or pm (if not 24 hour time).
 - select "OK" to save the data or "Cancel" to throw out those changes.

3 Templates

This section includes information on the templates included with this Pack. Start with Included Templates for an overview of templates and their categories. From there, view details on each template.

3.1 Included Templates

These templates are included with the software. Additional templates are available to download and install from Infinity Softworks' web site www.infinitysw.com.

Included template are sorted into the following categories:

Finance

- Bond
- Cash Flow
- Depreciation
- Interest Conv.
- Simple Interest
- TVM (includes Amortization)

Convert

- Currency

Business

- Breakeven
- Discount
- Markup
- Percent Change
- Percent Total
- Profit Margin
- Sales Tax
- Sum

3.2 Time Value of Money

This template is for TVM (Time Value of Money) calculations. See the Included Templates section for category information.

Description

Time value of money is the process of earning compound interest over a period of time. Compound interest problems assume that the interest earned also earns interest. Computations such as loans, leases, mortgages, annuities, and savings accounts are examples of compound interest problems.

In time value problems, positive and negative numbers have different meanings: positive numbers are inflows of cash (cash received) while negative numbers are outflows (cash paid). A car loan, for instance, may have a positive present value (because money was received from the loan company) but will have a negative payment amount, since this is money that will be paid back to the loan company. See the Understanding Cash Flows section for a pictorial explanation of inflows and outflows.

Variables

- **Pmt Timing:** the payment timing. Payments occur at the beginning or end of the period. Payments made at the beginning of the period are called Annuity Due. Most leases are this kind. A payment made at the end of the period is called an Ordinary Annuity. Most loans are this kind.
- **Present Val:** the present value.
- **Future Val:** the future value.
- **Payment:** payment amount per period.
- **Intrst/Yr%:** interest per year as a percentage. For example, 8.25% interest should be entered as "8.25".
- **Periods:** number of total periods. This number is the number of years and months times the periods per year. For example, if the loan is 4 years with 12 payments per year (monthly payments), periods should be 48 (4 x 12).
- **Periods/Yr:** the number of payment periods per year. For example, if payments are made quarterly, periods per year should be 4.
- **Cmpnds/Yr:** the number of interest compounding periods per year. Most of the time, compounding periods per year should equal payment periods per year. For example, if payments are made monthly and interest is compounded monthly, compounding periods per year and periods per year should both be 12.

Variable	Value
Pmt Timing	End
Present Val	7,500.00
Future Val	0.00
Payment	-250.90
Intrst/Yr%	12.50
Periods	36
Periods/Yr	12
Cmpnds/Yr	12

Buttons

- **x:** quick set button for the number of periods. This button multiplies the value in periods by the value in periods per year. For example, to convert 10 years at 12 periods per year to periods, enter 10 in periods, 12 in periods per year, and select the x button.
- **÷:** quick set button for the number of periods. This button divides the value in periods by the value in periods per year. For example, if periods is 60 with periods per year equal to 12, discovering that it is equal to five years can be done easily by selecting the ÷ button.
- **Amort:** access to the amortization screen. See the Amortization section for more information. If no data is entered in the TVM template, the amortization screen will not appear.
- **Plot:** plots the relationship of interest rate versus payment amount. Interest rate is on the x-axis while payment is on the y-axis. To evaluate while in the Graph Display, choose "Analysis" then "Trace/Eval".

Examples

Car Loan: When purchasing a new car, the auto dealer has offered a 12.5% interest rate over 36 months on a \$7,500 loan. What will be the monthly payment?

Variable	Enter	Comments
Tap the Clear... button		Sets the display to its default values
Pmt Timing	End	Loan pmt's are at the end of the period. Choose from the list
Present Val	7500	
Intrst/Yr%	12.5	
Periods	36	3 years at 12 periods per year
Periods/Yr	12	
Cmpnds/Yr	12	

Select "?" in the Payment row to calculate. The payment will be -250.90 per month. It is negative because it is a cash outflow.

Car Loan, Amortization 1: How much interest was paid for the first payment? (Assumes you are currently in the TVM template.)

Button/Control	Enter	Comments
Amort		Goes to the amortization template
Interest		Choose Interest from the data display 1 or 2 pop-up list

Interest for the first period is -78.13 . This is negative because it is part of the payment, which is a cash outflow.

Car Loan, Amortization 2: How much principal was paid for the first year if the car was purchased in January? (Assumes you are currently in the TVM template.)

Variable	Enter	Comments
Amort		Goes to the amortization template
Period		Select the amortization view in the top, right-hand corner.
Beg Period	1	
End Period	12	

Compute by selecting "?" next to Beg Balance. The principal paid for the first year is -2196.29 . This value is negative because it is part of the payment, which is a cash outflow.

Retirement Annuity: With 35 years until retirement and \$15,000 in the bank, it is time to think about savings. How much would have to be put aside at the beginning of each month to reach \$2.5 million if an interest rate of 10% can be expected.

Variable	Enter	Comments
Tap the Clear... button		Sets the display to its default values
Pmt Timing	Begin	Choose from the list
Present Val	-15,000	Negative because cash out of hand
Future Val	2,500,000	Positive because future cash inflow
Intrst/Yr%	10.0	
Periods	420	35 years x 12 periods per year
Periods/Yr	12	
Cmpnds/Yr	12	

Select "?" in the Payment row to calculate. The payment amount is -525.15 per month. It is negative because it is a cash outflow.

Savings Account: With \$3,000 in a savings account and 3.75% interest, how many months does it take to reach \$4,000?

Variable	Enter	Comments
Tap the Clear... button		Sets the display to its default values
Pmt Timing	End	Choose from the list
Present Val	-3,000	Negative because cash deposit (outflow) to open account
Future Val	4,000	
Payment	0	
Intrst/Yr%	3.75	
Periods/Yr	12	
Cmpnds/Yr	12	

Select "?" in the Periods row to calculate. To reach \$4,000, it will take 92.20 periods (or $92.20 \div 12 = 7.68$ years).

Home Mortgage: You have decided to buy a house but you only have \$900 to spend each month on a 30-year mortgage. The bank has quoted an interest rate of 8.75%. What is the maximum purchase price?

Variable	Enter	Comments
Tap the Clear... button		Sets the display to its default values
Pmt Timing	End	Loans payments at the end of the period. Choose from the list
Future Val	0	
Payment	-900	Negative because cash outflow
Intrst/Yr%	8.75	
Periods	360	30 years at 12 periods per year
Periods/Yr	12	
Cmpnds/Yr	12	

Select "?" in the Present Val row to calculate. You can afford a home with a price of \$114,401.87.

Mortgage with a Balloon Payment: (Continued from Home Mortgage) You realize that you will only own the house for about 5 years and then sell it. How much will the balloon payment (the repayment to the bank) be?

Variable	Enter	Comments
Periods	60	5 years at 12 periods per year

Select "?" in the Future Val row to calculate. The balloon payment will be \$109,469.92 after five years.

Canadian Mortgage: Canadian mortgages compound interest twice per year instead of monthly. What is the monthly payment to fully amortize a 30-year, \$80,000 Canadian mortgage if the interest rate is 12%?

Variable	Enter	Comments
Tap the Clear... button		Sets the display to its default values
Pmt Timing	End	Loans payments at the end of the period. Choose from the list
Present Val	80,000	Positive because cash inflow
Future Val	0	
Intrst/Yr%	12.00	
Periods	360	30 years at 12 periods per year
Periods/Yr	12	
Cmpnds/Yr	2	

Select "?" in the Payment row to calculate. The payment will be -\$805.11. It is negative because it is a cash outflow.

Bi-Weekly Mortgage Payments: A buyer is considering a \$100,000 home loan with monthly payments, an annual interest rate of 9% and a term of 30 years. Instead of making monthly payments, the buyer realizes that he can build equity faster by making bi-weekly payments (every two weeks). How long will it take to pay off the loan?

Part 1: Calculate the monthly payment

Variable	Enter	Comments
Tap the Clear... button		Sets the display to its default values
Pmt Timing	End	Choose from the list
Present Val	100,000	
Future Val	0	
Intrst/Yr%	9.00	
Periods	360	30 years at 12 periods per year
Periods/Yr	12	
Cmpnds/Yr	12	

Select "?" in the Payment row to calculate. Calculating shows payment equal to $-\$804.62$. It is negative because it is a cash outflow.

Part 2: Periods when making bi-weekly payments (continued)

Variable	Enter	Comments
Payment	-402.31	Recall payment in the input screen and divide it by 2
Periods/Yr	26	Bi-weekly payments mean 26 per year
Cmpnds/Yr	12	Still compounding interest monthly

Select "?" in the Periods row to calculate. Calculating shows periods equal to 567.40 periods ($567.40 \div 26 = 21.82$ years).

APR of a Loan with Fees: The Annual Percentage Rate (APR) is the interest rate when fees are included with the mortgage amount. Because the fees increase the cost of the loan, the effective interest rate on the borrowed amount is higher. For example, a borrower is charged two points for the issuance of a mortgage (one point is equal to 1% of the mortgage amount). If the mortgage amount is \$60,000 for 30 years with an interest rate of 11.5%, what is the APR?

Part 1: Calculate the actual monthly payment

Variable	Enter	Comments
Tap the Clear... button		Sets the display to its default values
Pmt Timing	End	Choose from the list
Present Val	60,000	
Future Val	0	
Intrst/Yr%	11.5	
Periods	360	30 years at 12 periods per year
Periods/Yr	12	
Cmpnds/Yr	12	

Select "?" in the Payment row to calculate. Calculating shows payment equal to $-\$594.17$. It is negative because it is a cash outflow.

Part 2: Calculate the APR (continued)

Variable	Enter	Comments
Present Val	58,800	The loan amount less 2% in fees. Calculate in the input screen with 60000 [x] .02 [=] [+/-] [+] 60000 [=]

Select "?" in the Intrst/Yr% row to calculate. Calculating shows interest per year equal to 11.76%.

Present Value of a Lease with Advance Payments and an Option to Buy: With a lease, often there is an amount to be paid up-front and an option to buy at the back-end. A company is leasing a machine for 4 years. Monthly payments are \$2,400; an additional \$2,400 payment at the beginning of the leasing period replaces the final payment. The leasing agreement includes an option to buy the machine for \$15,000 at the end of the leasing period. What is the capitalized value of the lease, assuming that the interest rate paid to borrow the funds is 18% compounded monthly?

Part 1: Find the present value of the payments

Variable	Enter	Comments
Tap the Clear... button		Sets the display to its default values
Pmt Timing	Beg	Choose from the list
Future Val	0	
Payment	-2,400	
Intrst/Yr%	18.00	
Periods	47	4 years at 12 per year less 1 advance payment
Periods/Yr	12	
Cmpnds/Yr	12	

Select "?" in the Present Val row to calculate. Calculating shows present value equal to \$81,735.58. Recall this to the pop-up calculator and save it to memory.

Part 2: Present Value of the buy option (continued)

Variable	Enter	Comments
Future Val	-15,000	
Payment	0	
Periods	48	

Select "?" in the Present Val row to calculate. Calculating shows present value equal to \$7,340.43.

Part 3: Calculate (continued)

Recall the present value to the pop-up calculator by selecting the Present Value's amount. Add it the present value of the payments stored in memory and \$2,400 for the advanced payment. The answer is \$91,476.00.

3.3 Amortizations

The amortization screen displays period-by-period information. Included information is beginning and ending balances, payment, interest and principal amounts. There are two amortization views: table and period.

Table View

The table view, set by choosing "Table" from the pop-up list in the top right corner, displays period-by-period information.

The display, from left-to-right, shows the period being displayed, data number one, and data number two. Either of the data sets can display beginning or ending balance, payment, principal, or interest. Select one by tapping on the pop-up list above each column.

Scroll through the list with either the scroll arrows or scroll buttons. Navigate to a specific period by selecting "Go To", entering a period, and selecting the "✓" (save button).

	▼ End Balance	▼ Interest
1:	7,327.23	-78.13
2:	7,152.66	-76.33
3:	6,976.27	-74.51
4:	6,798.04	-72.67
5:	6,617.95	-70.81
6:	6,435.99	-68.94
7:	6,252.13	-67.04
8:	6,066.36	-65.13
9:	5,878.65	-63.19
10:	5,688.99	-61.24

Period View

The period view can be selected by choosing "Period" from the pop-up list in the top, right-hand corner.

To calculate the values over the range of periods, enter a period for Beg Period, one for End Period, and select "?". The table will display information for Beg Balance, End Balance, Payment, Principal, and Interest over that range.

Additionally, four buttons are available at the bottom of the screen next to "Done". These buttons are used to quickly enter beginning and ending period values and perform computations:

- **Max:** sets the ending balance to the maximum number of periods.
- **Next:** moves to the next set of beginning and ending periods. For example, with both set to one, selecting next moves the beginning and ending period to two.
- **1yr:** calculates one year from the beginning period.
- **Dup:** duplicates the beginning period in the ending period.

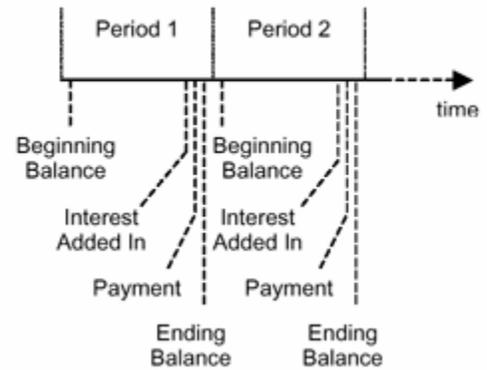
Amortization		▼ Period
Beg. Period:		1
End Period:		12
Beg. Balance:	7,500.00	?
Payment:	-3,010.80	
Principal:	-2,196.29	
Interest:	-814.51	
End Balance:	5,303.71	

Payment Timing Issues

Whether payments are made at the beginning or end of the period impacts how amortization information is calculated. This impacts the values shown in the amortization table in a way best illustrated by time line diagrams:

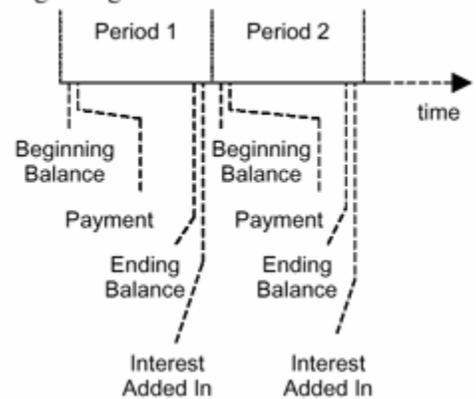
When payments are made at the end of the period (common for loans and mortgages), interest is accrued just before the payment is due. Note that the Ending Balance will always be the same as the Beginning Balance for the following payment period.

Pmt Timing = End



When payments are made at the beginning of the period (common for leases), interest is accrued after the end of the period. Note that the Ending Balance of a period will be less than the Beginning Balance of the next period by the amount of interest that accrued during that period.

Pmt Timing = Begin



3.4 Cash Flows

This template is for TVM (Time Value of Money) calculations. See the Included Templates section for category information.

Description

The Cash Flow template analyzes financial investments involving outflows and inflows of cash which occur on a regular basis but do not necessarily occur in similar amounts.

As with other templates, the Cash Flow template understands positive numbers to be inflows of cash (cash received) and negative numbers to be outflows (cash paid). Note that, although the interval between cash flows must be equal, the amounts of those cash flows do not have to be the same. Cash flows generally involve some initial outflow of cash followed by subsequent inflows over a number of periods. For instance, an initial outflow (designated by location 0) could be followed by various amounts paid back over five periods, each period being one year apart. Cash flows do not have to be initial outflows followed by inflows, either. Cash flows could be inflows preceded by outflows, or an initial inflow or outflow followed by some mixture of cash flows as well. See the Understanding Cash Flows section or a pictorial explanation of inflows and outflows.

Variables

- **Amounts:** Data set of cash flow values. The 0th cash flow is the initial cash flow.
- **Frequency:** Corresponding set of amount occurrences. This list must be the same length as Amounts. The template assumes a frequency of 1 per amount entry.
- **Intrst/Yr%:** Required to perform some cash flow computations, the interest per year is entered as a percentage. For instance, 8.25% would be entered as "8.25".
- **Periods/Yr:** Periods per year automatically adjusts the interest rate. When the interest rate is entered as a yearly rate, entering a value for periods per year will automatically determine the periodic interest rate. When calculating an interest rate (with IRR or MIRR), the reported interest rate will be on a yearly basis (the number of periods per year entered times the rate).

The screenshot shows the 'Cash Flow' calculator interface. It has a title bar 'Cash Flow' with an information icon. Below the title bar are input fields: 'Amounts: CFdata Col 1', 'Frequency: CFdata Col 2', 'Intrst/Yr%: 15', and 'Periods/Yr: 1'. Below these are calculated results: 'NPV: 3,985.14', 'IRR%: 29.93', 'NFV: 9,217.87', 'MIRR%: 23.01', 'NUS: 1,053.02', and 'Payback: 3.00'. Each result has a question mark icon to its right. At the bottom are four buttons: 'Done', 'Clear...', 'Plot NPV', and 'Plot Data'.

Calculations

- **NPV:** The net present value (NPV) method computes the amount gained or lost on a given investment in today's dollars. This uses a market rate of return (interest per year) to discount cash flows back to the present. Assuming an initial cash outflow, a positive NPV means the investor's assets would increase and the investment should be attractive. A negative NPV means that the investor's assets would decrease and the investment is not attractive. If NPV is zero, then the investor would probably be neutral to the investment. If the initial cash flow is an inflow, the reverse would be true.
- **IRR%:** The internal rate of return (IRR%) computes the rate at which the investment pays for itself. This can be compared against a desired rate of return. If the IRR is greater than a desired rate, the investment may be attractive. The internal rate of return method does not take interest per year or periods per year into consideration when calculating. The internal rate of return calculation is very complicated. Calculating IRR uses an iterative approach to solving the problem and, if there is an answer, may take quite some time to calculate. A few caveats to calculating internal rate of return exist. First, long calculations may be interrupted because an iterative limit is exceeded within the calculator itself. Errors may occur in other areas as well. If there is no sign change within the cash flow problem, an error will occur. If the cash flow will yield a negative IRR amount, an error will occur. A negative IRR means that there is at least one negative answer and possibly multiple negative and positive answers to the same cash flow question. In these situations, the calculator will not display an answer. Finally, if there are multiple sign changes (two or more) within the same problem, there may be multiple solutions. The calculator gives the IRR closest to 0, but extreme

caution should be used in basing an investment on this type of cash flow. See the Understanding Cash Flows section for more information.

Another method for solving IRR problems is by estimating an interest per year value and calculating net present value (NPV). Internal rate of return is calculated by solving for NPV when it is equal to 0. With this in mind, by estimating an interest per year amount, you can solve for the internal rate of return. The closer to a net present value of zero, the more accurate the IRR estimate becomes.

- **NFV:** The net future value (NFV) computes the future value of the net present value.
- **MIRR%:** The modified internal rate of return (MIRR%) is an alternative for IRR when there is more than one sign change. When IRR has multiple sign changes, IRR can have more than one answer. MIRR eliminates sign changes by using reinvestment and borrowing interest rates instead (the Cash Flow template assumes these rates are the same).
- **NUS:** The net uniform series (NUS) performs computations by taking the net present value of the cash flows if they are even and regular.
- **Payback:** The payback method tells at which period an initial investment will be paid back. If there is no payback, the reported answer is 0. The payback method does not take interest per year or periods per year into consideration when calculating.
- **Pft Index:** The profitability index, also known as the benefit/cost ratio, shows the relative profitability of any cash flow problem, dividing the present value of the inflows by the present value of the outflows.
- **Total:** The total is the sum of the cash flows.

Buttons

- **Plot NPV:** plots the relationship of interest rate versus net present value amount. Interest rate is on the x-axis while net present value is on the y-axis. To evaluate while in the Graph Display, choose "Analysis" then "Trace/Eval".
- **Plot Data:** plots a bar graph of cash flows.

Examples

Your company is looking to buy a new piece of equipment to help it increase manufacturing capacity to meet demands for its largest product. The managers are wondering what the return would be if the equipment was purchased for \$8,000. You can expect at least a 15% return on the investment elsewhere and are counting on the following yearly cash flows: Year #1: \$2,000, Years #2-#3: \$3,000 each year, Years #4-#6: \$4,000 each year. What are each of the cash flow computations for comparison?

Variable	Selection/Entry	Comments
Clear...		Sets the display to its default values
Amounts		Select the label to create or select a table
Table	None Selected	Select None Selected and choose New...
Name	CFData	Name the table
Size, rows	1	
Size, columns	2	One column for Amounts, one for frequency
OK		

Enter the cash flow items in the Table Editor

#	1	2	
0	-8,000	1	Initial cash outflow, which occurs once
1	2,000	1	Next cash flow item is \$2,000 inflow which occurs once in year 1
2	3,000	2	Next item is \$3,000 inflow which occurs twice, one time each in years 2 and 3
3	4,000	3	Next item is \$4,000 inflow which occurs three times, one time each in years 4, 5 and 6

Select "OK" to save the cash flow data and "OK" again to return to the cash flow template. Note that Amounts is set to CFData, Col 1 automatically. Continue entering data:

Variable	Selection/Entry	Comments
Frequency	5	Select the label to create or select a table
Table	None Selected	Select None Selected and choose CFData
Column	2	Select the second column for frequency
OK		
Intrst/Yr%	15	
Periods/Yr	1	

Calculating each of the remaining variables in the template yields the following answers:

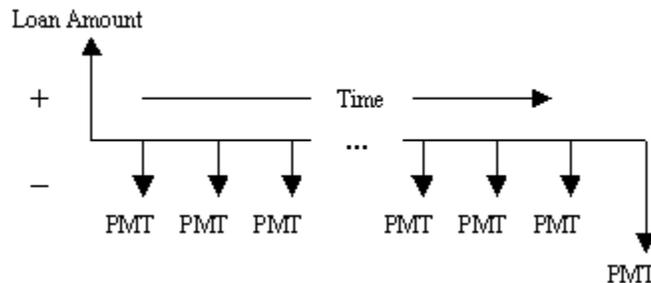
- NPV = \$3,985.14
- IRR% = 29.93%
- NFV = \$9,217.87
- MIRR% = 23.01%
- NUS = \$1,053.02
- Payback = 3 periods (in this case years because periods per year is one)
- Pft Index = 1.50
- Total = \$12,000

3.5 Understanding Cash Flows

To further understand the cash flow model, here is an example of a timeline. Note that inflows of cash are treated as positive amounts (designated by a [+] sign) and outflows of cash as negative amounts (designated by a [-] sign).

The Cash Flow and Time Value of Money templates both use cash flows. The difference is in the entry and interpretation. The Time Value of Money template deals with cash flows as annuities. Each of these cash flows are the same amount. The loan, lease and regular deposit examples on the next page are annuity problems solved in the TVM template. The Cash Flow template deals with investments where the payment is in varying amounts.

This example shows a typical loan problem, where the initial cash flow, the loan amount, is an inflow. Each of the subsequent cash flows - payments to the bank - are cash outflows.



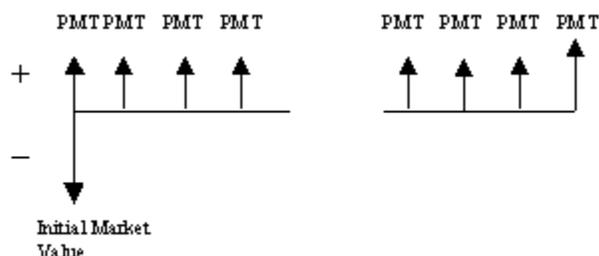
A few items to note:

- The length between cash flows is the same. This denotes that inflows and outflows occur at regular intervals of time.
- This cash flow begins with an inflow followed by subsequent outflows of cash. The cash flow can, however, begin with an outflow and be followed by subsequent inflows of cash. Furthermore, there can be mixed inflows and outflows of cash.
- The payment amounts are the same length, meaning that each payment is the same amount. This could differ for Cash Flow template problems as explained above because of the possibility for varying sized cash flows. Assume that, at the end of the series of cash flows, there was some larger payment (called a balloon payment) to pay off this loan because the last cash flow is longer than the others.

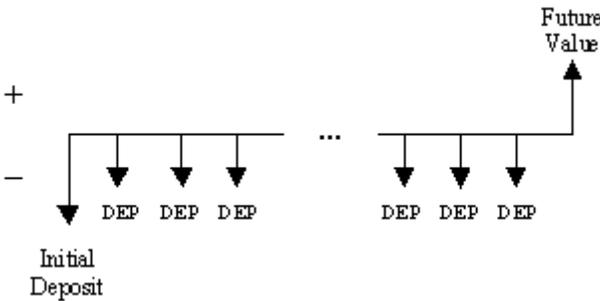
All cash flow problems can be represented in this fashion, with cash inflows and outflows viewed over some time period. The following are examples of other types of cash flow or TVM problems:

Examples

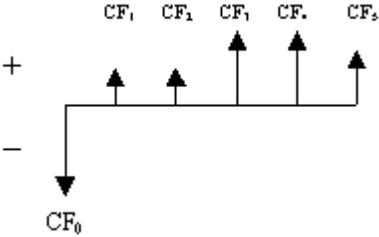
Leases



Investment with regular deposits



Cash flow with one sign change



3.6 Breakeven

For any company, making a profit is the key to success. By analyzing the relationship between revenues and expenses, the levels at which a company has to operate in order to break even can be determined. Breakeven is the point at which expenses equal revenues. Until that point, a company is operating at a loss.

Variables

- **Fixed Cost:** the fixed costs. These are costs that are not dependent on each unit sold. An example is rent – whether 0 or 5000 units are sold, the rent will always be the same.
- **Var Cost:** the variable cost per unit. These are costs that are dependent on each unit sold. For instance, shipping costs do not occur unless a unit is sold.
- **Price:** the price per unit. This is the price at which the product is sold.
- **Tax Rate%:** applicable tax rate as a percentage.
- **Profit:** the amount of profit determined or expected. Positive values are profits while negative ones are losses.
- **Quantity:** the number of units sold.

Breakeven		i
Fixed Cost:	500,000.00	?
Var Cost:	115.00	?
Price:	245.00	?
Tax Rate%:	40	?
Profit:	0.00	?
Quantity:	3,846.153846154	?

Done Clear...

Example

A startup company has \$500,000 in operating expenses every month. It is introducing its first product, which costs \$115 to produce. This product will sell to distributors for \$245 per unit. Its tax rate is 40%. How many units must the company sell every month to cover its costs (break even)?

Variable	Entry	Comments
Clear...		Sets the display to its default values
Fixed Cost	500,000	
Var Cost	115	
Price	245	
Tax Rate%	40	
Profit	0	

Compute the quantity by selecting "?" on the same line. The company needs to sell 3,847 units per month.

3.7 Bonds

Bond computations are used to calculate corporate or municipal bond investments. These computations include two day-count methods (actual or 30/360) and four coupon per year settings (once, twice, four, or twelve times per year).

Variables

- **Date Basis:** computations based on actual/actual month/year method or the 30/360 method.
- **Pmt Basis:** How often the coupon payments occur: 1, 2, 4, or 12 times per year.
- **Sett Date:** the settlement or purchase date.
- **Mat Date:** the maturity or call date. This date always occurs after the settlement date. This date is called a call date when the issuer can pay off the bond before the maturity date. Maturity date can also be called the redemption date.
- **Cpn Rate%:** the annual coupon rate as a percentage. This is the annual interest rate printed on the bond and is used to determine the coupon payment (the periodic payment of interest). This value is entered as a percentage. For example, 7.25% is entered as "7.25".

The screenshot shows a 'Bond' calculator window with the following fields and values:

- Date Basis: 30/360
- Pmt Basis: Semi-Annual
- Sett Date: Sat 8/14/04
- Mat Date: Tue 11/30/04
- Cpn Rate%: 13
- Rdmpn Val: 100.00
- Yield%: 13.75
- Price: 99.68
- Acc Intrst: 2.67

Buttons for 'Done' and 'Clear...' are visible at the bottom.

- **Rdmpn Val:** the redemption value is a percentage of the bond's par value that is paid to the owner when it is retired. If the calculation is to the maturity date, this value is 100. This is the standard set by HP. If the calculation is to a call date, this value varies. The par value is the value printed on the bond itself. A bond is often said to sell at a premium or discount. This is reflected in the redemption value. A bond that sells at a discount sells at less than par value. Bonds that sell at a premium are for more than par value.
- **Yield%:** the yield to maturity or redemption. This is the rate of return to the investor based on earnings from payments of principal and interest. This includes a sale at a premium or discount. To calculate yield, a value for price must be entered. This value is entered as a percentage. For example, 8.385% is entered as "8.385".
- **Price:** the dollar price. To calculate the dollar price, a value for yield must be entered.
- **Acc Interest:** the accrued interest based on \$100 of par value. This value is calculated automatically when computing either yield or price.

Example

A corporate bond matures on November 30, 1999 with a settlement date of August 14, 1996. It pays 13% coupon on a semi-annual basis, with a 30/360 day-count method. It will be redeemed at 100% of par and an annual yield of 13.75%. What is the price and accrued interest?

Variable	Enter	Comments
Clear...		Sets the display to its default values
Date Basis	30/360	
Pmt Basis	Semi-Annual	
Sett Date	8/14/04	August 14, 2004
Mat Date	11/30/07	November 30, 2007
Cpn Rate%	13	
Rdmpn Val	100	
Yield%	13.75	

Compute the price by selecting "?" on the same line. The accrued interest computes automatically. The price is \$99.68 and the accrued interest is \$2.67.

3.8 Currency Conversions

This template is for Currency conversions.

Variables

- **Type #1:** the unit type to convert from.
- **Amount #1:** the amount of the first type.
- **Type #2:** the unit type to convert to.
- **Amount #2:** the amount of the second type, calculated.
- **Rate:** conversion rate. In general, $\text{Amount \#1} \times \text{Rate} = \text{Amount \#2}$. Each time a currency conversion is calculated, the conversion's rate is stored automatically and recalled when those two currencies are set for Type #1 and Type #2. To clear that stored value, recall the two currencies and select Clear.

The screenshot shows a mobile application interface for currency conversion. The title bar is purple and says 'Currency'. Below it, there are several rows of data: 'Type #1: US Dollar', 'Amount #1: 850.00', 'Type #2: Yen', 'Amount #2: 97,112.50', and 'Rate: 114.25'. Each row has a question mark icon to its right. At the bottom, there are two buttons: 'Done' and 'Clear...'.

Example

The exchange rate from US dollars to Japanese yen is 114.25. If you are exchanging \$850, how many yen do you have?

Variable	Enter	Comments
Tap the Clear... button		Sets the display to its default values
Type #1	US Dollars	Not used in computation
Amount #1	850	
Type #2	Yen	Not used in computation
Rate	114.25	

Compute the amount of yen by selecting "?" on the Amount #2 line. You would receive 97,122.50 yen.

3.9 Discount

This template is for Discount calculations. It is in the Business category. For information on accessing this template, see the Templates : Accessing section. For more on using templates in general, see the Templates : Using the Templates section.

Variables

- **Price:** the price before discounts.
- **Sales Price:** the sales price after discount.
- **Discount%:** percentage discount. For example, a 30% discount would be entered as "30".
- **Difference:** the difference between the price and the sales price.



Example

The coupon is for 10% off the original cost. What is the discounted price if the cost is \$9.99?

Variable	Enter	Comments
Tap the Clear... button		Sets the display to its default values
Price	9.99	
Discount%	10.00	
Difference	1.00	

Select "?" in the Price row to calculate. The sales price is \$8.99.

3.10 Depreciation

Depreciation is an important source of revenue reduction in businesses. The four most common depreciation methods for book purposes are available: straight-line, declining balance, sum-of-the-year's digits, and declining-balance crossover. A separate template provides ACRS depreciation, often used for tax purposes.

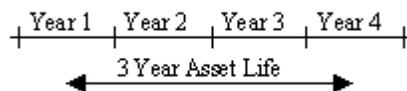
Variables

- **Method:** depreciation method. See Calculation Methods below for more information.
- **Cost:** the cost to purchase the asset.
- **Salvage:** the assumed value of the asset at the end of the asset's life.
- **Life:** the length of time the asset will be in service.
- **Month 1:** the first month the asset will be placed in service where January is 1 and December is 12. Entering "6.5", for example, means the asset was placed into service half way through the sixth month (approximately June 15).
- **Dep Rate%:** the declining balance rate. This is used in DB and DB x SL calculations. This is entered as a percentage. For example, 200% declining is entered as "200".
- **Year:** year to calculate depreciation.
- **Dep Amount:** amount of depreciation for the year.



- **Book Val:** original cost of the asset less accumulated depreciation. Accumulated depreciation is the total depreciation taken through the calculated year. This is the value of the asset remaining on the company's books.
- **Dep Val:** depreciation value. This is the book value less the salvage value for the asset.

Because an asset can begin depreciation on a date other than the first of the year, the calendar life may be greater than the amount entered for Asset Life. For instance, if an asset is expected to have a useful life of 3 years, beginning in March (the third month), the last calendar year is actually the fourth year:



Calculation Methods

The straight-line (SL) method depreciates the same amount every year of the asset's life.

The declining balance (DB) method depreciates more in the first few year's of the assets life than in the later years. This method, along with the DB x SL method, uses the declining balance rate to calculate the depreciation value.

The declining balance cross straight-line (DB x SL) method is often used for tax purposes. In this instance, the declining balance method is used until the optimal time to switch to the straight-line method. The calculator determines this point when depreciation is higher using the straight-line method than the declining balance method. This method also uses the declining balance rate for depreciating.

The sum of the year's digits (SOYD) method, like declining balance, allocates more depreciation to the early years of the asset's life. This method uses a complex formula based upon the number of years the asset will be in service to determine a depreciation rate.

Example

\$80,000 worth of equipment was recently purchased in the middle of June. With a five-year useful life and no salvage value, these computers will be depreciated using the declining balance method at a 200% rate. What is the depreciation amount for the first year?

Variable	Enter	Comments
Clear...		Sets the display to its default values
Method	DB	
Cost	80,000	
Salvage	0	
Life	5	
Month 1	6.5	Half way through the sixth month
Dep Rate%	200	

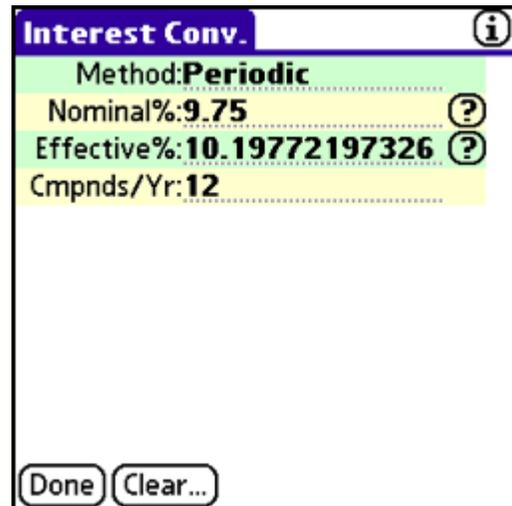
Compute the depreciation information by entering the year and selecting "?". The depreciation amount will be \$17,333.33.

3.11 Interest Conversions

Comparing interest rates may be necessary when two investment possibilities present themselves. Investments are usually stated in terms of an annual, nominal interest rate (or annual percentage rate) but each investment often has a different number of compounding periods per year. To compare these investments, the interest rates must first be converted to an annual, effective interest rate.

Variables

- **Method:** conversion method: either continuous or periodic. With periodic interest conversion, there is a set number of compounding periods per year, such as quarterly (4 times per year), monthly (12), or yearly (1). With continuous compounding, there is no set number of periods per year.
- **Nominal%:** the annual, nominal interest rate expressed as a percentage. For example, 8.25% is entered as "8.25".
- **Effective%:** the annual, effective interest rate expressed as a percentage. For example, 8.25% is entered as "8.25".
- **Cmpnds/Yr:** the number of compounding periods per year. For example, if interest is compounded quarterly, this value would be set to "4". Compounding periods per year is available only when the method is set to periodic.



Example

You are presented with two competing investments. The first is compounded monthly with a nominal interest rate of 9.75%. The other pays at an effective interest rate of 10%. Which investment has a better interest rate?

Variable	Enter	Comments
Clear...		Sets the display to its default values
Method	Periodic	
Nominal%	9.75	
Cmpnds/Yr	12	

Compute the effective rate by selecting "?" on the same line. The first investment's effective rate is 10.20%. It has the better interest rate.

3.12 Markup

This template is for Markup calculations. It is in the Business category. For information on accessing this template, see the Templates : Accessing section. For more on using templates in general, see the Templates : Using the Templates section.

Variables

- **Method:** computation based on price or cost. Profit margin computations are based on price; percent change computations are based on cost.
- **Cost:** the cost to manufacture or purchase.
- **Price:** the selling or resale price.
- **Markup%:** the markup expressed as a percentage. For example, an 8.125% change would be entered as "8.125". A positive value represents an increase while a negative one represents a decrease.
- **Difference:** the difference between the price and the cost.

The screenshot shows a window titled "Markup" with a menu bar containing "Template", "Options", and "Help". The main area displays the following values:

Method:	% of Cost
Cost:	29.99
Price:	37.49
Markup%:	25.00
Difference:	7.50

At the bottom of the window, there are two buttons: "Done" and "Clear..."

Example

The clothing is sold at a 25% markup on cost. What is the price if the cost is \$29.99?

Variable	Enter	Comments
Tap the Clear... button		Sets the display to its default values
Method	% of Cost	Choose from the list
Cost	29.99	
Markup%	25.00	
Difference	7.50	

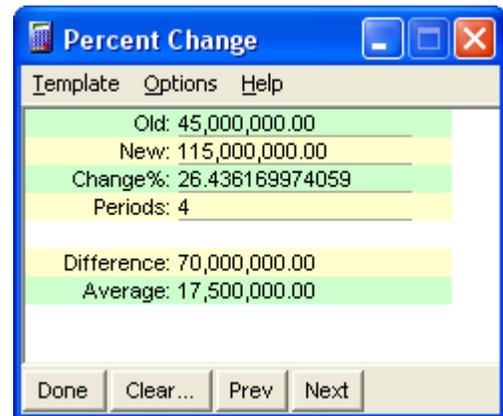
Select "?" in the Price row to calculate. The price is \$37.49.

3.13 Percent Change

This template is for Percent Change calculations. It is in the Business category. For information on accessing this template, see the Templates : Accessing section. For more on using templates in general, see the Templates : Using the Templates section.

Variables

- **Old:** the old value.
- **New:** the new value.
- **Change%:** the percentage changed per period. For example, an 8.125% change would be entered as "8.125". A positive value represents an increase while a negative one represents a decrease.
- **Periods:** the number of periods.
- **Difference:** the difference between the old and new amounts.
- **Average:** the average of the old and new amounts.



Example

Over 4 years, sales increased from \$45 million to \$115 million. The industry average is 20% increase per year. How does your company compare?

Variable	Entry	Comments
Tap the Clear... button		Sets the display to its default values
Old	45,000,000	
New	115,000,000	
Periods	4	
Difference	70,000,000.00	
Average	17,500,000.00	

Select "?" in the Change% row to calculate. Sales have increased 26.44% per year, comparing favorably to the 20% industry pace.

3.14 Percent Total

This template performs percent total computations.

Variables

- **Total:** the total.
- **Part:** the portion of the total.
- **Total%:** the percentage of the total. For example, an 8.125% change would be entered as "8.125".

The screenshot shows a software window titled "Percent Total". It contains three data rows, each with a question mark icon to its right, indicating that the values are user-editable or calculated based on input. The first row is "Total:3,150,000,000.00", the second is "Part:724,500,000.00", and the third is "Total%:23". At the bottom of the window are two buttons: "Done" and "Clear...".

Example

Your division contributes 23% of the company's revenue. If total revenue is \$3.15 billion, what is your division's contribution?

Variable	Entry	Comments
Clear...		Sets the display to its default values
Total	3,150,000,000	
Total%	23	

Compute the part by selecting "?" on the same line. Your division contributes \$724,500,000 in revenue.

3.15 Profit Margin

This template performs profit margin computations.

Variables

- **Cost:** the cost to manufacture or purchase.
- **Price:** the selling or resale price.
- **Margin%:** the gross profit margin expressed as a percentage. For example, an 8.125% change would be entered as "8.125". A positive value represents an increase while a negative one represents a decrease.

Profit margin and markup as a percentage of price are identical.



Example

Your division contributes \$724,500,000 in revenue. The costs associated with revenue are \$580,000,000. What is the profit margin?

Variable	Entry	Comments
Clear...		Sets the display to its default values
Cost	580,000,000	
Price	724,500,000	

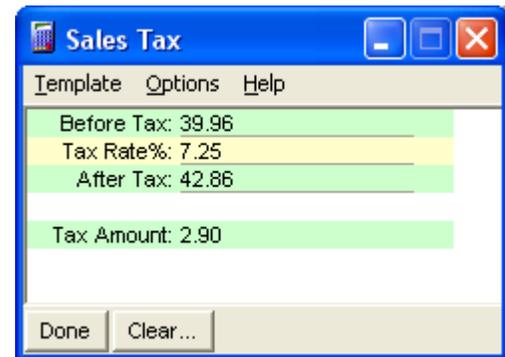
Compute the profit margin by selecting "?" on the Margin% line. The profit margin is 19.94%.

3.16 Sales Tax

This template is for Sales Tax calculations. It is in the Business category. For information on accessing this template, see the Templates : Accessing section. For more on using templates in general, see the Templates : Using the Templates section.

Variables

- **Before Tax:** before tax amount.
- **Tax Rate%:** tax rate expressed as a percentage. For example, a 6% tax rate would be entered as "6".
- **After Tax:** after tax amount.
- **Tax Amount:** the total amount of taxes.



Example

Dinner for two cost \$39.96 before taxes. What is the bill after taxes if the tax rate is 7.25%?

Variable	Entry	Comments
Tap the Clear... button		Sets the display to its default values
Before Tax	39.96	
Tax Rate%	7.25	
Tax Amount	2.90	

Select "?" in the After Tax row to calculate. The bill after taxes is \$42.86.

3.17 Simple Interest

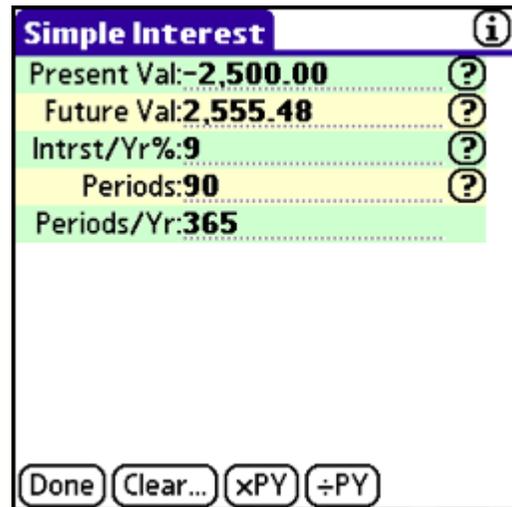
Simple interest problems assume that interest is accumulated only once (at the time of repayment). These computations are performed in the Simple Interest template. For compounding interest computations use the Time Value of Money (TVM) template.

Variables

- **Present Val:** the present or current value.
- **Future Val:** the future value.
- **Intrst/Yr%:** interest per year as a percentage. For example, 8.25% interest should be entered as "8.25".
- **Periods:** number of total periods. This number is the number of years and months times the periods per year. For example, if the loan is 4 years with 12 payments per year (monthly payments), periods should be 48 (4 x 12).
- **Periods/Yr:** the number of payment periods per year.

Buttons

- **xPY:** quick set button for the number of periods. This button multiplies the value in periods by the value in periods per year. For example, to convert 10 years at 12 periods per year to periods, enter 10 in periods and 12 in periods per year then select xPY.
- **÷PY:** quick set button for the number of periods. This button divides the value in periods by the value in periods per year. For example, if periods is 60 with periods per year equal to 12, discovering that is five years can be done easily by selecting ÷PY.



Example

A good friend has asked for a 90-day loan of \$2,500 to get involved with a real estate investment. You have agreed to lend him the money at 9% interest, calculated on a 360-day basis. What amount will be paid back at the end of this period?

Variable	Enter	Comments
Clear...		Sets the display to its default values
Present Val	-2,500	
Intrst/Yr%	9	
Periods	90	
Periods/Yr	360	

Compute the future value by selecting "?" on the same line. The friend should repay \$2,556.25 in 90 days.

3.18 Summation

This template performs summation calculations.

Variables

- **Sum:** summation of the list of numbers.
- **1-100:** list of numbers. To subtract, enter it as a negative number.

Example

You have four expenses: \$315, \$44, \$21, and \$38. What is the total amount for the expense report?

Variable	Entry	Comments
Clear...		Sets the display to its default values
1	315	
2	44	
3	21	
4	38	

The Sum calculates automatically. It equals \$418.

4 Appendix

This section includes additional information about the product.

- Technical Support
- Printing This Manual
- Legal and Disclaimers

4.1 Technical Support

For technical support, please visit Infinity Softworks' web site:

www.infinitysw.com/support

The web site contains:

- Extensive database of technical support questions and answers.
- Information about contacting Infinity Softworks.
- Free add-ons including templates, skins, graphs, data sets and import/export/beam plug-ins.
- Training and curriculum materials.

4.2 Printing This Manual

While Infinity Softworks does not offer a printed version of this manual, you are welcome to print it yourself.

To print, you will need Adobe Acrobat Reader (.pdf). After loading this file into Adobe Acrobat Reader, select the menu "File" then "Print".

To download a copy of Adobe Acrobat Reader, visit Adobe's web site:

<http://www.adobe.com/reader>

4.3 Legal and Disclaimers

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