



FORMULA BASICS FOR EXCEL

Microsoft Excel 2003

Spreadsheet Terminology

Spreadsheet: Spreadsheets are basically tables, which are designed to also do extra things for you, like automatically perform calculations, or make graphs.

Columns: Vertical collections of information. (Up and down, like the columns on a porch.) Referenced by letters.

Rows: Information that is arranged horizontally. (Side to side, like the rows on lined paper.) Referenced by numbers.

Cells: The point at which a row meets a column.

	A	B	C
1			
2			
3			

Cell Reference: The cell where the second column meets the second row would be referenced (called) B2, shown here outlined in black. Always use column letter followed by row number to reference a cell.

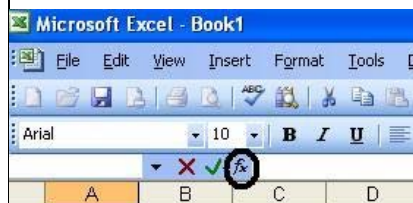
Range of Cells: When you refer to a range of cells, use a colon (:) between the start and end values. For example to include the cells in columns B & C, rows 3-5, the range you list would be B3:C5.

	A	B	C
1			
2			
3			
4			
5			

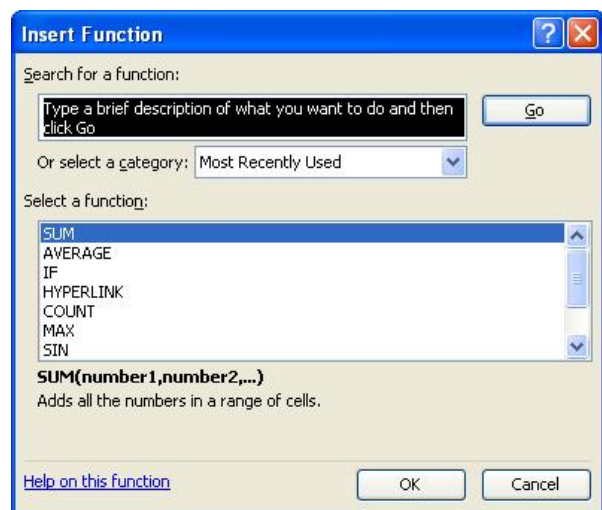
Starting a Formula

You can enter a formula (a mathematical equation to perform calculations,) in Excel to automatically calculate for you. When typing in a formula in Excel, you must start with an =. This tells Excel that what follows is a formula, not text or numbers.

Insert Function

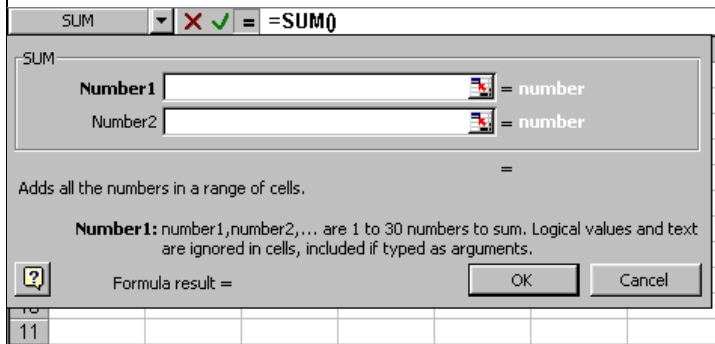


A Function in Excel is one of a list of preset mathematical functions, such as sum, average, etc., used to help build a formula. If you click on the **Insert Function** button to start a formula it automatically starts with the = sign, and gives you a list of functions to choose from, organized by categories. You




can choose **Insert Function** anywhere in a formula. Once you choose a function from a list in Insert Function, the Function Wizard window appears. (See below.)

Function Wizard



The Function Wizard prompts you for the information you need to enter for each function. This can be useful if you are not sure of the correct format to use to enter the formula. The Function Wizard also

gives a description of the function at the bottom, as well as presenting the formula result.

Remember you can use the red arrows at the edges of the boxes  to move into the worksheet and select (by highlighting) the cells you wish the formula to use, rather than typing their cell reference(s) in. When you do this Excel automatically enters the cell reference.

Why Use a Reference

	A	B	C
1	Tax	7.00%	
2			
3		Prices:	with tax
4	books	\$100.00	\$107.00
5	paper	\$10.00	\$10.70
6	shoes	\$40.00	\$42.80

You can enter a formula (a mathematical equations to perform calculations) using just a number, not a cell reference. However, many times your will use a given value (tax, price of paper) multiple places. Then if the number changes, you must track down everywhere that number was used in formulas and manually change it. Instead, you can put the number in a cell, and then always reference the cell for the formulas. Now, if the value in the cell changes (for instance taxes increase, or the price of paper increases,) you just need to change the number in the cell. Excel will automatically recalculate all the formulas that reference that cell.

	A	B	C
1	Tax	0.07	
2			
3		Prices:	with tax
4	books	100	=B4 + (\$B\$1*B4)
5	paper	10	=B5 + (\$B\$1*B5)
6	shoes	40	=B6 + (\$B\$1*B6)

In this example, if the prices or the tax change, and the numbers were used instead of a reference, the entire calculation of Price with tax

in column C must be redone. When the cell references are used (as shown,) only the price or tax cell must be changed, and the spreadsheet will recalculate automatically for you.

Cell Reference

Excel has 2 types of Cell References.

Relative Reference: By default Excel assumes all references are

relative. This means that when you are working in cell A3 and use the reference B4, Excel reads this as one column to the right and one row down. If you copy this formula to a new location, Excel will change the reference so it is still one column over and one row down from the new location. For example, if you copy the reference above (B4) from A3 to C4, in cell C4 Excel will change the B4 reference to D5, one column right, one row down from the new location, C4. If you need the cell reference not to change you must use an absolute reference.

	A	B	C	D
1				
2				
3	=B4			
4		A3 looks here	=D5	
5				When copied, C4 looks here

Absolute Reference: If you use a \$ before a column or a row reference it becomes fixed, and Excel does not change it when you copy the formula. Using the above example if you had typed \$B\$4 in the formula in cell A3, and then copied it to cell C4, it would still read \$B\$4 in cell C4. You can also make absolute either just the column or the row designation. For example if the reference in A3 was B\$4, when moved to cell C4 it would read D\$4, one column over but still row 4, and if the reference in A3 was \$B4, when moved to C4 it would read \$B5, still column B but one row down.

Formula View

Use Cont ~ (hold down the control key and press tilde) to toggle between

	A	B	C
1	Tax	0.07	
2			
3		Prices:	with tax
4	books	100	=B4 + (\$B\$1*B4)
5	paper	10	=B5 + (\$B\$1*B5)
6	shoes	40	=B6 + (\$B\$1*B6)

showing formulas in cells (shown left, Formula view) or the default of showing the results of formulas

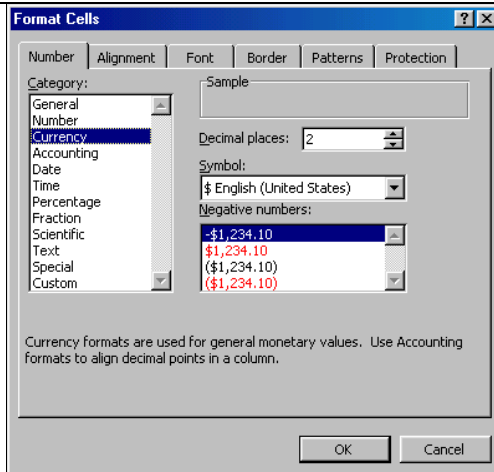
	A	B	C
1	Tax	7.00%	
2			
3		Prices:	with tax
4	books	\$100.00	\$107.00
5	paper	\$10.00	\$10.70
6	shoes	\$40.00	\$42.80

(shown right, Default view.) Excel automatically formats for you in Default view, but the formatting features do not show up in Formula view.

Formatting Cells

When you are entering data it is a lot of typing to put in the \$ sign for each money amount, or fill in the .00 for even dollar amounts, etc. Excel helps by letting you choose a variety of format options, and then automatically fixing the data to match that format.

Notice in the Formula view above, the prices are simply numbers with no \$ and no decimal places, where in the default view they have a dollar sign in front and two decimal places. That is because the cells have been formatted as currency.



When you right click in a cell, or a range of cells, you get the Format Cells dialog box. Notice you can choose Categories like Date, Percentage, Currency, etc. For each Category there are further choices. In the Currency choice shown you can choose how many decimal places, what currency symbol, and how to display negative numbers.

The Border Tab is where you can turn on or off lines around cells, or choose

to just display a line on top, for example.

Copy

	A	B	C
1			
2			
3			

In Excel, the cell or cells you are focused on are surrounded in a thick black box, with a small box in the bottom right hand corner called the Fill Handle. If you just want to

copy to the cells adjacent to your cell, click on the drag box and drag it in the appropriate direction. If you want to copy elsewhere you will need to choose Copy from the Edit Menu, then move your cursor to the new location and choose Paste from the Edit Menu.

Auto Fill

If you are making a list of consecutive things, such as days of the week, months, or numbers, after you fill in the first 2 you can drag the Fill Handle down or to the side. Excel will automatically fill in consecutive data lists where you have dragged.