

Formulas

Formulas are entered in the worksheet cell and must begin with an equal sign "=".

The formula then includes the addresses of the cells whose values will be manipulated with appropriate operands "(" placed in between.

After the formula is typed into the cell, the calculation executes immediately and the formula itself is visible in the formula bar.

	A	B	C	D	E	F
1	Textbook	Quantity	Price			
2	Biology	4	\$99.99			
3	Chemistry	2	\$79.95			
4	Calculus	7	\$65.99			
5	English	12	\$49.99			
6						
7		Sub Total	\$1,621.67			
8		Sales Tax	6%			
9		Total	\$1,718.97			
10						
11						
12						

See the example above to view the formula for calculating the sub total for a number of textbooks. The formula multiplies the quantity and price of each textbook and adds the subtotal for each book.

Linking Worksheets

You may want to use the value from a cell in another worksheet within the same workbook in a formula. For example, the value of cell A1 in the current worksheet and cell A2 in the second worksheet can be added using the format "sheetname!celladdress". The formula for this example would be "=A1+Sheet2!A2" where the value of cell A1 in the current worksheet is added to the value of cell A2 in the worksheet named "Sheet2".

Relative, Absolute, and Mixed Referencing

Calling cells by just their column and row labels (such as "A1") is called **relative referencing**. When a formula contains relative referencing and it is copied from one cell to another, Excel does not create an exact copy of the formula. It will change cell addresses relative to the row and column they are moved to. For example, if a simple addition formula in cell C1 " $=A1+B1$ " is copied to cell C2, the formula would change to " $=A2+B2$ " to reflect the new row.

To prevent this change, cells must be called by **absolute referencing** and this is accomplished by placing dollar signs "\$" within the cell addresses in the formula. Continuing the previous example, the formula in cell C1 would read " $=\$A\$1+\$B\1 " if the value of cell C2 should be the sum of cells A1 and B1. Both the column and row of both cells are absolute and will not change when copied.

Mixed referencing can also be used where only the row OR column fixed. For example, in the formula " $=A\$1+\$B2$ ", the row of cell A1 is fixed and the column of cell B2 is fixed.

Basic Functions

Functions can be a more efficient way of performing mathematical operations than formulas. For example, if you wanted to add the values of cells D1 through D10, you would type the formula " $=D1+D2+D3+D4+D5+D6+D7+D8+D9+D10$ ". A shorter way would be to use the **SUM function** and simply type " $=SUM(D1:D10)$ ". Several other functions and examples are given in the table below:

Function	Example	Description
SUM	$=SUM(A1:100)$	finds the sum of cells A1 through A100
AVERAGE	$=AVERAGE(B1:B10)$	finds the average of cells B1 through B10
MAX	$=MAX(C1:C100)$	returns the highest number from cells C1 through C100
MIN	$=MIN(D1:D100)$	returns the lowest number from cells D1 through D100
SQRT	$=SQRT(D10)$	finds the square root of the value in cell D10
TODAY	$=TODAY()$	returns the current date (leave the parentheses empty)