Excel Expert
Microsoft Excel 2010

Formulas & Functions

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Excel 2010 Formulas and Functions

One of Excel's most useful features is that it allows users to create custom formulas to perform calculations on their data. Excel also contains built-in formulas called functions that make it easy to perform common calculations on data. Here you will find step by step tutorials, tips and shortcuts on how to use formulas and the common and less common functions available in Excel.

Formula Basics

Formulas in Microsoft Excel begin with an equal sign. The equal sign tells Excel that the succeeding characters constitute a formula. If you don't enter the equal sign, Excel will treat your entry as text and the calculation will fail.

To show how formulas work, we'll begin with a simple exercise by selecting blank cell A1. Then type =5+5, and press Enter. Excel performs the calculation and produces a result of 10 in cell A1.

Notice the formula bar shows the formula you just typed. What appears in the cell is the result; what appears in the formula bar is the underlying value, which is a formula in this case.

Order of Operation

When performing calculations in a formula, Excel follows certain rules of precedence: Excel calculates expressions within parentheses first. Excel calculates multiplication and division before addition and subtraction. Excel calculates consecutive operators with the same level of precedence from left to right.

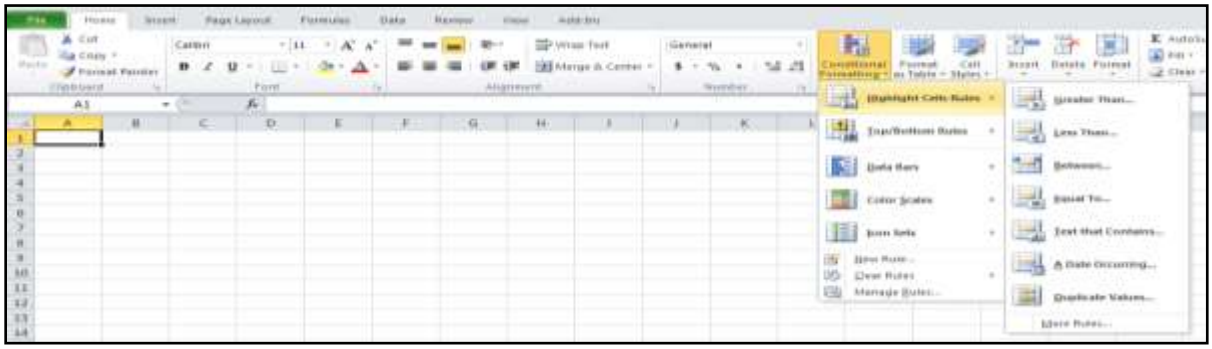
For example, the formula = 10+10*2 gives a result of 30 as Excel multiplies 10 by 2 and then adds 10. However, the formula =(10+10)*2 produces a result of 40. This is because Excel calculates the expression (10+10) within the parentheses first. It then multiplies by 2.

If you are unsure of the order in which Excel calculates, use parentheses - even if the parentheses aren't necessary. Parentheses also make your formulas easier to read.

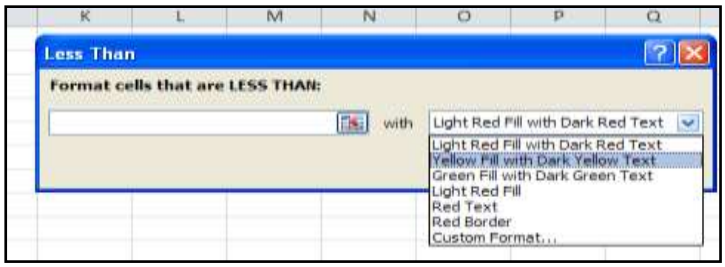
Operations in Formulas	
:	Colon
	Single space
,	Comma
-	Negation (as in -1)
%	Percent
^	Exponentiation
*	Multiplication
/	Division
+	Addition
-	Subtraction
&	Connects two strings of text
=	Comparison (Equal to)
<	Less Than
>	Greater Than
>=	Greater Than or Equal to
<=	Less Than or Equal to
<>	Not Equal to

Conditional Formatting

Conditional Formats respond to the contents of cells. They are almost always applied to group of cells, often rows or columns of totals, if not entire tables. Click **Home Tab,** locate the **Style** group and click on the downward arrow of **Conditional Formatting.**

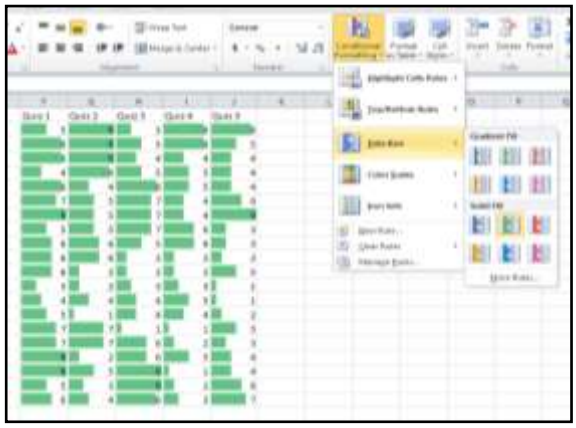


When you click on **Highlight Cell Rules** this method will keep the cells "inactive" until the values (numeric or text) contain the specific rule you select. You have the option to select: **Greater Than, Less Than Between, Equal To, Text that Contains, A Date Occurring, and Duplicate Values.** Once you have selected a rule a dialog box will appear where you may specify the appropriate criteria.



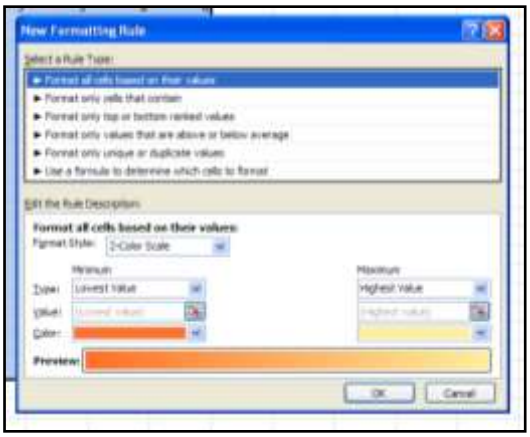
Note: Within the dialog box the dropdown arrow will display numerous options of how the information will appear.

In addition to **Highlighting Cell Rules** there are four other options:



1. **Top Bottom:** Selected formatting applied to all cells in a range that are greater than or less than a given threshold. Click **Top 10 Items, Top 10%, Botton 10 Items, Bottom 10%, Above Average,** or **Below Average** to display a dialog box where you can specify the appropriate criteria.
2. **Data Bars:** Gradient fills of color within cells whose lengths indicate the values in the cells relative to all other adjacent cells formatted using the same conditions. Choose from a number of different colors, based on the current theme. Excel will automatically allow you to preview the proposed changes before actually clicking on the changes.
3. **Color Scales:** Two-color or three-color formats whose color indicates the values in the cells relative to all other adjacent cells formatted using the same conditions. Choose from a number of different color combinations, based on the current theme.
4. **Icon Sets:** Sets of three, four, or five tiny graphic images placed inside cells whose shape or color indicates the values in the cells relative to all other adjacent cells formatted using the same conditions. Choose from a number of different types of icons.

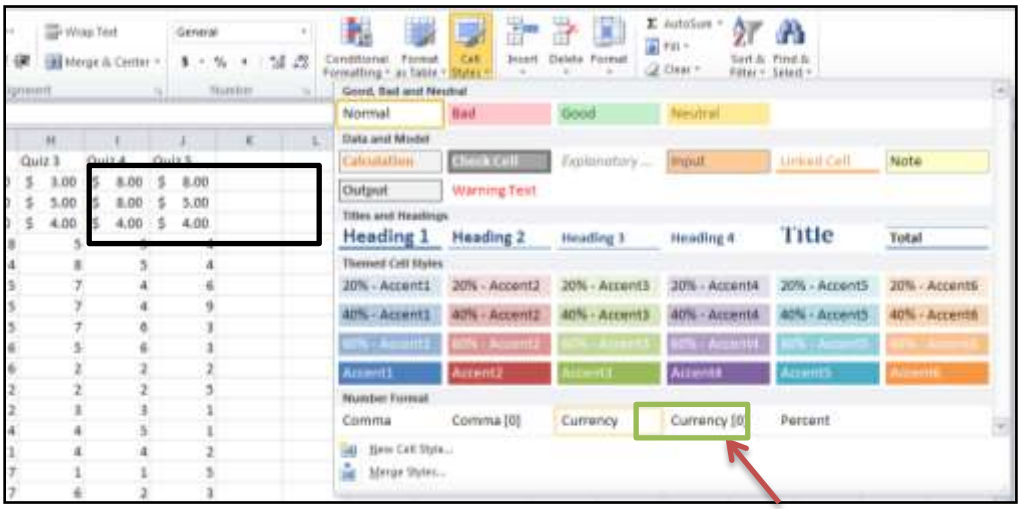
Note: Before selecting **Conditional Formatting,** make sure the cells to be formatted have been selected. There are a few more options with how to format data. We can go again to the **Conditional Formatting** box in the **Styles** group. From there select **New Rule.** This will open a dialogue box where we are able to format how we want the formatting to appear. You can select color options, the maximum and minimum value and the format style.



Tip: After adding rules they can easily be removed. Return to the **Conditional Formatting** box in the **Styles** group. Click on the downward arrow and select **Clear Rules from Selected Cells.**

Cell Styles

In addition to formatting the contents of the cells we can also format the appearance of the cells. Go to the **Home Tab,** and locate **Cell Styles**



Tip: Observe the numbers in the bordered cells have been altered to currency.

Formulas & Functions

The organization of the formulas is new to Excel 2010. Previously in Excel 2007, to obtain all of the formulas Excel had to offer you had to click on the **AutoSum** dropdown arrow and select **More Functions.** Here there are the same options that appeared in the **More Functions** dialog box now appear on the **Formula Tab.** Each formula is divided up among relevant general topic categories. The categories are listed across the top of the **Formula Tab** group titled **Function Library.**

With the new Excel **Formula Bar** the majority of all formulas you may need are at your fingertips. For example: a Math professor is interested in determining which formula would be best to convert radians to degrees. We will go to the **Formula Tab,** and select the **Math & Trig** downward arrow.

Tip: When you scroll the mouse over a formula Excel will have a small dialog box that explains the purpose of each formula.

Basic Formulas

Add the Values in Rows or Columns

Use the SUM function, which is prewritten formula, to add all the values in a row or column:

1. Click your mouse in the cell in which you wish your result to appear
2. Click the **AutoSum** button on the **Home Tab** or the **Formulas Tab**
3. Highlight the range of cells you wish to add
4. Press **Enter**

To add some of the values in a column or row:

1. Type an equal sign, type **SUM**, then type an opening parenthesis.
2. Type or select the cell references you want to add. A comma (,) separates individual arguments that tell the function what to calculate
3. Type a closing parenthesis, and then press ENTER.

For example: =SUM(B2:B4, B6) and =SUM(B2, B5, B7)

Find the Average, Maximum, or Minimum

Use the AVERAGE, MAX, OR MIN functions.

1. Click your mouse in the cell in which you wish your result to appear
2. Click the arrow next to **AutoSum** on the **Home Tab** or the **Formulas Tab**.
3. Click the **Average, Max,** or **Min**
4. Highlight the range of cells you wish to find the value for
5. Press **Enter**

To see more functions, click **More Functions** on the **AutoSum** list to open the **Insert Function** dialog box OR go to the **Formulas Tab** and click on the **More Functions** orange textbook icon.

Tip: You can also enter formulas and cell references by typing them in the formula bar after selecting a cell.

Ranges and Individual Cells

As you start to write excel formulas, you may realize you want to use a range of cells or nonadjacent cells in your formula. A range of cells will include the value of every cell within the range specified (for example, the range A1:A4 includes the cells A1, A2, A3 & A4). Ranges of cells are identified with a colon.

Cell References	Refers to Values
A10	The cell in column A and row 10
A10,A20	Cell A10 and cell A20
A10:E20	The range of cells in columns A through E and rows 10 through 20

Nonadjacent cells can be listed in the formula by separating them with a comma rather than a colon. For example, =SUM(A2,A4) will add cells A2 and A4, but *not* A3.

Copy a Formula

Using the Fill Handle

1. Select the cell that contains the formula, then position the mouse pointer over the lower-right corner of the cell until the black cross (+) appears.
2. Drag the fill handle over the cell or cells to which you want to copy the formula, then release the mouse button.

Using Traditional Copy & Paste

1. Select the cell that contains the formula, and on the **Edit** menu, click **Copy.**
2. Select the cell or cells that you want to copy it to.
    a. To copy the formula and any formatting, on the **Edit** menu, click **Paste.**
    b. To copy the formula only, on the **Edit** menu, click **Paste Special,** and then click **Formulas.**

Referencing Cells in Formulas

You can include or reference other cells in a formula. When you do, the result of the formula depends on the values in the referenced cells and changes automatically when the values in the referenced cells change. This is extremely powerful in what-if scenarios.

To see how this works, enter 10 in cell A1. Now select cell A2 and type =A1*2, and press ENTER. The value in cell A2 is 20. If you change the value in cell A1 from 10 to any value, the value in cell A2 will also change. Cell references are especially helpful when you create complex formulas, or conduct what-if analysis.

Column & Row Absolute	**($A$1)**
Column Absolute	**($A1)**
Row Absolute	**(A$1)**
Nothing Absolute	**(A1)**

Pressing [F4] repeatedly over a reference (cell) will allow you to switch between making the column, the row, or nothing 'Absolute.'

Relative References

By default Excel uses **Relative Referencing.** In relative reference, you actually refer to cell that is above or below or left or right to a number of rows or columns. For example, if you refer to cell D2 from F2, you are actually referring to a column that is two columns to the left of cell D2 and in the same row (the second '2'row). When a formula that possesses a relative reference is copied from one cell to another cell, the value in the copied cell also changes. i.e., if you copy a formula =C2+D2 from E2 to the cell F2, the formula in F2 adjusts in such a way that when the cell F2 is dragged downwards by one row, the formula automatically changes to C3+D3 and places the resulting value of C3+D3 in cell F3.

Absolute References

In case, if you wish to maintain the original references as they were, then you should make use of the absolute references. If you want to make the above example retain the original reference when it is copied, then you should precede the columns A2 and B2 and the row number by a Dollar ($) symbol. i.e., you should use the formula as =$C$2+$B$2 so that when you copy the formula the original reference is retained.

To make the cell appear in absolute format ($) click on the cell you would like to edit and press [F4] and press enter. You will observe the cell A1 turn into =$A$1.

For example, if you copy or fill an absolute reference in cell B2 to cell B3, it stays the same in both cells =$A$1.

Mixed References

In some situations, you may need to make the cell reference as 'Mixed' reference, so that you can lock either a column or a row by preceding it with a Dollar ($) symbol. For example, if you use a formula as =$D4+E4, then you are making the value that is present in cell D4 as absolute and the value in cell E4 as Relative.

References to Other Worksheets

You can refer to cells in other worksheets within the same workbook just as easily as you refer to cells in the same worksheet. For example, to enter a reference to cell A2 in Sheet2 into cell A1 in Sheet1, do this:

1. Select cell A1 in Sheet1, and type an equal sign.
2. Click the Sheet2 tab.
3. Click cell A2, and then press Enter.

After you press Enter, Sheet1 is now active. Select cell A1, and you will see that it contains the formula =Sheet2!A2.

The exclamation point separates the worksheet portion of the reference from the cell portion.

Other Workbook References

You can refer to cells in worksheets in other workbooks in the same way you refer to cells in other worksheets within the same workbook. These references are called external references. For example, to enter a reference to Book2 in Book1, follow these steps:

1. Create 2 workbooks; Book1 and Book2
2. Select cell A1 in Sheet1 of Book1, and type an equal sign.
3. Switch to Book2. Click to select A2.
4. Press Enter

After you press enter, your formula in Workbook 1, Cell A1, should be =[Book2]Sheet1!$A$2. This reference has 3 parts: The Workbook Book2 in square brackets, the worksheet and the cell. So referencing cells in external workbooks by selecting the workbook, then worksheet, and then the cell you want to reference.

Quick Reference Guide

Add, Subtract, Multiply & Divide

Type an equal sign (=), use math operators, and then press ENTER.

- =10+5 to add
- =10-5 to subtract
- =10*5 to multiply
- =10/5 to divide

Formulas are visible in the formula bar when you select a cell that contains a result. If the formula bar is not visible, on the **Tools** menu, click **Options**. Click the **View** tab, and select the **Formula bar** check box.

Understand Error Values

- **#####** The column is not wide enough to display the content. Increase column width, shrink contents to fit the column, or apply a different number format.
- **#REF!** A cell reference is not valid. Cells may have been deleted or pasted over.
- **#NAME?** You may have misspelled a function name.

Practical Purposes of Excel Formulas

Excel formulas are used to make the data you have entered more useful. Through the use of formulas you are able to, at a minimum, maintain finances, schedules, and detailed reports. Here are a few

examples of some common ways Excel formulas may be applied into your daily activities. Additional formulas will be described in detail later on in the tutorial.

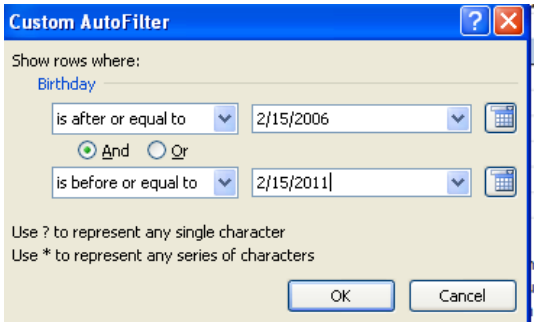
Using Date & Time Formulas

In this example we have a list of birthdays. Our objective with this data is to find out how many birthdays occurred more than six months ago, and how many occurred five years ago. To start we want to know todays date.

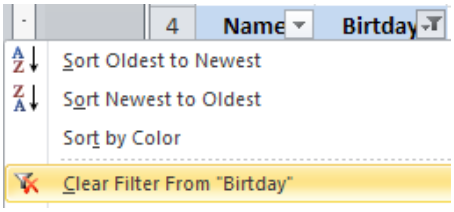
F6

	A	B
1	Today	5 years ago
2	2/15/2011	2/15/2006
3		
4	Name	Birthday
5	Name 1	12/21/2007
6	Name 2	6/1/2003
7	Name 3	10/4/2004
8	Name 4	9/19/2002
9	Name 5	1/6/2003
10	Name 6	10/6/2005

- Step 1: Click in cell A2. Type in **=TODAY()** and press **ENTER**. The computer will automatically enter in today's date.
- Step 2: Click in cell C2. In this example, we want this value to be five years before today's date. To do this, the formula must be **=EDATE(A2-60)** and press enter.
    - 60 months in five years
    - If you simply get a numerical value instead of a date, that means you have to format the cell to be a date. Right click on the cell and click **Format Cells**. In the **Number** tab of the format dialog box, choose **Date**. Choose whatever date format you wish and then click **Ok.**
- Step 3: Select your current data (A4:B10) and go to the **Home Tab.** Click on the **Sort & Filter** dropdown arrow and select **Filter.** Now in the *Name* and *Birthday* column you should see a dropdown arrow. Click on the arrow under *Birthday* and select **Date Filters** and **Between.**



- Step 4: You will be prompted with an **AutoFilter** box which we will use to help sort your data.
    - In the "is after or equal to" field, put the date that occurred five years ago
    - In the "is before or equal to" field, put today's date
    - Click **Ok**
- Step 5: Any dates ranging between the date five years ago and today's date will show, but all others will disappear from view.
- Step 6: We can do basically the same thing we just did by using a formula. We will use the AND formula because we have two things to check.
    - First, click the down arrow by **Birthday** and click **Clear Filter from "Birthday"**
    - Add a new column heading in C5 reading **Today to 5y Ago**



- Step 7: Click your mouse in C6 and enter **=AND(** click on cell B5 is greater than or equal to only B2, and comma B5 is less than or equal to only A2.
    - **=AND(B5>=$B$2,B5<=$A$2)**
    - Note that we are using an absolute reference for A1 and A2 because we don't want our formula to reference cells lower than those if/when we drag/copy the formula.
- Step 8: Click enter, it will show us the statement is TRUE.

- Step 8: Now we want to have this formula we just created to be applied to the entire list of birthdays. To do this roll your mouse over C5 until you get the + symbol from the mouse. Once the mouse pointer looks like the +, drag all the way to the bottom of the column and release. Each column will now have a TRUE or FALSE in the box indicating that the birthday was between six months to five years ago, and will indicate FALSE if the birthday was within the last five years.

	A	B	C
1	Today	5 Years Ago	
2	2/15/2011	2/15/2006	
3			
4	Name	Birtday	Today to 5y Agp
5	Name 1	12/21/2007	TRUE
6	Name 2	6/1/2003	FALSE
7	Name 3	10/4/2004	FALSE
8	Name 4	9/19/2002	FALSE
9	Name 5	1/6/2003	FALSE
10	Name 6	10/6/2005	FALSE

Commonly Used Functions & Formulas

Below is a list and description of commonly used formulas within Excel.

Math & Trig Icon

PRODUCT Function

The PRODUCT function provides a quick way to multiple numbers in a Excel. The advantage of using this function becomes apparent if you have several numbers to multiply together. It is easier then building a long formula.

The syntax for the PRODUCT function is: **=PRODUCT(Number1, Number2, ... Number255)**

TIP: Up to 255 numbers can be entered into the function.

SUMIF Function

The SUMIF function is used to add up the values in cells in a selected range that meet certain criteria.

The syntax for the SUMIF function is: **= SUMIF (Range, Criteria, Sum Range)**

- *Range* - the group of cells the function is to search.
- *Criteria* - determines whether the cell is to be counted or not.
- *Sum Range* - the data range that is summed if the first range meets the specified criteria. If this range is omitted, the first range is summed instead.

SUMIFS Function

The SUMIFS function adds up the data in selected cells when specific criteria are met in two or more ranges of data.

The SUMIFS function works like the AND function in that it only sums the data if the criterion for each range is true.

The syntax for the SUMIFS function is: **=SUMIFS (Sum_range, Criteria_range1, Criteria1, Criteria_range2, Criteria2, ...)**

- Sum_range - the range of cells to be added.
- Criteria_range - the range of cells the function is to search.

- Criteria - determines whether a cell in the Sum_range is to be counted or not.

Note: Up to 127 range/criteria pairs can be entered into the function.

ROUND Function

The ROUND function is used to reduce a given value to a specific number of decimal places.
The syntax for the ROUND function is: **= ROUND (Number, Num_digits)**

- Number - the value to be rounded.
- Num_digits - the number of decimal places to reduce the above number to.

ROUNDOWN Function

The ROUNDDOWN function is used to round a number down towards the next lowest number. ROUNDDOWN is similar to the ROUND function except that it always rounds a number downward while the ROUND function will round up or down depending on whether the last digit is greater than or less than 5.
For example, the ROUND function would round the number 34.567 up to 34.6 because the second decimal place (6) is greater than 5. Since ROUNDDOWN doesn't care whether the second digit is greater or less than 5 it rounds the answer down to 34.5.

The syntax for the ROUNDDOWN function is: **= ROUNDDOWN (Number, Num_digits)**

- Number - the value to be rounded.
- Num_digits - the number of decimal places to reduce the above number to.

ROUNDUP Function

The ROUNDUP function is used to round a number upwards towards the next highest number. ROUNDUP is similar to the ROUND function except that it always rounds a number upward while the ROUND function will round up or down depending on whether the last digit is greater than or less than 5.
For example, the ROUND function would round the number 34.231 down to 34.2 because the second decimal place (3) is less than 5. Since ROUNDUP doesn't care whether the second digit is greater or less than 5 it rounds the answer up to 34.3.

The syntax for the ROUNDUP function is: **= ROUNDUP (Number, Num_digits)**

- Number - the value to be rounded.
- Num_digits - the number of decimal places to reduce the above number to.

Logical Icon

IF Function

The IF function, one of Excel's logical functions, tests to see if a certain condition in a spreadsheet is true or false.
The syntax for the IF function is: **=IF (logical_test, value_if_true, value_if_false)**

- logical_test – a value or expression that is tested to see if it is true or false.
- value_if_true – the value that is displayed if logical_test is true.

- value_if_false – the value that is displayed if logical_test is false.

Lookup & Reference Icon

VLOOKUP Function

Excel's VLOOKUP function, which stands for vertical lookup, is used to find specific information that has been stored in a spreadsheet table.

Note: The data in the table should be sorted in ascending order (alphabetically A to Z).
The syntax for the VLOOKUP function is: *= VLOOKUP (lookup_value , table_array , col_index_num , range_lookup)*

- **lookup _value:** The value you want to find in the first column of the table_array.
- **table_array:** This is the table of data that VLOOKUP searches to find the information you are after.

The table_array must contain at least two columns of data. The first column contains the lookup_values.

- **col_index_num:** The number of the column in the table_array that contains the data you want returned.
- **range_lookup:** A logical value (TRUE or FALSE only) that indicates whether you want VLOOKUP to find an exact or an approximate match to the lookup_value. Typing *False* will return exact matches only.

TRANSPOSE Function

The TRANSPOSE function, one of Excel's Lookup & Reference functions, is used to copy data located in a row into a column or copy data located in a column into a row.
The syntax for the TRANSPOSE function is: **{ = TRANSPOSE (Array)}**

- Array - the range of cells to be copied from the horizontal to the vertical or vertical to the horizontal.

The curly braces " **{ }** " surrounding the function indicate that it is an array function.

Date & Time Icon

NETWORKDAYS Function

The NETWORKDAYS function, one of Excel's Date and Time functions, can be used to count the number of working days between two dates - such as the start and end dates for a project. The function automatically removes weekend days from the total. Specific holidays can also be omitted.

The syntax for the NETWORKDAYS function is: **= NETWORKDAYS (Start_date , End_date , Holidays)**

- Start_date - the start date of the chosen time period.
- End_date - the end date of the chosen time period.
- Holidays - can be used to exclude one or more dates from the total number of working days (optional).

DATEDIF Function

The DATEDIF function can be used to calculate the number of days between two dates in versions of Excel from 97 to 2010. An interesting point about DATEDIF is that it is an "undocumented" function which means it is not listed with other functions under the *Formulas* tab in Excel 2010.

To use the function you must type it manually into a cell on the worksheet rather than using the dialog box method available for other functions. The syntax for the DATEDIF function is: **= DATEDIF (start_date , end_date , unit)**

The function has three arguments that need to be entered as part of the function:

- **start_date** - the first or starting date.
- **end_date** - the second or last date.
- **unit** - tells the function to find the number of days ("D"), complete months ("M"), or complete years ("Y") between the two dates.

The unit argument can also be a combination of days, months, and years:

- "YM" - excludes years - calculates the number of months between two dates as if the dates were in the same year.
- "YD" - excludes years - calculates the number of days between two dates as if the dates were in the same year.
- "MD" - excludes months - calculates the number of days between two dates as if the dates were in the same month and year.

DAYS 360 Function

The DAYS360 function, one of Excel's Date and Time functions, can be used in accounting systems to calculate the number of days between two dates based on a 360-day year (twelve 30-day months).
The syntax for the DAYS360 function is: **= DAYS360 (Start_date , End_date , Method)**

Start_date - the start date of the chosen time period.
End_date - the end date of the chosen time period.
Method - A Boolean value (TRUE or FALSE).

- If TRUE -- the function uses the U.S. method of calculating start and end dates.
- If FALSE -- the function uses the European method of calculating start and end dates.

Note: The Method can be omitted. If it is, the U.S. method is used in the calculations.

WORKDAY Function

The WORKDAY function can be used to calculate the end date or start date of a project for a given number of business days. The number of business days cannot include weekend days. Specific holidays can also be omitted.
The syntax for the WORKDAY function is: **= WORKDAY (Start_date , Days , Holidays)**

- Start_date - the start date of the project or time period in question.
- Days - the number of days work on the project occurred after the Start_date.
- Holidays - can be used to exclude one or more dates from the total number of working days (optional).

NOW Function

The NOW function, one of Excel's date and time functions, is used to add the current time and date to a spreadsheet. The syntax for the NOW function is: **= NOW ( )**

Note: The NOW function takes no arguments.

AutoSum

AVERAGE Function

The AVERAGE function, one of Excel's statistical functions, is used to find the average or arithmetic mean of a given list of arguments. The syntax for the AVERAGE function is: **= AVERAGE (argument1, argument2, ... argument255)** Argument1, argument 2, ... argument 255 can be numbers, named ranges, arrays, or cell references.

Tip: Up to 255 arguments can be entered.

MAX Function

The MAX function, one of Excel's statistical functions, is used to find the largest or maximum number in a given list of values or arguments. The syntax for the MAX function is: **=MAX(argument1, argument2, ... argument30)**

Argument1 ... argument 30: The arguments can be numbers, named ranges, arrays, or cell references. Up to 30 arguments can be entered.

MIN Function

The MIN function, one of Excel's statistical functions, is used to find the smallest or minimum value in a list of numbers or arguments. The syntax for the MIN function is: **=MIN (argument1, argument2, ... argument30)**

Argument1 ... argument 30: Arguments can be numbers, named ranges, arrays, or cell references. Up to 30 arguments can be entered.

Statistical

AVERAGEIF Function

The AVERAGE IF function is used to find the average of values in cells in a selected range that meet certain criteria.
The syntax for the AVERAGE IF function is: **=AVERAGEIF(Range, Criteria, Sum Range)**

- Range - the group of cells the function is to search.
- Criteria - the number, expression, or text statement that the data in the Range above is to determines whether the cell is to be counted or not.
- Average_range - the data range that is averaged if the first range meets the specified criteria. If this range is omitted, the first range is averaged instead.

COUNTIF Function

The COUNTIF function, one of Excel's COUNT functions, is used to count up the number of cells in a selected range that meet specified criteria. The syntax for the COUNTIF function is: **=COUNTIF (Range, Criteria)**

- Range - the group of cells the function is to search.
- Criteria - determines whether the cell is to be counted or not. This can be a number, expression, cell reference, or text string.

COUNTIFS Function

The COUNTIFS function, similar to Excel's COUNTIF function, counts up the number of times data in two or more ranges of cells meets multiple criterion.

The syntax for the COUNTIFS function is: **=COUNTIFS(Criteria_range-1, Criteria-1, Criteria_range-2, Criteria-2, ...)**

- Criteria_range - the group of cells the function is to search.
- Criteria - determines whether the cell is to be counted or not.

Note: Up to 127 range/criteria pairs can be entered into the function.
The ranges must be of identical size, and the function only counts instances where the criterion for each range is met simultaneously - such as in the same row.

COUNT Function

Excel's COUNT function is one of a group of *Count Functions* that can be used when you need to total the number of cells in a selected range. The COUNT function's job is to only add up the cells in a selected range that contain numbers. It ignores empty cells or those contain text. If a number is later added to an empty cell the function will be automatically updated to include this new data.

Be aware that dates, times, functions, and formulas are stored as numbers in Excel. The COUNT function will, therefore, include any cells containing these types of data in the total.
The syntax for the COUNT function is: **=COUNT(Range)**

- Range - the group of cells the function is to count.

COUNTA Function

Excel’s COUNTA function is one of a group of “Count Functions” that can be used when you need to total the number of cells in a selected range. The COUNTA function's job is to add up the cells in a selected range that contain numbers, dates, or text labels. It ignores empty cells.

If data is later added to an empty cell the function will be automatically updated to include the addition. The syntax for the COUNTA function is: **= COUNTA (Value1, Value2, ... Value255)**

Tip: Up to 255 values can be entered into the function.

COUNTBLANK Function

The COUNTBLANK function, one of Excel's COUNT functions, is used to count up the number of blank cells in a selected range.

The syntax for the COUNTBLANK function is: **=COUNTBLANK(Range)**

- Range - the group of cells the function is to search.

MEDIAN Function

The MEDIAN function, one of Excel's statistical functions, shows you the middle number in a data list. Middle, in this case, refers to arithmetic value rather than the location of the numbers in a list.
If there is an even set of numbers, the median is the average of the middle two values.

The syntax for the MEDIAN function is: **= MEDIAN (number1, number2, ... number255)**
number1, ... number255: means that up to 255 numbers can be entered into the function. These can be numbers or the cell references where the data is located.

MODE.SNGL Function

In Excel 2010, the MODE.SNGL function, has replaced the MODE function found in previous versions of Excel.
Despite its new name, MODE.SNGL still does the same job which is to show you the most frequently occurring value in a list of numbers. The syntax for the MODE.SNGL function is: **= MODE.SNGL (number1, number2, ... number255)**

Note: Up to 255 numbers can be entered into the function.