

Excel Intermediate & Advanced





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Further techniques to format spreadsheets

Renaming Worksheets

Double click on the tab you wish to rename

Enter the new name

Or right-click on a worksheet tab and use a pop-up menu

Deleting and Inserting Worksheets

You can insert and delete worksheets:

By clicking on the relevant worksheet tab with the right-hand mouse button and selecting Insert or Delete from the pop-up menu

OR

By selecting Worksheet from the Insert menu, or Delete Sheet from the Edit menu

Finding Files

Allows you to easily locate files stored on disk

Displaying Other Toolbars

From the View menu, select Toolbars and pick from the sub-menu displayed

Or right click on any toolbar to see a pop-up list

Customizing the Look of the Toolbars & Menus

Right click on any toolbar

Select Customize

Select the Options tab

Freeze Panes

To enable you to see which row or column you are in when you are working on a large worksheet, you may wish to lock the row or column headings

To do this, use Freeze Panes

Grouping and Ungrouping Worksheets

Allows you to edit and format several worksheets at the same time

Changes made to the active sheet will be reflected in all sheets in the group

Use more functions

Excel 2007 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 [dat](#)

Simple Expense Tracking With New Excel 2007 Functions -SUMIFS

Today's author, Monica Poinescu, a Software Developer in Test on the Excel team, gives an overview of some new functions in Excel 2007 and along the way shows us how to do some simple expense tracking.

Considering the current economic environment, one may desire to better keep track of personal expenses. The new functions introduced in Office Excel 2007 simplify this effort. Here is how: given a list of expenses sorted by dates and categories (food, travel, clothing, etc.), how do I find how much was spent for each category, per month? And what's the average amount spent? The functions SUMIFS, AVERAGEIFS and COUNTIFS perform selective calculations: they take into account only those values which fulfill several criteria. The values could be in a range spanning several rows and columns.

Let's assume I entered the expenses in a table:

Date	Category	Amount
January	home	220.35
January	food	34.00
February	travel	65.00
February	food	12.00
January	food	51.00
February	home	358.00
January	home	15.00

The solution below uses the new Excel 2007 feature [structured references](#); see '[Tables Part 3: Using Formulas with Tables](#)' for more details on how to simplify your formulas based on tables.

I'm also using the function SUMIFS which extends the functionality of SUMIF: given a range to be summed, it will add only those values that fulfill all the given criteria (one could use between 1 and 127 criteria applied to corresponding ranges).

The syntax is SUMIFS(the_range_to_sum, range_to_apply_criteria1, criteria1, [range_to_apply_criteria2, criteria2], ...) where the first parameter tells Excel what range we want to sum and the following pairs of arguments tell Excel on which range to apply the respective condition.

In visual terms, I think of each pair (range_to_apply_criteria1, criteria1) as a [punch card](#) with some (0 or more) perforations, in the places where the criteria is TRUE. Stack all these cards on top of each other, the_range_to_sum being on the bottom, and SUMIFS adds only the values that remain visible.

Then start building your reports table by entering in F1:I3 the categories and the months:

	home	food	travel
January			
February			

and in G2 enter:

=SUMIFS(Table1[Amount], Table1[Category], G\$1, Table1[Date], \$F2)

which will evaluate the 'home' expenses for January (235.35).

It should look like this:

G2		=SUMIFS(Table1[Amount],Table1[Category],G\$1,Table1[Date],\$F2)									
	A	B	C	D	E	F	G	H	I	J	K
1	Date	Category	Amount				home	food	travel		
2	January	home	220.35			January	235.35	85	0		
3	January	food	34.00			February	358	12	65		
4	February	travel	65.00								
5	February	food	12.00								
6	January	food	51.00								
7	February	home	358.00								
8	January	home	15.00								
9											

Similarly, in H2 enter:

=SUMIFS(Table1[Amount], Table1[Category], H\$1, Table1[Date], \$F2)

this will evaluate the 'food' expenses for January .

And in I2 enter:

=SUMIFS(Table1[Amount], Table1[Category], I\$1, Table1[Date], \$F2)

to get your travel related amount.

You can copy/paste these formulas down as you add more months. This will automatically take into account new entries in your expense list. Also, in case you need to figure the average expense per category, within each month, you can use:

=AVERAGEIFS(Table1[Amount], Table1[Category], "home", Table1[Date], "January") - this returns 117.675

The Date Function in Excel 2007

Date and Time functions are quite common when you're creating spreadsheets, especially if you need to create a spreadsheet for work. What was the date of the order? How long did it take to process the order? How many days

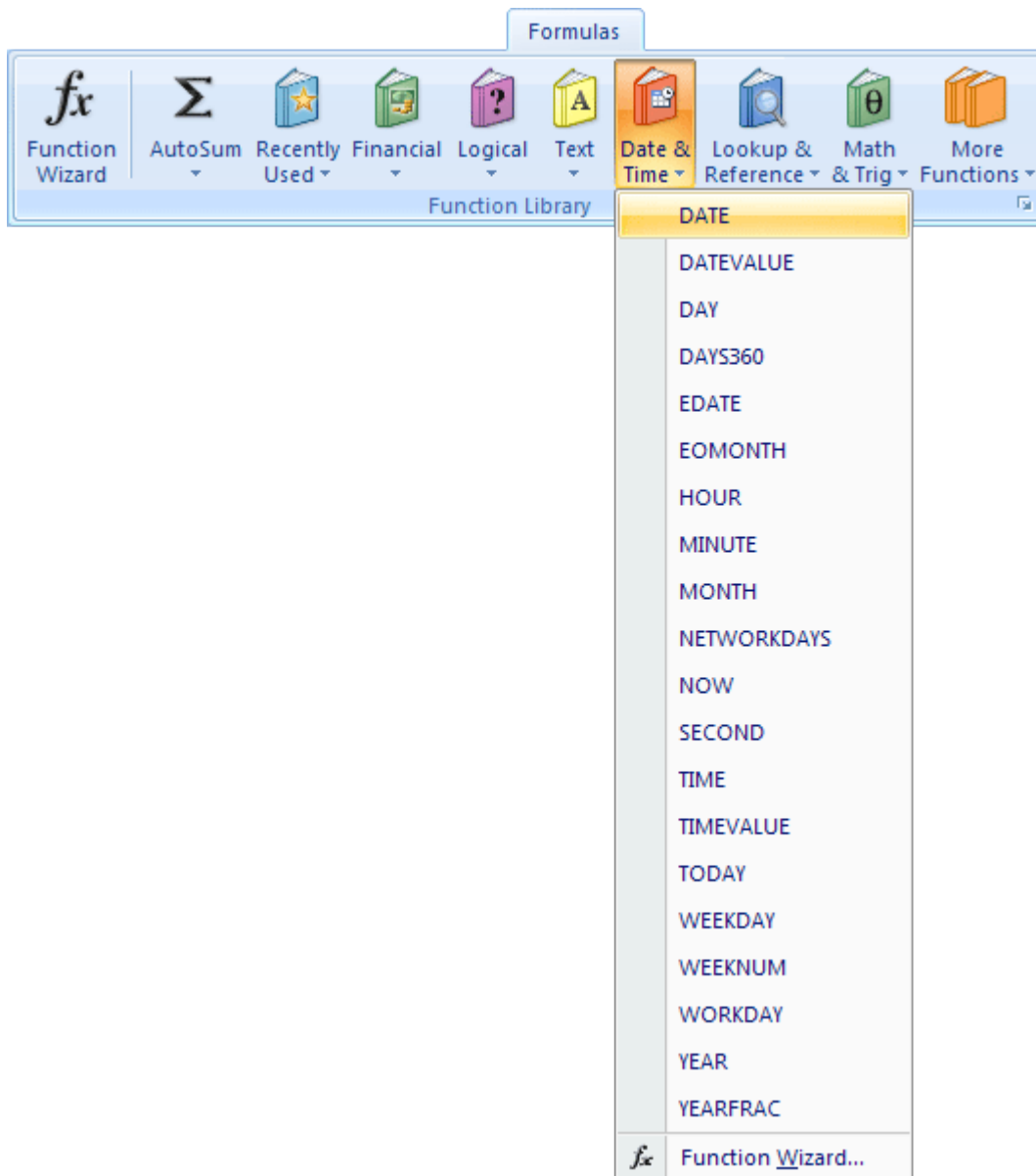
overdue, if any, is the payment? In the next part of this Excel 2007 lesson, you'll see how to theTime function. First up, though is how to handle dates.

The Date Function

As an example of how to use date functions in Excel 2007, we'll construct a simple spreadsheet for an order form. We'll enter the date an order was taken, the date the order was sent, and how long it took to be processed. So, to make a start, create the spreadsheet below :

	A	B	C	D
1	Date Order Taken	Date Order Sent	Time Taken	
2				
3				
4				
5				

Click inside cell A2, and we'll enter a date. To enter a date, Click on the **Formulas** menu at the top of Excel. Then locate the **Function Library** panel. From the Function Library panel, click on **Date & Time**:



As you can see, there's quite a lot of Date and Time functions! Click on **Date** from the menu, and you'll get the following dialogue box:

Function Arguments

DAY5360

Start_date = number

End_date = number

Method = logical

=

Returns the number of days between two dates based on a 360-day year

Start_date start_date and end_date are the two dates between which you want to know the number of days.

Formula result =

[Help on this function](#)

OK Cancel

You're now being asked enter a full date.

- In the Year box, enter 2006
- In the Month box, enter the number 4
- In the Day box, enter the number 15
- Click the OK button
- Excel 2007 will enter the Date in your selected cell, A2 for us

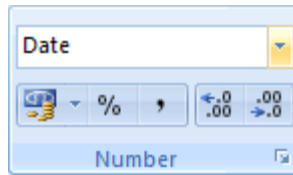
A2				
	A	B	C	D
1	Date Order Taken	Date Order Sent	Time Taken	
2	15/04/2006			
3				
4				
5				

Notice the DATE Function in the Formula bar:

=DATE(2006, 4, 15)

Between the round brackets of DATE, the Year comes first, then the Month, then the Day.

If you want to format your date as say Monday 15th of April, then you need to click on Home from the menu bar at the top of Excel. Locate the Number panel, and you'll see Date already displayed:



Click the down arrow to see more options:



Click the **Long Date** item. Or click on **More** at the bottom to see some more Date formats to choose from. Your spreadsheet will then look like this:

	A	B	C	D
1	Date Order Taken	Date Order Sent	Time Taken	
2	15 April 2006			
3				
4				

In cell B2, under your Date Order Sent heading, enter another Date Function. This time, have the date read May 3, 2006:

	A	B	C	D
1	Date Order Taken	Date Order Sent	Time Taken	
2	15 April 2006	03 May 2006		
3				
4				

In cell C2, under Time Taken, we'll work out how many days the order took to be sent out.

The Days360 Function in Excel 2007

When you want to work out how many days there are between two dates, the function to use is Days360(). We want to work out how many days there are between the 15th of April 2006 and the 3rd of May 2006. So click inside cell C2 and do the following:

Click on the Formulas menu at the top of Excel. Then locate the Function Library panel. From the Function Library panel, click on Date & Time. From the menu, click on Days360(). You should see the Function Arguments dialogue box appear again. This time, it will look like this:

The image shows the 'Function Arguments' dialog box for the DAYS360 function. The title bar is blue with a question mark and a close button. The main area has a light beige background. At the top, the function name 'DAYS360' is displayed. Below it, there are three input fields: 'Start_date', 'End_date', and 'Method'. Each field has a small calendar icon to its right. To the right of each field is an equals sign followed by a description: '= number' for Start_date, '= number' for End_date, and '= logical' for Method. Below these fields, there is a line with an equals sign. Underneath, a description reads: 'Returns the number of days between two dates based on a 360-day year'. Below this, the arguments are listed: 'Start_date' followed by 'start_date and end_date are the two dates between which you want to know the number of days.' At the bottom, there is a 'Formula result =' label, a blue hyperlink 'Help on this function', and two buttons: 'OK' and 'Cancel'.

The Days360 function needs a start date and an end date. You can enter your cell references here. So in the **Start_date** box, enter A2. In the **End_Date** box, enter B2. If you enter the word True in the **Method** box, Excel 2007 will calculate using the European date system. Click OK, to return to your spreadsheet and you might see this:

C2			=DAYS360(A2,B2,TRUE)	
	A	B	C	D
1	Date Order Taken	Date Order Sent	Time Taken	
2	15 April 2006	03 May 2006	18 January 1900	
3				
4				

(If your C2 cell has a lot of ##### symbols in it, it means that your column is not wide enough. Widen the C column and they'll go away!)

The answer we got was January 18th 1900! The reason for such a bizarre answer is that we've formatted the C2 cell as a date. But the answer to the Days360 function is not a date - it's a number. If you have the same strange answer, then format your C2 as a number. Your spreadsheet will then look like ours below:

	A	B	C	D
1	Date Order Taken	Date Order Sent	Time Taken	
2	15 April 2006	03 May 2006	18	
3				
4				

So the difference between the two dates is 18 days.

Entering dates can be fairly straightforward, like cells A2 and B2. But performing calculations with dates can be slightly more complex. To get you some more practise, here's an exercise.

Exercise

Use a Days360 function to work out how many days are left before your next birthday.

Instead of typing out the current date in say cell A2, you can use this inbuilt function:

=Now()

The Now function doesn't need anything between the round brackets. Once you have today's date, you can enter your birthday in say cell B2.

Use Of The Count Functions in Excel 2007

COUNT is one of the first functions which the average user will encounter. It can be accessed from the drop-down menu next to the AutoSum tool. However, many users remain unaware that this modest function has a fine pedigree and is fairly powerful. In this

article, we shall examine some of the hidden power of the COUNT function. The COUNT function is found in the statistical category. There are five variations; COUNT, COUNTA, COUNTBLANK, COUNTIF and COUNTIFS. We will examine COUNTIF and COUNTIFS in another article. In this article, we will look at COUNT, COUNTA and COUNTBLANK. The COUNT function returns the number of cells within a given range or series of ranges that contain numbers. COUNTA simply counts the cells which aren't blank. COUNTBLANK does the reverse: it counts the cells in a range which are blank. For the purposes of illustration, let's say that we have a spreadsheet containing the scores achieved by students in a variety of subjects. For each student, we can input one of three entries under each subject: firstly, a number representing the score achieved; secondly, the letter X indicating a subject the student was scheduled to take but missed; and, thirdly, the cell can be left blank, indicating a subject that they were not scheduled to take. If we want to count the number of exams each student took, we would use COUNT function. If we want to count the number of exams they were scheduled to take we would use COUNTA. Finally, to count the number of exams they were not scheduled to take, we would use COUNTBLANK. To create the formula for calculating the number of exams taken, we would click in the appropriate cell and click the Insert Function button on the left of the formula bar. Next, we highlight the statistical category and scroll down to COUNT. As always Excel reminds us of what this function will do: it counts the number of cells in a range that contain numbers. When we click OK, the Function Wizard appears and we are prompted to specify the parameters required by this function. In almost all circumstances, these parameters will consist of cell references. We can simply drag across the cells that we want to count and Excel will create the reference for us. We can then click OK and Excel will return the correct value. Next, we would repeat the same procedure to create a formula containing the COUNTA function and another for containing COUNTBLANK. Finally, we would copy the formula down by highlighting the cells containing the original formulas and dragging the AutoFill handle down. The author is a trainer and developer with OniteTrainingCourses.Com, an independent computer training company offering a href=<http://www.onsitetrainingcourses.com/training-courses/microsoft-training/excel.htm> target='_blank'Excel training courses/a in London and throughout the UK. P.S. After a hard working day you deserve a nice rest. If you like video games – get PS3 at the best price. Visit the a href=<http://www.playstationexpert.com/play-station-tips/sony-playstation-advice-hints-and-tips.html> target='_blank'cheap PlayStation 3/a for frugal tips.

Calculating with Functions

Basic worksheets in Excel often require you to use formulas and functions, which are calculations based on designated values, cell references, and commands. Functions are pre-written commands provided by Excel, while formulas are written entirely by the user. While both methods are useful, functions often save time and energy when working with complex but common tasks (such as finding the sum or average of a group of numbers) by allowing you to customize a pre-created calculation instead of typing it yourself.

HINT: For more information on formulas, refer to **Performing Calculations with Formulas** ([Win](#) | [Mac](#)).

- [Parts of a Function](#)
- [Inserting Functions](#)
- [Inserting Functions with the Point and Click Method](#)



Parts of a Function

Functions have two basic parts which you should be aware of:

- An equation, which is provided by Excel when you select the desired function
- Values or cell references to be used in the equation, which you will provide

Functions that are inserted using the **Insert Function** ([Windows](#)) / **Formula Builder** ([Macintosh](#)) dialog or the [Point and Click](#) method provide empty equations, you must provide the values which will be used in the calculation. Depending on the calculation, you may choose to use several types of operands.

NOTE: While typing cell references, keep in mind that the calculations will be done using the values present in the particular cells entered, not with the cell references themselves.

Operand	Example	Value
Cell Reference	A1	Calculates the function using the value(s) present in a specified cell. References can be relative or absolute .
Cell Range	A1:A3	Calculates the function using the values present in all cells specified. References can be relative or absolute .

Named Cell Range	Quiz Scores	Calculates the function using a specific group of cells that you have previously named . If the function is copied or moved, it will still use the values present in the specified range.
Value	5	Calculates the function using a specific value provided by you.

Inserting Functions

There are multiple ways to create a function. You can insert functions manually (by typing them), or you can use the **Insert Function** dialog box in Windows and the **Formula Builder** dialog box in Macintosh. The dialog box option eliminates the possibility of a typing error, so it is the recommended method.

Inserting Functions: Dialog Box Option

The dialog box option makes it easy to determine what functions are available, which function you should be using, and what you need to include in the function. It displays a listing of all functions or categories of functions available with Excel. As you select a function, a sample of the function appears at the bottom of the dialog box. As you make your selection, the dialog box will request certain types of information; you will simply need to select the cells where that information is located.

Windows:

1. Select the cell where the function should be added
2. From the **Ribbon**, select the **Formulas** command tab



3. In the **Function Library** group, click **FUNCTION WIZARD**.
The **Insert Function** dialog box appears.

Insert Function ? x

Search for a function:

Type a brief description of what you want to do and then click Go

Or select a category: All

Select a function:

ABS
ACOS
ACOSH
ADDRESS
AND
AREAS
ASIN

ABS(number)
Returns the absolute value of a number, a number without its sign.

[Help on this function](#)

4. From the **Or select a category** pull-down list, select the appropriate function category
OR
Select **All**
5. From the **Select a function** scroll box, select the desired function
HINT: A description of the selected function appears beneath the **Select a function** scroll box.
6. Click **OK**
The **Function Arguments** dialog box appears.
NOTES:
The appearance and options available in the **Function Arguments** dialog box will differ depending on which function has been chosen.

A function's arguments are the value(s) that the function is being performed upon.

Function Arguments

AVERAGE

Number1 B4:B8 = {0;0;0;0;0}

Number2 = number

= AVERAGE(B4:B8)



Returns the average (arithmetic mean) of its arguments, which can be numbers or names, arrays, or references that contain numbers.

Number1: number1,number2,... are 1 to 255 numeric arguments for which you want the average.

Formula result = AVERAGE(B4:B8)

[Help on this function](#)

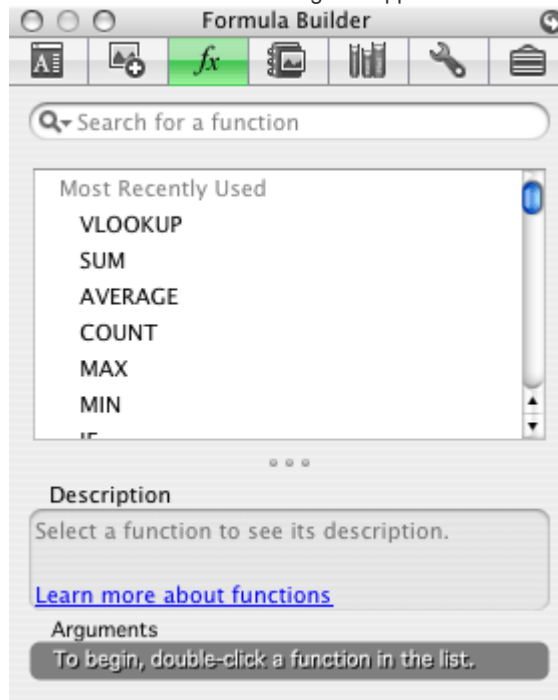
OK Cancel

7. In the text boxes, type the [data](#) to be used in the function
OR
To select cell ranges
 - a. Click **COLLAPSE DIALOG** 
 - b. Click and drag the mouse to select the desired cells
 - c. Click **RESTORE DIALOG** 
8. Click **OK**
The results of the function appear in the selected cell.

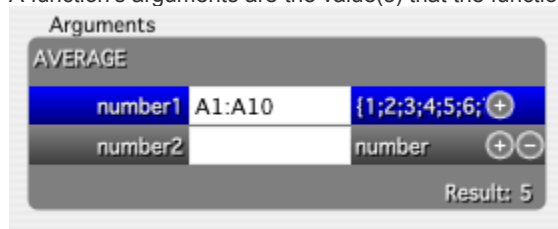
Macintosh:

1. Select the cell where the function should be added

- From the **Insert** menu, select **Function...**
The **Formula Builder** dialog box appears.



- In the formula scroll-box, double-click the desired function
HINT: In the **Description** section, a description of the selected function appears.
NOTES:
The **Arguments** section of the **Formula Builder** expands.
The appearance and options available in the **Arguments** section will differ depending on which function has been chosen.
A function's arguments are the value(s) that the function is being performed upon.



- Complete the text boxes.
HINT: Type the [data](#) to be used in the function or click and drag the mouse to select the desired cells
- Press [return]

Inserting Functions: Ribbon Option

Windows only:

Excel provides a multitude of functions for your use. While this ensures that functions exist for most of your needs, it can also make it very difficult to find a particular function. To make functions easier to find, they are divided into categories (e.g., math and trig functions, date and time functions, logic functions, etc.). If you are looking for a function that belongs in a particular category, you can access the **Function Arguments** dialog box from that category.

1. Select the cell where the function should be added
2. From the **Ribbon**, select the **Formulas** command tab
3. In the **Function Library** group, click the correct category » select the desired function

The **Function Arguments** dialog box appears.

NOTES:

The appearance and options available in the **Function Arguments** dialog box will differ depending on which function has been chosen.

A function's arguments are the value(s) that the function is being performed upon.

Function Arguments

DATE

Year	A2	=	2003
Month	B2	=	2
Day	C3	=	8

= 37660

Returns the number that represents the date in Microsoft Office Excel date-time code.

Day is a number from 1 to 31 representing the day of the month.

Formula result = 37660

[Help on this function](#)

OK Cancel

4. In the text boxes, type the [data](#) to be used in the function
OR
To select cell ranges
 - a. Click **COLLAPSE DIALOG**
 - b. Click and drag the mouse to select the desired cells
 - c. Click **RESTORE DIALOG**
5. Click **OK**
The results of the function appear in the selected cell.

About the Function Arguments Dialog Box

The **Function Arguments** dialog box helps you to create functions. As you type information about the function, the **Function Arguments** dialog box displays the name of the function, the function arguments (i.e., the [values](#) that the function is being performed upon), a description of the function and its logic, and the result of the function.

Once you have entered a function, you can further edit it using the **Function Arguments** dialog box.

To access the Function Arguments dialog box:

Windows only:

1. Select a cell containing a function

2. On the **Formula** bar, click **FUNCTION WIZARD** 
The **Function Arguments** dialog box appears.



Inserting Functions with the Point and Click Method

Functions based on cell references can be created by clicking the cells rather than typing the cell entries. This "point and click" method can help reduce the chance of error in the functions and may be easier for some users.

The key to the point and click method is to click the cells to be included and type the operators where appropriate.

NOTE: All functions that can be accessed from the **Insert Function** ([Windows](#)) / **Formula Builder** ([Macintosh](#)) dialog box can be typed with a text-based command. If you choose to type your function into a cell, however, be sure that you know precisely how to enter information for the function, especially if you are working with a complex function.

The following examples provide step-by-step instructions for a simple addition of two cells and for adding a range of cells.

Adding Cells Together

1. Select the cell where the results should be displayed
2. To start the function, press [=]
3. Click the first cell to be added
4. Press [+]
5. Click the next cell to be added
6. Repeat steps 4–5 as necessary
7. Windows: Press [Enter]
Macintosh: Press [return]
The sum appears in the selected cell.

Adding a Range of Cells with the SUM Function

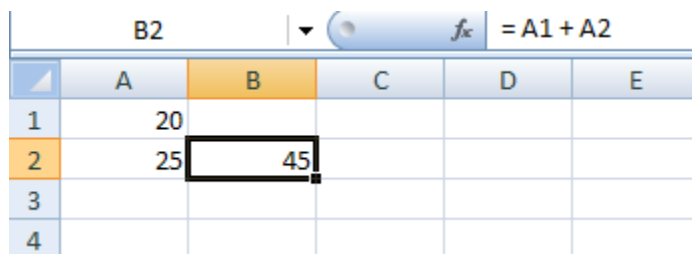
1. Select the cell where the results should be displayed
2. To start the function, press [=]
3. Type **SUM(**
4. Click and drag the mouse over the range of cells to be added
OR
 - a. Click the first cell in the range to be added
 - b. Press [:]
 - c. Click the last cell in the range to be added
5. Type **)**
6. Windows: Press [Enter]
Macintosh: Press [return]
The sum appears in the selected cell.

Use Absolute cell references in formulas

Absolute Cell References

An important difference in Excel spreadsheets is between absolute cell references and relative cell references. To see what this is all about, we'll create a simple spreadsheet. This will illustrate relative cell references, which is what we've been using so far.

So open up Excel 2007 and enter the same values as in the image below:



The image shows an Excel spreadsheet with columns A through E and rows 1 through 4. Cell A1 contains the value 20, and cell A2 contains the value 25. Cell B2 is selected and contains the formula =A1+A2, which has resulted in the value 45. The formula bar at the top shows the formula =A1+A2.

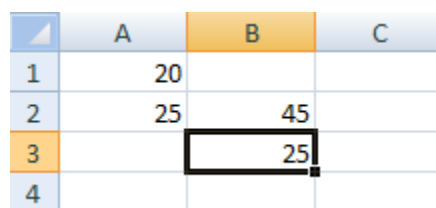
	A	B	C	D	E
1	20				
2	25	45			
3					
4					

In cell B2, you need the following formula:

= A1 + A2

What do you think would happen if we copied and pasted the formula from B2 to cell B3? Let's see:

- Click inside cell B2 to highlight it
- Click on cell B2 with your right mouse button, and select Copy from the menu that appears
- Now click into cell B3
- Again, right click the cell to get the menu. But this time click Paste
- Your spreadsheet should now look like ours:



The image shows the same Excel spreadsheet as before, but now cell B3 contains the value 25. This is because the formula from B2 was copied to B3, and Excel automatically adjusted the formula to =A2+A3, which equals 25.

	A	B	C
1	20		
2	25	45	
3		25	
4			

Cell now says 25! We were trying to work out what $20 + 25$ was, and have the wrong answer. So why did Excel put 25 into cell B3 and not 45?

With cell B3 still highlighted, look at the formula bar at the top of Excel. You should see this formula:

= A2 + A3

Click into B2, however, and the formula is this:

= A1 + A2

The problem is due to cell referencing. When you clicked Copy from the menu, Excel didn't only copy the formula. It took a look at where the cells were in the formula, relative to the B2 cell, and copied this as well. From B2, the first cell reference (A1) is up one row, and left 1 column (the red arrow below):

	B2		fx = A1 + A2			
	A	B	C	D	E	
1	20					
2	25	45				
3						
4						

The second cell reference (A2) is one column to the left of cell B2:

	B2		fx = A1 + A2			
	A	B	C	D	E	
1	20					
2	25	45				
3						
4						

When you clicked into cell B3 and selected Paste from the menu, Excel was not only pasting the formula, it was pasting this "up 1, left 1". Take a look at the two images below. We're now starting at cell B3. Have a look at where the two red arrows are pointing now:

The first cell reference:

	A	B	C
1	20		
2	25	45	
3		25	
4			

The second cell reference:

	A	B	C
1	20		
2	25	45	
3		25	
4			

So the first red arrow is pointing to cell A2, and the second red arrow is point to cell A3. This is what was copied. Excel then took the formula to mean this:

$$= A2 + A3$$

But it should have been this:

$$= A1 + A2$$

If you want the correct answer in cell B3, you have stop Excel from using this Relative Cell Referencing that it's currently doing. What you need is Absolute Cell Referencing.

Absolute cell referencing involves nothing more than placing a dollar symbol (\$) before each letter and number.

Click inside of cell B2 on your spreadsheet, and change the formula to this:

$$= \$A\$1 + \$A\$2$$

Now copy and paste it over to cell B3 again. You should have the correct answer, this time:

	A	B	C	D	E
1	20				
2	25	45			
3		45			
4					

Excel will use Absolute Formula in its own calculation, so it's worth getting used to them. But to recap:

- If you need to copy and paste formulas, use Absolute cell references
- Absolute referencing means typing a dollar symbol before the numbers and letters of each cell reference (You can mix absolute and relative cell references, though).

Creating Tables and Lists

	A	B	C	D	E
1	College Enrollment 2007 - 2008				
2					
3	Student ID	Last Name	Initial	Age	Program
4	ST348-245	Walton	L.	21	Drafting
5	ST348-246	Wilson	R.	19	Science
6	ST348-247	Thompson	G.	18	Business
7	ST348-248	James	L.	23	Nursing
8	ST348-249	Peterson	M.	37	Science
9	ST348-250	Graham	J.	20	Arts
10	ST348-251	Smith	F.	26	Business
11	ST348-252	Nash	S.	22	Arts
12	ST348-253	Russell	W.	20	Nursing
13	ST348-254	Robitaille	L.	19	Drafting

Excel 2003 Database Tutorial

© Ted French

Tables of data

The basic format for storing data in an Excel database is a table. In a table, data is entered in rows. Each row is known as a [record](#).

Once a table has been created, Excel's data tools can be used to search, sort, and filter records in the database to find specific information.

Although there are a number of ways you can use these data tools in Excel, the easiest way of doing so is to create what's known as a **list** from the [data](#) in a table.

To follow this tutorial:

- enter the data as it is shown in the image above.

Tip - To enter the Student ID's quickly:

Note: For help on these steps, refer to the image above.

1. Type the first two ID's - ST348-245 and ST348-246 into cells A5 and A6 respectively.
2. [Drag select](#) the two ID's to highlight them.
3. Click on the [fill handle](#) and drag it down to cell A13.

4. The rest of the Student ID's should be entered into cells A6 to A13 correct

Entering Data Correctly

	A	B	C	Leave no empty cells in the table when entering data	
1	College Enrollment 2005 - 2006				
2					
3	Student ID	Last Name	Initial	Age	Program
4	ST348-245	Smith	B.	21	Drafting
5	ST348-246	Wilson	C.	19	Science
6	ST348-247	Thompson	S.	18	Business
7	ST348-248	James	D.	23	Nursing
8	ST348-249	Ramirez	A.	37	Science
9	ST348-250	Graham	T.	20	Arts
10	ST348-251	Rosen	O.	26	Business
11	ST348-252	Hirsch	W.	22	Arts
12	ST348-253	Russell	E.	20	Nursing
13	ST348-254	Robitaille	K.	19	Drafting

Enter the data correctly for a list

© Ted French

Entering Data Correctly

Note: For help on these steps, refer to the image above.

The first step in creating an Excel database is to enter the data. When doing so, it is important to ensure that it is entered correctly.

Data errors, caused by incorrect data entry, are the source of many problems related to data management. If the data is entered correctly in the beginning, the program is more likely to give you back the results you want.

Rows are Records

	A	B	C
1	College Enrollment 2005 - 2006		
2			
3	Student ID	Last Name	Initial
4	ST348-245	Smith	B.
5	ST348-246	Wilson	C.
6	ST348-247	Thompson	S.
7	ST348-248	James	D.
8	ST348-249	Ramirez	A.
9	ST348-250	Graham	T.
10	ST348-251	Rosen	O.
11	ST348-252	Hirsch	W.
12	ST348-253	Russell	E.
13	ST348-254	Robitaille	K.

Each row in the table is a data record

A data record in an Excel database

© Ted French

Rows are Records

Note: For help on these steps, refer to the image above.

As mentioned, rows of [data](#), in a database are known as [records](#). When entering records keep these guidelines in mind:

- Leave no blank rows in the table being created, not even between the headings and the first row of data.
- A record can contain data about only one specific item.
- A record must also contain ALL the data in the database about that item. There can't be information about an item in more than one row.

Columns are Fields

	A	B	C		
1	College Enrollment 2005 - 2006				
2					
3	Student ID	Last Name	Initial	Age	Program
4	ST348-245	Smith	B.	21	Drafting
5	ST348-246	Wilson	C.	19	Science
6	ST348-247	Thompson	S.	18	Business
7	ST348-248	James	D.	23	Nursing
8	ST348-249	Ramirez	A.	37	Science
9	ST348-250	Graham	T.	20	Arts
10	ST348-251	Rosen	O.	26	Business
11	ST348-252	Hirsch	W.	22	Arts
12	ST348-253	Russell	E.	20	Nursing
13	ST348-254	Robitaille	K.	19	Drafting

Field names

Field names in an Excel table

© Ted French

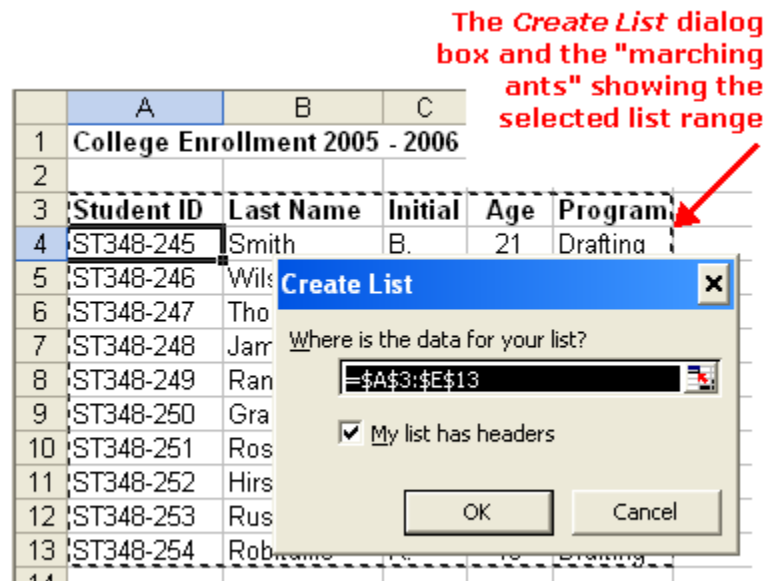
Columns are Fields

Note: For help on these steps, refer to the image above.

While rows in an Excel database are referred to as records, the columns are known as **fields**. Each column needs a heading to identify the data it contains. These headings are called field names.

- Field names are used to ensure that the data for each record is entered in the same sequence.
- Make sure that all the data in a column is entered using the same format. If you start entering numbers as digits (such as 10 or 20) keep it up. Don't change part way through and begin entering numbers as words (such as ten or twenty). Be consistent.
- Leave no blank columns in the table.

Creating the List



Using the Create List dialog box in Excel

© Ted French

Create the list

Note: For help on these steps, refer to the image above.

Once the data has been entered into the table, it can be converted to a **list**. To do so:

1. [Drag select](#) cells A3 to E13 in the spreadsheet.
2. Click on **Data > List > Create List** from the menu to open the *Create List* dialog box.
3. While the dialog box is open, [cells](#) A3 to E13 on the worksheet should be surrounded by the [marching ants](#).
4. If the marching ants surround the correct [range](#) of cells, click Ok in the *Create List* dialog box.
5. If the marching ants **do not** surround the correct range of cells, drag select the correct range in the spreadsheet and then click Ok in the *Create List* dialog box.
6. The table should be surrounded by a dark border and have drop down arrows added beside each field name.

Using the Database Tools

A list in Excel.

The open menu shows options for sorting and filtering data

	A	B	C
1	College Enrollment 2005 - 2006		
2			
3	Student ID	Last Name	Initial
4	ST348-245	Sort Ascending	B.
5	ST348-246	Sort Descending	C.
6	ST348-247	(All)	S.
7	ST348-248	(Top 10...)	D.
8	ST348-249	(Custom...)	A.
9	ST348-250	Graham	37
10	ST348-251	Hirsch	20
11	ST348-252	James	26
12	ST348-253	Ramirez	22
13	ST348-254	Robitaille	20
14	*	Rosen	19
15		Russell	
16		Smith	
17		Thompson	
18		Wilson	

Creating lists in Excel

© Ted French

Using the Database Tools

Note: For help on these steps, refer to the image above.

Once you have created the database, you can use the tools located under the drop down arrows beside each field name to sort or filter your data.

Sorting Data

1. Click on the drop down arrow next to the *Last Name* field name.
2. Click on the *Sort Ascending* option to sort the database alphabetically from A to Z.
3. Once sorted, *Graham J.* should be the first record in the table and *Wilson . R* should be the last.

Filtering Data

1. Click on the drop down arrow next to the *Program* field name.
2. Click on the *Business* option to filter out any students not in the business program.
3. Click OK.
4. Only two students - G. Thompson and F. Smith should be visible since they are the only two enrolled in the business program.

5. To show all records, click on the drop down arrow next to the *Program* field name.
6. Click on the *All* option.

Expanding the Database

	A	B	C	D	E
1	College Enrollment 2007 - 2008				
2					
3	Student ID ▼	Last Name ▼	Initial ▼	Age ▼	Program ▼
4	ST348-245	Walton	L.	21	Drafting
5	ST348-246	Wilson	R.	19	Science
6	ST348-247	Thompson	G.	18	Business
7	ST348-248	James	L.	23	Nursing
8	ST348-249	Peterson			
9	ST348-250	Graham			
10	ST348-251	Smith			
11	ST348-252	Nash			
12	ST348-253	Russell			
13	ST348-254	Robitaille	L.	19	Drafting
14	*				

Type in the blank row provided to add new records to the database

Excel 2003 Database Tutorial

© Ted French

Expanding the database

Note: For help on these steps, refer to the image above.

Expanding the database

Note: For help on these steps, refer to the image above.

To add additional records to your database:

- A blank row containing an asterisk (cells A14 to E14) is added to the bottom of the database when it is created.
- Additional data can be added to the database using this blank row.
- Add the following data:

Cell - Data

A14 - ST348-255

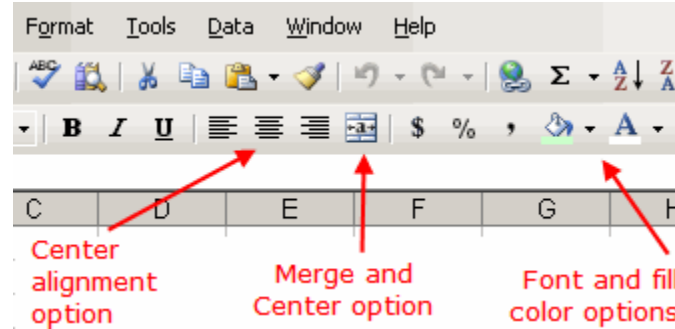
B14 - Christopher

C14 - A.

D14 - 22

E14 - Science

ormatting the Database



Excel 2003 Database Tutorial

© Ted French

Formatting the database:

Note: For help on these steps, refer to the image above. This step involves using icons located on the **Formatting toolbar**, which is normally located at the top of the Excel 2003 screen. If it is not present, this article, [Finding Excel Toolbars](#) can help you locate it.

1. [Drag select](#) cells A1 to E1 in the spreadsheet.
2. Click on the *Merge and Center* icon on the **Formatting** Toolbar to center the title.
3. With cells A1 to E1 still selected, click on the *Fill Color* icon on the **Formatting** Toolbar (looks like a paint can) to open the background color drop down list.
4. Choose *Sea Green* from the list to change the background color of cells A1 - E1 to dark green.
5. Click on the *Font Color* icon on the **Formatting** Toolbar (it is a large letter "A") to open the font color drop down list.
6. Choose *White* from the list to change the color of the text in cells A1 - E1 to white.
7. Drag select [cells](#) A2 - E2 on the spreadsheet.
8. Click on the *Fill Color* icon on the **Formatting** Toolbar to open the background color drop down list.
9. Choose *Light Green* from the list to change the background color of cells A2 - E2 to light green.
10. Drag select cells A3 - E14 on the spreadsheet.
11. Choose **Format > AutoFormat** from the menus to open the *AutoFormat* dialog box.
12. Choose *List 2* from the list of options to format cells A3 - E14.

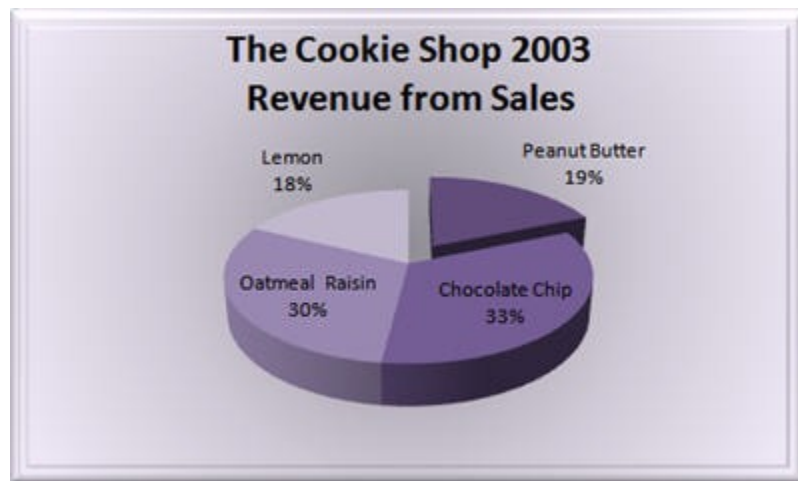
13. Drag select cells A3 - E14 on the spreadsheet.
14. Click on the *Center* option icon on the **Formatting** Toolbar to center align the text in cells A3 to E14.
15. At this point, if you have followed all the steps of this tutorial correctly, your spreadsheet should resemble the spreadsheet pictured in [Step 1](#) of this tutorial.

Use filters and subtotals in a data base

See above

Create charts

Create a Pie Chart / Pie Graph in Excel 2007



Excel 2007 Pie Chart

© Ted French

Excel 2007 Pie Chart / Pie Graph Tutorial

Related article: [Excel 2003 Pie Chart Tutorial](#).

One change to creating a pie chart or pie graph in Excel 2007 is that the [Chart Wizard](#) is no longer available.

It has been replaced by chart options listed under the Insert [ribbon](#).

This tutorial walks you through creating and formatting a pie chart using many of the common features available in Excel 2007.

Entering the Chart Data

The Cookie Shop Sales - 2003		
Peanut Butter	\$15,500	
Chocolate Chip	\$27,589	
Oatmeal Raisin	\$24,980	
Lemon	\$14,768	

Excel 2007 Pie Chart

© Ted French

Enter the Chart Data

The first step in creating a pie chart is to enter the data into the [worksheet](#).

When entering the data, keep these rules in mind:

1. Don't leave blank [rows](#) or [columns](#) when entering your data.
2. Enter your [data](#) in columns.
 - **Note:** When laying out your spreadsheet, list the names describing the data in one column and, to the right of that, the data itself.
3. A pie chart is a percentage chart, so only one series of data will be used in the chart. If there is more than one column of data, try to list the data to be used in the chart next to the column containing the list of names in order to simplify creating the chart.

Select the Pie Chart Data

The Cookie Shop Sales - 2003		
Peanut Butter	\$15,500	
Chocolate Chip	\$27,589	
Oatmeal Raisin	\$24,980	
Lemon	\$14,768	

Excel 2007 Pie Chart

© Ted French

Two Options for Selecting the Chart Data

Using the mouse

1. Drag select with the mouse button to highlight the cells containing the data to be included in the pie chart.

Using the keyboard

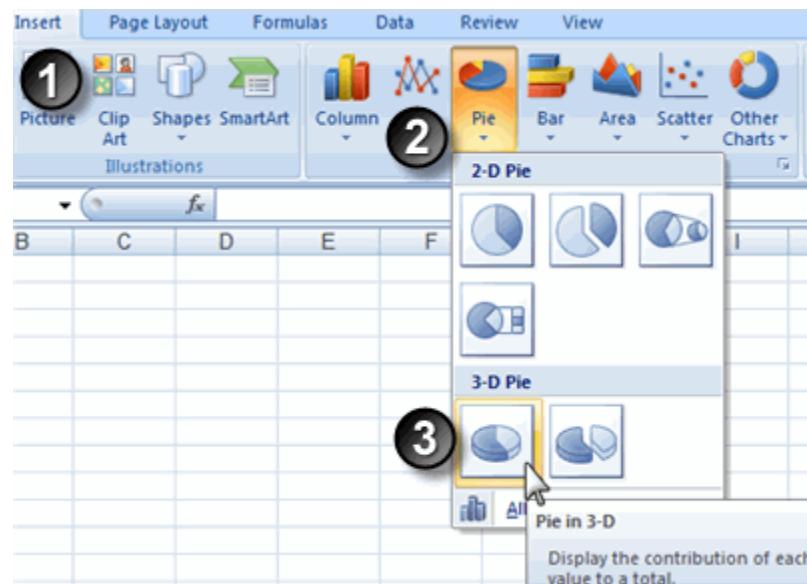
1. Click on the top left of the pie charts's data.
2. Hold down the **SHIFT** key on the keyboard.
3. Use the arrow keys on the keyboard to select the data to be included in the pie chart.

Note: Be sure to select any column and row titles that you want included in the chart.

For this tutorial

1. Highlight the block of cells from A2 to B5, which includes the row headings

Selecting a Pie Chart Type



Excel 2007 Pie Chart

© Ted French

Selecting a Pie Chart Type

Note: For help with these instructions, see the image example above.

1. Click on the *Insert* [ribbon](#) tab.
2. Click on a chart category to open the drop down list of available chart types.
(Hovering your mouse pointer over a chart type will bring up a description of the chart type).
3. Click on a chart type to select it.

For this tutorial

1. Choose **Insert > Pie > Pie in 3-d**.
2. A basic pie chart is created and placed on your [worksheet](#). The following pages cover formatting this chart to match the pie chart shown in [Step 1](#) of this tutorial.

he Basic Pie Chart



Excel 2007 Pie Chart

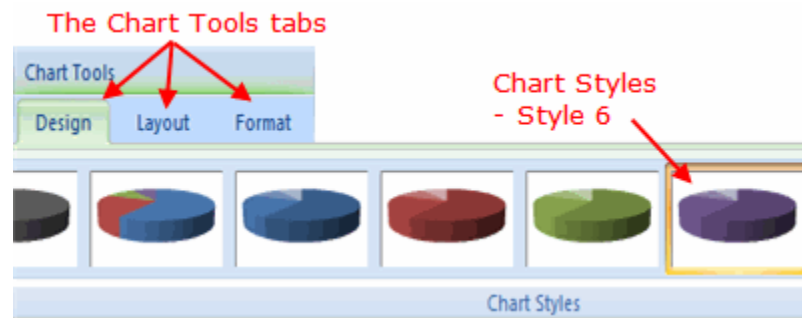
© Ted French

Formatting options for the pie chart

Use the following links to format the basic pie chart shown above.

- [Choosing a style for the pie chart](#)
- [Exploding a piece of the pie chart](#)
- [Adding a title to the chart](#)
- [Remove the legend](#)
- [Adding data labels to the chart](#)
- [Adding a drop shadow to the title](#)
- [Coloring the chart background](#)
- [Beveling the chart edge](#)

Formatting the Pie Chart - 1



Excel 2007 Pie Chart

© Ted French

Formatting the Pie Chart - 1

Note: For help with these instructions, see the image example above.

When you click on a chart, three tabs - the Design, Layout, and Format tabs are added to the [ribbon](#) under the title of *Chart Tools*.

Choosing a style for the Pie chart

1. Click on the pie chart.
2. Click on the *Design* tab.
3. Choose **Style 6** of the Chart Styles

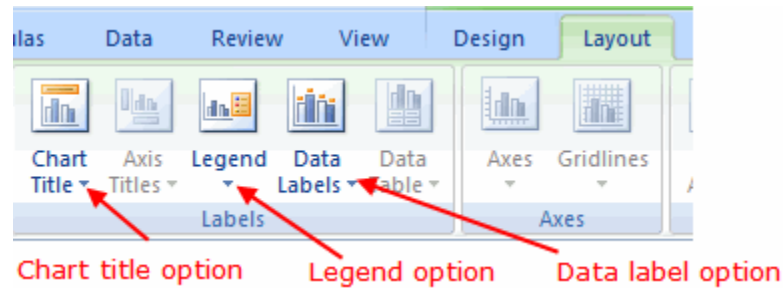
. [Return to the format options list](#)

Exploding a piece of the pie chart

Note: Exploding a piece of pie out from the rest of the chart is done to emphasize that section.

1. Click once on the pie chart to highlight it.
2. Click once on the *Peanut Butter* slice of the pie chart to select just that piece of the chart.
3. Click and drag the *Peanut Butter* slice out from the pie chart to *explode* it.

Formatting the Pie Chart - 2



Excel 2007 Pie Chart

© Ted French

Formatting the Pie Chart - 2

Note: For help with these instructions, see the image example above.

Adding a title to the chart

1. Click on the *Layout* tab.
2. Click on *Chart Title* under the *Labels* section.
3. Select the third option - *Above Chart*.
4. Type in the title "**The Cookie Shop 2003 Revenue from Sales**"

[Return to the format options list](#)

Remove the legend

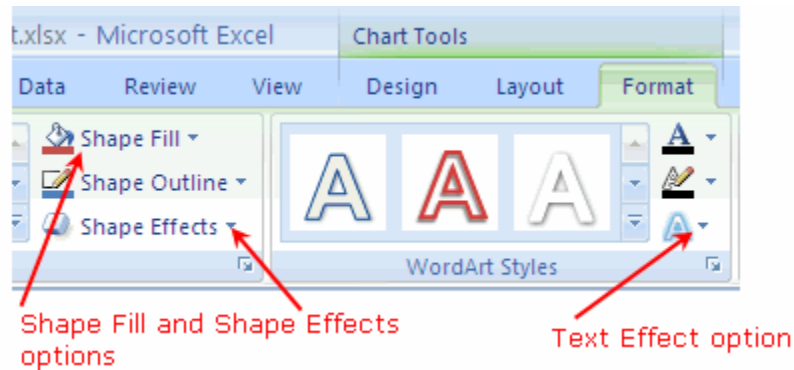
1. Choose **Layout > Legend > None**.

[Return to the format options list](#)

Adding data labels to the chart

1. Choose **Layout > Data Labels > Best Fit** to add data labels.
2. Choose **Layout > Data Labels > More Data Label Options** to bring up the *Format Data Labels* dialog box.
3. Remove the check marks from **Value** and **Show Leader Lines** under *Label Options* in the right hand window.
4. Check off **Category Name** and **Percentage** under *Label Options* in the right hand window.

Formatting the Pie Chart - 3



Excel 2007 Pie Chart

© Ted French

Formatting the Pie Chart - 3

Note: For help with these instructions, see the image example above.

Adding a drop shadow to the title

1. [Drag select](#) the chart title.
2. Click on the **Format** [ribbon](#) tab.
3. Choose **Text Effects > Shadow > Offset Right**.

[Return to the format options list](#)

Coloring the chart background

1. Click on the chart background.
2. Click on the **Format** [ribbon](#) tab.
3. Choose **Shape Fill > Gradient > Theme Colors > Purple, Accent 4, Lighter 80%**.
4. Click on the **Shape Fill > Gradient > From Center** option.

[Return to the format options list](#)

Beveling the chart edge

1. Click on the chart background.
2. Click on the **Format** [ribbon](#) tab.
3. Choose **Shape Effects > Bevel > Divot**.

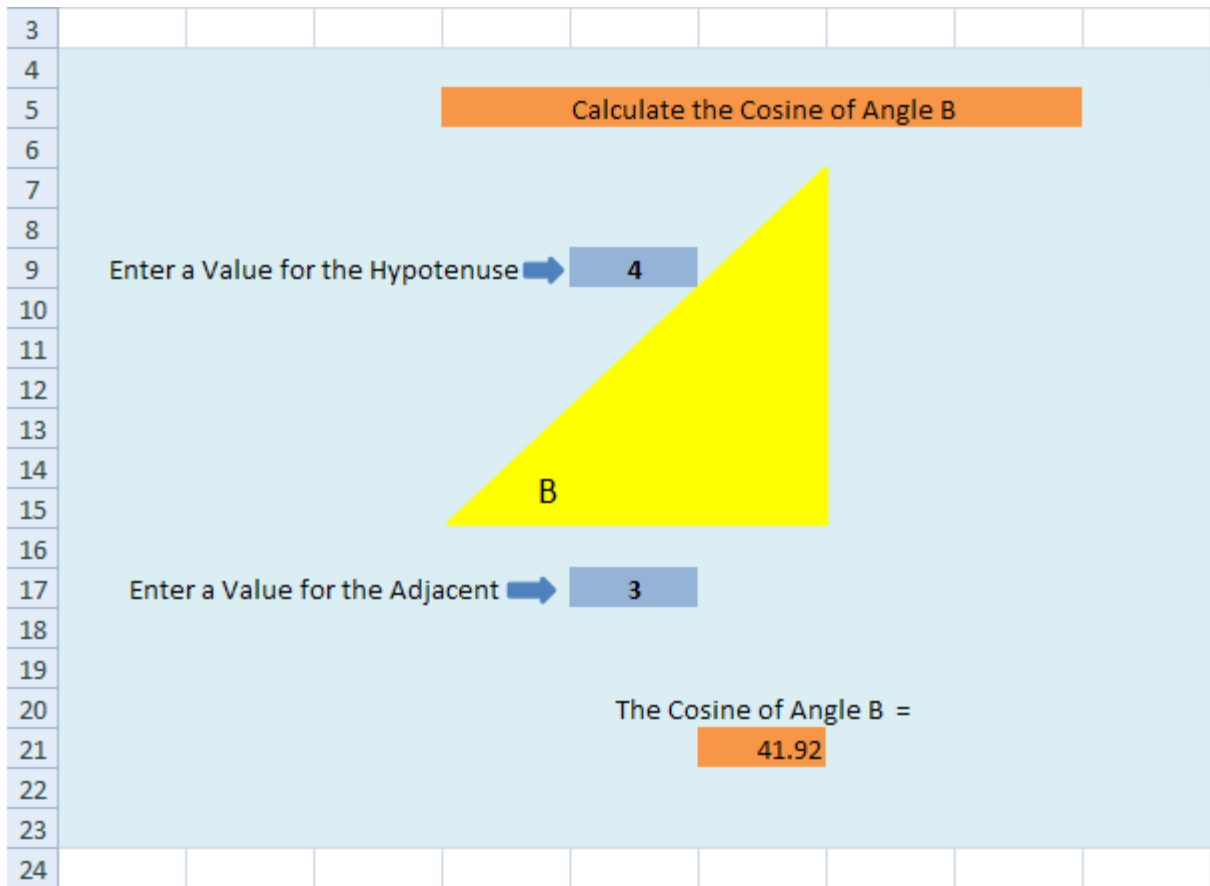
Create drawing objects

Insert Drawing Objects into your Excel 2007 Spreadsheets

A drawing can liven up a dull spreadsheet. Some good line art, or even simple shapes, can help illustrate your data. In this lesson, you'll see how to add simple shapes, and textboxes to your spreadsheet. First, look at the spreadsheet below. Unless you know about Cosines, Adjacent angles, and Hypotenuse, the data below will be a bit bewildering:

	A	B	C	D	E	F
1	Calculate the Cosine of Angle B					
2						
3	Enter a Value for the Hypontuse				4	
4	Enter a Value for the Adjacent				3	
5	The Cosine of Angle B =				42	
6						
7						

However, add a few shapes, along with some colour, and it becomes clearer what the data is for (the Cosine in the image below has been formatted to 2 decimal places):

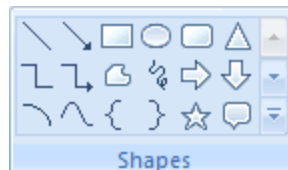


We'll now show you how to produce a spreadsheet like the one above. Don't worry if you haven't a clue about Cosines - it's not important for this lesson. (We'll show you the formula, though.)

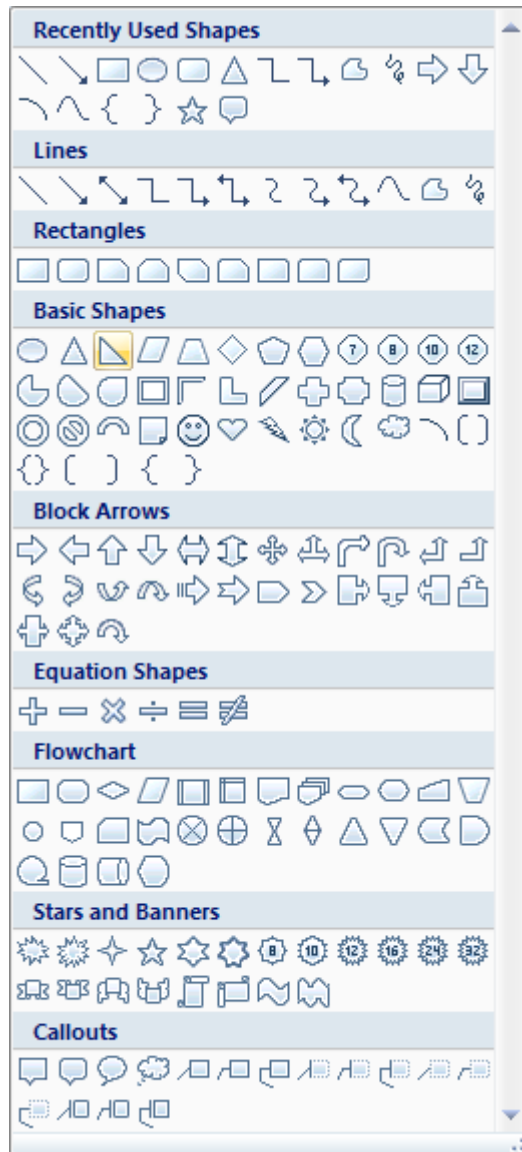
How to Draw a Shape on an Excel 2007 Spreadsheet

To insert a shape on your spreadsheet, do the following.

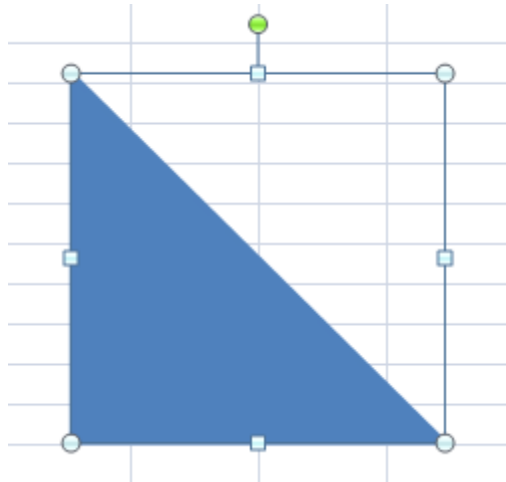
- From the Excel 2007 menu bar, click on **Insert**
- Locate the **Shapes** panel:



On the **Shapes** panel, click the drop down arrow to see all the available shapes:

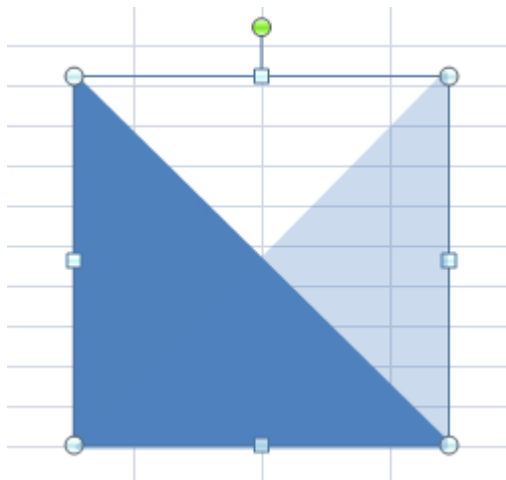


- Under **Basic Shapes**, select the **Right Triangle**
- Hold down your left mouse button on your spreadsheet, and drag to create your shape. Let go when you have a decent sized triangle. You'll see something like this:

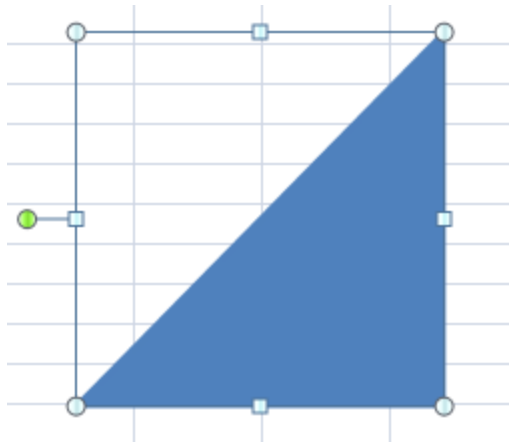


The green circle allows you to rotate the shape. The other circles (and squares) are sizing handles. Hold your mouse down over one of these and drag to resize your shape, if it's not the size you want it.

But we'd like the triangle pointing the other way. So hold your mouse down on the green circle, and drag to rotate your triangle:

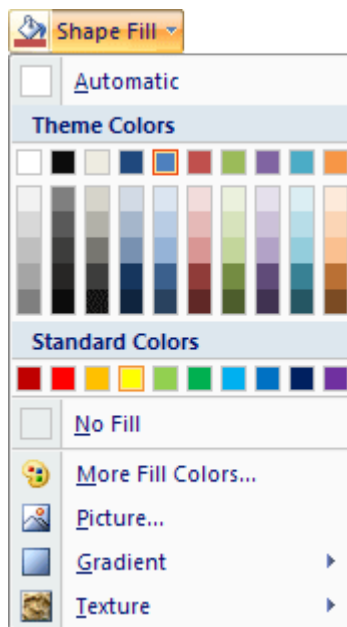


You should see an outline, like the one above. Let go of your left mouse button when it is in position:

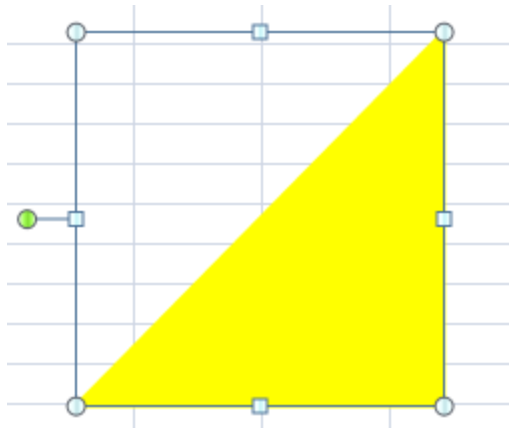


As you can see, the green circle is now on the left hand side.

If you look on the Excel 2007 Ribbon at the top, you'll notice that it has changed. You'll see all the various options for shapes. Locate **Shape Fill** on the **Shape Styles** panel, and click to see the **Fill** options:

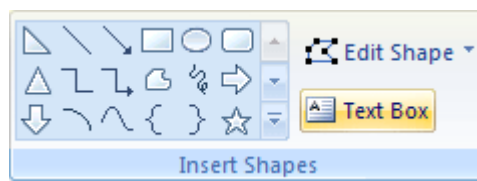


Select a colour for your triangle. You'll also want to select a **Shape Outline**, underneath Shape Fill. Select the same colour as your Fill, and your triangle will look something like this one:

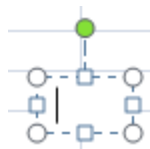


Add a Text Box to an Excel 2007 Spreadsheet

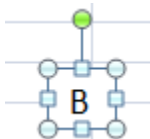
To get the letter B in the triangle, we'll add a text box. So, on the **Insert Shapes** panel again, you'll notice a Text Box option. Click on this to select it:



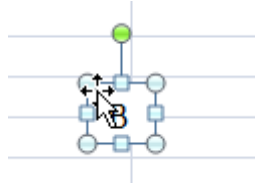
Now move back to your spreadsheet, hold down your left mouse button, and drag out a Text Box. Let go of the left mouse button and you'll have something like this:



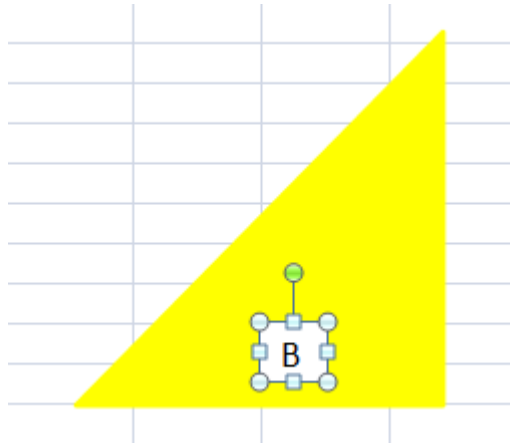
With the cursor inside of the Text Box, simply type the letter B. Because it's text, you can highlight your letter and format it. In the image below, we've increased the font size:



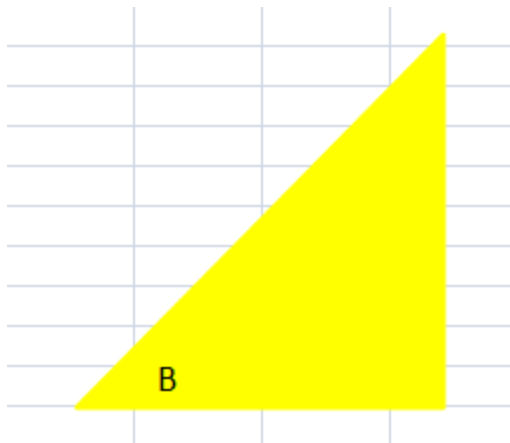
We now need to drag our Text Box onto the shape. Move your mouse over the Text Box until the cursor changes shape to four arrowheads (this can be tricky):



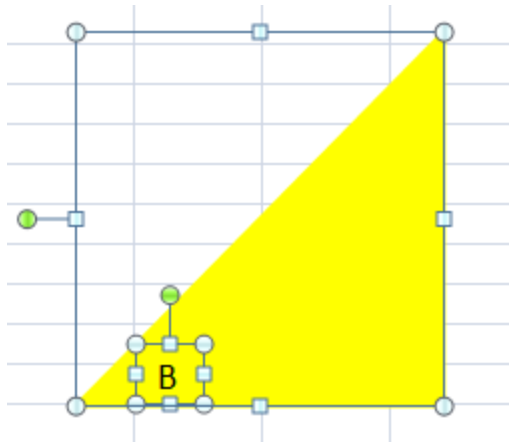
Once your cursor changes shape, hold down the left mouse button and drag your Text Box on to the triangle:



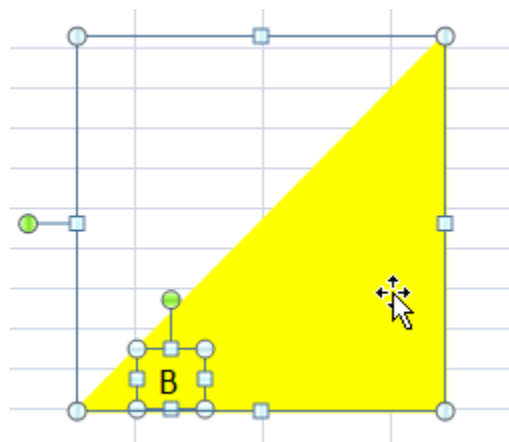
With the Text Box selected, use the arrow keys on your keyboard to nudge it in to position. Fill the Text Box in the same way as you did for the triangle. It will then look like this:



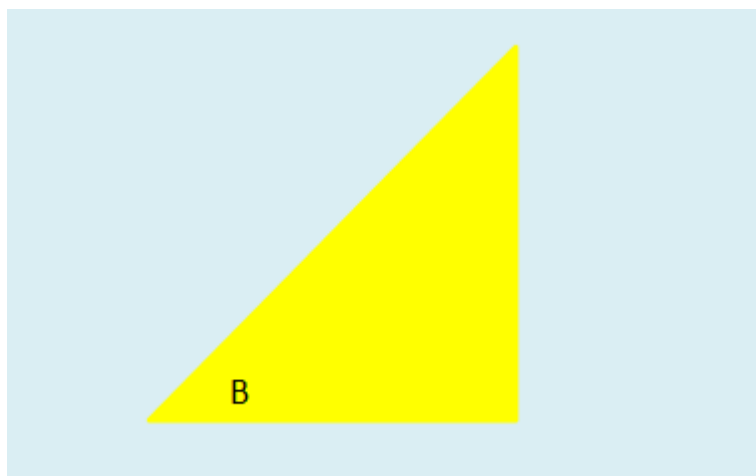
If you need to move your triangle and Text Box, you can select them both at the same time, and drag them as one. Click on your Triangle to select it. Now hold down the CTRL key on your keyboard. With the CTRL key held down, click on your Text Box. Both will now be selected:



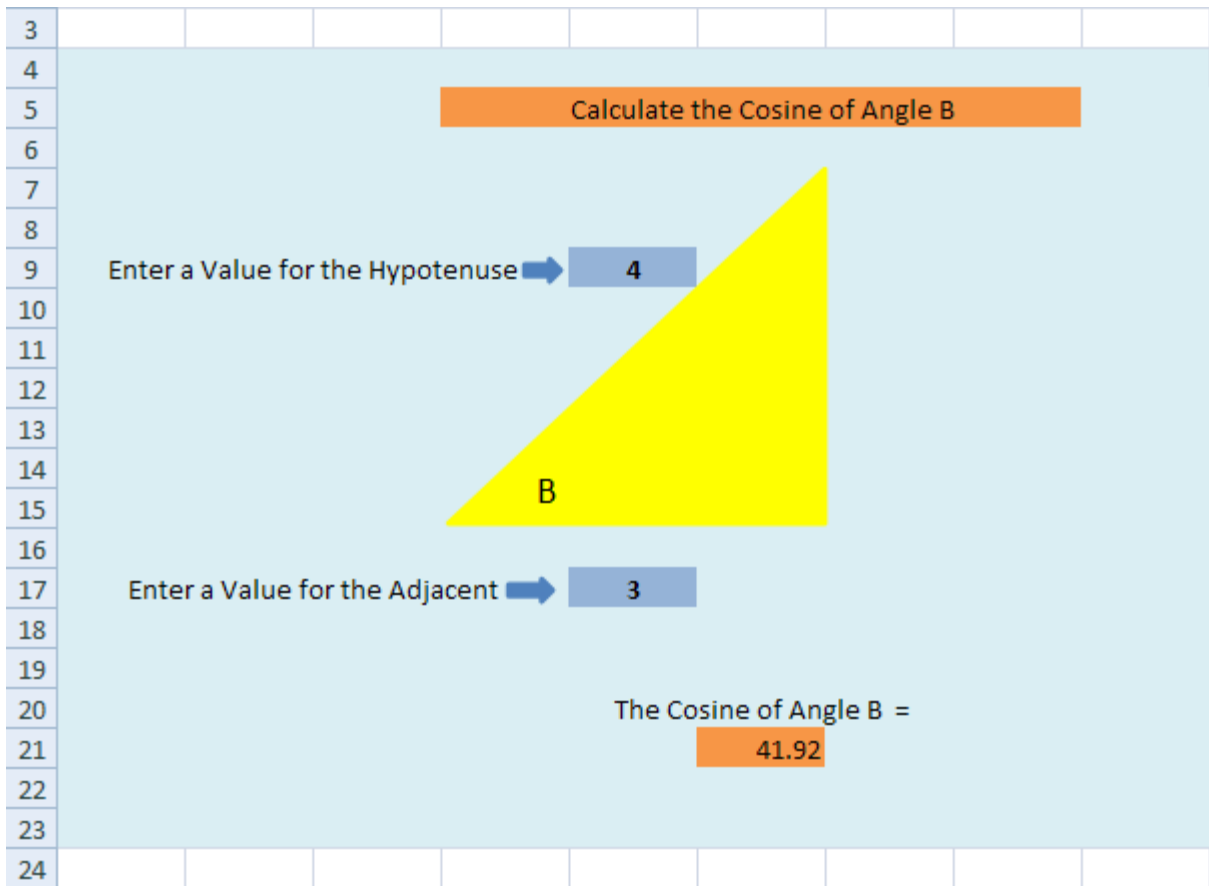
With both the triangle and the Text Box selected, hold your mouse over the selected shapes. When your cursor changes to the four arrowheads, hold down the left button and drag your shapes to a new position:



You can finish off the formatting in the normal way. In the image below, we selected all the cells surrounding the shape, and added a background colour from the **Home** menu, **Font** panel.



If you look again at the finished version, you'll see the rest of the colours we chose. These are just filled cells from the Home > Font panel:



The Text in the cells is just entered in the normal way. The formula for the Cosine in cell G22 of our spreadsheet has this syntax:

=DEGREES(COS(Adjacent_Cell_Reference / Hypotenuse_Cell_Reference))

An example of how to use is it this:

=DEGREES(COS(F18 / F10))

When the user types in a value for the Hypotenuse or the Adjacent, the Cosine number will change.

But you can add any shapes you want to liven up your spreadsheet. It doesn't have to look plain, white and dull!

And that completes this beginners course on Excel 2007. It may have a little taxing along the way, but if you've finished all of it, you should have quite a few new skills to show off!

Use hyperlinks

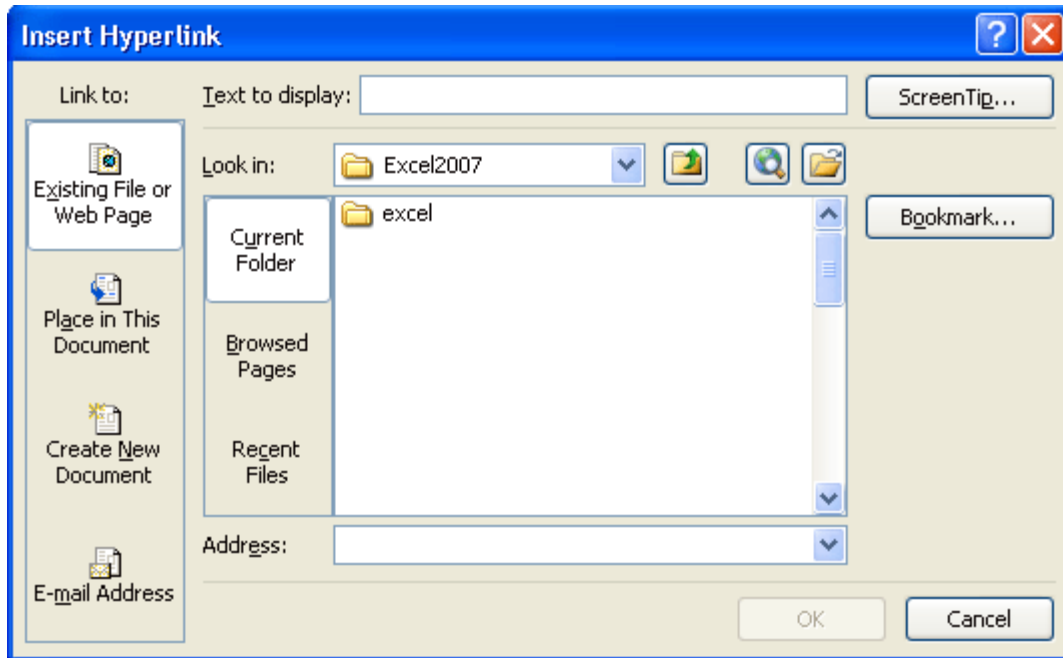
How to Insert Hyperlinks in Excel 2007

You can place Hyperlinks in the cells on your spreadsheet. To quickly go to a different worksheet or workbook, you would simply click the link. We'll see how to do that now.

- Click inside of cell A1 of a new spreadsheet
- From the Excel 2007 menu bar, click the **Insert** menu
- From the Insert menu, locate the **Links** panel
- Click on **Hyperlink**:

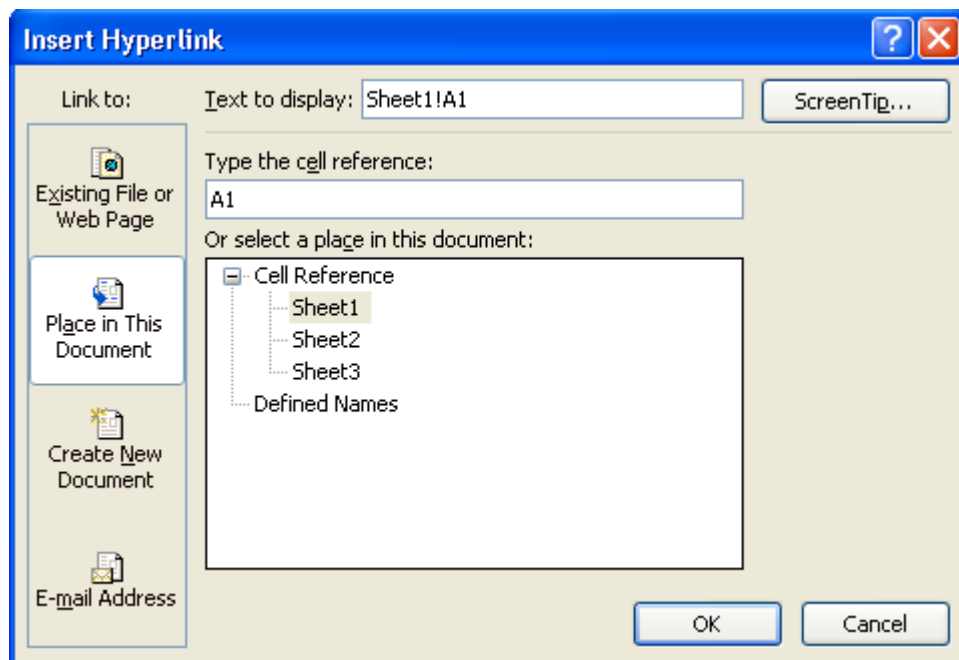


When you click the Hyperlink item, you'll see the following dialogue box appear:



We're going to create a link to another worksheet in this same spreadsheet. So, under **Link to** on the left, click on "Place in This Document".

When you click **Place in This Document**, the dialogue box changes to this:

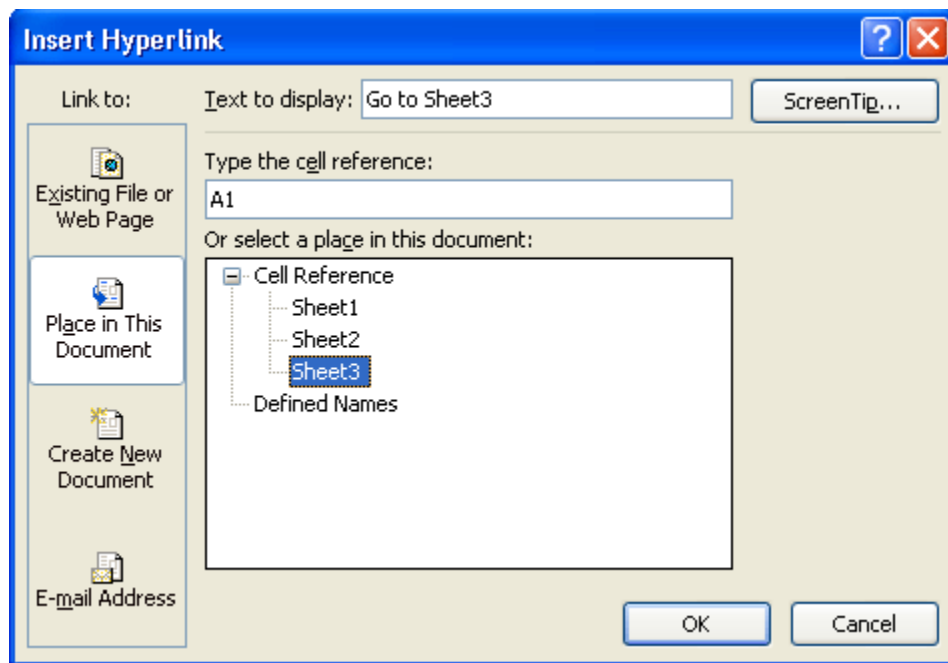


We'll try linking to Sheet3 on our spreadsheet. When the link is clicked on Sheet1, we want to jump to a specific cell on Sheet3.

- Under "Or select a place in this document, click on Sheet3"

- Type some text in the Text to display box at the top. This is the text of your hyperlink, as it will display in the cell
- Click the Screen Tip button at the top, and type some text for when the mouse is over the link

Your dialogue box will then look something like this one:



Click OK when you're done, and you'll see cell A1 on your spreadsheet change:

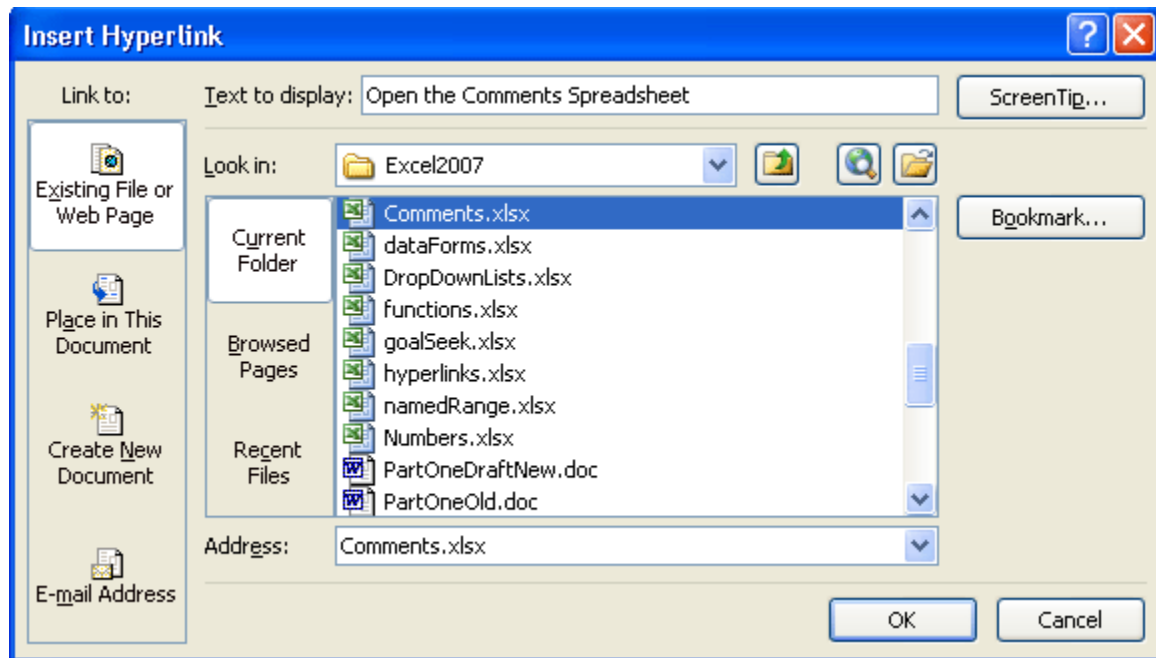
	A	B	C
1	Go to Sheet3		
2			
3			
4			
5			

Hold your mouse over the link and you should see your Screen Tip:

	A	B	C
1	Go to Sheet3		
2			
3			
4			
5			

Try to click on your link, and you might find that nothing happens! To use the hyperlink, you have to click the link and hold your mouse down for a second or so. Let go of the left mouse button and you should jump to Sheet 3.

If you want to open up an existing spreadsheet, instead of jumping to a location in the current one, click the Hyperlink item on the Links panel to bring up the dialogue box again.



- Under Link to on the left, select Existing File or Web Page
- Navigate to the location of your spreadsheet from the Look in area
- Select the spreadsheet to open
- Type some text, and a Screen tip
- Then click OK

When you click your new link, the spreadsheet file you selected will open.

But we'll leave this brief introduction to the subject of Web Integration in Excel 2007. There's a whole lot more you can do in this area: Upload your spreadsheet data to the web, instead of downloading like we did; save your spreadsheet as a web page; create a spreadsheet that others can interact with, email your spreadsheets, and a whole lot more besides. In fact, a whole book could be written on the subject!

Use named ranges in formulas

Named Ranges in Excel 2007

A Named Range is way to describe your formulas. So you don't have to have this in a cell:

= SUM(B2:B4)

You can replace the cell references between the round brackets. You replace them with a descriptive name, all of your own. So you could have this, instead:

= SUM(Monthly_Totals)

Behind the Monthly_Totals, though, Excel is hiding the cell references. We'll see how it works, now.

Open up Excel 2007, and create the spreadsheet below:

B5			fx		=SUM(B2:B4)
	A	B	C	D	
1		Monthly_Totals	Monthly_Tax		
2		124	12		
3		234	23		
4		344	34		
5	Results	702			
6					

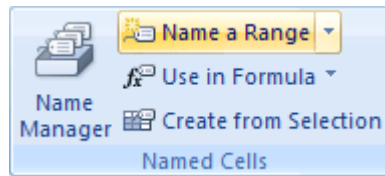
The formula is in cell B5, and just adds up the monthly totals in the B column.

Define a Name

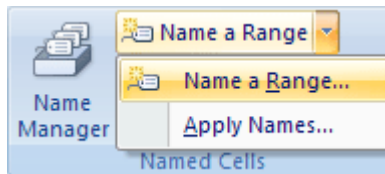
Setting up a Named Range is a two-step process. You first Define the Name, and then you Apply it. To Define your name, do this (make sure you have the formula in cell B5):

- Highlight the cells B2 to B4 (NOT B5), then click the Formulas menu
- Locate the Named Cells panel

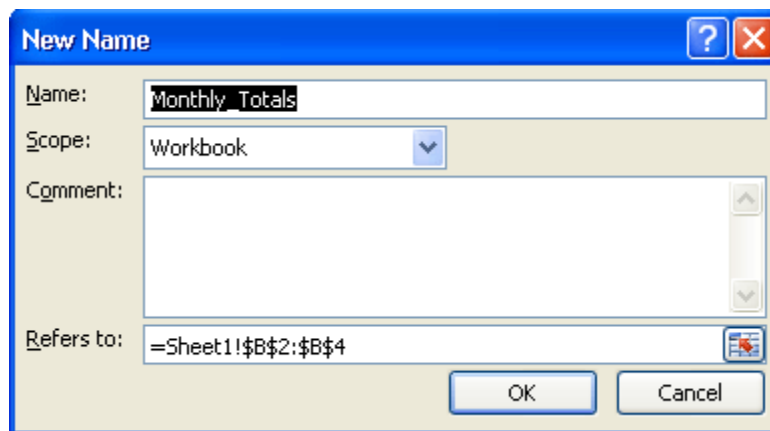
- Click Name a Range



From the **Name a Range** menu, click **Name a Range**:



You'll then get the following dialogue box:



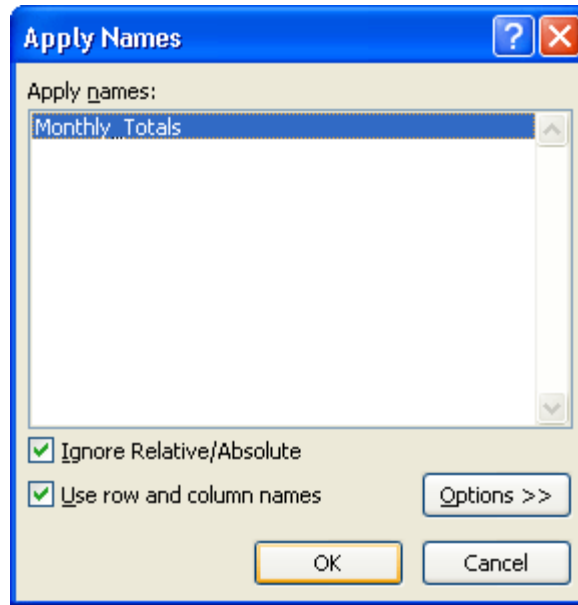
Click OK on the New Name dialogue box. Notice that the Name is our heading of **Monthly_Totals**.

When you click OK, you'll be returned to your spreadsheet. You won't see anything changed. But what you have done is to Define a Name. You can now Apply it.

Apply a Name

To apply your new Name, click into cell B5 where your formula is, and do this:

- On the **Named Cells** panel, Click **Name a Range**
- From the menu, select **Apply Names**
- From the Apply Names dialogue box, select the Name you want and click OK:



When you click OK, Excel should remove all those cell references between the round brackets, and replace them with the Name you defined:

B5		fx =SUM(Monthly_Totals)		
	A	B	C	D
1		Monthly_Totals	Monthly_Tax	
2		124	12	
3		234	23	
4		344	34	
5	Results	702		
6				

In the image above, cell B5 now says:

=SUM(Monthly_Totals)

The cell references have been hidden. But Excel still knows about them - it's you that can't see them!

Exercise

Study the spreadsheet below, now that we have added another Named Range to cell C5:

C5			=SUM(Monthly_Tax)	
	A	B	C	D
1		Monthly_Totals	Monthly_Tax	
2		124	12	
3		234	23	
4		344	34	
5	Results	702	69	
6				

Using the same techniques just outlined, create the same Named Range as in our image above. Again, the formula we've used is just a SUM formula:

= SUM(C2:C4)

You need to start with this, before you Define the Name and Apply it.

Using Named Ranges in Formulas

We'll now use two Named Ranges to deduct the tax from our monthly totals.

So, to define two new Names, do the following:

1. Click inside cell B5 to highlight it
2. From the **Formulas** menu bar, locate the **Named Cells** panel, and click **Name a Range > Name a Range**
3. From the **New Name** dialogue box, click in to the **Name** textbox at the top and enter **Monthly_Result** (with the underscore character)
4. Click OK
5. Click inside cell C5 and do the same as step 2 above. This time, however, enter **Tax_Result** as the Name

You should now have two new Names defined. We'll now Apply these new names. First, add a new label to your spreadsheet:

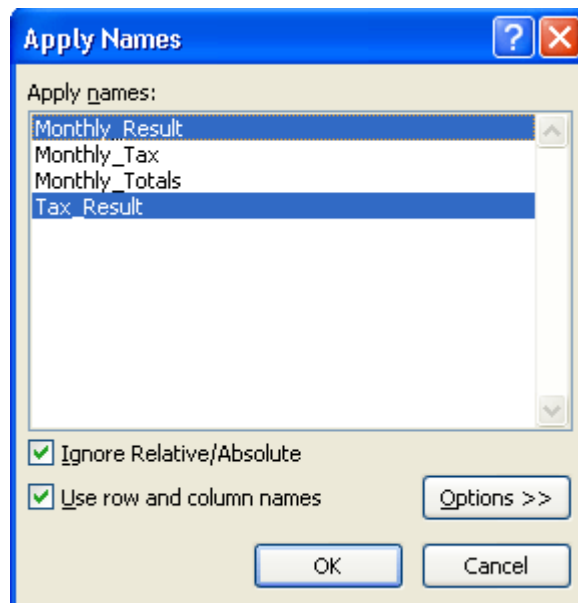
	B7		fx	= B5 - C5
	A	B	C	D
1		Monthly_Totals	Monthly_Tax	
2		124	12	
3		234	23	
4		344	34	
5	Results	702	69	
6				
7	Final Total	633		
8				

Click in to cell B7, next to your new label, and enter the following formula:

= B5 - C5

With the formula in place, we can Apply the two new Names we've just defined:

- From the **Formulas** menu bar, locate the **Named Cells** panel, and click **Name a Range > Apply Names**
- The Apply Names dialogue box appears
- Click **Monthly_Result** to select it
- Click on **Tax_Result** to select it:



- Click the OK button
- Excel will replace your cell references with the two Names you Defined
- Your spreadsheet should look like ours:

	B7		= Monthly_Result - Tax_Result	
	A	B	C	D
1		Monthly_Totals	Monthly_Tax	
2		124	12	
3		234	23	
4		344	34	
5	Results	702	69	
6				
7	Final Total	633		
8				

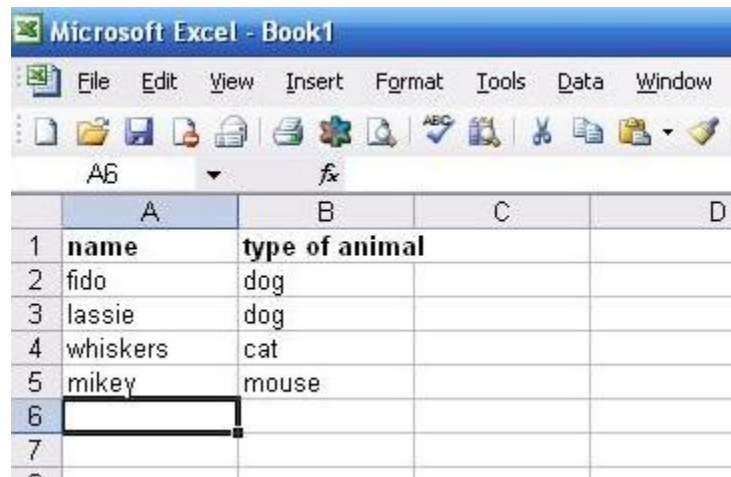
If you look at the formula bar, you'll see the two Named Ranges. The formula is easier to read like this. But it's not terribly easy to set up! They can be quite useful, though.

Use lookup functions

If you use Excel much at your job, sooner or later, you're bound to need to look up values in a table. One of the most useful functions in Excel, called [vlookup](#), does exactly that. The "V" in vlookup stands for "vertical" and "lookup" is pretty self explanatory. This function allows you to look up values in a table that are listed in column format (how most tables are laid out), given another value (let's call this the "key"). Excel also has a sister function called hlookup (h = horizontal) that can be used to look up values in rows.

Sadly, as most companies seem to rely on Excel as a poor-man's database of sorts (a totally unscalable solution and prone to errors with every revision, but don't get me started), once you know vlookup, it's likely to become one of your most often used Excel functions.

So, let's get started with a very simple example of what vlookup is all about. Suppose you had the following table:



	A	B	C	D
1	name	type of animal		
2	fido	dog		
3	lassie	dog		
4	whiskers	cat		
5	mikey	mouse		
6				
7				

Given a list of names in another part of the table (in this case, column H), you want to figure out what kind of animal it is:

	H	I	J	K	L
	name				
	mikey				
	lassie				
	whiskers				
	fido				

Vlookup's format looks like the following:

=vlookup(lookup value, table where values reside, column # where values are located, false)

Let's look at each of these parts a bit closer.

The first thing that goes into the vlookup function is the thing you know (or are given) and that will be used to lookup other values. In this case, you have the names of the animals, so these are the things we know. In our example, they reside in column H, from cells H2 through H5. If we wanted to put the type of animal next to the name of the animal in column I (so I2 would correspond to the name of the animal in H2), we would insert the vlookup function there:

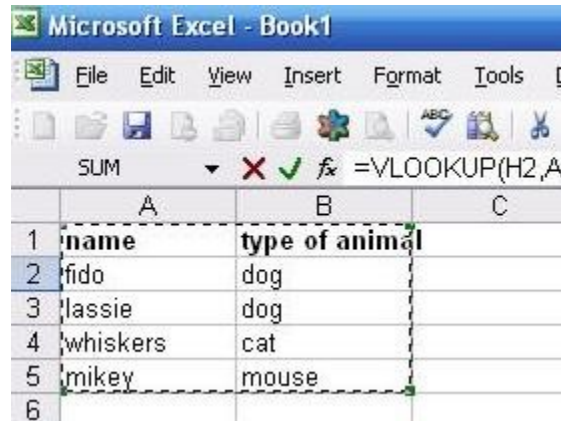
	H	I	J	K	L	M	N
	name						
	mikey	=vlookup(
	lassie	VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])					
	whiskers						
	fido						

and put H2 as the first thing in our vlookup function:

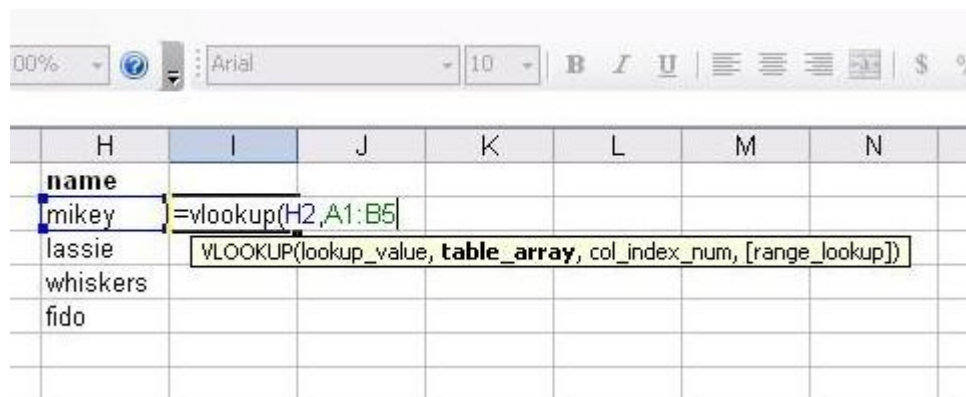
	H	I	J	K	L	M	N
	name						
	mikey	=vlookup(H2					
	lassie	VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])					
	whiskers						
	fido						

Next, we need to know the location of the table where our values reside. These happen to be from cells A1 through B5 in this example, which we would highlight with our mouse to insert into the vlookup function. It's very important that you include all the cells in the table.

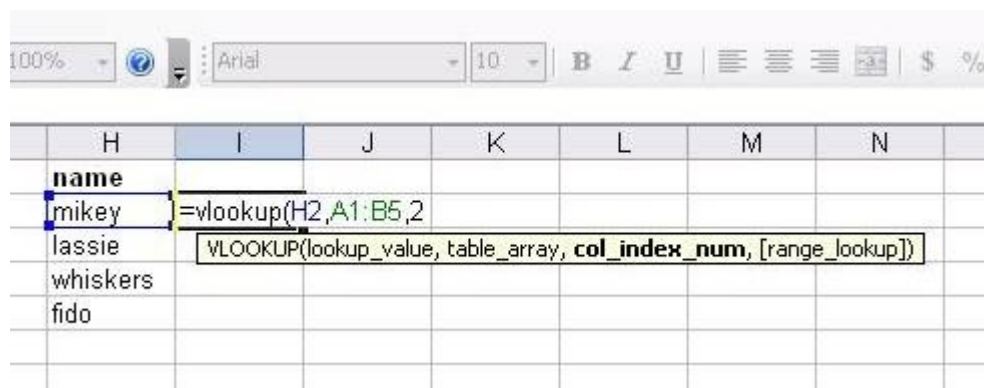
Highlight the table with your mouse:



At the same time, the vlookup function automatically puts in the cells you've highlighted:

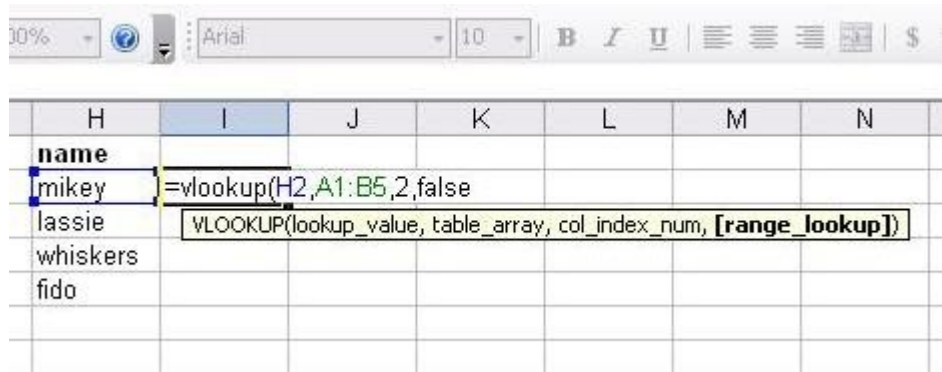


Next, we need the column number where the values are located. Always start with the first column (column A in this case) as #1 and count out to the right. In this example, the type of animal listed is in column 2, so that's what we would need to insert in the vlookup function. Note that to use vlookup, your keys always have to be to the left of your values. (We'll cover more of this in part II of the tutorial at a later date.)



Finally, the last attribute that vlookup takes is either "true" or "false". I happen to always use "false", and what this does is force vlookup to return the first exact value it finds. If that value isn't found, then vlookup conks out and returns "#N/A". Though we won't use it in this example, if you select "true", then rather than always looking for the

exact value, vlookup will return the exact value if it exists, or the closest one to it that doesn't exceed the key. (If you use "true", you will need to sort your data in ascending order before using vlookup.)

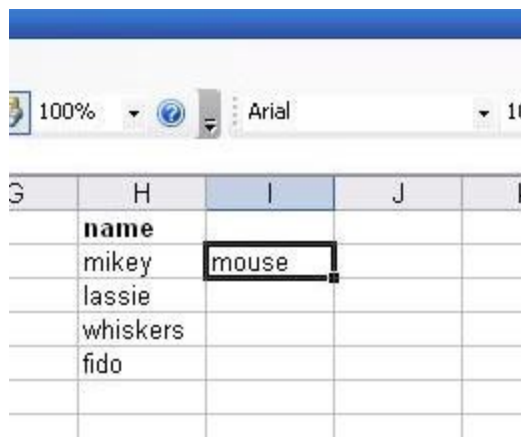


	H	I	J	K	L	M	N
	name						
	mikey	=vlookup(H2,A1:B5,2,false					
	lassie	VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])					
	whiskers						
	fido						

Still with me? Again, this is what we would actually put in cells I2 if the names of the animals we have are located in cells H2 through H5:

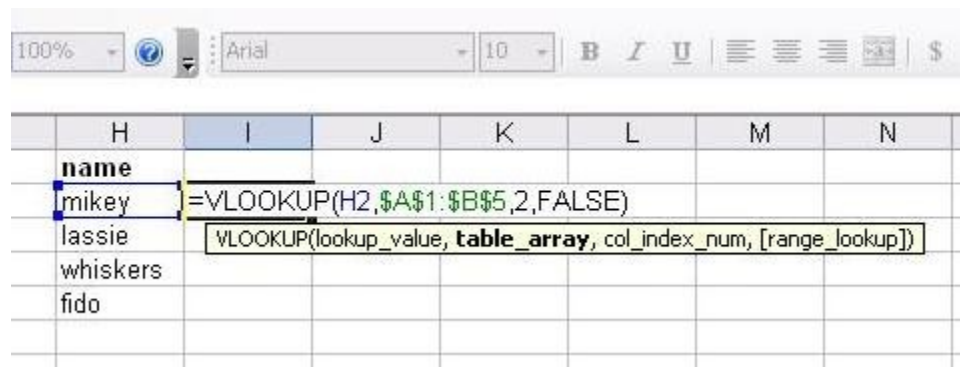
=vlookup(H2, A1:B5, 2, false)

Once we close off the parenthesis and hit "Enter", vlookup automatically calculates:



	H	I	J
	name		
	mikey	mouse	
	lassie		
	whiskers		
	fido		

And so on. We would continue down each cell in column I that we needed. One thing to note is to make sure that the location of your keys and values is always selected correctly. Oftentimes, as you copy-and-paste formulas all around Excel, the location of the data will also move around relative to the cell. The easiest way to prevent this is to "lock" the range of the location; in this case, we would do so by using "\$A\$1:\$B\$5" instead of "A1:B5". This way, as we move down column I, say, to cell I2, A1:B5 doesn't become A2:B6 but stays with the original range of data. This way, we can just copy what's in cell I2 down the rest of the cells (from I3 through I5):



	H	I	J	K	L	M	N
	name						
	mikey	=VLOOKUP(H2,\$A\$1:\$B\$5,2,FALSE)					
	lassie	VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])					
	whiskers						
	fido						

Finally, here's our result, after making the "\$" changes and copying and pasting the formula down the rest of the column:



	H	I	J	K
	name			
	mikey	mouse		
	lassie	dog		
	whiskers	cat		
	fido	dog		

This has been a really simple example of vlookup, and I'll cover a bit more in part II with another example, still simple, but with slightly more data.

Although in practice, vlookup is usually used between Excel sheets and workbooks, once you understand this example (which has been done within a single sheet), using vlookup outside the same sheet shouldn't be much harder. Look for part II soon!

Searches for a value in the first column of a table array and returns a value in the same row from another column in the table array.

The V in VLOOKUP stands for vertical. Use VLOOKUP instead of HLOOKUP when your comparison values are located in a column to the left of the data that you want to find.

Syntax

VLOOKUP(lookup_value,table_array,col_index_num,range_lookup)

Lookup_value The value to search in the first column of the table [array \(array: Used to build single formulas that produce multiple results or that operate on a group of arguments that are arranged in rows and columns. An array range shares a common formula; an array constant is a group of constants used as an argument.\)](#). Lookup_value can be a value or a reference. If lookup_value is smaller than the smallest value in the first column of table_array, VLOOKUP returns the #N/A error value.

Table_array Two or more columns of data. Use a reference to a range or a range name. The values in the first column of table_array are the values searched by lookup_value. These values can be text, numbers, or logical values. Uppercase and lowercase text are equivalent.

Col_index_num The column number in table_array from which the matching value must be returned. A col_index_num of 1 returns the value in the first column in table_array; a col_index_num of 2 returns the value in the second column in table_array, and so on. If col_index_num is:

- Less than 1, VLOOKUP returns the #VALUE! error value.
- Greater than the number of columns in table_array, VLOOKUP returns the #REF! error value.

Range_lookup A logical value that specifies whether you want VLOOKUP to find an exact match or an approximate match:

- If TRUE or omitted, an exact or approximate match is returned. If an exact match is not found, the next largest value that is less than lookup_value is returned.

The values in the first column of table_array must be placed in ascending sort order; otherwise, VLOOKUP may not give the correct value. You can put the values in ascending order by choosing the **Sort** command from the **Data** menu and selecting **Ascending**. For more information, see [Default sort orders](#).

- If FALSE, VLOOKUP will only find an exact match. In this case, the values in the first column of table_array do not need to be sorted. If there are two or more values in the first column of table_array that match the lookup_value, the first value found is used. If an exact match is not found, the error value #N/A is returned.

Remarks

- When searching text values in the first column of table_array, ensure that the data in the first column of table_array does not have leading spaces, trailing spaces, inconsistent use of straight (' or ") and curly (' or ") quotation marks, or nonprinting characters. In these cases, VLOOKUP may give an incorrect or unexpected value. For more information on functions that you can use to clean text data, see [Text and Data functions](#).
- When searching number or date values, ensure that the data in the first column of table_array is not stored as text values. In this case, VLOOKUP may give an incorrect or unexpected value. For more information, see [Convert numbers stored as text to numbers](#).
- If range_lookup is FALSE and lookup_value is text, then you can use the wildcard characters, question mark (?) and asterisk (*), in lookup_value. A question mark matches any single character; an asterisk matches any sequence of characters. If you want to find an actual question mark or asterisk, type a tilde (~) preceding the character.

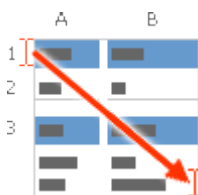
Example 1

The example may be easier to understand if you copy it to a blank worksheet.

[How to copy an example](#)

1. Create a blank workbook or worksheet.
2. Select the example in the Help topic.

Note Do not select the row or column headers.



Selecting an example from Help

3. Press CTRL+C.
4. In the worksheet, select cell A1, and press CTRL+V.
5. To switch between viewing the results and viewing the formulas that return the results, press CTRL+` (grave accent), or on the **Tools** menu, point to **Formula Auditing**, and then click **Formula Auditing Mode**.

This example searches the Density column of an atmospheric properties table to find corresponding values in the Viscosity and Temperature columns. (The values are for air at 0 degrees Celsius at sea level, or 1 atmosphere.)

	A	B	C
1	Density	Viscosity	Temperature
2	0.457	3.55	500
3	0.525	3.25	400
4	0.616	2.93	300
5	0.675	2.75	250
6	0.746	2.57	200
7	0.835	2.38	150
8	0.946	2.17	100
9	1.09	1.95	50
10	1.29	1.71	0

Formula

**Description
(result)**

=VLOOKUP(1,A2:C10,2)

Using an approximate match, searches for the value 1 in column A, finds the largest value less than or equal to 1 in column A which is 0.946, and then returns the value from column B in the same row. (2.17)

=VLOOKUP(1,A2:C10,3,TRUE)

Using an approximate match, searches for the value 1 in column A, finds the largest value less than or equal to 1 in

=VLOOKUP(.7,A2:C10,3,FALSE)

=VLOOKUP(0.1,A2:C10,2,TRUE)

=VLOOKUP(2,A2:C10,2,TRUE)

column A,
which is
0.946, and
then returns
the value
from column
C in the
same row.
(100)

Using an
exact
match,
searches for
the value .7
in column A.
Because
there is no
exact match
in column A,
an error is
returned.
(#N/A)

Using an
approximate
match,
searches for
the value
0.1 in
column A.
Because 0.1
is less than
the smallest
value in
column A,
an error is
returned.
(#N/A)

Using an
approximate
match,
searches for
the value 2
in column A,
finds the
largest value
less than or
equal to 2 in
column A,
which is
1.29, and
then returns
the value
from column
B in the
same row.

(1.71)

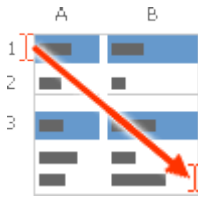
Example 2

The example may be easier to understand if you copy it to a blank worksheet.

[How to copy an example](#)

1. Create a blank workbook or worksheet.
2. Select the example in the Help topic.

Note Do not select the row or column headers.



Selecting an example from Help

3. Press CTRL+C.
4. In the worksheet, select cell A1, and press CTRL+V.
5. To switch between viewing the results and viewing the formulas that return the results, press CTRL+` (grave accent), or on the **Tools** menu, point to **Formula Auditing**, and then click **Formula Auditing Mode**.

This example searches the Item-ID column of a baby products table and matches values in the Cost and Markup columns to calculate prices and test conditions.

	A	B	C	D
1	Item-ID	Item	Cost	Markup
2	ST-340	Stroller	\$145.67	30%
3	BI-567	Bib	\$3.56	40%
4	DI-328	Diapers	\$21.45	35%
5	WI-989	Wipes	\$5.12	40%
6	AS-469	Aspirator	\$2.56	45%
	Formula	Description (result)		
	= VLOOKUP("DI-328", A2:D6, 3, FALSE) * (1 + VLOOKUP("DI-328", A2:D6, 4, FALSE))	Calculates the retail price of diapers by adding the markup percentage to the cost. (\$28.96)		
	= (VLOOKUP("WI-989", A2:D6, 3,	Calculates the sale price of		

FALSE) * (1 +
VLOOKUP("WI-
989", A2:D6, 4,
FALSE))) * (1 -
20%)

=
IF(VLOOKUP(A2,
A2:D6, 3, FALSE)
>= 20, "Markup is
&" & 100 *
VLOOKUP(A2,
A2:D6, 4, FALSE)
&"%", "Cost is
under \$20.00")

=
IF(VLOOKUP(A3,
A2:D6, 3, FALSE)
>= 20, "Markup is:
&" & 100 *
VLOOKUP(A3,
A2:D6, 4, FALSE)
&"%", "Cost is \$"
& VLOOKUP(A3,
A2:D6, 3,
FALSE))

wipes by
subtracting
a specified
discount
from the
retail price.
(\$5.73)

If the cost of
an item is
greater than
or equal to
\$20.00,
displays the
string
"Markup is
nn%";
otherwise,
displays the
string "Cost
is under
\$20.00".
(Markup is
30%)

If the cost of
an item is
greater than
or equal to
\$20.00,
displays the
string
Markup is
nn%";
otherwise,
displays the
string "Cost
is \$n.nn".
(Cost is
\$3.56)

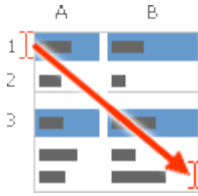
Example 3

The example may be easier to understand if you copy it to a blank worksheet.

 [How to copy an example](#)

1. Create a blank workbook or worksheet.
2. Select the example in the Help topic.

Note Do not select the row or column headers.



Selecting an example from Help

3. Press CTRL+C.
4. In the worksheet, select cell A1, and press CTRL+V.
5. To switch between viewing the results and viewing the formulas that return the results, press CTRL+` (grave accent), or on the **Tools** menu, point to **Formula Auditing**, and then click **Formula Auditing Mode**.

This example searches the ID column of an employee table and matches values in other columns to calculate ages and test for error conditions.

	A	B	C
1	ID	Last name	First name
2			
3	1	Davolio	Nancy
4			
5	2	Fuller	Andrew
6			
7	3	Leverling	Janet
	4	Peacock	Margaret
	5	Buchanan	Steven
	6	Suyama	Michael
	Formula	Description (result)	
	=INT(YEARFRAC(DATE(2004,6,30), VLOOKUP(5,A2:E7,5, FALSE), 1))	For the fiscal year 2004, finds the age of the employee with ID equal to 5. Uses the YEARFRAC function to subtract the birth date from the fiscal year end date and displays the result as an integer using the INT function. (49)	
	=IF(ISNA(VLOOKUP(5,A2:E7,2,FALSE))= TRUE, "Employee not found",	If there is an employee with	

VLOOKUP(5,A2:E7,2,FALSE))

an ID of 5,
displays the
employee's last
name;
otherwise,
displays the
message
"Employee not
found".
(Buchanan)

The ISNA function returns a
TRUE value when the
VLOOKUP function returns the
#NA error value.

=IF(ISNA(VLOOKUP(15,A3:E8,2,FALSE))
= TRUE, "Employee not found",
VLOOKUP(15,A3:E8,2,FALSE))

If there is an
employee with
an ID of 15,
displays the
employee's last
name;
otherwise,
displays the
message
"Employee not
found".
(Employee not
found)

The ISNA function returns a
TRUE value when the
VLOOKUP function returns the
#NA error value.

=VLOOKUP(4,A2:E7,3,FALSE) & " " &
VLOOKUP(4,A2:E7,2,FALSE) & " is a " &
VLOOKUP(4,A2:E7,4,FALSE) & "."

For the
employee with
an ID of 4,
concatenates
the values of
three cells into a
complete
sentence.
(Margaret
Peacock is a
Sales
Representative.)

Link multiple workbooks



To use Paste Special to create links quickly:

1. Copy a range of cells containing data, and select a cell in another sheet or workbook.
2. Select Home -> Paste arrow (in Clipboard Group) -> Paste Link.

Or

Press Shift+F10 or right-click, and then select Paste Special from the shortcut menu, and click Paste Link.

Import data

CSV stands for Comma Separated Values, and this simple text file format is excellent for moving data between programs that can't read each other's native format. Here, we'll look at how to import CSV files into a Microsoft Excel 2007 spreadsheet.

CSV Files Explained

In Windows, a file with a .CSV extension denotes a Comma Separated Values file. It's a very simple text file format where the data is separated with commas, hence the name of the file. CSV files are most commonly used for transferring data between programs, such as exporting your Outlook Contacts into a .CSV file so that it can be imported into Excel or Access. Because .CSV files are just text, they can also be transferred between operating systems.

Working With CSV



The .CSV file extension has been around since the earliest days of computing, and it is still supported by many programs today. If you've ever been given the tedious task of transferring data between two different programs, then comma separated values will save you lots of headache. Microsoft Excel is great for importing this data and automated wizards built within the program help expedite the process.

Suppose you wanted to export an address book from one program into Excel. Let's assume that program lets you [export to CSV](#), as many do. When finished, your data will look something like this in the .CSV file:

```
Name,Address,City
Bill,124 Here,Biloxi
Christy,243 There,Biloxi
Mike,256 Alpha,Gulfport
Lucy,674 Beta,Gulfport
David,127 Horse,Biloxi
```

In the above example, you see the first line contains the label for each column, then underneath are five different data entries. Each piece of information is separated by a comma. Also notice the space between the street number and name.

To import this back into Microsoft Excel 2007, click on **Data**, then click the **From Text** button in the **Get External Data** menu. This will bring up the **Text Import Wizard**.

In the first step, make sure you have **Delimited** set as the first option. You can also select which row you would like to start from. In this example, I'm doing the whole thing starting with the first row.

In the second step, make sure you check the box next to **Comma**. This will then show your data in columns at the bottom. If you click the check next to **Space**, it will divide the address column into two lines, in this example. Sometimes this can be helpful when you are trying to break down data during the import, as some programs tend to lump data together.

The third step simply lets you choose the format of the data, such as numbers, text, or dates. After you've done that, just click **Finish** and the data will be imported into your spreadsheet. Depending on how big the .CSV file is, the import process could be instantaneous or take several minutes. I've seen giant database exports pulled into Excel that took a while to load, but they still worked just fine.

Additional Resources

So there you have it. Comma Separated Value values are very easy to work with, which is why they are still around today. They are mainly used for importing and exporting data between other programs, but they still function as a viable file format even though they are not very secure. With all the complications that get piled into every new version of some software out there, it's good to know that the basics like .CSV files are still available.

Use pivot tables and charts

ivot tables are an Excel feature that you should learn how to use. Instead of analyzing rows upon rows of records, a pivot table can aggregate your data and show a new perspective with few clicks. You can also move columns to rows or vice versa. The problem is people believe creating a pivot table is too difficult to learn. Grab a seat and we'll walk you through a short tutorial using Excel 2007. **(Includes tutorial in PDF format with larger images and example worksheet.)**

What is an Excel Pivot Table?

You might think of a pivot table as a user created summary table of your original spreadsheet. You create the table by defining which fields to view and how the data should be displayed. Based on your field selections, Excel aggregates and organizes the data so you see a different view of your data.

As example, I've uploaded a sample spreadsheet of 4000 fictitious voters, which includes the following data fields:

- Voter ID
- Party Affiliation
- Their precinct
- Age group
- When they last voted
- Years they've been registered
- Ballot status

[illegible]

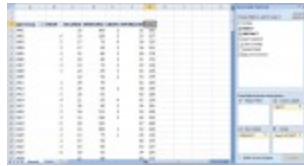
Click to enlarge

Looking at the first 20 data records, you can see the data is boring. In this format, the key question it answers is how many voters exist in all the precincts.

Using pivot tables, you can organize and group the same data in ways that start to answer questions such as:

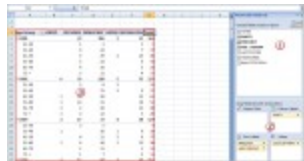
- What is the party breakdown by precinct?
- Do voters use permanent absentee ballots?
- Which precincts have the most Democrats?
- How many voter pamphlets do I need for Precinct 2416?
- Do 18-21 year olds vote?

Excel pivot tables allow you to group the spreadsheet or external data source by any of your data fields. The thumbnail below shows a count of voters by party by precinct.



Click to enlarge

Using a pivot table, I can continue to slice the data by selecting additional fields from the **PivotTable Field List**. For example, I can take the same data and segment by voter age group.



Click to enlarge

Understanding Pivot Table Structures

In the thumbnail above, I've labeled the main areas of the pivot table.

(1) PivotTable Field List – this section in the top right displays the fields in your spreadsheet. You may check a field or drag it to a quadrant in the lower portion.

(2) The lower right quadrants - this area defines **where** and **how** the data shows on your pivot table. You can have a field show in either a column or row. You may also indicate if the data should be counted, summed, averaged, filtered and so on.

(3) The red outlined area to the left is the result of your selections from (1) and (2). You'll see that the only difference I made in the last pivot table was to drag the AGE GROUP field underneath the PRECINCT field in the **Row Labels** quadrant.

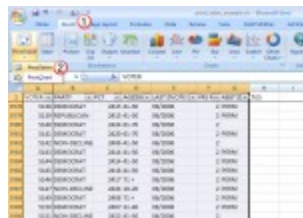
How to Create an Excel Pivot Table

<http://www.dummies.com/how-to/content/how-to-create-a-pivot-chart-in-excel-2007.html>

There are several ways to build a pivot table. Excel has logic that knows the field type and will try to place it in the correct row or column if you check the box. For example, data that is numeric such as Precinct counts tends to appear to the right in columns. Data, which is textual, such as Party would appear in rows.

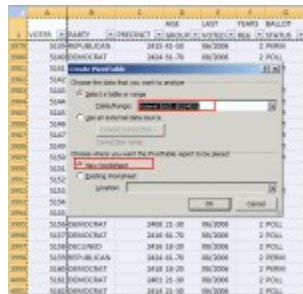
While you can simply check fields to display and let Excel build your pivot table, I prefer to use the “drag and drop” method. This is partly because I like to visualize my data in columns and rows. I think it may also be easier if you have fields, which can appear to be numbers like a precinct value.

1. Open your original spreadsheet and remove any blank rows or columns.
2. Make sure each column has a heading, as it will be carried over to the Field List.
3. Make sure your cells are properly formatted for their data type.
4. Highlight your data range
5. Click the **Insert** tab.
6. Select the **PivotTable** button from the **Tables** group.
7. Select **PivotTable** from the list.



Click to enlarge

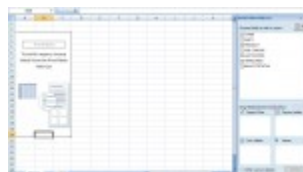
The **Create PivotTable** dialog appears.



Click to enlarge

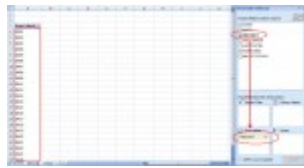
8. Double-check your **Table/Range** value.
9. Select the radio button for **New Worksheet**.
10. Click **OK**.

A new worksheet opens with a blank pivot table. You'll see that the fields from our source spreadsheet were carried over to the **PivotTable Field List**.



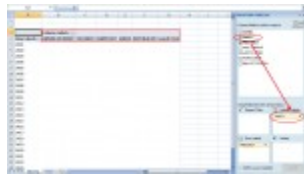
Click to enlarge

11. Drag an item such as **PRECINCT** from the **PivotTable Field List** down to the **Row Labels** quadrant. The left side of your Excel spreadsheet should show a row for each precinct value. You should also see a checkmark appear next to **PRECINCT**.



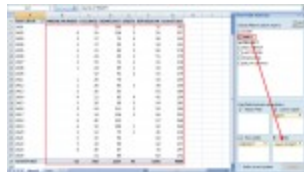
[Click to enlarge](#)

12. The next step is to ask what you would like to know about each precinct. I'll drag the **PARTY** field from the **PivotTable Field List** to the **Column Labels** quadrant. This will provide an additional column for each party. Note that you won't see any numerical data.



[Click to enlarge](#)

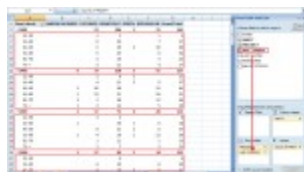
13. To see the count for each party, I need to drag the same field to the **Values** quadrant. In this case, Excel determines I want a Count of **PARTY**. I could double-click the entry and choose another **Field Setting**. Excel has also added Grand Totals.



[Click to enlarge](#)

Additional Groupings and Options

As you build your pivot table, you'll probably think of additional ways to group the information. For example, you might want to know the Age Range of voters by Precinct by Party. In this case, I would drag the **AGE GROUP** column from the **PivotTable Field List** down below the **PRECINCT** value in **Row Labels**.



[Click to enlarge](#)

Each age group is broken out and indented by precinct. At this stage, you might also be thinking of usability. As with a regular spreadsheet, you may manipulate the fields. For example, you might want to rename "Grand Total" to "Total" or even collapse the age values for one or more precincts. You can also hide or show rows and columns. These features work the same way as a regular spreadsheet.

One area that is different is the pivot table has its own options. You can access these options by right-clicking a cell within and selecting **PivotTable Options...** For example, you might only want Grand Totals for columns and not rows.

There are also ways to filter the data using the controls next to Row Labels or Column labels on the pivot table. You may also drag fields to the **Report Filter** quadrant.

Troubleshooting Pivot Tables

You might encounter several “gotchas” with this example file or another spreadsheet. Sometimes when you move around your pivot table the **PivotTable Field List** disappears. To get it back, click any cell with a value.

You can also move or “pivot” your data by right clicking a data field on the table and selecting the “**Move**” menu. From here, you can move a column to a row or even change the position. An example of this might be the values for “LAST VOTED” since Excel will sort by the month first. You might prefer to move the data so the election dates are in a chronological order.

I prefer not adding fields to a pivot table. I think it’s easier to add the fields first to your source spreadsheet. The reason is you might get items out of sync if you move data unless you make them a calculated field.

Excel pivot tables may not make the election data exciting, but it can make the analysis easier. Without these tables, you’d probably spend more time filtering, sorting and subtotaling. The other benefit is that it’s easy to start over by deselecting fields or moving them to another location. Feel free to download the tutorial spreadsheet below and play with the data. This may be the only time you’re allowed to manipulate election data.

Use templates and styles

How to Use Templates in Excel 2007

Excel 2007 provides predesigned [templates](#), [worksheets](#) for common uses. Templates contain standard or *boilerplate* text, but you can modify the templates to fit your needs. You can use the templates automatically installed with Excel 2007, or you can download free templates from the Microsoft Office Online Web site.

The following templates are automatically installed when you start using Excel 2007: Billing Statement, Blood Pressure Tracker, Expense Report, Loan Amortization, Personal Monthly Budget, Sales Report, and Time Card. Many additional templates are available for downloading.

Using the installed templates

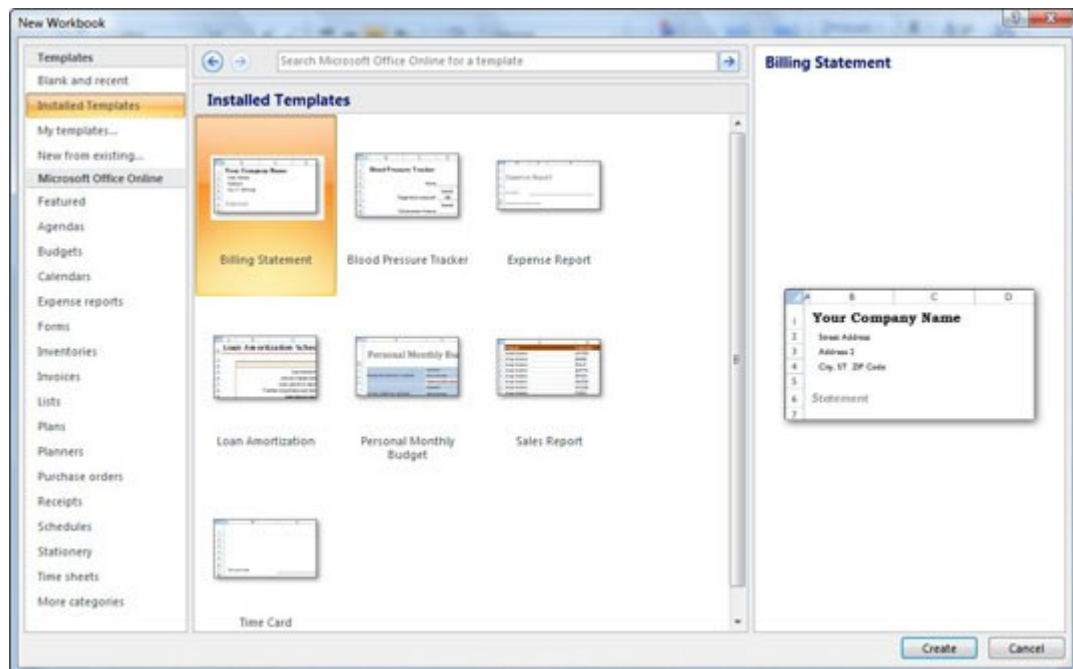
Follow these steps to use one of the templates that comes installed with Excel 2007:

1. Click the Office button and then click New.

The New [Workbook dialog box](#) appears.

2. Click Installed Templates under Templates in the pane on the left.

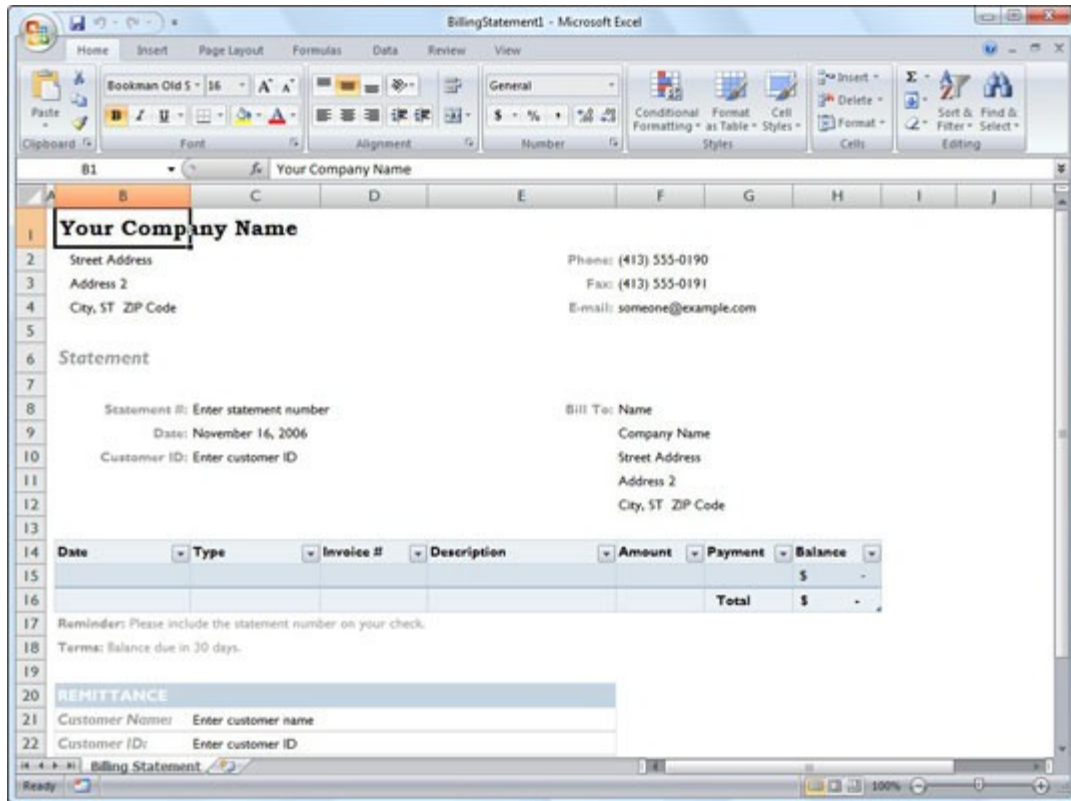
The middle pane displays thumbnails for each of the installed templates. A preview of the selected thumbnail appears in a preview pane on the right.



You can select an installed template to generate a new workbook.

3. Select the desired template from the middle pane and click Create.

Excel closes the [dialog box](#) and opens the selected template.



A new billing statement worksheet generated from the Billing Statement template.

4. Customize the template as needed.
5. Save the file with a new name.

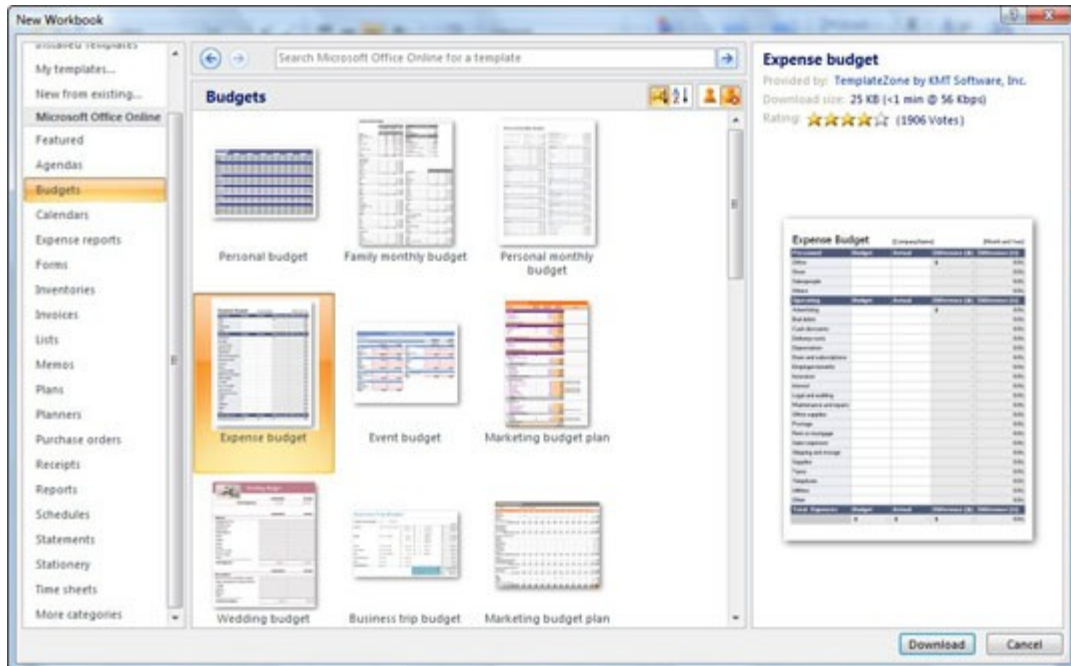
Downloading templates

If you have Internet access, you can easily check out and download any of the templates offered by Microsoft directly from the New Workbook [dialog box](#).

Follow these steps to download a template from Microsoft Office Online:

1. Click the Office button and then click New.
2. Click the category of the template you want to download under Microsoft Office Online in the Navigation pane on the left.

The middle pane displays thumbnails for each of the items in that category. In some cases, you may need to select a subcategory in the middle pane before you see the thumbnails. A preview of the selected thumbnail appears in a preview pane on the right.



Selecting a Budget template to download from Microsoft Office Online.

3. Select the thumbnail image for the template you want to download and then click the Download button.

The Download button appears near the bottom-right corner of the New Workbook [dialog box](#).

4. If you see the Microsoft Office Genuine Advantage [dialog box](#), click the Continue button.

This step verifies that you have a genuine copy of Microsoft Office. After Excel 2007 finishes downloading the template, the template file opens automatically.

5. Customize the template as needed.
6. Save the file with a new name.

After downloading a template from Microsoft Office Online, you can use the template to generate new workbooks by opening it from the My Templates [tab](#) of the New [dialog box](#) (open this [dialog box](#) by clicking the My Templates link in the Navigation pane of the New Workbook [dialog box](#)).

Analyse data

[Change Excel 2007 spreadsheets to tables for easier data analysis](#)

- **Date:** August 7th, 2007
- **Author:** Mary Ann Richardson
- **Category:** [Excel](#), [Microsoft Office](#), [Tips](#)
- **Tags:** [Data Analysis](#), [Column](#), [Sales](#), [Microsoft Excel](#), [Spreadsheet](#), [Microsoft Excel 2007](#), [Cell](#), [Mary Ann Richardson](#)
-

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- 8

Excel 2007's Format As Table feature can make columns of data easy to read, while providing a set of tools that you can use to perform basic data analysis with a few mouse clicks. For example, say you have collected unit sales for 100 products sold during the last quarter. Your worksheet consists of three columns: Product Name in

column A, Unit Price in column B, and Units Sold in column C. To convert this worksheet to a table, follow these steps:

1. Click in any cell within the data range.
2. Click the Home tab.
3. In the Styles group, click the drop-down arrow of the Format As Table command.
4. Point the cursor to the Table Style Medium 17 format. A preview of the format will appear.
5. Click the Table Style Medium 17 format. The format will apply to the table.
6. Click OK.

As you scroll through the table, note the locked column headers; with the column headers locked, they always appear on the screen. Follow these steps to add a column that will calculate the total sales for each product to the table:

1. Enter **Total Sales** in D1.
2. Enter **=B2*C2** in D2.

Excel automatically calculates and copies the formula to the last product in the table.

You can now perform basic analysis on the Total Sales column. For example, to sort the total sales from highest to lowest, click the drop-down arrow in the Total Sales header cell and select Sort Highest To Lowest. You can also filter the table to show only the cells with above average sales or the top 10 or 20 performers.

When you complete your analysis, you can convert the table back to a data range by following these steps:

1. Click any cell in the table.
2. Click the Design tab under Table Tools in the title bar.
3. Click the Convert To Range command in the Tools group.
4. Click Yes at Do You Want To Convert The Table To A Normal Range?.

Create and use macros

Excel Macro Recorder Tutorial

Note: For help on these steps, refer to the image above.

Related article: [Excel 2003 Macro Tutorial](#)

This tutorial covers using the macro recorder to create a simple macro in Excel. The macro recorder works by recording all keystrokes and clicks of the mouse.

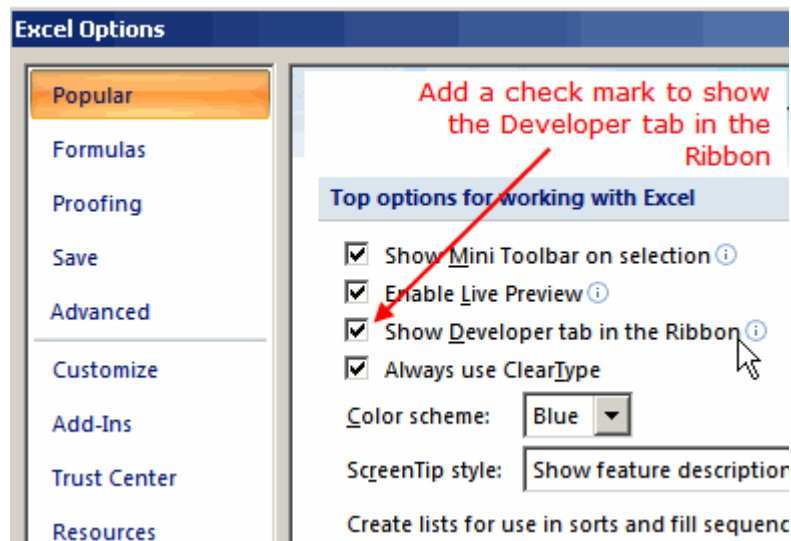
The macro created in this tutorial will apply a number of formatting options to a [worksheet](#) titles.

In Excel 2007, all macro - related commands are located on the *Developer* tab of the [ribbon](#). Often, this tab needs to be added to the ribbon in order to access the macro commands.

The topics covered by this tutorial include:

- [Adding the Developer Tab](#)
- [Starting the Excel macro recorder](#)
- [Excel macro recorder options](#)
- [Recording the macro](#)
- [Running the macro](#)
- [Macro errors / Editing the macro](#)

Adding the Developer Tab



Excel 2007 Macro Recorder Tutorial

by Ted French

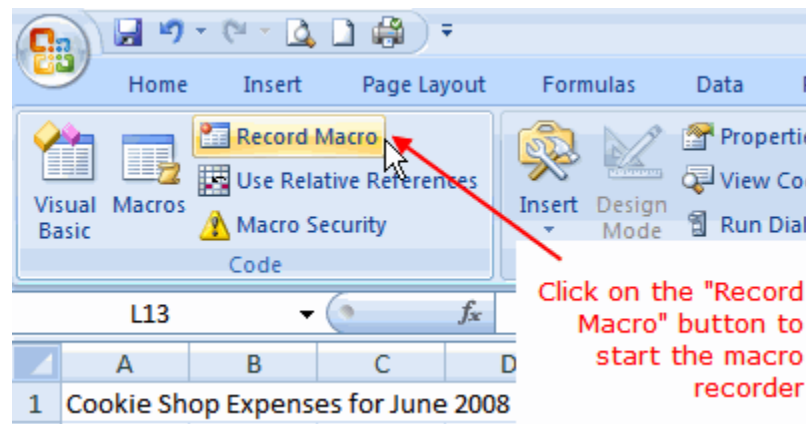
Adding the Developer Tab

Note: For help on these steps, refer to the image above.

1. Click on the [Office button](#) to open the drop down menu.

2. Click on the **Excel Options** button located at the bottom of the menu to open the *Excel Options* dialog box.
3. Click on the *Popular* option at the top of the left hand window of the open dialog box.
4. Click on the *Show Developer Tab in the ribbon* in the right hand window of the open dialog box.
5. Click OK.
6. The Developer tab should now be visible in the ribbon.

Adding a Worksheet Title / The Excel Macro Recorder



Excel 2007 Macro Recorder Tutorial

by Ted French

Adding a Worksheet Title

Note: For help on these steps, refer to the image above.

Before we start recording our macro, we need to add the [worksheet](#) title we will be formatting.

Since the title of each worksheet is usually unique to that worksheet, we don't want to include the title in the macro. Therefore we will add it to the worksheet, before starting the macro recorder.

1. Click on cell A1 in the worksheet.
2. Type the title: *Cookie Shop Expenses for June 2008*.
3. Press the **Enter** key on the keyboard.

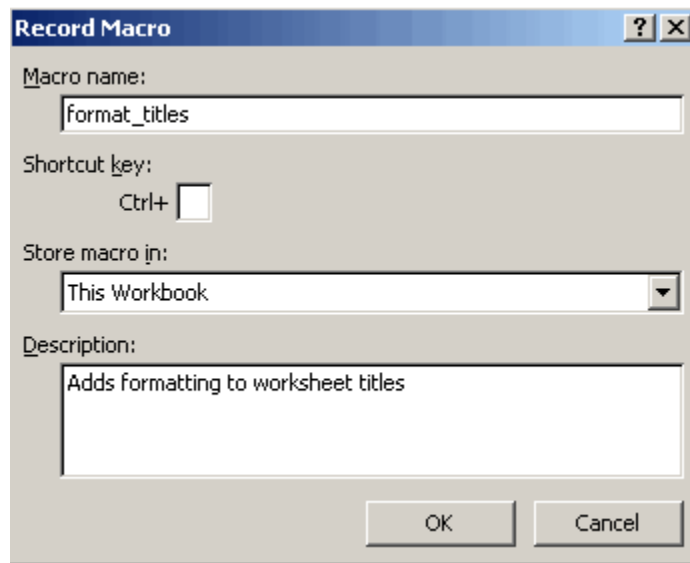
Excel Macro Recorder

The easiest way to create a macro in Excel is to use the macro recorder. To do so:

1. Click on the *Developers* tab.

2. Click on **Record Macro** in the [ribbon](#) to open the *Record Macro* dialog box.

The Macro Recorder Options



Excel 2007 Macro Recorder Tutorial

i½ Ted French

The Macro Recorder dialog box

Note: For help on these steps, refer to the image above.

There are 4 options to complete in this dialog box:

1. Macro name - give your macro a descriptive name. The name must begin with a letter and spaces are not allowed. Only letters, numbers and the underscore character are permitted.
2. Shortcut key - (optional) fill in a letter, number, or other character in the available space. This will allow you to run the macro by holding down the CTRL key and pressing the chosen letter on the keyboard.
3. Store macro in

Options:

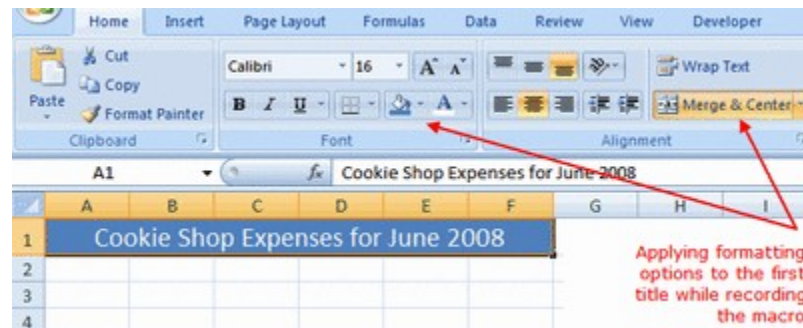
- This [workbook](#)
 - The macro is available only in this file.
- New workbook
 - This option opens a new Excel file. The macro is available only in this new file.
- Personal macro workbook.

- This option creates a hidden file *Personal.xls* which stores your macros and makes them available to you in all Excel files.
4. Description - (optional) enter a description of the macro.

For this tutorial:

1. Set the options in the *Record Macro* dialog box to match those in the image above.
2. **Do Not** click OK - yet - see below.
 - Clicking the OK button in the *Record Macro* dialog box starts recording the macro you have just identified.
 - As previously mentioned, the macro recorder works by recording all keystrokes and clicks of the mouse.
 - Creating the *format_titles* macro involves clicking on a number of format options on the home tab of the ribbon with the mouse while the macro recorder is running.
3. Go to the next step before starting the macro recorder.

Adding the Macro Steps



Excel 2007 Macro Recorder Tutorial

by Ted French

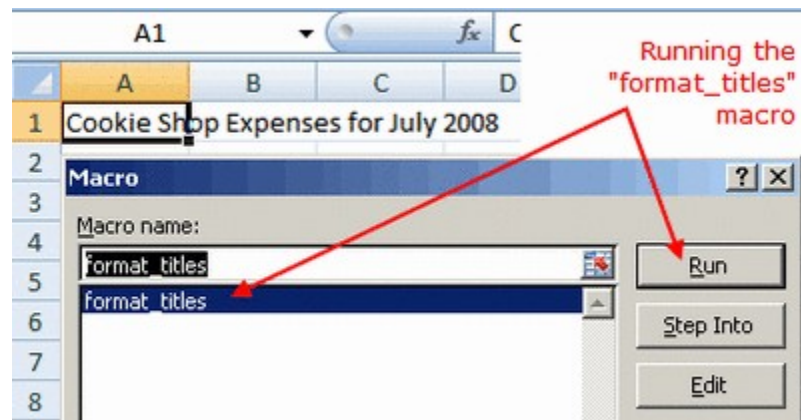
Recording the Macro

Note: For help on these steps, refer to the image above.

1. Click the OK button in the *Record Macro* dialog box to start the macro recorder.
2. Click on the *Home* tab of the ribbon.
3. [Drag select](#) cells A1 to F1 in the [worksheet](#) to highlight them.
4. Click on the *Merge and Center* icon to center the title between cells A1 and F1.
5. Click on the *Fill Color* icon (looks like a paint can) to open the fill color drop down list.

6. Choose *Blue, Accent 1* from the list to turn the background color of the selected cells to blue.
7. Click on the *Font Color* icon (it is a large letter "A") to open the font color drop down list.
8. Choose *White* from the list to turn the text in the selected cells to white.
9. Click on the *Font Size* icon (above the paint can icon) to open the font size drop down list.
10. Choose *16* from the list to change the size the text in the selected cells to 16 point.
11. Click on the *Developer* tab of the ribbon.
12. Click the *Stop Recording* button on the ribbon to stop the macro recording.
13. At this point, your worksheet title should resemble the title in the image above.

Running the Macro



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i'd ½ Ted French

Running a Macro in Excel

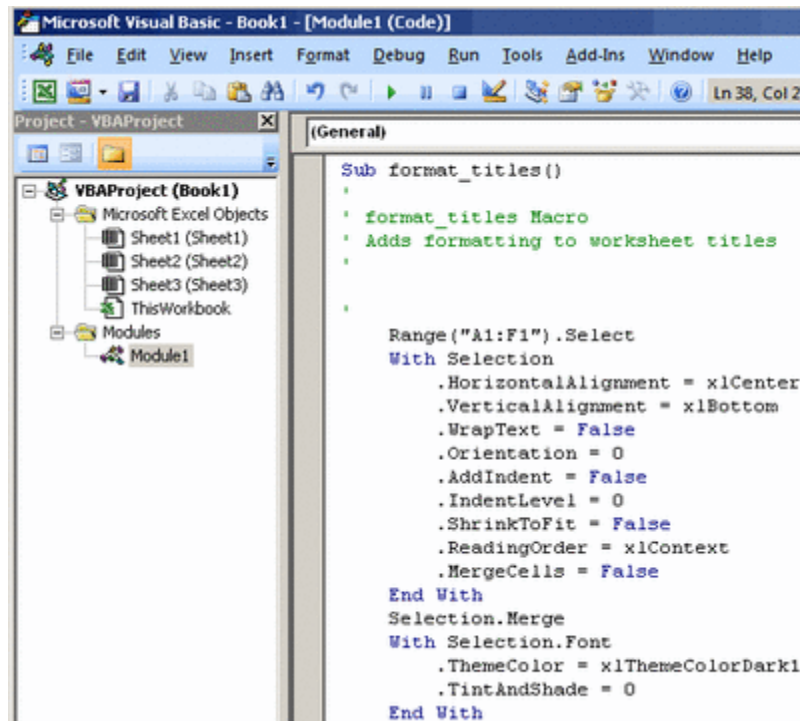
Note: For help on these steps, refer to the image above.

To run a macro you have recorded:

1. Click on the *Sheet2* tab at the bottom of the [spreadsheet](#).
2. Click on cell A1 in the [worksheet](#).
3. Type the title: *Cookie Shop Expenses for July 2008*.
4. Press the **Enter** key on the keyboard.
5. Click on the *Developer* tab of the ribbon.

6. Click the *Macros* button on the ribbon to bring up the *View Macro* dialog box.
7. Click on the *format_titles* macro in the *Macro name* window.
8. Click the *Run* button.
9. The steps of the macro should run automatically and apply the same formatting steps applied to the title on sheet 1.
10. At this point, the title on worksheet 2 should resemble the title on worksheet 1.

Macro Errors / Editing a Macro



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Macro Errors

Note: For help on these steps, refer to the image above.

If your macro did not perform as expected, the easiest, and best option is to follow the steps of the tutorial again and re - record the macro.

Editing/Step Into a Macro

An Excel macro is written in the Visual Basic for Applications (VBA) programming language.

Clicking on either the *Edit* or *Step Into* buttons in the *Macro dialog box* starts the VBA editor (see the image above).

Using the VBA editor and covering the VBA programming language is beyond the scope of this tutorial.

Protect a spreadsheet

Protection of documents and cells can help prevent inadvertent changes to your worksheet. This can be especially helpful if you have someone who is unfamiliar with worksheets or doing your data entry, or if you spent many hours struggling to get the worksheet right.

Excel offers the option of protecting the entire document, individual objects, the structure of a window, and/or specific cells. With Excel, you can even add a password to the file. If you want to prevent changes to sheets or cells, you need to lock the cells and then protect the sheet.

- [Protection Options](#)
- [Locking & Unlocking Cells](#)
- [Workbook Level Protection](#)
- [Worksheet Level Protection](#)
- [File Level Protection](#)



Protection Options

When you are protecting your workbook, you have two primary options:

- **Prevent data entry for select cells**
Users can access the worksheet and view the information; however, access for making changes is restricted. For more information, refer to [Locking & Unlocking Cells](#).
- **Restrict or prevent access to the file**
Users can be prevented from viewing the worksheet, or users can view the workbook but not make changes to it. For more information, refer to [File Level Protection](#).



Locking & Unlocking Cells

Excel can protect cells, graphics, charts, and other worksheet objects. This protection will take effect only after you turn on the [Worksheet Protection](#) option in the **Protect Sheet** dialog box. If you enable protection, no changes can be made to a cell until you unlock that cell.

Locking Cells

You can easily lock any cell in a worksheet.

NOTE: Make sure to lock the cells before you protect the sheet or document. Once a sheet or a document has been protected, you cannot access menu selections that allow you to make changes to cells.

1. Select the cell(s) to be locked

2. From the **Ribbon**, select the **Home** command tab
3. In the **Cells** group, click **FORMAT**
4. In the **Protection** section, select **Lock**
NOTE: If the icon is highlighted, the cells are locked.
5. [Protect the worksheet](#)

Unlocking Cells

In order to unlock cells, sheet protection must first be turned off. For more information, refer to [Worksheet Level Protection](#) or [Workbook Level Protection](#).

1. [Unprotect the worksheet](#)
2. Select the cells you want to unlock
3. From the **Ribbon**, select the **Home** command tab
4. In the **Cells** group, click **FORMAT**
5. In the **Protection** section, deselect **Lock**
The cells are unlocked.
NOTE: If the icon is not highlighted, the cells are unlocked.



Workbook Level Protection

You can prevent a workbook from having its structure and windows modified or resized by another user.

Protecting the Workbook

1. From the **Ribbon**, select the **Review** command tab
2. In the **Changes** group, click **PROTECT WORKBOOK**
The **Protect Workbook** dialog box appears.

Protect workbook for _____

☒ Structure
☐ Windows

Password (optional):
| |

OK Cancel

3. Select the appropriate option(s):

Structure

Prevents the user from changing the order of the sheets within a workbook. This includes adding or deleting worksheets.

Windows

Prevents the user from being able to resize or move the window.

Password

Allows only those who know the password entered in this text box to turn the workbook protection off.

4. Click **OK**
The workbook is protected.

Unprotecting the Workbook

1. From the **Ribbon**, select the **Review** command tab
2. In the **Changes** group, click **PROTECT WORKBOOK**
The workbook is unprotected. Users can now modify the structure and windows of the workbook.
NOTE: If you included a password when you turned the protection on, you must enter the password to turn the protection off.



Worksheet Level Protection

You can protect a single worksheet from being modified by another user.

Protecting the Worksheet

1. From the **Ribbon**, select the **Home** command tab
2. In the **Cells** group, click **FORMAT**
3. In the **Protection** section, select **Protect Sheet...**
The **Protect Sheet** dialog box appears.

Protect Sheet [X]

☒ Protect worksheet and contents of locked cells

Password to unprotect sheet:

Allow all users of this worksheet to:

- ☒ Select locked cells
- ☒ Select unlocked cells
- ☐ Format cells
- ☐ Format columns
- ☐ Format rows
- ☐ Insert columns
- ☐ Insert rows
- ☐ Insert hyperlinks
- ☐ Delete columns
- ☐ Delete rows

OK Cancel

4. In the **Protect Sheet** dialog box, select the appropriate options:

Protect worksheet and contents of locked cells

Prevents changes to locked cells.

Password to unprotect sheet

Allows only those who know the assigned password to unprotect the worksheet.

Allow all users of this worksheet to

Checked boxes are aspects that any user can access.

5. Click **OK**
The worksheet is protected.

Unprotecting the Worksheet

1. From the **Ribbon**, select the **Home** command tab
2. In the **Cells** group, click **FORMAT**
3. In the **Protection** section, select **Unprotect Sheet...**
The worksheet is unprotected. Users can now modify the worksheet.
NOTE: If you included a password when you turned the protection on, you must type the password in the **Password** text box to turn the protection off.

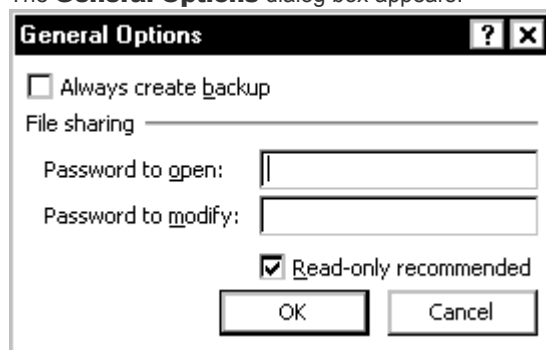


File Level Protection

You have two options when saving your workbook file with a password. You can save the file so only those who know the password can open the file, or so only those who know the password can modify the file.

Protecting the File

1. From the **File** menu, select **Save As...**
The **Save As** dialog box appears.
2. From the **Tools** pull-down list, select **General Options...**
The **General Options** dialog box appears.



3. To prevent unauthorized access to the file, in the **Password to open** text box, type a *password*
To prevent unauthorized changes to the file, in the **Password to modify** text box, type a *password*
4. OPTIONAL: If you would like Excel to recommend that this file be opened as a read-only file each time it is opened, select **Read-only recommended**
HINT: Read-only files can be modified, but the changes cannot be saved without creating a new file.

5. Click **OK**
The **Confirm Password** dialog box appears.
6. In the **Reenter password to modify** text box, type the *password(s)* in the order of the password(s) that you typed in the **Save Options** dialog box
EXAMPLE: If you typed **apple** in the **Password to open** text box and **orange** in the **Password to modify** text box, you must type **apple** in the first confirmation dialog box and **orange** in the second confirmation dialog box.
7. Click **OK**
8. Click **SAVE**
Your file is saved with password protection.

Unprotecting the File

If you no longer need to password-protect the file, you can remove the password.

1. Open the file
NOTE: In order to open the file, you will need to know the password.
2. From the **File** menu, select **Save As...**
The **Save As** dialog box appears.
3. In the **Save As** dialog box, from the **Tools** pull-down list, select **General Options...**
4. In the **Password to open** text box, select the text » press [Delete]
5. In the **Password to modify** text box, select the text » press [Delete]
6. Click **OK**
The file is no longer password protected.
7. To save the file, click **SAVE**
A confirmation dialog box appears.
NOTE: This will overwrite the existing saved file with the new file, which is currently not password-protected. Any other changes you have made to this file since opening it will also be saved and will overwrite the old document.
8. Click **YES**
Your file is re-saved without password protection.

Consolidate a work book

What do you want to do?

If you want to...	Then...
Arrange the data in all worksheets in identical order and location	Consolidate by position
Organize the data differently in the separate worksheets, but use the same row and column labels so that the master worksheet can match the data	Consolidate by category

Use formulas with cell references or [3-D references \(3-D reference: A reference to a range that spans two or more worksheets in a workbook.\)](#) to other worksheets that you are combining because you do not have a consistent position or category to rely on

[Consolidate by formula](#)

Use a PivotTable report instead of a consolidation

[Use a PivotTable report to consolidate data](#)

Consolidate by position

1. Set up the data to be consolidated on each separate worksheet.

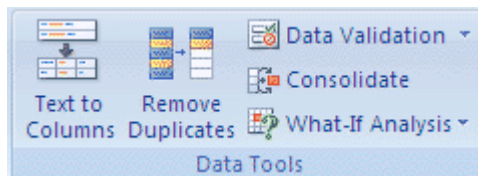
 [How to set up the data](#)

- Make sure that each range of data is in [list \(list: A series of rows that contains related data or a series of rows that you designate to function as a datasheet by using the Create List command.\)](#) format: each column has a label in the first row and contains similar facts, and there are no blank rows or columns within the list.
- Put each range on a separate worksheet. Don't put any of the ranges on the worksheet where you plan to put the consolidation.
- Make sure that each range has the same layout.
- Name each range: Select the entire range, and then on the **Formulas** tab in the **Named Cells** group, click the arrow next to **Name a Range**, and type a name for the range in the **Name** box.

2. Click the upper-left cell of the area where you want the consolidated data to appear in the master worksheet.

Note Make sure that you leave enough cells to the right and below this cell for the consolidated data. The **Consolidate** command populates the area as needed.

3. On the **Data** tab, in the **Data Tools** group, click **Consolidate**.



4. In the **Function** box, click the [summary function \(summary function: A type of calculation that combines source data in a PivotTable report or a consolidation table, or when you are inserting automatic subtotals in a list or database. Examples of summary functions include Sum, Count, and Average.\)](#) that you want Microsoft Office Excel to use to consolidate the data.
5. If the worksheet is in another workbook, click **Browse** to locate the file, and then click **OK** to close the **Browse** dialog box.

The file path is entered in the **Reference** box followed by an exclamation point.


6. Type the name that you gave the range, and then click **Add**. Repeat this step for each range.
7. Decide how you want to update the consolidation. Do one of the following:
 - To set up the consolidation so that it updates automatically when the source data changes, select the **Create links to source data** check box.

Important You can only select this check box if the worksheet is in another workbook. Once you select this check box, you won't be able to change which cells and ranges are included in the consolidation.
 - To set up the consolidation so that you can update the consolidation manually by changing the included cells and ranges, clear the **Create links to source data** check box.
8. Leave the boxes under **Use labels in** blank. Excel does not copy the row or column labels in the source ranges to the consolidation. If you want labels for the consolidated data, copy them from one of the source ranges or enter them manually.

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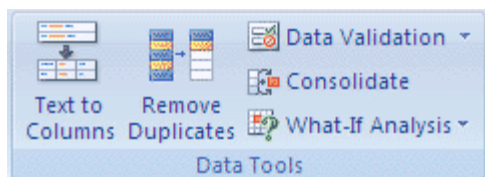
Consolidate by category

1. Set up the data to be consolidated on each separate worksheet.

 [How to set up the data](#)

 - Make sure that each range of data is in [list \(list: A series of rows that contains related data or a series of rows that you designate to function as a datasheet by using the Create List command.\)](#) format: each column has a label in the first row and contains similar facts, and there are no blank rows or columns within the list.
 - Put each range on a separate worksheet. Don't put any of the ranges on the worksheet where you plan to put the consolidation.
 - Make sure that the labels for columns or rows that you want to combine have identical spelling and capitalization; for example, labels Annual Avg. and Annual Average are different and will not consolidate.
 - Name each range: Select the entire range, and then on the **Formulas** tab in the **Named Cells** group, click the arrow next to **Name a Range**, and type a name for the range in the **Name** box.
2. Click the upper-left cell of the area where you want the consolidated data to appear in the master worksheet.

Note Make sure that you leave enough cells to the right and below this cell for the consolidated data. The **Consolidate** command populates the area as needed.
3. On the **Data** tab, in the **Data Tools** group, click **Consolidate**.



4. In the **Function** box, click the [summary function \(summary function: A type of calculation that combines source data in a PivotTable report or a consolidation table, or when you are inserting automatic subtotals in a list or database. Examples of summary functions include Sum, Count, and Average.\)](#) that you want Excel to use to consolidate the data.

5. If the worksheet is in another workbook, click **Browse** to locate the file, and then click **OK** to close the **Browse** dialog box.

The file path is entered in the **Reference** box followed by an exclamation point.

6. Type the name you gave the range, and then click **Add**. Repeat this step for each range.

7. Decide how you want to update the consolidation. Do one of the following:

- To set up the consolidation so that it updates automatically when the source data changes, select the **Create links to source data** check box.

Important You can only select this check box if the worksheet is in another workbook. Once you select this check box, you won't be able to change which cells and ranges are included in the consolidation.

- To set up the consolidation so that you can update the consolidation manually by changing the included cells and ranges, clear the **Create links to source data** check box.

8. Select the check boxes under **Use labels in** that indicate where the labels are located in the source ranges: either the **Top row**, the **Left column**, or both.

Notes

- Any labels that don't match up with labels in the other source areas result in separate rows or columns in the consolidation.
- Make sure that any categories that you don't want to consolidate have unique labels that appear in only one source range.

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Consolidate by formula

1. On the master worksheet, copy or enter the column or row labels that you want for the consolidated data.
2. Click a cell that you want to contain consolidated data.
3. Type a formula that includes a cell reference to the source cells on each worksheet or a 3-D reference that contains data that you want to consolidate. Regarding cell references, do one of the following:

If the data to consolidate is in different cells on different worksheets

- Enter a formula with cell references to the other worksheets, one for each separate worksheet. For example, to consolidate data from worksheets named Sales (in cell B4), HR (in cell F5), and Marketing (in cell B9), in cell A2 of the master worksheet, you would enter the following:

	A	B	C	D	E
1					
2	= SUM(Sales!B4, HR!F5, Marketing!B9)				
3					
	Sales	HR	Marketing	Consolidation	

Tip To enter a cell reference, such as Sales!B4, in a formula without typing, type the formula up to the point where you need the reference, click the worksheet tab, and then click the cell.

If the data to consolidate is in the same cells on different worksheets

- Enter a formula with a 3-D reference that uses a reference to a range of worksheet names. For example, to consolidate data in cells A2 from Sales through Marketing inclusive, in cell A2 of the master worksheet you would enter the following:

	A	B	C	D	E
1					
2	= SUM(Sales:Marketing!A2)				
3					
	Sales	HR	Marketing	Consolidation	

Note If the workbook is set to automatically calculate formulas, a consolidation by formula always updates automatically when the data in the separate worksheets change.

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Use a PivotTable report to consolidate data

You can create a [PivotTable report \(PivotTable report: An interactive, crosstabulated Excel report that summarizes and analyzes data, such as database records, from various sources including ones external to Excel.\)](#) from multiple consolidation ranges. This method is similar to consolidating by category, but it offers more flexibility to reorganize the categories. For more information see [Consolidate multiple workshee](#)

Appendix – Definitions & Resources

Resources

ACCA - <http://www.accaglobal.com/>

ICAEW- <http://icaew.com>

AIA - www.aiaaworldwide.com/

Accounting web - <http://www.accountingweb.co.uk/>