Microsoft Excel 2007 to 2013

A first look at Excel

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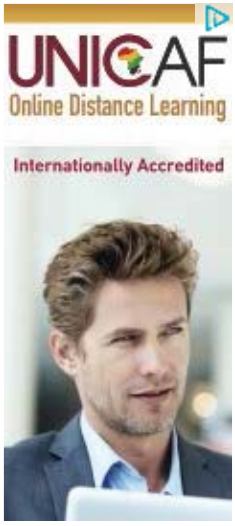
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In the first part of our Excel tutorials, we'll explain what you will see when the programme first starts. We're not going to explain what a spreadsheet is, and assume that you already know. If you don't, we have an introduction here:

What is a Spreadsheet?

Launch your Excel software. When the programme starts, you'll see something like this in Excel 2007:

Excel Main Screen (Opens in a new window 67KB)

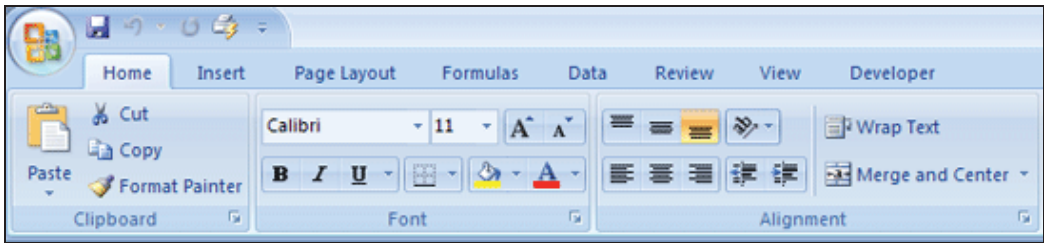
In newer versions of Excel, you may see a screen like this one first (Excel 2013):

Excel 2013 Main Screen (Opens in a new window 33KB)

To create a new spreadsheet in Excel 2013, click one of the templates. For this course, we'll be using the **Blank Workbook** temple. Click on that option from the list available. You'll be taken to the main spreadsheet area.

If you've ever used a previous version of Excel then you'll notice that the new version looks quite different! Even if you have never used Excel, the software looks quite intimidating. But we'll make a gentle start, so that you can get used to the way everything works.

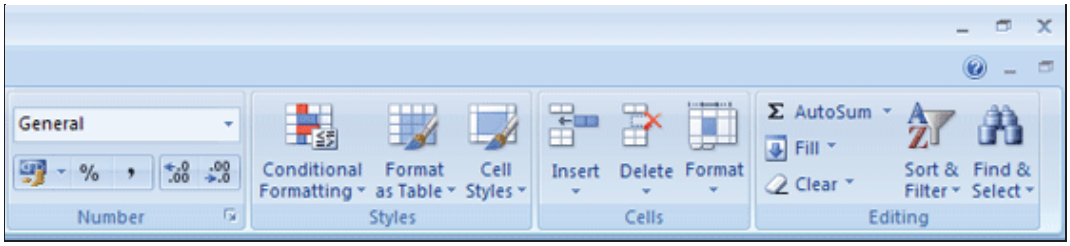
The first thing to notice is the Ribbon running right across the top. The Ribbon is supposed to be more intuitive than drop-down menus. Emphasis is placed on the tools and options appropriate to what you're doing. Here's a closer look at the Ribbon when Excel first starts (it's split in half, here):



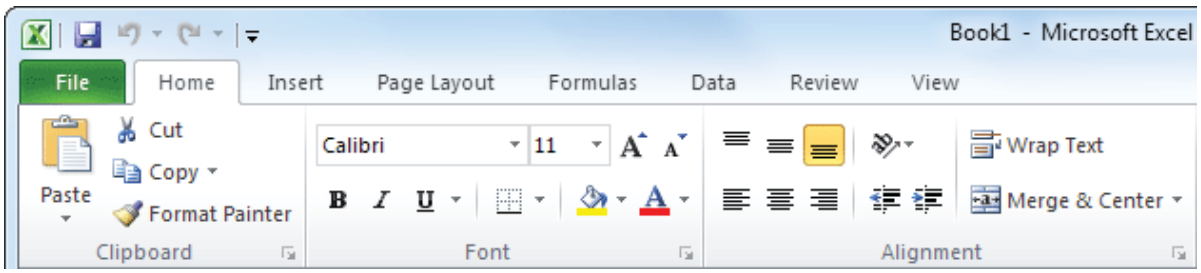
Left Side of the Ribbon in Excel 2007

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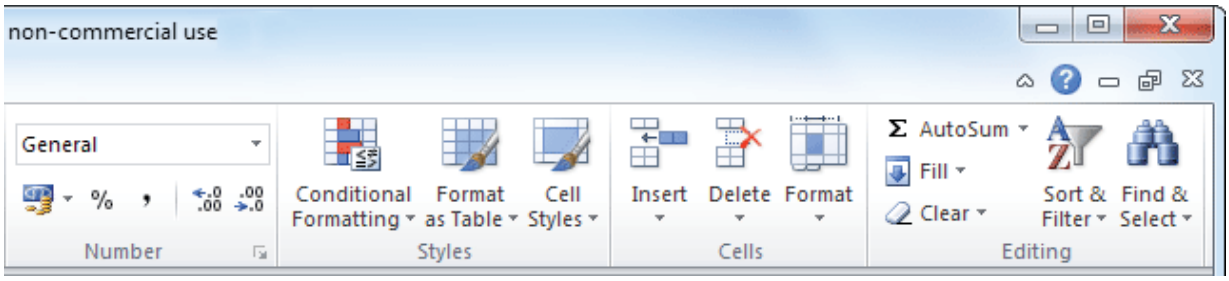




Right Side of the Ribbon in Excel 2007



Left Side of the Ribbon in Excel 2010 and 2013



Right Side of the Ribbon in Excel 2010 and 2013

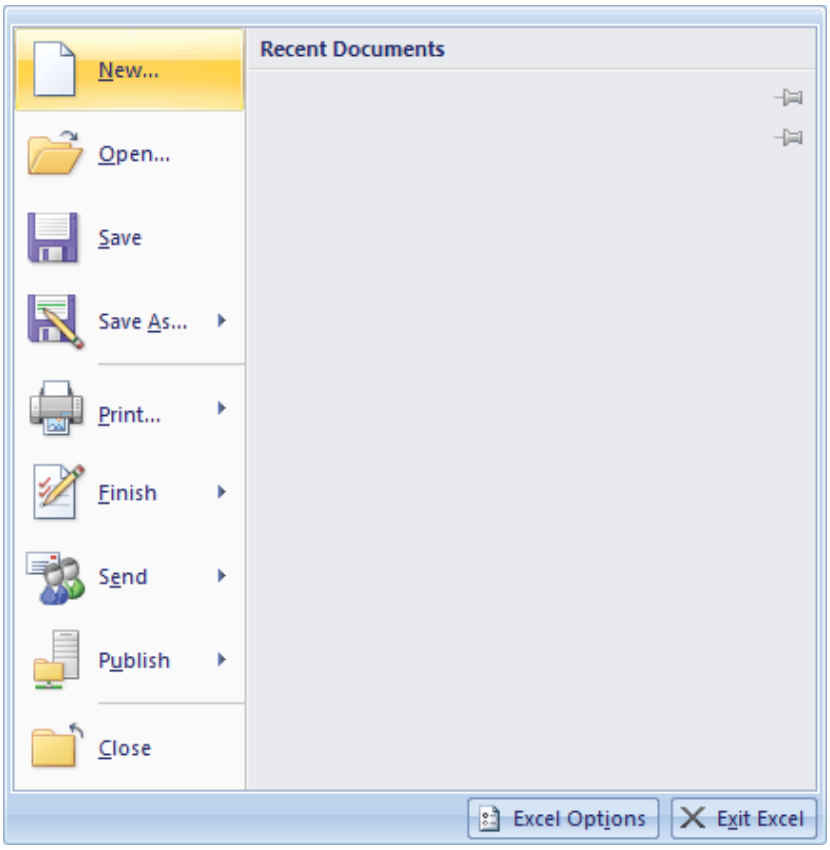
Notice that in both versions the Home tab is the one that is selected. Other tabs are: Insert, Page Layout, Formulas, Data, Review and View. (In the image above, there's also a Developer tab. If you don't do any programming then you don't have to worry about this tab.)

In the top left of the Ribbon in Excel 2007 there's a big circle. This one:

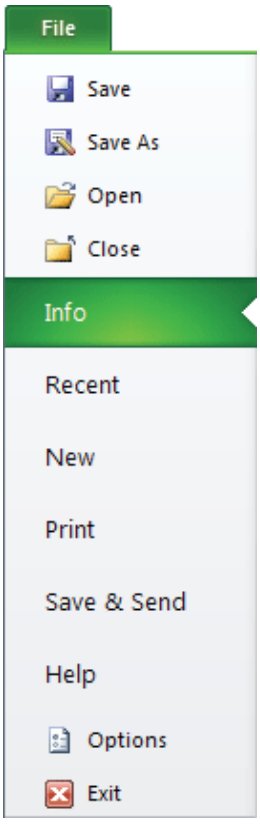


Click this, and you'll see all the file operations: **New**, **Open**, **Save**, **Exit**, etc.

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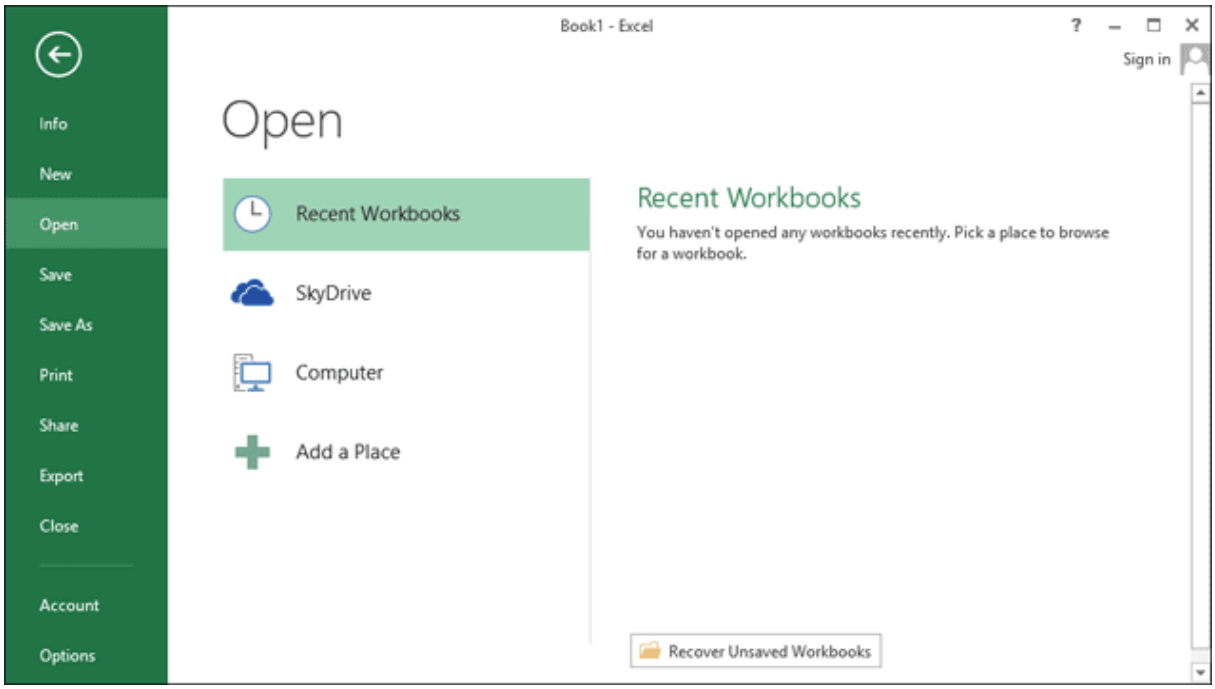


To see the same menu in Excel 2010, you have to click on the File tab, which is on the far left. (It looks as though it's already selected, but it's not.):

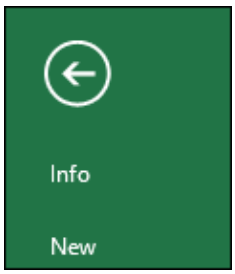


Excel 2013 also has a File menu like the one above. When you click the File menu in Excel 2013, however, you'll see this instead:

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To get back to your spreadsheet in Excel 2013, click the left-pointing arrow in the top left:



We'll go through all these menu options later, along with the various options on the Ribbon tabs. But the best place to start with Excel is getting to grips with all those numbers and letters. These are the Grid Coordinates. We'll do that in the next part.

Move on to Rows and Columns -->

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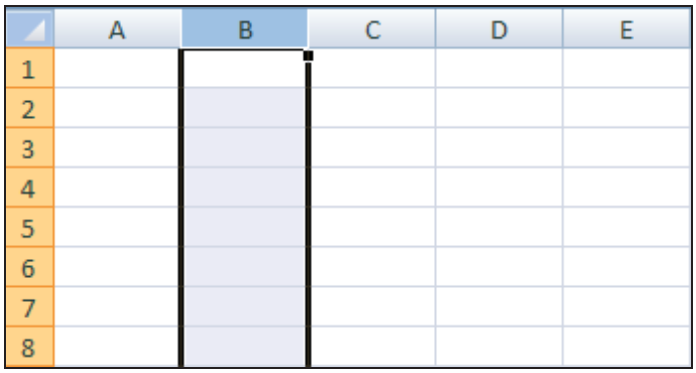
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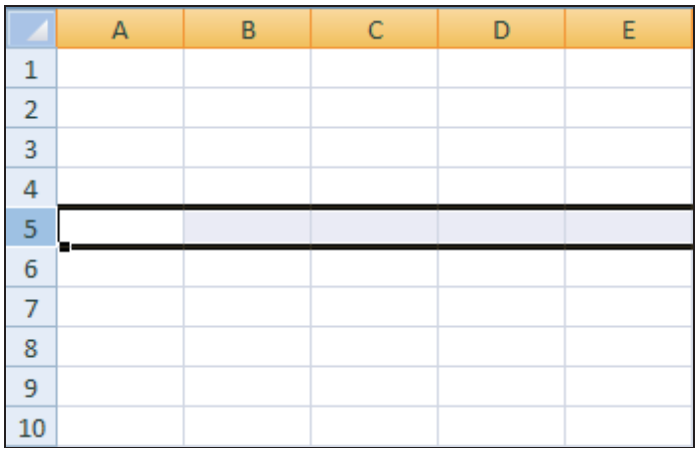
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Spreadsheets are displayed in a grid layout. The letters across the top are Column headings. To highlight an entire Column, click on any of the letters. The image below shows the B Column highlighted:



If you look down the left side of the grid, you'll see numbers, which start at number 1 at the very top and go down to over a million. (The exact number of rows and columns are 1,048,576 rows and 16,384 columns. You've never going to need this many!) You can click a number to highlight an entire Row. If you look at the image below, you'll see that Row 5 has been highlighted (The image is from Excel 2007. Later are version are the same except less colourful!).

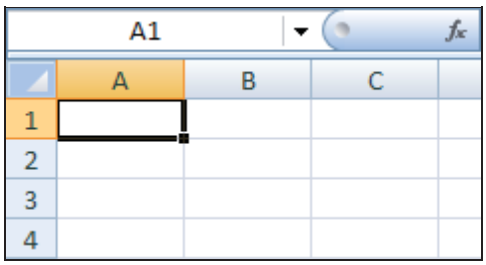


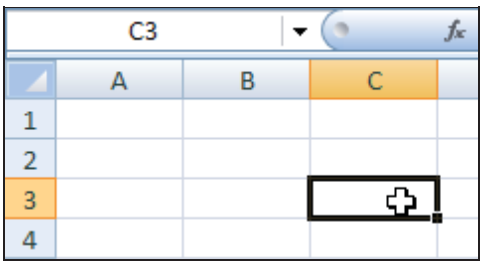
Spreadsheets are all about individual Cells. A Cell is a letter combined with a number. So if you combine the B column with Row 5, you get Cell B5. Combine Column D with Row 5 and you get Cell D5.

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Enable sentiment & text analysis in Excel with Textalytics add-in

To see this for yourself, click inside any of the cells on your spreadsheet. In the Images below, we have clicked inside cell A1 and cell C3.





The first picture is Column A, Row 1 (A1), and the second picture is Column C Row 3 (C3). Notice that the cells we clicked on have a black border around them. This tells you the cell is active. The cell that is active will have its Column letter and Row number displayed in the top left, just above the letters A and B in the pictures. When you click into a cell, you can then type text and numbers.

To move around the spreadsheet, and make other cells active, you can either just click inside a Cell, or press the arrow keys on your keyboard. Try it now. Click inside a Cell and notice the Cell reference appear above the letters A and B. Press your arrow keys and notice how the active cells moves.

Before going any further, make sure you understand how the spreadsheet grid works. If you are asked to locate Cell H2, you should be able to do so.



We'll now enter some simple data into an active cell.

Entering Text and Numbers in a Cell -->

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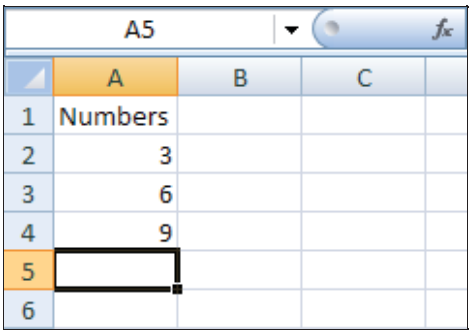
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To make a start, we'll create this really simple spreadsheet:



All we're going to be doing here is entering some text and some numbers. We're not adding anything up yet.

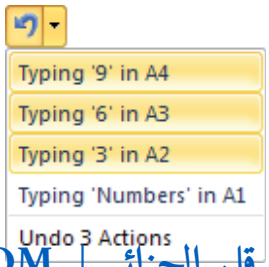
Before you tackle this first exercise, though, you may want to take note of the **Undo** feature, just in case you make a mistake. The Undo option is the left curved arrow, right at the top of your screen. This one for Excel 2007 users:



And this one for Excel 2010 and Excel 2013 users:



Click the left curved arrow to Undo something, and click the right curved arrow to redo it. The Undo arrow also has a dropdown box. Click the small arrow next to Undo to see the following:



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This list is for multiple Undo's. Move your mouse down the list and click to undo several steps at once.

But back to the spreadsheet.

Click inside of cell A1 on your spreadsheet, and do the following:

- Type the word "Numbers" (with no quotation marks)
- Hit the Enter key on your keyboard
- The active cell will move down one, to cell A2
- Type the number 3, and again hit the Enter key on your keyboard
- The active cell will move down one, to cell A3
- Now put the number 6 into cell A3, and the number 9 in cell A4
- After you have typed the number 9, and hit the Enter key, you should see that cell A5 is now the active cell

You should now have a spreadsheet that looks like ours above.



The text we entered in cell A1 is known as a Heading. It's there just to tell you what the numbers mean. Except our heading doesn't tell us a great deal. Let's change it to something else. Click the link below to learn how to edit text in a cell.

How to Edit Text in a Cell -->

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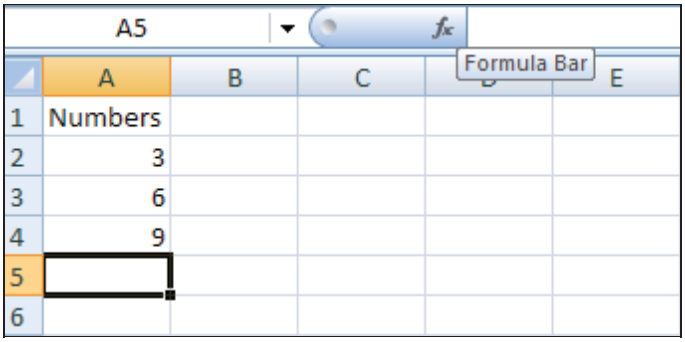
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In the previous part, you created a simple Excel spreadsheet. You'll now learn how to edit text in a cell.

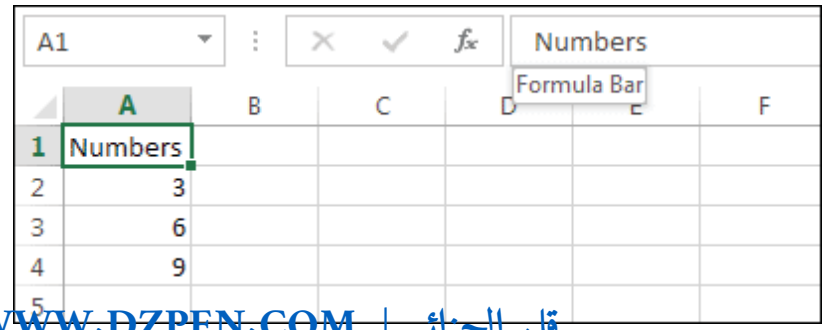
To change the text in cell A1, you can just click inside of the cell and start typing. Anything you had there previously would be erased. But if you just want to edit the text (if you've made a spelling mistake, for example), then this is no good. If you want to keep most of the text, and just make minor changes, then you need to do something else.



In the image below, you can see what's known as the **Formula Bar**. The Formula Bar is like a long textbox that you can click inside and start typing. Here's what it looks like in Excel 2007:

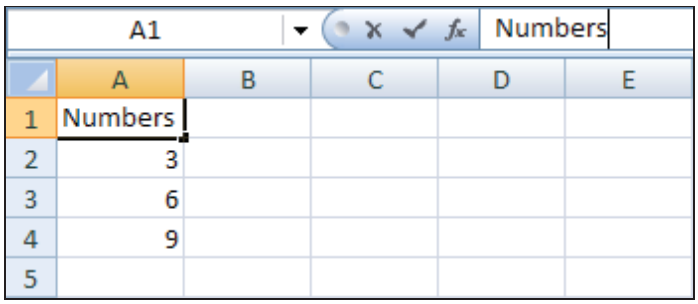


And here it is in Excel 2010 and 2013:



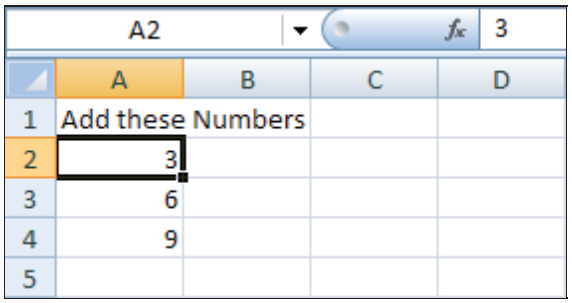
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To edit a Cell in Excel, first click inside the cell you want to edit (A1 for us). Then click inside the formula bar. Notice where your cursor is now:



The image above shows that the cell A1 is active, but the cursor is inside of the formula bar.

With the cursor in the Formula Bar, try changing the text "Numbers" to "Add these Numbers". Press the Enter key when you've made the changes. Your spreadsheet should look like ours below:

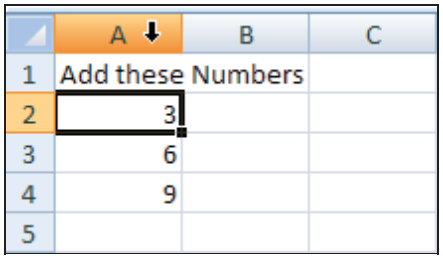


Notice that the active cell is now A2, and that the Formula Bar has a 3 in it.

However, there's a problem. There's not enough room in cell A1 for our new text. Part of it seems to be in the B column.

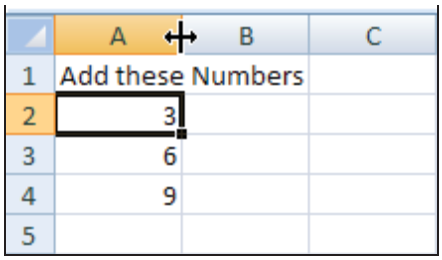
The solution is to widen the whole of Column A. Try this:

- Move your mouse up to the start of the A Column
- The pointer will change shape and now be a black arrow

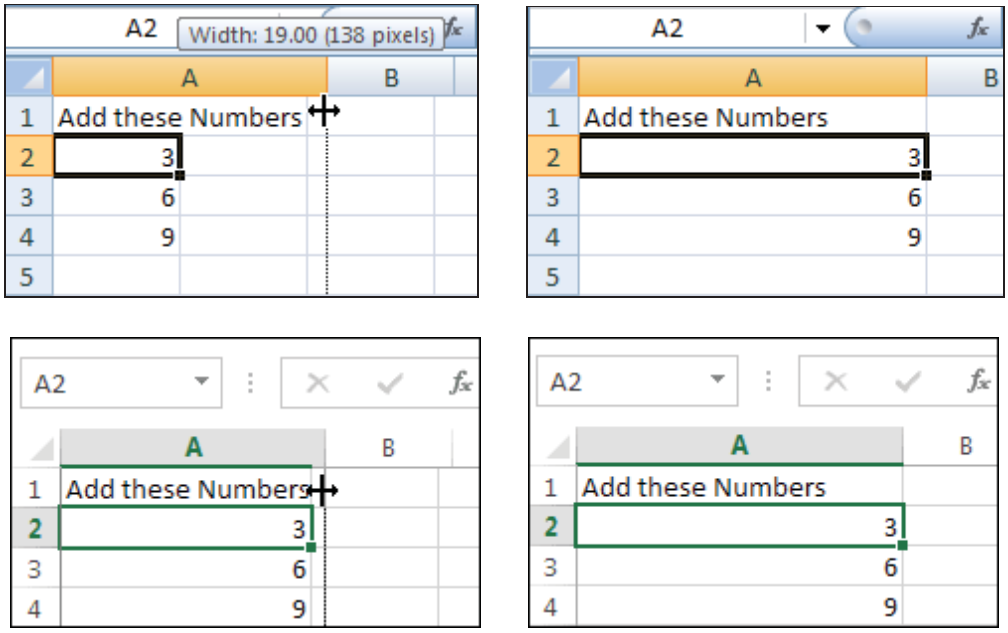


- Move your mouse over the line that separates Column A and Column B
- Your mouse pointer will change shape again, this time to a cross with arrows

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- When you see the new shape, hold down your left mouse button
- Keep the left mouse button held down, and drag your cross to the right
- Once you have all the text in the A column, let go of the left mouse button. The images below show the process in action (the top two are from Excel 2007 and the bottom two are from Excel 2010/2013):



You can make the height of the Rows bigger or smaller by using exactly the same technique.



The numbers, however, don't look very tidy. We'll now see how to centre them, and the text as well.

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Centre Text and Numbers in Excel 2007 to 2013 -->

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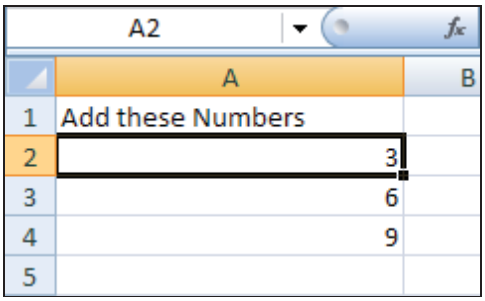
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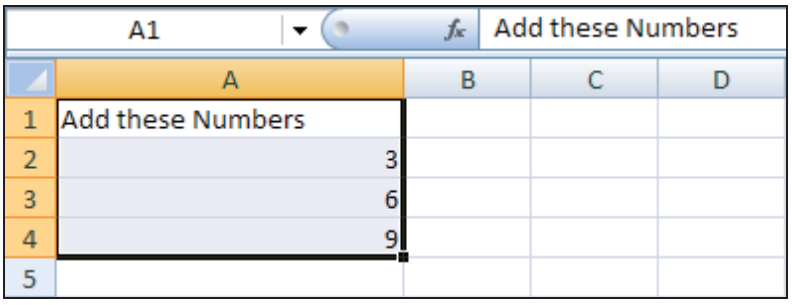


You saw that by clicking inside of a cell it makes it active, so that you can make changes. We want to centre all our numbers and the text. Here's the spreadsheet we have:



So we need cells A1, A2, A3 and A4 to be active. In Excel, you can do this by highlighting the cells.

- Place your mouse over cell A1
- Your pointer should now be in the shape of a white cross
- When your pointer changes to the white cross, hold your left mouse button down and drag to cell A4
- Let go of the left mouse button when cells A1, A2, A3 and A4 are highlighted
- The image below shows what you are aiming for



The cells highlighted in the image above have a different colour to the normal white colour of a cell. When you highlight cells, you can do things to all the cells as a group.

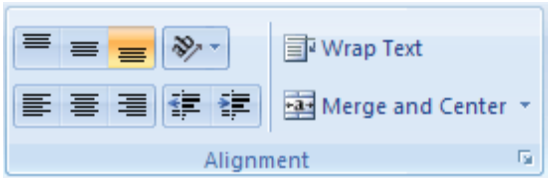
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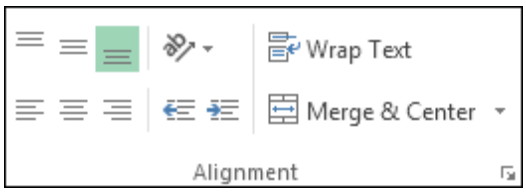
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To centre the text and numbers in our highlighted cells, try this:

- From the Excel Ribbon at the top of the screen, locate the **Alignment** panel. Here's the Alignment panel in Excel 2007:



And here it is in Excel 2010 and 2013:

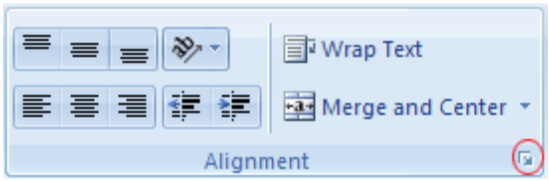


You can see the various alignment options laid out. These ones:



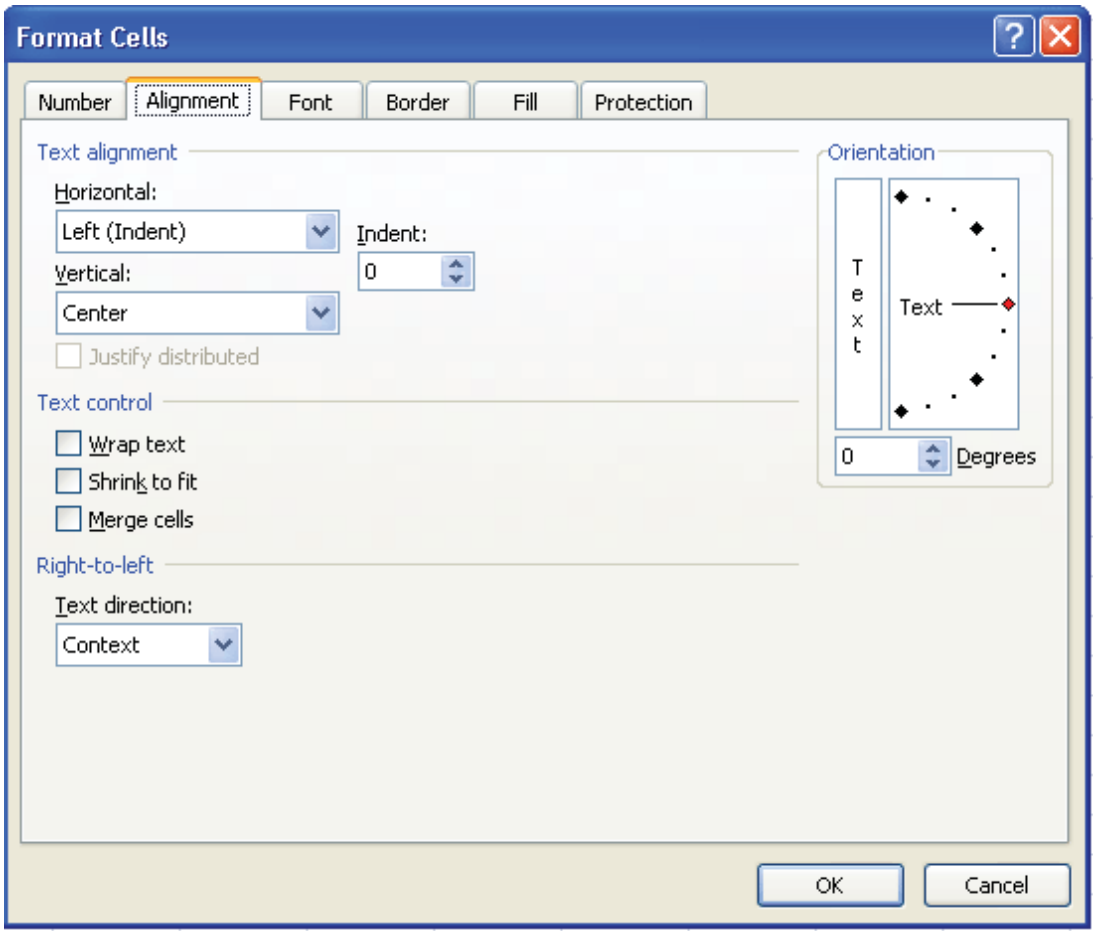
Hold your mouse over each alignment icon and you'll see an explanation of what they do. Click each icon and see what they do to your highlighted cells.

You can also click the arrow in the bottom right of the Alignment panel to bring up the Format Cells box (the one circled below).



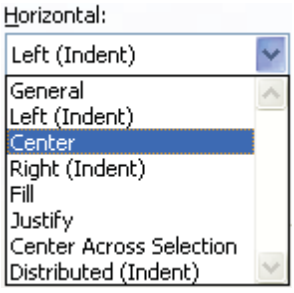
When you click the arrow, you'll see this dialogue box:

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Notice the Text Alignment section at the top of the Alignment tab. It has two drop down menus, one for **Horizontal** alignment and one for **Vertical** alignment.

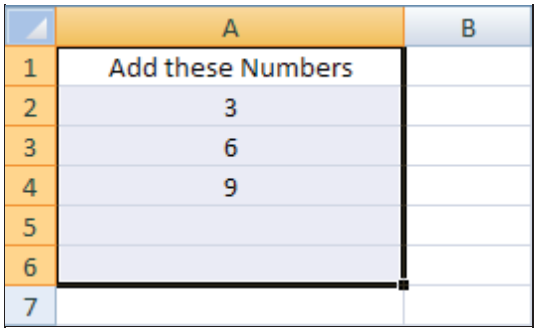
- Click the arrow on the Horizontal drop down menu, the one with Left (Indent) on it
- You'll see the following:



As you can see, you have plenty of options to choose from in Excel. But click on **Center**. Do the same for the **Vertical** drop down menu. Then click OK at the bottom of the Format Cells dialogue box.

The text and numbers in cells A1, A2, A3 and A4 should now be centred, and your spreadsheet will look like the one below:

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	A	B
1	Add these Numbers	
2	3	
3	6	
4	9	
5		
6		
7		

Before moving on to other types of formatting you can do in Excel, have a try of this:

- Highlight the cells A5 and A6 on your spreadsheet
- Bring up the Format Cells dialogue box, just as you did above
- Make the alignment changes from the Horizontal and Vertical drop down menus
- Click OK to get rid of the dialogue box
- Now click inside of cell A5 on your spreadsheet and enter any number you like
- Hit the Enter key

The number you just entered should also be centred. So even if a cell is empty you can still apply formatting to it.

In the next part, we'll take a look at the various font formatting you can do in Excel.

Font Formatting in Excel 2007 to 2013 -->

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If you've been following along with the previous tutorials, you should now have a spreadsheet that looks like this:

	A	B
1	Add these Numbers	
2	3	
3	6	
4	9	
5		
6		
7		

Excel 2007 to Excel 2013 have a much wider range of formatting options than previous versions, and it's relatively easy to turn a dull spreadsheet into something that really shines. We'll start with changing the font.

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Choosing a Font in Excel 2007/2013

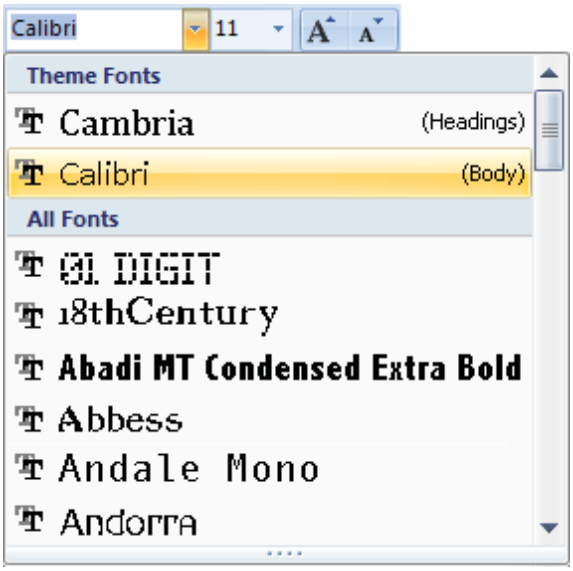
You can pick a different font for the data you enter into cells, as well as choosing the size you want. The colour of the font, and the cell background, can be changed, too. From Excel 2007 onwards, Themes have been introduced, so that you can format your spreadsheets more easily. You'll meet these later. First, we'll see how to change the font type.

- Highlight cell A1 on your spreadsheet by simply clicking into it
- Locate the Font panel on the Excel Ribbon at the top of the page:



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The font in the panel above is set to Calibri. To see more fonts, click the black down arrow:



The good things about Excel 2007 and 2010/2013 is that when you move your mouse over one of the fonts on the list, the text in your selected cell (A1) will change automatically. This is just a preview, though. When you have decided on the font you want, click it with the left mouse button.

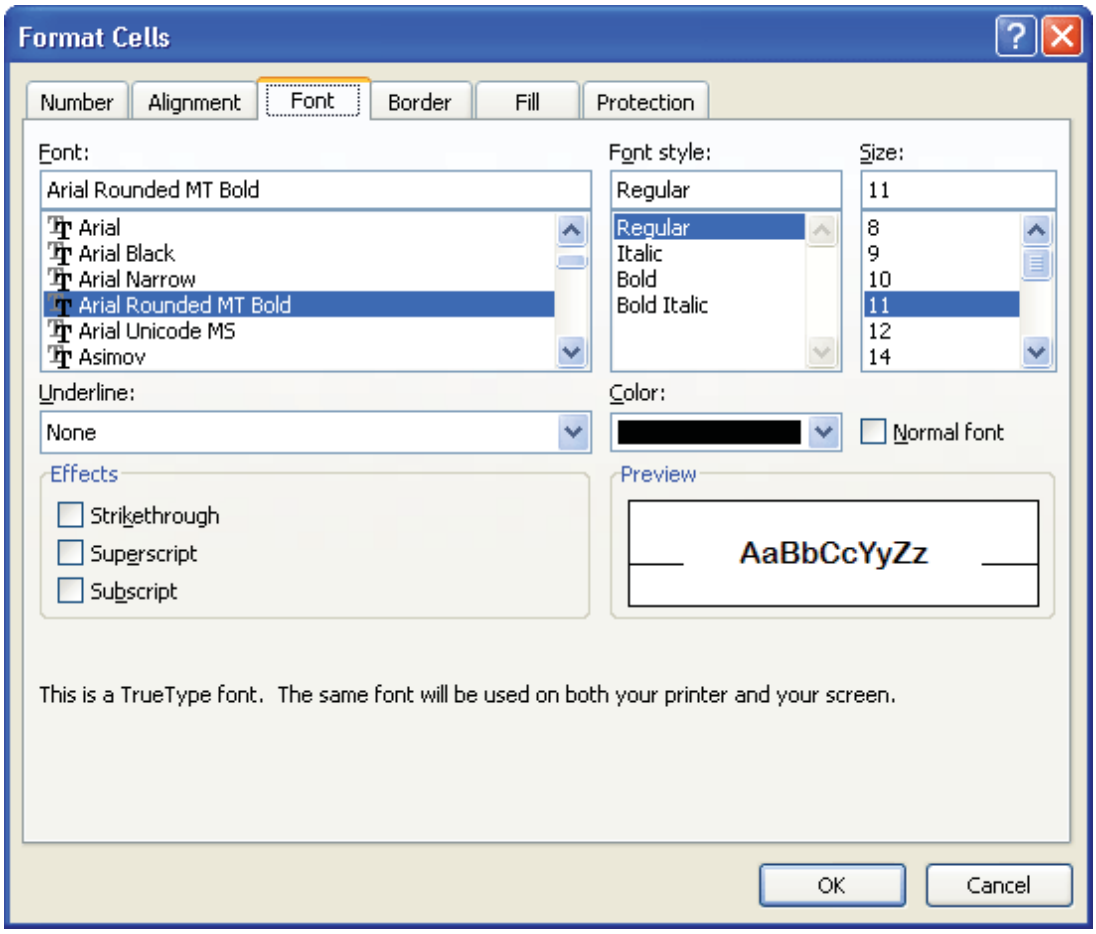
You can change the size of the font in the same way - just choose a new font size from the list of numbers in the drop down box.

If you want to change the font via the Format Cells dialogue box, as you did in previous versions of Excel, you can click the small arrow in the bottom right of the Font panel (the one circled below):



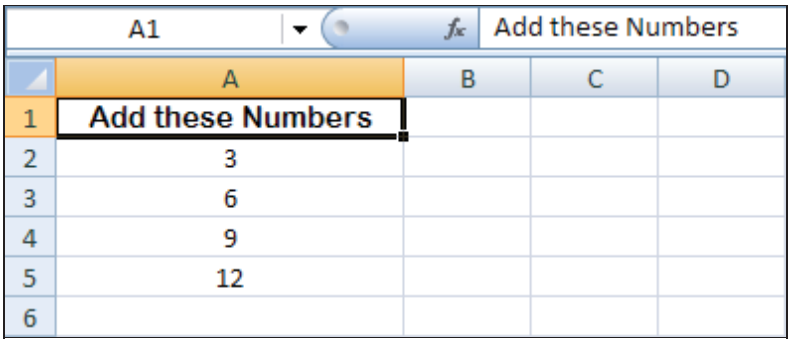
When you click the arrow, you'll see the Format Cells dialogue box. You can choose various options from this dialogue box: Font size, style, size, etc. The dialogue box looks like this:

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You can also set the font colour from here, and add text effects. Click OK when you have made your choices.

When you have changed the font and font size, your A1 cell might look something like this:



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Done!



The background colour of your cells can be changed, too. We'll see how to do that in the next part of this tutorial.

Change Cell Colours in Excel 2007 to 2013 -->

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In the previous lesson, you saw how to change the font and font size in Excel. In this lesson, we'll look at how to change the colour of a cell.

Change the Background Colour of a Cell

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To change the background colour of cells, you first have to highlight the ones you want to alter. We'll start with the cells A2 to A5. So highlight these cells on your spreadsheet.

- With the cells A2 to A5 highlighted, locate the Font panel on the Ribbon at the top of the Excel: (The image below is from Excel 2007. Later versions are the same but less colourful!)



- Locate the Paint Bucket, and click the arrow just to the right of it. You'll see some colours appear:

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Move your mouse over any of the colours and the cells will change automatically. You can then see what the new colour looks like. Click with the left mouse button to set the colour you want. If you don't like any of the colours displayed, click on "More Colors".

Once you have the number cells formatted in a different colour, click on the cell A1. Now do exactly the same thing, only this time choose a contrasting colour for the background of this cell. Your spreadsheet should then look something like the one below.

	A	B	C
1	Add these Numbers		
2	3		
3	6		
4	9		
5	12		
6			

Change the Text colour

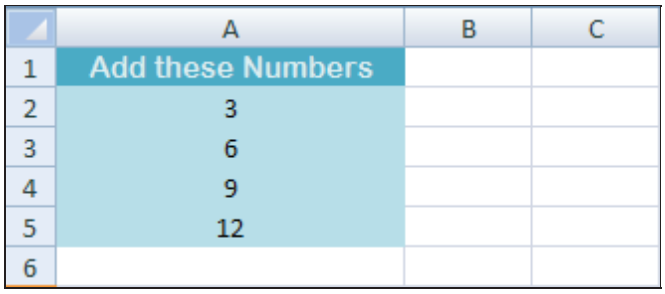
To change the colour of the text itself, click the down arrow just to the right of the letter A, which is just to the right of the Paint Bucket on the Font panel.



Select a colour just like you did for the background colour of the cell. Here's what

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your spreadsheet might look like with the background cell colour changes, and the text colour:



	A	B	C
1	Add these Numbers		
2	3		
3	6		
4	9		
5	12		
6			

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So with just a few clicks of your mouse, you can create a quite attractive spreadsheet. In the next part, you'll see how to save your work in Excel.

Save your work in Excel 2007 to 2013 -->

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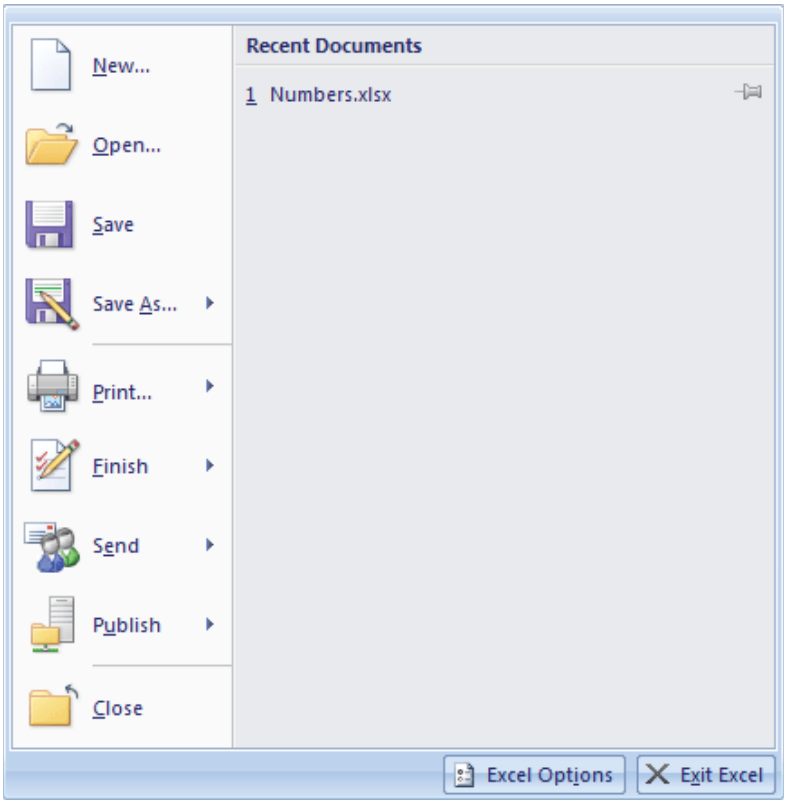


Now that your spreadsheet is coming along nicely, you'll want to save your work. To save your spreadsheet, do the following.

- If you have Excel 2007, click the round Office button in the very top left of Excel 2007. This one:



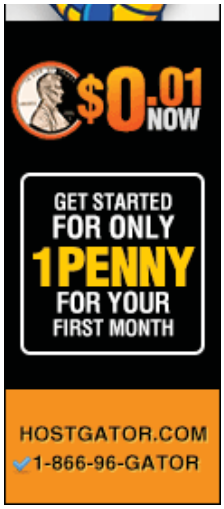
When you click the Office button, you'll see the options list appear:



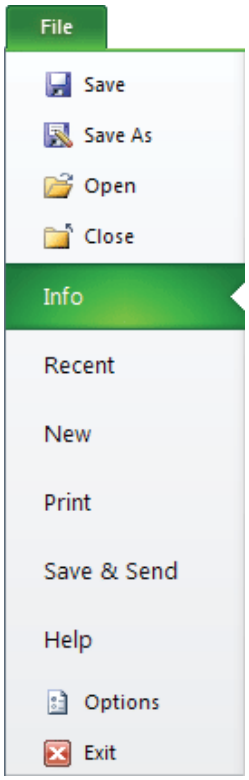
The Office button used to be a file menu in previous versions of Excel. In Excel 2007, you perform all the File operations by clicking the round Office button. Clicking Close, for example, will close the current Excel spreadsheet, but won't close down Excel itself. To close down Excel, click the "Exit Excel" button in the bottom right of this dialogue box. If you want to open a recent Excel document, click its name under the Recent Documents heading.

For Excel 2010 and 2013 users, you don't have a round Office button. Click the **File** tab instead

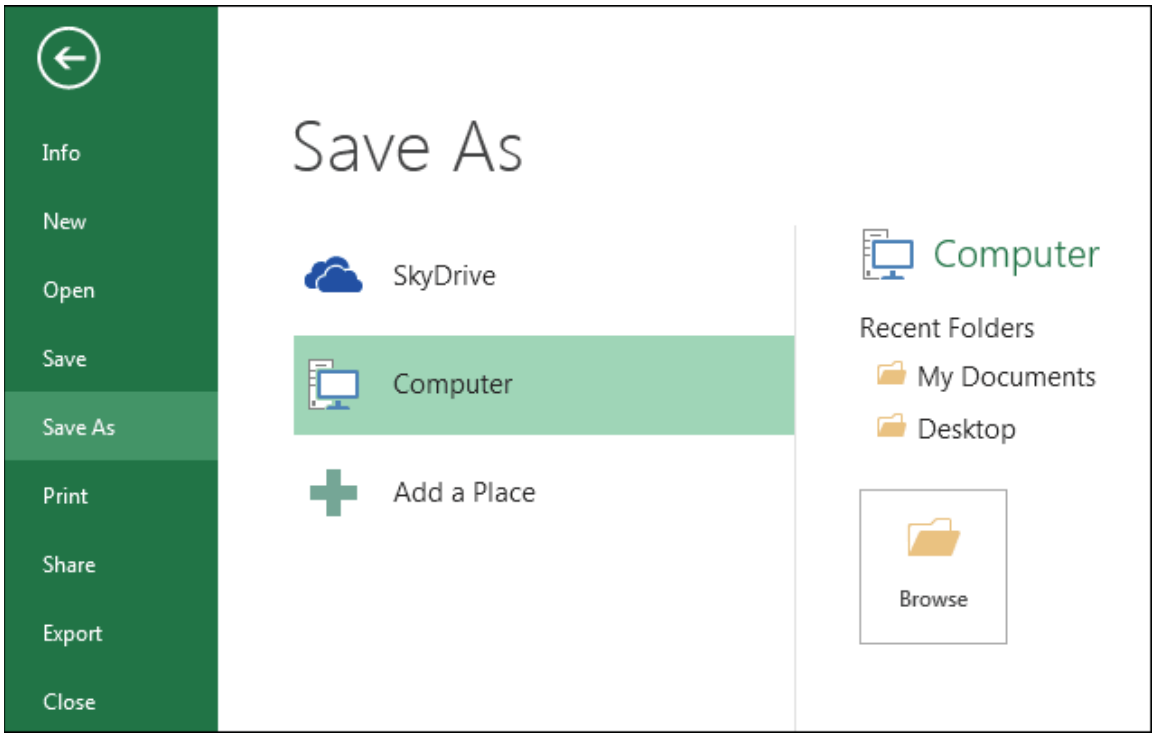
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to see the menu options as above:



In Excel 2013, your spreadsheet will disappear when you click **File** and you'll see this screen:

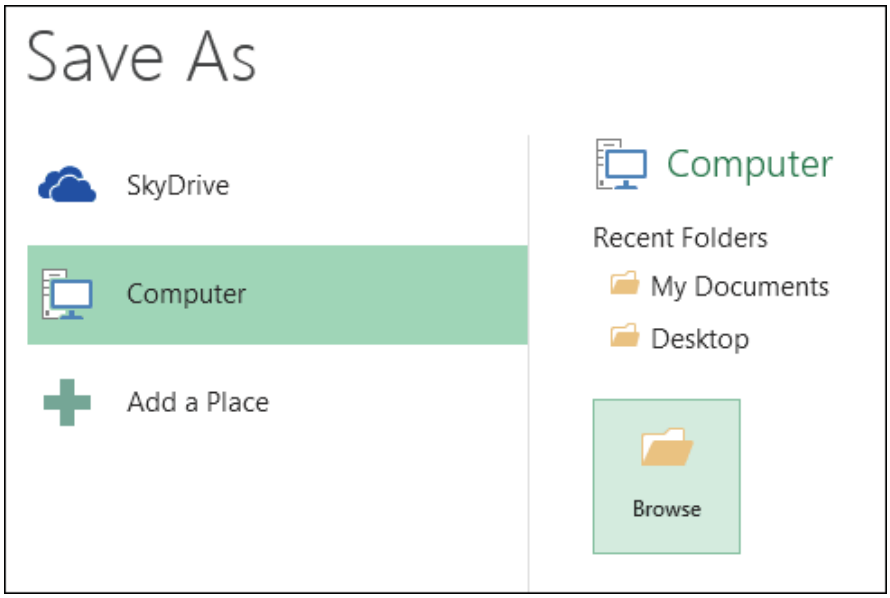


To save your work, click the Save option in all versions. Excel 2013 users will stay on the screen above.

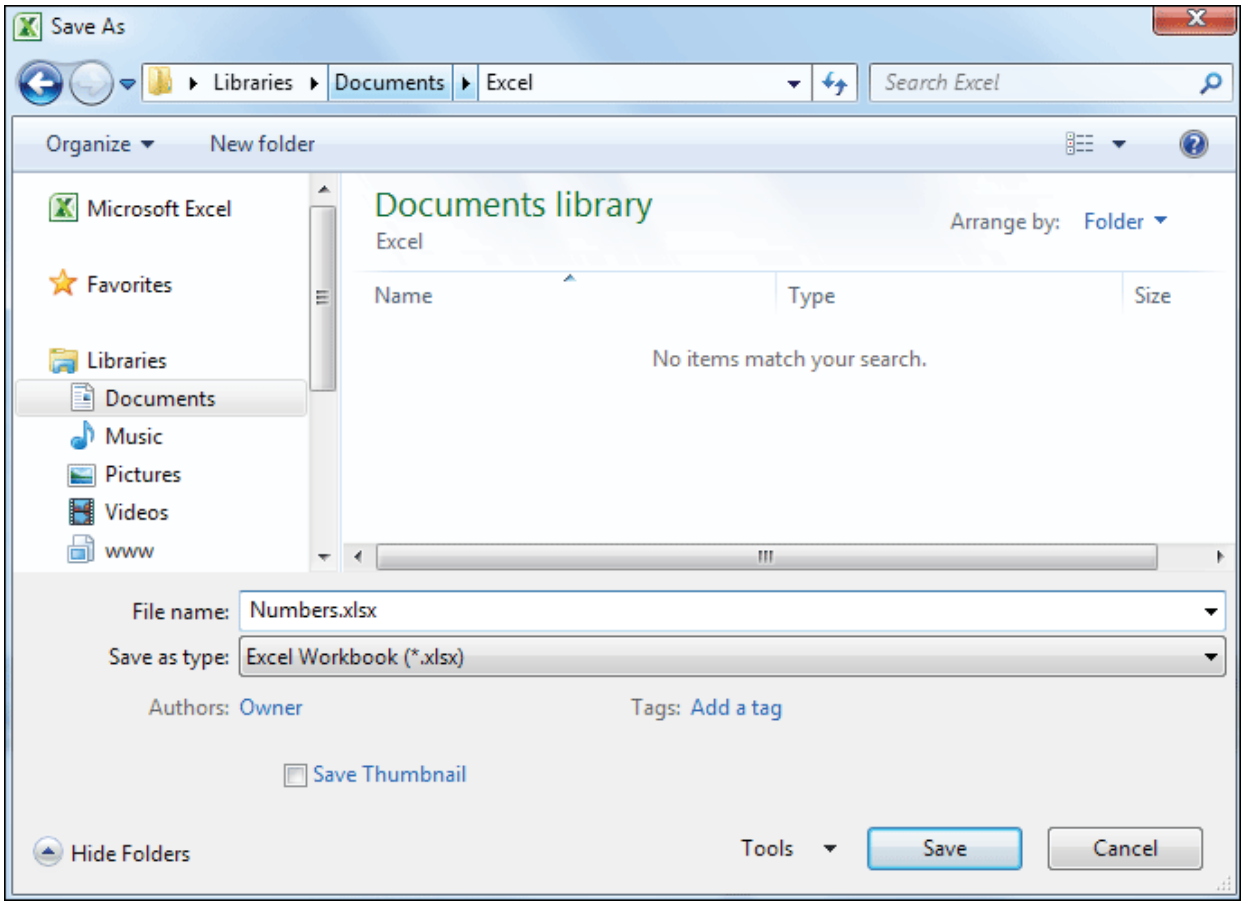
Under **Save As** in Excel 2013, you'll see three options: **SkyDrive**, **Computer**, and **Add a Place**. The first option is **SkyDrive**. This saves it to servers operated and controlled by Microsoft. This is very useful if you want to work on your Excel document from other locations. For example, you may be working on a spreadsheet in your office. Saving it to SkyDrive means you'll also be able

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to open it when you get home from work. When you click the SkyDrive option you'll be able to Sign In, Sign Up, or simply Learn More. We'll be saving to the **Computer**, though, so click this option. Then click the **Browse** option:



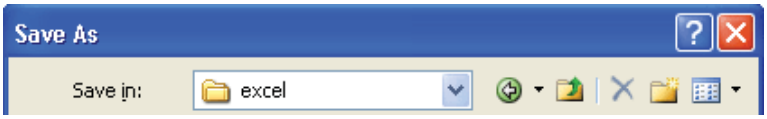
You'll then see a dialogue box like this one: (Excel 2007 and 2010 users will see this straightaway.)



In the image above, we're saving our Excel spreadsheet to a **New Folder** we've created in the **Libraries > Documents** folder.

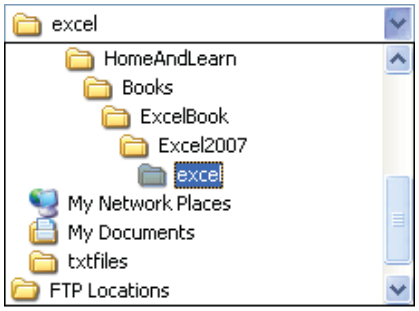
If you have Windows XP, you'll see this at the top of your dialogue box:

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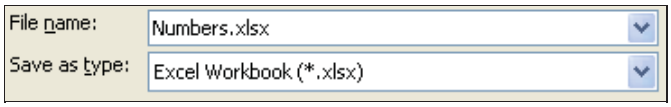
Save in means "Where would you like to save your spreadsheet?" In the image above, we're saving it to a folder called **excel**.

Notice the blue down-pointing arrow on the **Save in** drop down list. Click the arrow to reveal more locations:



Choose a new location from the list, if you prefer. The large white rectangle on the Save as dialogue box will then show you all the files already in the location.

When you're happy with your file location, type a name for your file in the area at the bottom of the dialogue box :



Notice the "Save as Type" box below the file name. The type is a **XLSX** file, and this is new from Excel 2007. The old ending was XLS. Excel 2007 and 2010 can open older XLS files, but previous versions of Excel can't open XLSX files.)

Remember to save you work on a regular basis, by clicking either the round Office button in Excel 2007 or the File menu in Excel 2010/2013. Then click the **Save** option. A quicker way is to just click the disk icon on the Quick Access Toolbar in the top left of Excel (all versions):



Coming up shortly is a Review, so that you can test your new knowledge of Excel. First though, you'll need to know about currency options.

Currency Symbols in Excel 2007 to 2013 -->

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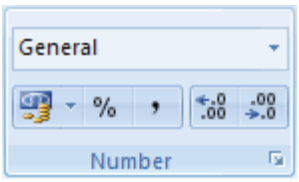
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Take a look at the following spreadsheet, which you'll shortly be creating:

	A	B	C	D
1		**Shopping Bill**		
2				
3	Item	Number	Price Each	
4	Mars Bars	4	£0.35	
5	Aeros	10	£0.32	
6	Twixes	4	£0.39	
7	Crisps	12	£0.35	
8	Pop	4	£0.59	
9				

The C column has a heading of "Price Each". The prices all have the currency symbol. To insert the currency symbol, do this:

- Enter some prices on a spreadsheet (any will do), and highlight the cells
- With the cells highlighted, locate the **Number** panel on the Excel 2007 to 2013 Ribbon bar (on the **Home** Tab):



Click the drop down list that says **General**. You'll then be presented with a list of options:



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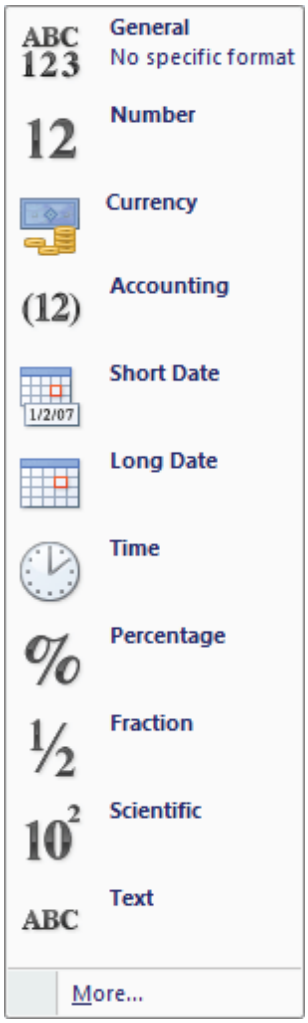
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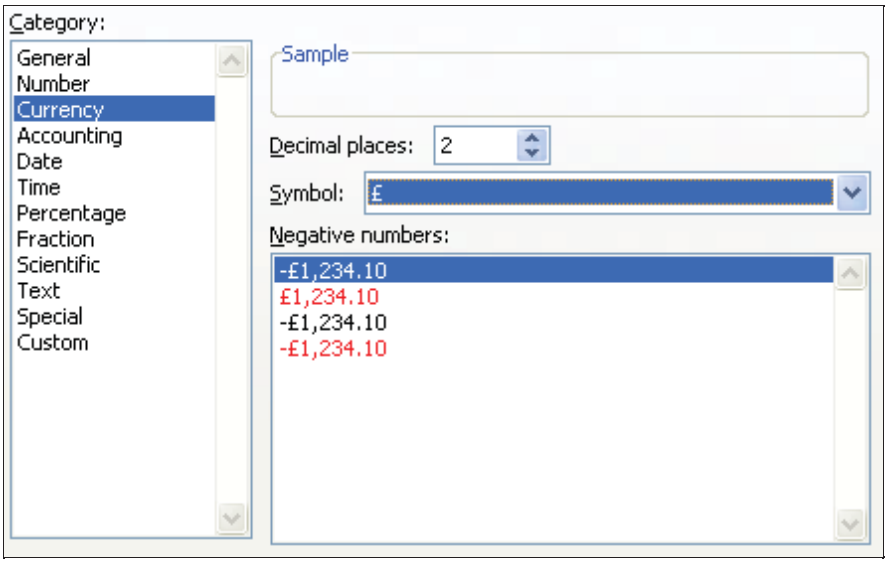
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Click the Currency item to add a pound sign. But if you're not in the UK, you'll see the default currency for your country.

To see other currencies, click on **More** (or **More Number Formats** in Excel 2013).The Format Cells dialogue box appears. In the Category list, click on Currency. Select a Currency sign from the Symbol list. The dialogue box will then look like this:



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Click OK to set the pound sign as the currency.

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In the next part, you'll see how to Merge Cells in Excel, so that they don't spill over into other cells. You'll need this for your Review.

How to Merge a Cell -->

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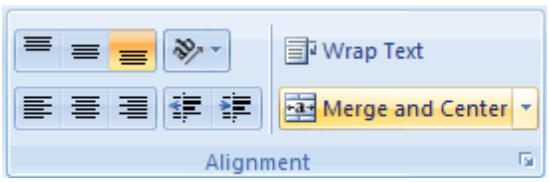
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Study the spreadsheet below:

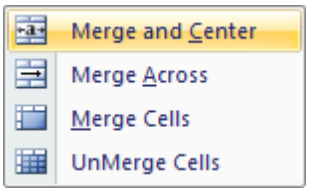
	A	B	C	D
1	Shopping Bill			
2				
3	Item	Number	Price Each	
4	Mars Bars	4	£0.35	
5	Aeros	10	£0.32	
6	Twixes	4	£0.39	
7	Crisps	12	£0.35	
8	Pop	4	£0.59	
9				

If you look at Row 1, you'll see that the "Shopping Bill" heading stretches across three cells. This is not three separate cells, with a colour change for each individual cell. The A1, B1 and C1 cells were merged. To merge cells, do the following.

- Type the words **Shopping Bill** into cell A1 of a spreadsheet
- Highlight the cells A1, B1 and C1
- On the Alignment panel of the Excel Ribbon, locate the "Merge and Center" item:



- Click the down arrow to see the following options:



Click on "Merge and Center". Your three cells will then become one - A1, to be

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OK, now that you know how to merge cells, have a go at the following Review on the next page. It will test your new skills in Excel.

Review One -->

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Reproduce the simple spreadsheet below, from a junk-food addict! You can pick your own colours for the cells and data, but try to include everything that's in the image.

	A	B	C	D
1		**Shopping Bill**		
2				
3	Item	Number	Price Each	
4	Mars Bars	4	£0.35	
5	Aeros	10	£0.32	
6	Twixes	4	£0.39	
7	Crisps	12	£0.35	
8	Pop	4	£0.59	
9				

As well as centred text and numbers, you need to widen the columns. To get the currency symbol, see a previous section. Also in a previous section, you can see how to merge cells for the "Shopping Bill" heading. This should be one cell, and not three.

When you have produced the same spreadsheet as ours, you can move on to the next section, which is all about basic formulas in Excel.

Move on to the Next Section -->

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Now that you've gotten a feel for how Excel works, we'll build a more complex spreadsheet. The skills you'll learn in this section are:

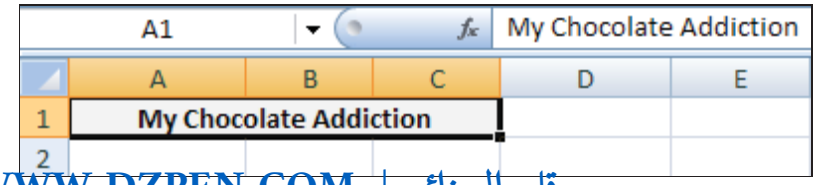
- How to use AutoFill
- How to insert a row or a column
- How to add up numbers in a column
- And how to enter simple formulas for your calculations

The spreadsheet you'll construct looks like this, when it's finished:

	A	B	C	D	E	F	G	H
1	My Chocolate Addiction							
2								
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
4	Mars Bars	1	2	1	3	3	2	5
5	Twix	7	5	3	2	4	2	4
6	Bounty	8	3	2	3	4	1	4
7	Other	1	2	2	2	2	1	1
8								
9	Day Totals	17	12	8	10	13	6	14
10								

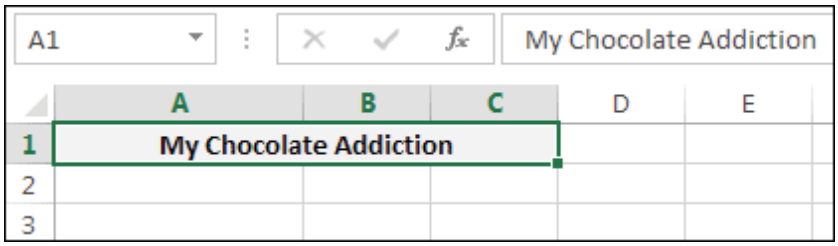
Not much has been done in the way of formatting here, as we'll concentrate on how to add up in Excel. To make a start, follow along with the instructions below.

- Click inside of cell A1 on a new spreadsheet
- Type the text "My Chocolate Addiction", then press the Enter key on your keyboard
- Highlight the cells A1, B1 and C1, and Merge the cells, just like you did for Review One
- Your spreadsheet will look like this in Excel 2007:



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Or this in Excel 2010 and 2013:



Now that you have a heading for your spreadsheet, we'll fill in the days of the week using something called **AutoFill**. This allows you to quickly fill in things like days of the week, months, and consecutive numbers.

AutoFill in Excel 2007 to 2013 -->

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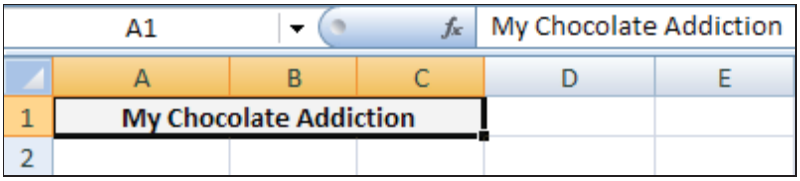
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Beginners PHP

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Your spreadsheet from the previous section should look like this one:

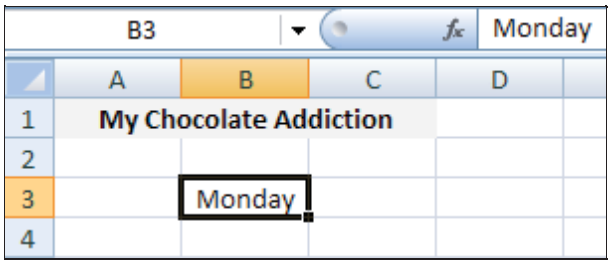


You have a title in cell A1, but nothing else. You'll now see how to use the AutoFill feature of Excell to quickly enter the days of the week. Off we go, then.

Excel AutoFill

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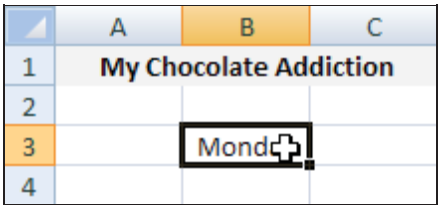
Click inside cell B3 of your spreadsheet, and type Monday, as in the image below:

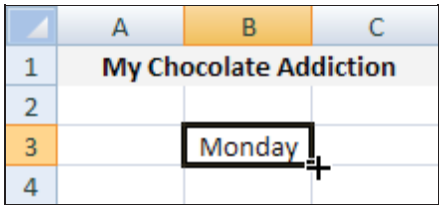


The days of the week are going to be entered on Row 3 of our spreadsheet, from cell B3 to cell H3. Fortunately, you don't have to type them all out. You can use something called AutoFill to complete a known sequence like days of the week. In other words, Excel will do it all for us.

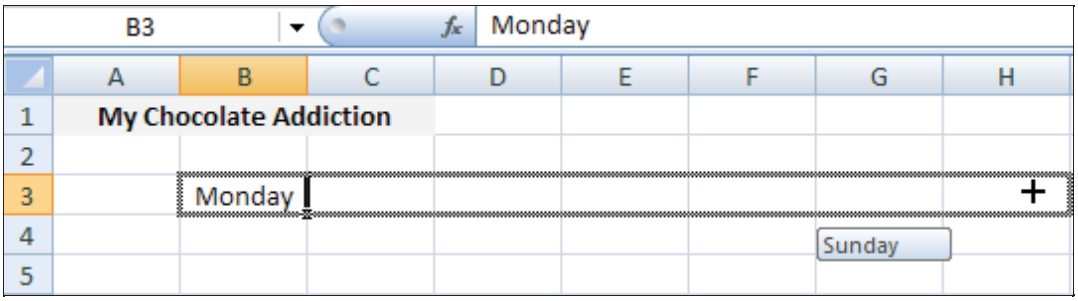
- Position your mouse pointer to the bottom right of the B3 cell
- The mouse pointer will change to a black cross, as in the images below. The image on the left shows the normal white cross; the image on the right, the black cross, tells you AutoFill is available:

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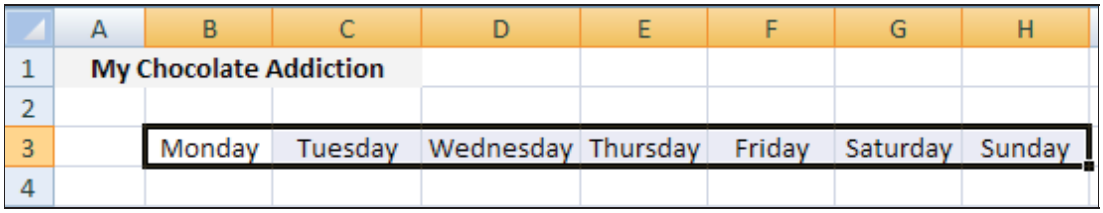




- When you can see the AutoFill cursor, hold down your left mouse button and drag to the right
- Drag your mouse all the way to cell H3, as in the following image:



- When your cursor is in the H3 cell, let go of the left mouse button
- Excel will now complete the days of the week:



And that's all there is too it! AutoFill can be a handy tool to use, when you want to complete a known sequence like days of the week, months, and even formulas. We'll use AutoFill on a column of numbers, shortly. But let's crack on with our spreadsheet

Now that we've got a heading for the spreadsheet, as well as the days of the week, we can enter a few chocolate bars.

- Click inside cell A4 and enter the name of a chocolate bar. You can enter anything you like, but we've gone for Mars Bars. In cell A5 we chose Twix, and in cell A6 Bounty. In cell A7 we typed Other
- In cell A9 of you spreadsheet enter the words **Day Totals**. Leave cell A8 blank. Your spreadsheet should then look something like ours below:

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	A	B	C	D	E	F	G	H
1	My Chocolate Addiction							
2								
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
4	Mars Bars							
5	Twix							
6	Bounty							
7	Other							
8								
9	Day Totals							

Time to enter some numbers.

- Click inside cell B4, and enter the number 1. Press the enter key on your keyboard, and the active cell will jump down to cell B5
- In cell B5 type the number 7. Press the Enter key again to jump down to cell B6
- In cell B6 type 8
- In cell B7 type 1
- Your spreadsheet will then look like this one:

	A	B	C	D	E	F	G	H
1	My Chocolate Addiction							
2								
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
4	Mars Bars	1						
5	Twix	7						
6	Bounty	8						
7	Other	1						
8								
9	Day Totals							

To complete the numbers for the rest of the week, enter the following under each heading:

Tuesday: 2, 5, 3, 2
Wednesday: 1, 3, 2, 2
Thursday: 3, 2, 3, 2
Friday: 3, 4, 4, 2
Saturday: 2, 2, 1, 1
Sunday: 5, 4, 4, 1

When you're done, your spreadsheet will look like this:

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	A	B	C	D	E	F	G	H
1	My Chocolate Addiction							
2								
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
4	Mars Bars	1	2	1	3	3	2	5
5	Twix	7	5	3	2	4	2	4
6	Bounty	8	3	2	3	4	1	4
7	Other	1	2	2	2	2	1	1
8								
9	Day Totals							

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Now that you have all those numbers typed out, we can move on to formulas, as you learn how to add up in Excel.

Entering Formulas in Excel 2007 to 2013 -->

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The first thing we'll do to our spreadsheet from the previous section is to add up all those numbers, the ones going down under the days of the week headings. The total for each day of the week will be placed on Row 9. So Monday's total will go in cell B9, Tuesday's total will go in cell C9, and so on.

Here's our spreadsheet again:

	A	B	C	D	E	F	G	H
1	My Chocolate Addiction							
2								
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
4	Mars Bars	1	2	1	3	3	2	5
5	Twix	7	5	3	2	4	2	4
6	Bounty	8	3	2	3	4	1	4
7	Other	1	2	2	2	2	1	1
8								
9	Day Totals							

Our first total will go in cell B9.

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Adding up in Excel

Excel needs to know which cells you want to add up. Look at the numbers for the Monday column. We have a 1 in cell B4, a 7 in cell B5, an 8 in cell B6, and a 1 in cell B7. So we want the answer to this:

B4 + B5 + B6 + B7

To let Excel know that this is what we want, try this:

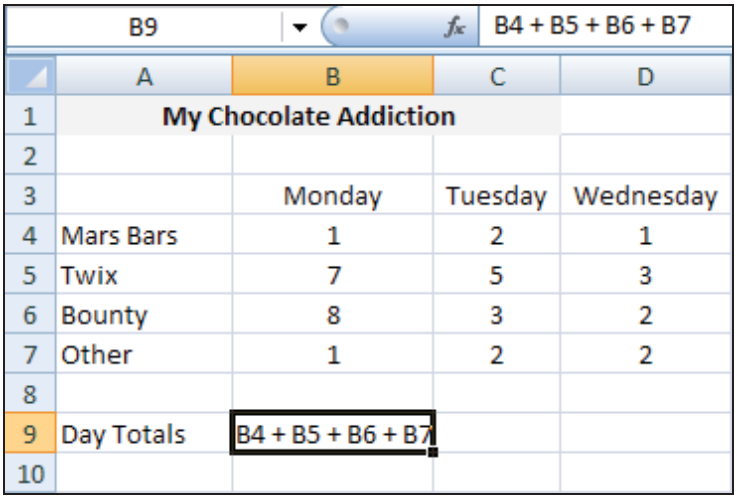
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Click inside cell B9, which is where we want the answer to appear

- Once you've clicked on cell B9, click into the formula bar at the top
- Type this:

B4 + B5 + B6 + B7

When you have entered the formula in the formula bar, press the enter key on your keyboard. Your spreadsheet should look like ours below:



	A	B	C	D
1	My Chocolate Addiction			
2				
3		Monday	Tuesday	Wednesday
4	Mars Bars	1	2	1
5	Twix	7	5	3
6	Bounty	8	3	2
7	Other	1	2	2
8				
9	Day Totals	B4 + B5 + B6 + B7		
10				

Something has gone wrong! This is not quite what we were expecting. We wanted Excel to add up the numbers for us, but it hasn't done anything except enter the cells we typed.

What went wrong was that we didn't "tell" excel to add up. Excel needs you to type an equals (=) sign first, and then those cell references. If you don't include the equals sign, Excel thinks it's just plain text, and so doesn't do any calculating.

So enter this inside of your formula bar instead:

= B4 + B5 + B6 + B7

In other words, put an equals sign (=) before **B4**. Press your enter key and you should have the correct answer in cell B9.

Now click back inside the formula bar, and delete the equals sign. Press the enter key again. You should then just have the same text as in the image above. We're doing this to show you an easier way to add up - with the SUM function.

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... and what you can do about it.
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When your spreadsheet looks like ours in the image at the top of the page, you can nove on to the next part.

The SUM function in Excel 2007 to 2013 -->

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You saw a simple way to add up in the previous section. Enter an equals sign, followed by the cells you want Excel to add up:

= B4 + B5 + B6 + B7

But this is not a good way to add up in Excel: it could get very tedious indeed if you had to type out say 50 cell references by hand. The easy way is to get Excel to do the work for you. That's where SUM comes in.

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The Excel SUM function

The SUM function is used to add things up, and saves you the bother of typing out lots of cell names and numbers. It looks like this:

=SUM( )

In between the round brackets, you type what you want Excel to add up. Look at our spreadsheet again. Here it is in Excel 2007:

	A	B	C	D	E	F	G	H
1	My Chocolate Addiction							
2								
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
4	Mars Bars	1	2	1	3	3	2	5
5	Twix	7	5	3	2	4	2	4
6	Bounty	8	3	2	3	4	1	4
7	Other	1	2	2	2	2	1	1
8								
9	Day Totals							

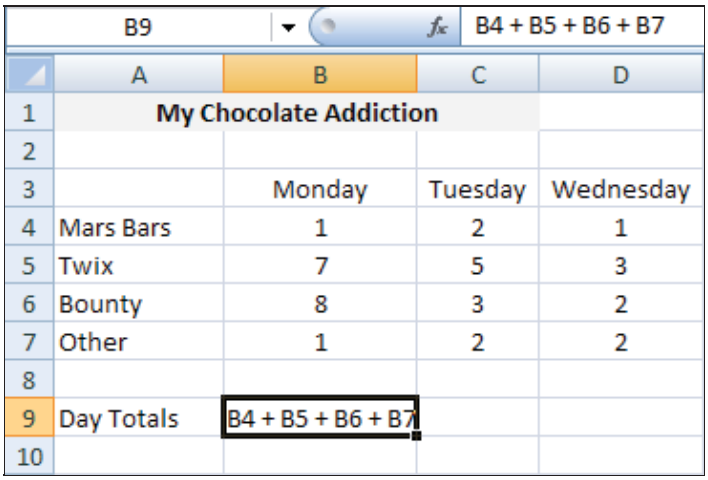
In Excel 2010 and 2013 you'll have this less colourful version:

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	A	B	C	D	E	F	G	H
1	My Chocolate Addiction							
2								
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
4	Mars Bars	1	2	1	3	3	2	5
5	Twix	7	5	3	2	4	2	4
6	Bounty	8	3	2	3	4	1	4
7	Other	1	2	2	2	2	1	1
8								
9	Day Totals							
10								

We want to add up the numbers under the **Monday** heading, and place the answer in cell B9.

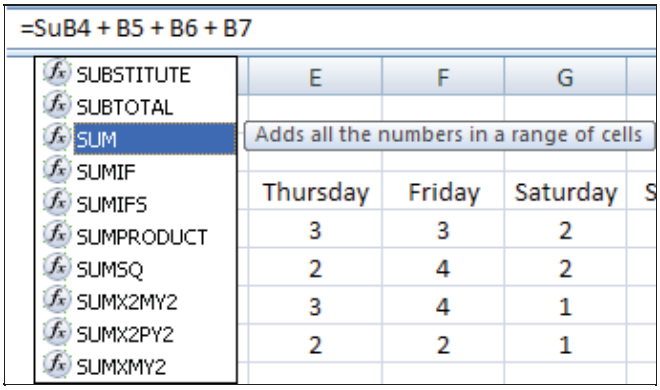
So with cell B9 selected again, click into your formula bar. If you're following along from the previous lesson, you should have this in cell B9:



If you have an equals sign before B4, delete it and press the enter key. Now position your cursor at the start of the line, before the "B" of B4.

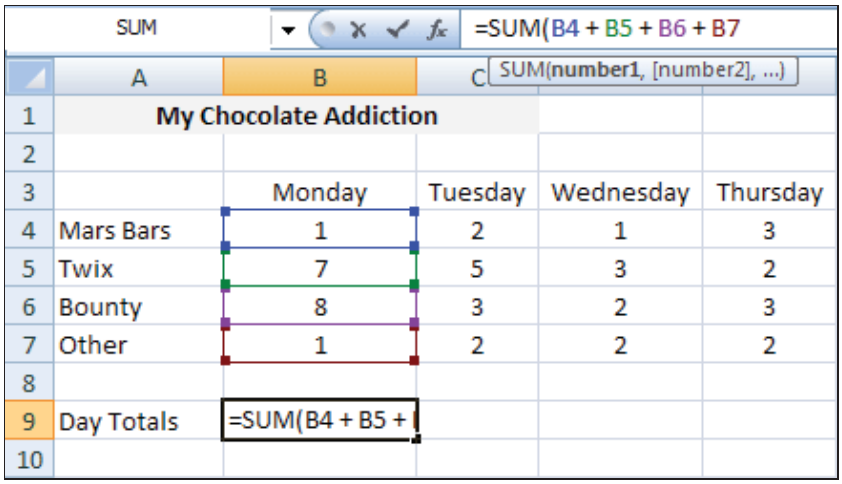
Type an equals sign first, then the letter **SU** of SUM.

As soon as you start typing, Excel will present you with a drop down list of available functions. Click once with the left mouse button on **SUM** to highlight it:

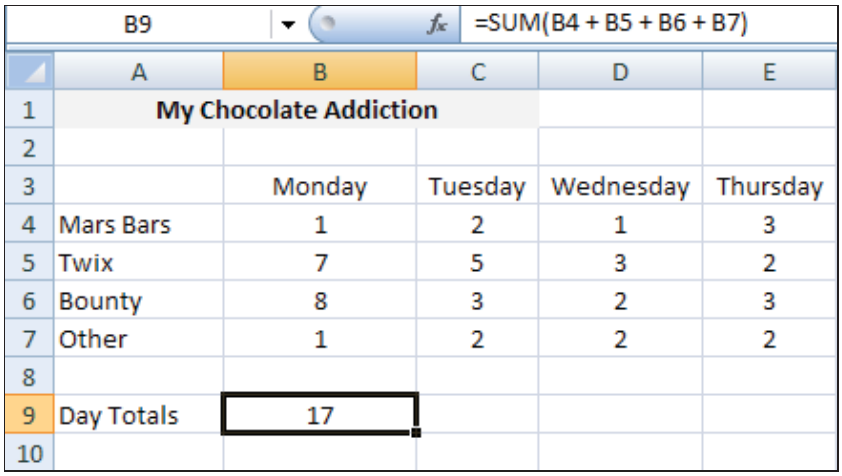


Now double click on SUM. Excel will add the "M" for you, and the left bracket. It will also highlight the cells in your formula:

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Now press the Enter key on your keyboard. Excel will add the right bracket, and work out the SUM for you:



Now click back on cell B9, and look at the Name box (just above the A column, in our image). It has B9 in it. The formula bar to the right shows you which formula you have in the active cell (B9).

An easier way to add up number with the SUM function is to use a colon **(:)** The colon is a shorthand way of adding up consecutive cells. Instead of typing out all those cell references like this:

=SUM(B4 + B5 + B6 + B7)

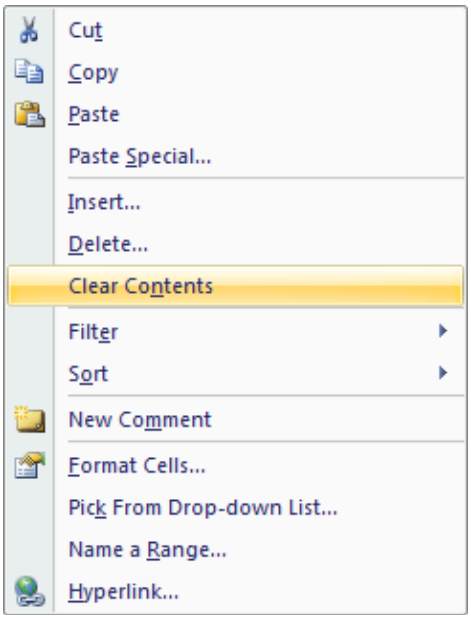
You can just type out the first cell reference, then a colon, then the last cell reference. Like this:

=Sum(B4: B7)

Excel will then add up the numbers in cells B4 to B7. It knows what the colon means!

- Click into cell B9, if it's not already active
- Now click on the cell with your right mouse button
- You'll see a menu appear:

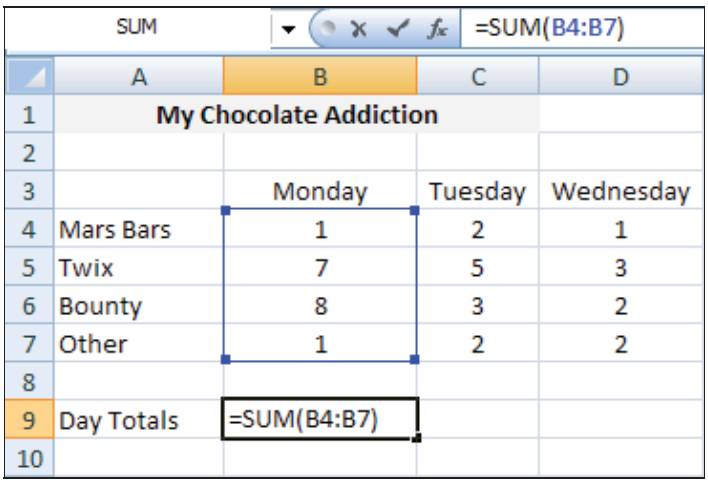
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- From the menu, select **Clear Contents** by clicking the item with your left mouse button
- This will clear the formula from the formula bar
- Now click back inside of the formula bar and type the following:

=Sum(B4:B7)

Your spreadsheet should look like ours:



When you have the formula typed out, hit the Enter key on your keyboard. Excel will add up the numbers for you, and place the correct answer in cell B9.

If everything went well, you should have an answer of 17 in cell B9. Fortunately, we can use AutoFill for the rest of the answers.

- Place your mouse pointer to the bottom right of cell B9
- The pointer will turn into a thin black cross:

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	A	B	C	D	E	F	G	H
1	My Chocolate Addiction							
2								
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
4	Mars Bars	1	2	1	3	3	2	5
5	Twix	7	5	3	2	4	2	4
6	Bounty	8	3	2	3	4	1	4
7	Other	1	2	2	2	2	1	1
8								
9	Day Totals	17						
10								

- Hold down your left mouse button
- Keep it held down, and drag your mouse to cell H9:

	A	B	C	D	E	F	G	H
1	My Chocolate Addiction							
2								
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
4	Mars Bars	1	2	1	3	3	2	5
5	Twix	7	5	3	2	4	2	4
6	Bounty	8	3	2	3	4	1	4
7	Other	1	2	2	2	2	1	1
8								
9	Day Totals	17						
10								

With your mouse pointer over cell H9, let go of the left button. Excel will AutoFill the rest of the formulas. It uses the same formula from cell B9 to get the answers, and just alters all the cell references. Without AutoFill, you'd have to type it all out yourself!

The answers on Row 9 of your spreadsheet should be the same as ours in the image below:

H9 | =SUM(H4:H7)

	A	B	C	D	E	F	G	H
1	My Chocolate Addiction							
2								
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
4	Mars Bars	1	2	1	3	3	2	5
5	Twix	7	5	3	2	4	2	4
6	Bounty	8	3	2	3	4	1	4
7	Other	1	2	2	2	2	1	1
8								
9	Day Totals	17	12	8	10	13	6	14
10								

Notice the formula bar in the image. It shows the formula in cell H9. This is:

=Sum(H4:H7)

The formula we started with was:

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=Sum(B4:B7)

Excel has changed the letters for us, but not the numbers. In other words, it's adding up the columns.

If you think of the colon as the word TO, it should make sense:

Add up the cells B4 **TO** B7
Add up the cells H4 **TO** H7

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In the next section, you'll get some more practice with this spreadsheet, and with the SUM Function. So don't forget to save the work you've done so far!

SUM Function Continued -->

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Using the same spreadsheet you've been working on in the previous section, you'll now get some more practice with the SUM function in Excel, in order to add up values in cells. Our spreadsheet now looks like this, though:

H9 =SUM(H4:H7)

	A	B	C	D	E	F	G	H
1	My Chocolate Addiction							
2								
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
4	Mars Bars	1	2	1	3	3	2	5
5	Twix	7	5	3	2	4	2	4
6	Bounty	8	3	2	3	4	1	4
7	Other	1	2	2	2	2	1	1
8								
9	Day Totals	17	12	8	10	13	6	14
10								

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You've just used the easy way to add up values in consecutive cells for a column. Just do this:

=SUM(B4:B7)

Using that formula gave us the answer to how many chocolate bars we ate from Monday to Sunday. You can use this same colon (:) shorthand to add up numbers in a Row.

- Click inside cell J3 of your Chocolate Addiction spreadsheet
- Type the text Individual Totals (you may have to widen the column a bit, as you did for a previous section)
- Your spreadsheet will then look like this:

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J3 | Individual Totals

	A	B	C	D	E	F	G	H	I	J
1	My Chocolate Addiction									
2										
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday		Individual Totals
4	Mars Bars	1	2	1	3	3	2	5		
5	Twix	7	5	3	2	4	2	4		
6	Bounty	8	3	2	3	4	1	4		
7	Other	1	2	2	2	2	1	1		
8										
9	Day Totals	17	12	8	10	13	6	14		
10										

We'll use a SUM formula to add up the values in each Row. This will tell us how many of a particular chocolate bar we ate in one week: how many Mars Bars, how many Twix, etc.

The first answer we'll try is how many Mars Bars we ate in one week. We'll place this answer in cell J4. The cells we're going to be adding up are these:

B4 + C4 + D4 + E4 + F4 + G4 + H4

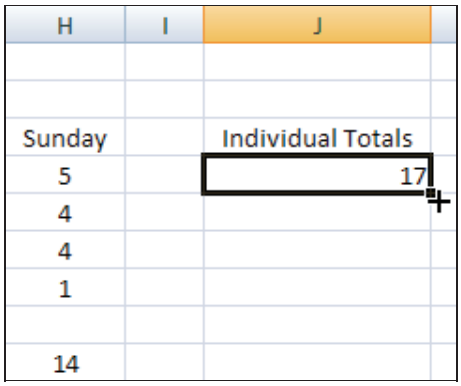
Because we have consecutive cells, we can use the colon shorthand again.

- Click into cell J4 of your spreadsheet
- Then click into the formula bar at the top
- Enter the following formula:

=Sum(B4:H4)

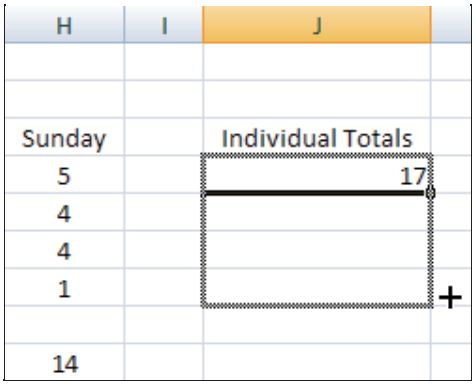
Press the enter key on your keyboard, and you'll see the answer appear in J4. To complete the rest of the rows, we can use AutoFill again.

- Click back in cell J4 to make it the active cell
- Move your mouse pointer to the bottom right of cell J4
- You'll see the pointer change to a thin black cross:



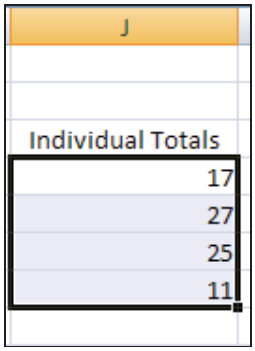
- Now hold down your left mouse button
- Keep the left button held down and drag down to cell J7

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H	I	J
Sunday		Individual Totals
5		17
4		
4		
1		
14		

When your mouse pointer gets to cell J7, let go of the left button. Excel will use AutoFill to get the answers for the other three cells. Hopefully, your spreadsheet now looks like ours:



J
Individual Totals
17
27
25
11

Select any of the cells J4, J5, J6 and J7. Then examine the formula in the formula bar. You should be able to understand what is being added up, and what all the formulas mean.

Now that we have totals for each individual chocolate bar, we can work out how many chocolate bars we ate for the whole week. We'll put the Grand Total in cell F11. First, we'll enter some text to explain what is being added up

- Click inside cell A11 on your spreadsheet
- Type the following text: Number of Chocolate bars consumed in a week
- Hit the Enter key on your keyboard
- You should see the text you just typed. But it will all be in individual cells. Highlight the cells A11 to E11, and merge them together (You learned how to merge cells in a previous section.)
- This is what your spreadsheet should now look like:

	A	B	C	D	E	F	G	H	I	J
1	My Chocolate Addiction									
2										
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday		Individual Totals
4	Mars Bars	1	2	1	3	3	2	5		17
5	Twix	7	5	3	2	4	2	4		27
6	Bounty	8	3	2	3	4	1	4		25
7	Other	1	2	2	2	2	1	1		11
8										
9	Day Totals	17	12	8	10	13	6	14		
10										
11	Number of Chocolate bars consumed in a week:									
12										

There are two ways we can calculate the Grand Total. You can just add up the Individual totals in the J column, or ... Well, how else could you get the number of chocolate bars

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consumed in one week?

- Click into cell F11 on your spreadsheet
- Enter your formula to calculate the number of chocolate bars consumed in one week
- Hit the Enter key when you think you have the correct formula

The correct answer is 80. If you got a different answer, or are struggling in any way to come up with the correct formula, then it's a good idea to go over the previous section. But don't just type 80 into cell F11 and move on!

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In the next part, we'll extend the spreadsheet a little. To do that, you learn how to copy and paste with Excel.

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From the previous section, you now have a spreadsheet that looks like this:

	A	B	C	D	E	F	G	H	I	J
1	My Chocolate Addiction									
2										
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday		Individual Totals
4	Mars Bars	1	2	1	3	3	2	5		17
5	Twix	7	5	3	2	4	2	4		27
6	Bounty	8	3	2	3	4	1	4		25
7	Other	1	2	2	2	2	1	1		11
8										
9	Day Totals	17	12	8	10	13	6	14		
10										
11	Number of Chocolate bars consumed in a week:									
12										

If we're eating that many chocolate bars in one week, we'd like to know how much this habit is costing us! And what about the yearly cost of the addiction? Excel makes sums like this quite easy to calculate. First let's have some new headings.

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Copy and Paste

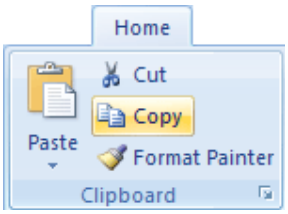
To create your new headings, do this:

- Locate cell A13 on your spreadsheet and click on it
- Type **Cost of Addiction**
- Merge the cells, in the same way you learned previously
- Add a bit of formatting to the text, if you like

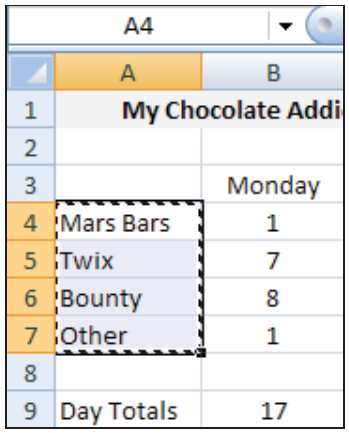
We're going to be needing the names of the chocolate bars again. These will go in cells A15 to A18. Instead of typing them all out by hand, Excel 2007 and Excel 2010 make it easy to copy and paste the names. Try this:

- Highlight the cells A4, A5, A6 and A7
- Locate the Clipboard panel in the Ribbon at the top of the page (on the **Home** menu)
- From the Clipboard panel, click **Copy**

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You'll see some moving lines surrounding your highlighted cells - the so-called marching ants!



	A	B
1	My Chocolate Addi	
2		
3		Monday
4	Mars Bars	1
5	Twix	7
6	Bounty	8
7	Other	1
8		
9	Day Totals	17

- Once you see the marching ants, click into cell A15
- To paste the copied text over, simply press the Enter key on your keyboard
- You spreadsheet should now look something like ours below:

1	My Chocolate Addiction				
2					
3		Monday	Tuesday	Wednesday	Thursday
4	Mars Bars	1	2	1	3
5	Twix	7	5	3	2
6	Bounty	8	3	2	3
7	Other	1	2	2	2
8					
9	Day Totals	17	12	8	10
10					
11	Number of Chocolate bars consumed in a week:				
12					
13	Cost of Addiction				
14					
15	Mars Bars				
16	Twix				
17	Bounty				
18	Other				
19					

We need some new headings on the spreadsheet. Under these headings will be the price of each chocolate bar, how many of a particular chocolate bar we're eating each week, and how much this is costing us each week. So, do the following:

- In cell B14 enter the word Price
- In cell C14 enter the word Number
- In cell D14 enter the word Cost

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Your spreadsheet should now look like this:

11	Number of Chocolate bars consumed in a week:					80
12						
13	Cost of Addiction					
14		Price	Number	Cost		
15	Mars Bars					
16	Twix					
17	Bounty					
18	Other					
19						

We're going to put the price of each chocolate bar in cells B15, B16, B17 and B18. We'll have the following for the prices:

Mars Bars £0.35
Twix £0.29
Bounty £0.32
Others £0.40

So go ahead and enter those prices in cells B15, B16, B17 and B18 of your spreadsheet. (You can have your own currency symbol, instead of the UK pound.)

When you're finished, your spreadsheet should look like this one.

13	Cost of Addiction			
14		Price	Number	Cost
15	Mars Bars	£0.35		
16	Twix	£0.29		
17	Bounty	£0.32		
18	Other	£0.40		
19				

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For the Number column, we'll use a different form of Paste called Paste Special. You'll see how that works in the next part of this Excel tutorial.

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Paste Special in Excel 2007 to 2013 -->

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In the previous section, you created new areas of your spreadsheet that look like this:

13	Cost of Addiction			
14		Price	Number	Cost
15	Mars Bars	£0.35		
16	Twix	£0.29		
17	Bounty	£0.32		
18	Other	£0.40		
19				

We have prices in the B column. Under the **Number** heading, we're going to put how many of each chocolate bar we ate in one week: how many Mars Bars we ate will go in cell C15, how many Twix will go in cell C16, how many Bounty bars will go in cell C17, and how many other chocolate bars we ate will go in cell C18.

But we already have the weekly totals elsewhere in the spreadsheet, so we don't need to calculate them all over again. We can Copy and Paste the formula over to cells C15, C16, C17 and C18.

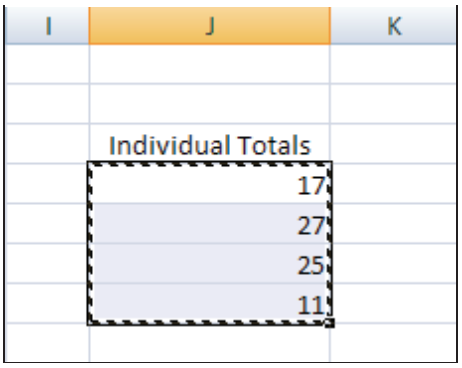
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Paste Special in Excel 2007 to 2013

We have the weekly totals for each chocolate bar in the J column, under the Individual Totals heading.

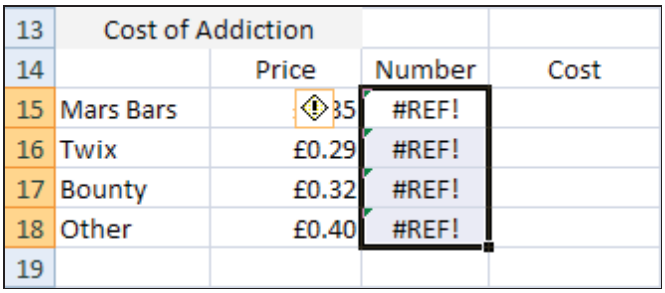
- So highlight your four totals in the J column of your spreadsheet
- From the Clipboard panel, click Copy
- You'll see the marching ants again:

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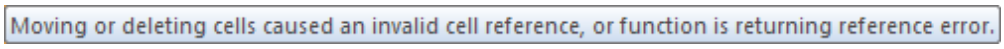
- Now, under the **Numbers** heading, click into cell C15
- Press the enter key on your keyboard to paste the numbers across

What you should notice is that something has gone wrong!



So what happened? Why have all those strange **#REF** comments appeared in the cells?

If you hold your mouse over the exclamation mark in the yellow diamond, you'll see this:



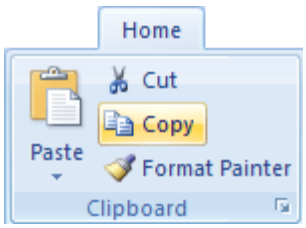
That complex error message means that Excel tried to paste the formulas over. But the cell references it has are all for the J column.

To solve the problem, we can paste the values over and not the formula.

- Click the left curved arrow at the very top of Excel to Undo (or press CTRL + Z on your keyboard)

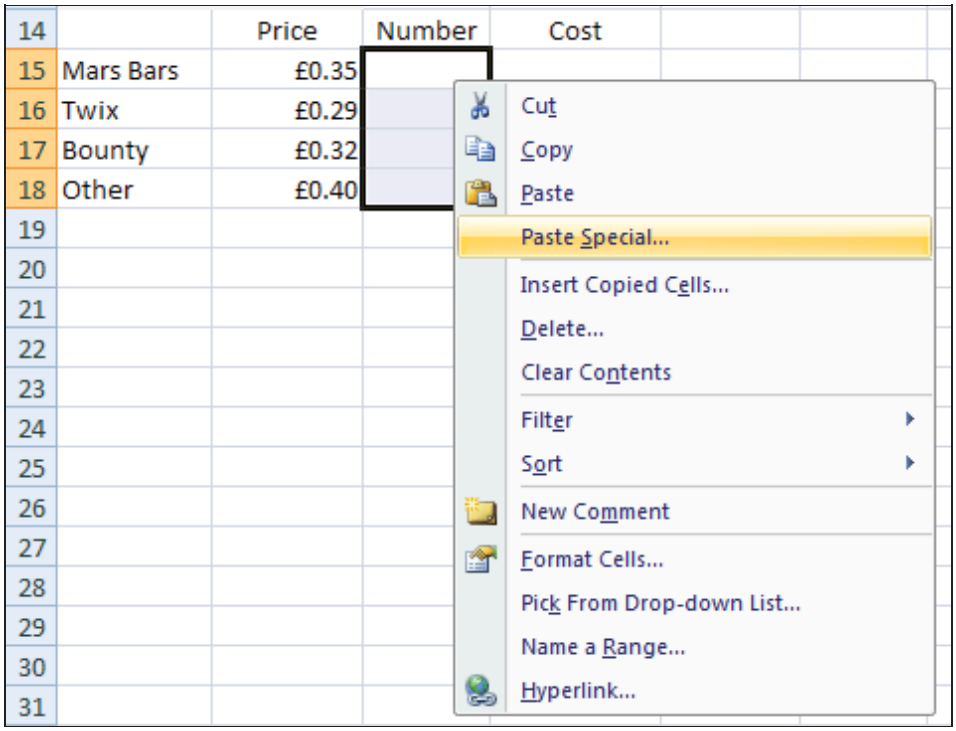


- Highlight the four cells in the J column again
- From the Clipboard panel, click copy

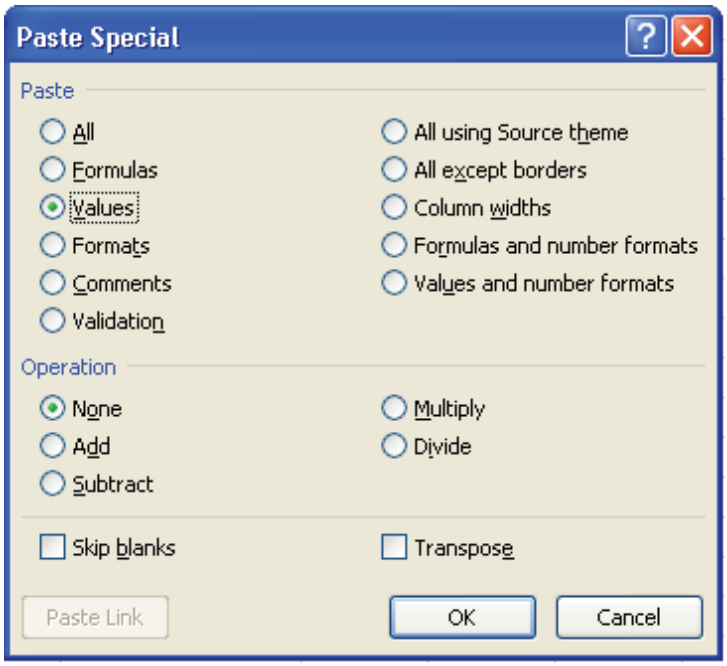


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- Highlight the cells C15 to C18
- Using your right mouse button, click anywhere in the highlighted area. You'll see the following menu in Excel 2007:



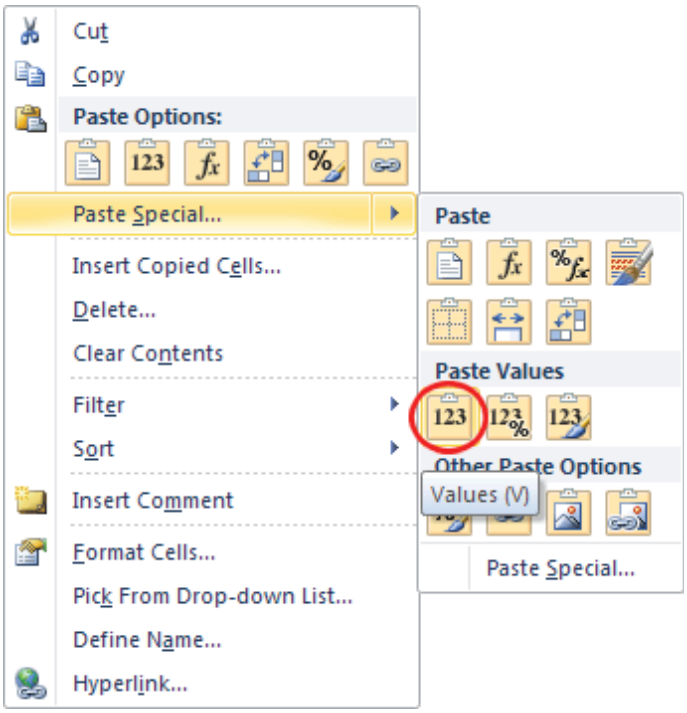
- From the menu, click **Paste Special** with your left mouse button
- The Paste Special dialogue box will appear:



The item that is selected by default is **All**, under the **Paste** option at the top. Select the **Values** option instead. Then click the OK button.

In Excel 2010 and 2013, however, the right-click menu looks like this:

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Select **Paste Special** to see the submenu above. From the submenu select the **Values** option, which is circled in red in our image.

What you've just done is to tell Excel to paste only the Values (the numbers) across, and not the formulas we used to get these values.

If you did it correctly, your spreadsheet should look ours below:

13	Cost of Addiction			
14		Price	Number	Cost
15	Mars Bars	0.35	17	
16	Twix	0.29	27	
17	Bounty	0.32	25	
18	Other	0.40	11	
19				

Of course, it would have been easy just to type out the values again, since we only have 4. But if you have a lot of values to paste over then the Paste Special dialogue box or menu can save you a lot of time.

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Now that we have a price for each chocolate bar, and how many we are eating each week, we can calculate how much our addiction is costing us. For that, we'll need to multiply.

How to Multiply in Excel 2007 to 2013 -->

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In the previous parts of this Excel tutorial, you have been working on a spreadsheet that now looks like this:

13	Cost of Addiction			
14		Price	Number	Cost
15	Mars Bars	0.35	17	
16	Twix	0.29	27	
17	Bounty	0.32	25	
18	Other	0.40	11	
19				

To get the weekly cost of each chocolate bar, we need to multiply the **Number** of bars eaten in one week by the **Price**. This can then go in the **Cost** column. The standard way to multiply things is like this:

12 x 10 = 120

The "x" means multiply. In a spreadsheet, however, the letter "x" is not used to multiply things. Spreadsheets use the asterisk symbol instead (the one above the number 8 on your keyboard, in the UK). The previous sum would then look like this:

12 * 10 = 120

Actually, in Excel, you don't need much more than that to multiply. The only other thing you need is an equals sign before the formula. So to get the answer 120, you'd just enter this into any cell:

= 12 * 10

Instead of entering numbers directly, though, we'll enter a cell reference instead. To multiply, then, try this:

- Click into cell D15 on your spreadsheet, just below your **Cost** heading
- Now click into the Formula Bar at the top of Excel
- Type the following formula:

= B15 * C15

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- Hit the enter key on your keyboard, and you should get an answer of 5.95
- Your spreadsheet will look like this (we've formatted the cell as a currency):

D15 | = B15 * C15

	A	B	C	D	E	F	G	H
1	My Chocolate Addiction							
2								
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
4	Mars Bars	1	2	1	3	3	2	5
5	Twix	7	5	3	2	4	2	4
6	Bounty	8	3	2	3	4	1	4
7	Other	1	2	2	2	2	1	1
8								
9	Day Totals	17	12	8	10	13	6	14
10								
11	Number of Chocolate bars consumed in a week:					80		
12								
13	Cost of Addiction							
14		Price	Number	Cost				
15	Mars Bars	0.35	17	£5.95				
16	Twix	0.29	27					
17	Bounty	0.32	25					
18	Other	0.40	11					
19								

So to multiply in Excel , you do this:

= Cell Reference * Cell Reference

You type the equals sign first (=), followed by the first cell. Type an asterisk (*), and then the second cell. Hit the enter key, and Excel will multiply the two cells for you:

= B15 * C15

Once you have that first formula in place, you can use AutoFill for the others:

11	Number of Chocolate bars consumed in a week:				80
12					
13	Cost of Addiction				
14		Price	Number	Cost	
15	Mars Bars	0.35	17	£5.95	
16	Twix	0.29	27	£7.83	
17	Bounty	0.32	25	£8.00	
18	Other	0.40	11	£4.40	
19					

After you're done, you should have the same figures that we have in the Cost column.

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In the next part of the tutorial, you'll complete this Excel spreadsheet by adding a weekly cost and a yearly cost.

Complete the Spreadsheet -->

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To finish off the Excel spreadsheet you have been working on in this section, we'll add figures for the weekly cost and yearly costs of the chocolate addiction. We'll use AutoFill and SUM.

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The bottom of our spreadsheet looks like this:

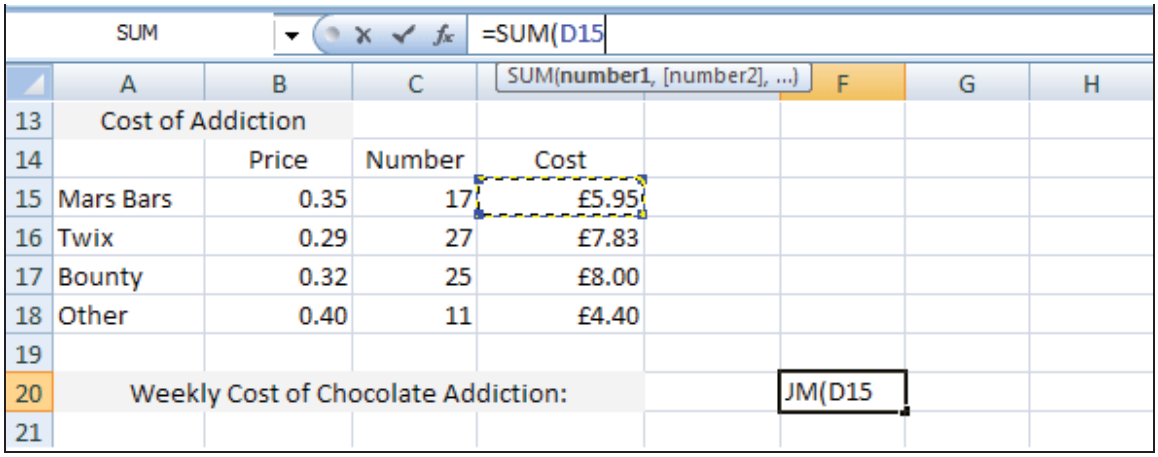
11	Number of Chocolate bars consumed in a week:					80
12						
13	Cost of Addiction					
14		Price	Number	Cost		
15	Mars Bars	0.35	17	£5.95		
16	Twix	0.29	27	£7.83		
17	Bounty	0.32	25	£8.00		
18	Other	0.40	11	£4.40		
19						

We now have how much each individual chocolate bar is costing us each week. The next things to do is to add them all up to arrive at a weekly figure for all chocolate bars.

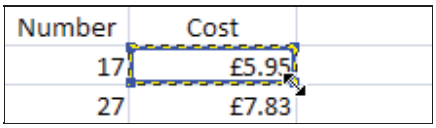
To calculate the weekly cost of the chocolate addiction, you can use the Excel SUM function. But there's an even easier way - use Auto Fill and SUM. Try this.

- Click inside cell F20
- Click inside the Formula bar at the top and enter **= SU**
- When you see the drop down list of functions, double click **SUM**
- Now click inside D15 of you spreadsheet
- Excel will enter the Cell for you in the formula bar:

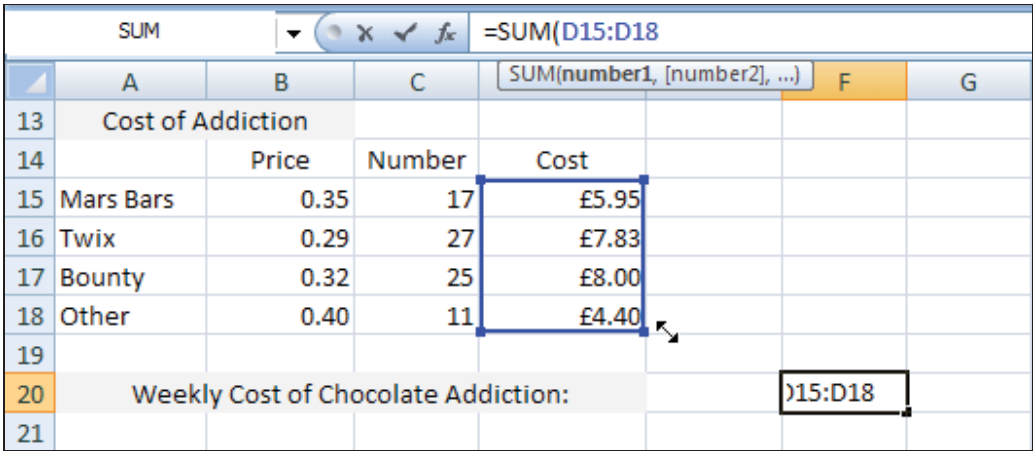
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- Notice the marching ants around Cell D15, and that there is a blue border with blue squares
- Hold your mouse over the bottom right blue square until your cursor changes to a double-headed arrow:

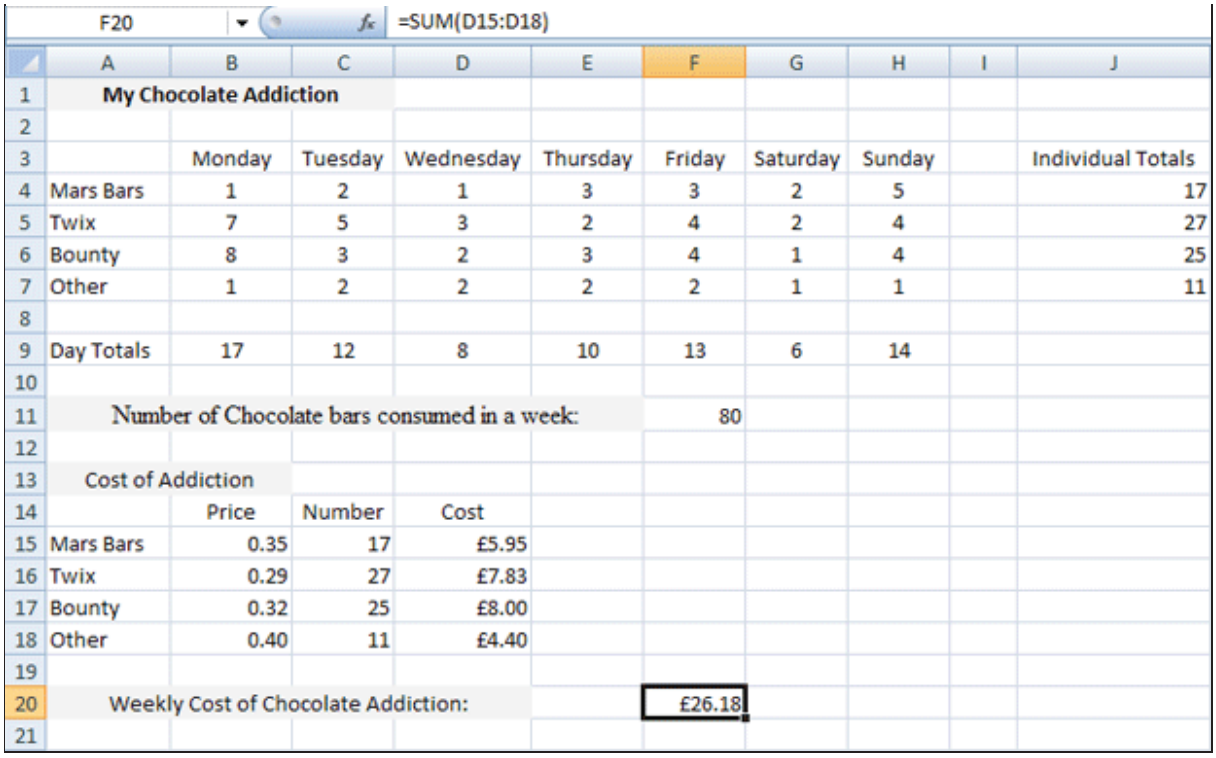


- Now hold your left mouse button down and drag down to cell D18
- Let go and Excel will enter the rest of the formula for you:



Press the enter key on your keyboard to finish off the rest of the formula:

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F20 =SUM(D15:D18)

	A	B	C	D	E	F	G	H	I	J
1	My Chocolate Addiction									
2										
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday		Individual Totals
4	Mars Bars	1	2	1	3	3	2	5		17
5	Twix	7	5	3	2	4	2	4		27
6	Bounty	8	3	2	3	4	1	4		25
7	Other	1	2	2	2	2	1	1		11
8										
9	Day Totals	17	12	8	10	13	6	14		
10										
11	Number of Chocolate bars consumed in a week:					80				
12										
13	Cost of Addiction									
14		Price	Number	Cost						
15	Mars Bars	0.35	17	£5.95						
16	Twix	0.29	27	£7.83						
17	Bounty	0.32	25	£8.00						
18	Other	0.40	11	£4.40						
19										
20	Weekly Cost of Chocolate Addiction:					£26.18				
21										

If you did that correctly, you should have a figure of 26.18 in cell F20. That's how much our chocolate bar addiction is costing each week.

To work out how much the addiction is costing every year, we can multiply the weekly cost of the addiction by 52 (the number of weeks in a year). First, enter some suitable text in cell A21, something like "Annual Cost of Chocolate addiction". The answer can then go in cell F21, under the weekly cost.

- Click into cell F21 on your spreadsheet
- Then click into the formula bar at the top
- Enter the following:

= F20 * 52

Hit the enter key on your keyboard, and the correct answer should appear.

Cell F20 is where the weekly total is. Excel already knows what formula is inside of this cell, so only the cell reference is needed. After the multiply symbol, we then only need to enter the number of weeks in a year.

The answer you should have in cell F21 is 1, 361.36. You spreadsheet should look like ours below:

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13	Cost of Addiction					
14		Price	Number	Cost		
15	Mars Bars	0.35	17	£5.95		
16	Twix	0.29	27	£7.83		
17	Bounty	0.32	25	£8.00		
18	Other	0.40	11	£4.40		
19						
20	Weekly Cost of Chocolate Addiction:					£26.18
21	Annual Cost of Chocolate Addiction:					£1,361.36
22						
23						

The formula we just used mixes a cell reference with a number. Excel doesn't mind you doing it this way, just as long as there's something to multiply. So you can do things this way:

= 26.18 * 52

Or this way:

= F20 * 52

If you have the number 52 typed into say cell H20, you could just do this:

= F20 * H20

Whichever way you choose, though, just remember to use the asterisk to multiply things.

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In the next tutorial, you'll learn how to add a Comment to a Cell in Excel .

Add a Comment to a Cell -->

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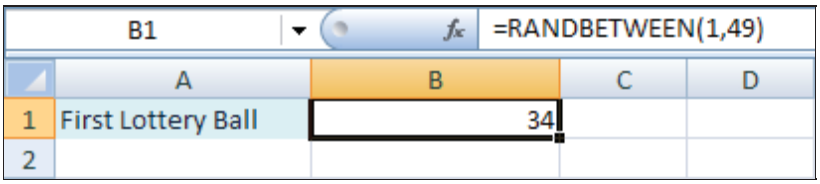
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A comment can be added to any cell on your spreadsheet. When you hover your mouse pointer over a cell that contains a comment, you'll see the comment appear in a sort of Sticky-Note. To see how they work, study the spreadsheet below:



The formula in cell B1 above gives you a random number from 1 to 49. A new number can be had by clicking the "Calculate Now" button on the Formula menu.

To let users know what to do, we'll add a comment to cell B1.

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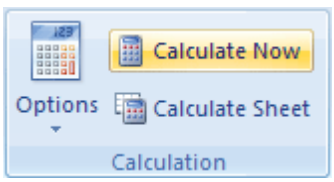
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First, create the spreadsheet above. In cell B2, enter the following formula:

=RANDBETWEEN(1, 49)

The formula will generate a Random number between 1 and 49. Once you have the above spreadsheet up and running, click inside B1 and try it out:

- From the menu bars on the Ribbon at the top of Excel, click on **Formula**
- Locate the **Calculation** panel, and then click on Calculate Now:

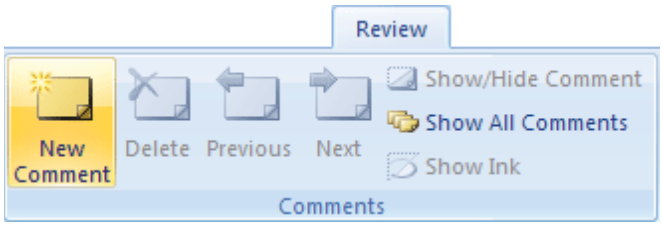


Excel 2007 will refresh the calculation and enter a new random number for you. To let people know about this, you can add your comment to the cell. To add a comment

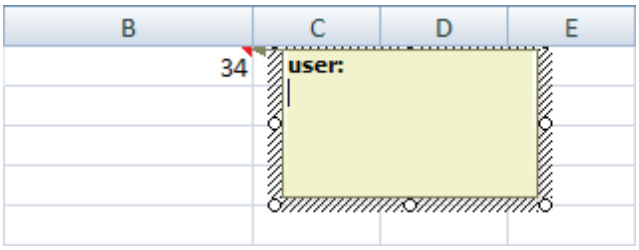
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to cell B1, do the following:

- Click inside cell B1 on your spreadsheet
- From the tabs on the Ribbon at the top of Excel, click on **Review**
- Click on **New Comment**

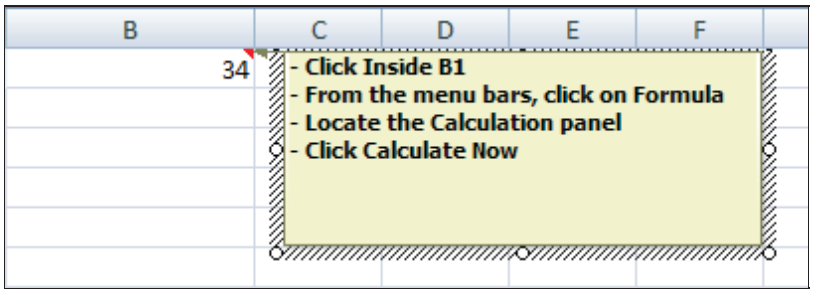


A greenish textbox will appear to the right of cell B1, as in the image below:

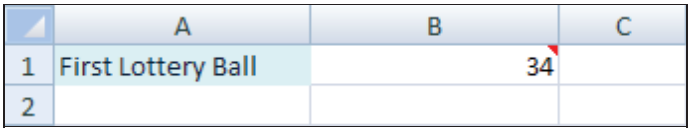


The word "user" in the image above is placed there by Excel. This is the name of the user account that was set up in Windows. Press the backspace on your keyboard to delete this.

To add your comment, just start typing. The size of the comment area can be increased or decreased by moving your mouse over the white circles. Hold down the left mouse button and drag.

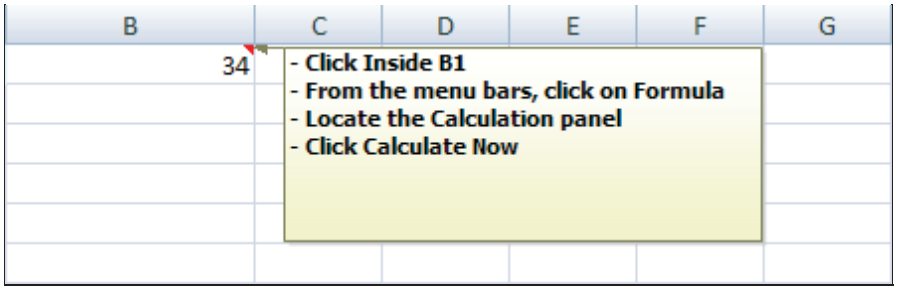


When you have finished typing your comment, click on any other cell. The comment will disappear. Notice that the cell now has a red triangle in the top right. This indicates that it contains a comment:



If you move your mouse pointer over cell B1 the comment will appear:

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To get rid of a comment, right click the cell that contains the comment. Then, from the menu that appears, select **Delete Comment**.

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The next part is another Review. If you have been following along with the tutorials in this section, try the Review and see how you get on. It will give you more practice in building a spreadsheet.

Review Two -->

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You've seen a spreadsheet on chocolate addiction. The finished version looked like this:

	A	B	C	D	E	F	G	H	I	J
1	**My Chocolate Addiction**									
2										
3		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday		Individual Totals
4	Mars Bars	1	2	1	3	3	2	5		17
5	Twix	7	5	3	2	4	2	4		27
6	Bounty	8	3	2	3	4	1	4		25
7	Other	1	2	2	2	2	1	1		11
8										
9	Day Totals	17	12	8	10	13	6	14		
10										
11	Number of Chocolate bars consumed in a week:					80				
12										
13	Cost of Addiction									
14		Price	Number	Cost						
15	Mars Bars	0.35	17	£5.95						
16	Twix	0.29	27	£7.83						
17	Bounty	0.32	25	£8.00						
18	Other	0.40	11	£4.40						
19										
20	Weekly Cost of Chocolate Addiction:					£26.18				
21	Annual Cost of Chocolate Addiction:					£1,361.36				
22										

Time now to reveal your addiction! Create a spreadsheet like the one above, but substitute Chocolate Addiction for something else. Examples might be: smoking, drinking, eating out, clothes, makeup - in fact, anything that someone might be spending too much money on. (It doesn't have to be you doing the spending: it can be entirely made up.)

Your spreadsheet should include the following:

- Daily totals
- Individual totals
- Weekly total
- Columns for Prices
- Columns for Number and Cost
- Weekly cost
- Annual cost

You can format the spreadsheet any way you like. The colour scheme is entirely up to

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you. Just make sure that your spreadsheet is easy to follow.

In the next section, we'll make start on Charts in Excel. Before that, you'll learn how to sort data.

Sorting in Excel 2007 to 2013 -->

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Section three of this course is really all about charts. Later, you'll see how to create a variety of charts and chart styles with Excel. Microsoft have really revamped chart creation from Excel 2007 onwards. If you've ever used previous versions of the software, you'll appreciate how easy it is to produce impressive results.

First, though, we'll tackle the subject of how to sort data. The two subjects are not really related, but the data going in to our charts is a good opportunity to learn about this important topic.

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Sorting Data in Excel 2007 to 2013

To make a start, you need to create the spreadsheet below. You don't need to use the same colours as ours, but reproduce the data and the headings exactly as they are in this one:

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	A	B	C	D	E	F
1	Viewing Figures					
2						
3	BBC 1			ITV		
4		Millions			Millions	
5	National Lottery	6.27		Who...Millionare	10.99	
6	Ready Steady Cook	6.33		Heartbeat	10.22	
7	Vicar of Dibley	6.34		Bad Girls	7.42	
8	Ground Force	6.71		The Bill	6.54	
9	Holby City	6.99		The Vice	6.37	
10	Lenny Henry	7.03		Blind Date	6.31	
11	DIY SOS	7.2		Stars in their Eyes	6.26	
12	Changing Rooms	7.38		Footballer's Wives	6.17	
13	Antiques Roadshow	7.68		Champions League	6.09	
14	Casualty	8.82		Inspector Morse	5.81	
15						

Our spreadsheet is all about the viewing figures for the two main TV channels in the UK. The data is a bit old, but that's not important. As long as we have some nice information to sort, that's what matters.

The viewing figures for ITV have been sorted, from the highest first to the lowest last. The BBC1 figures are still waiting to be sorted. Let's see how to do that now.

Descending Sort in Excel 2007 to 2013

We want to sort the BBC1 viewing figures in the same way that the ITV figures have been sorted. We'll put the highest programme first and the lowest last. This is called a Descending Sort. If you do it the other way round, it's known as an Ascending Sort.

The first thing to do is to highlight the information that you want to sort. In your spreadsheet, highlight cells A5 to B14. The crucial thing to remember when you want to sort data in Excel is to include the text as well as the numbers. If you don't, you'll end up with a spreadsheet where the numbers don't relate to the information, which could spell disaster in bigger spreadsheets!

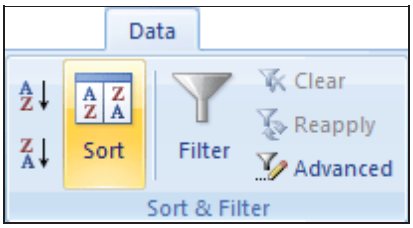
Your highlighted spreadsheet, though, should look like this one:

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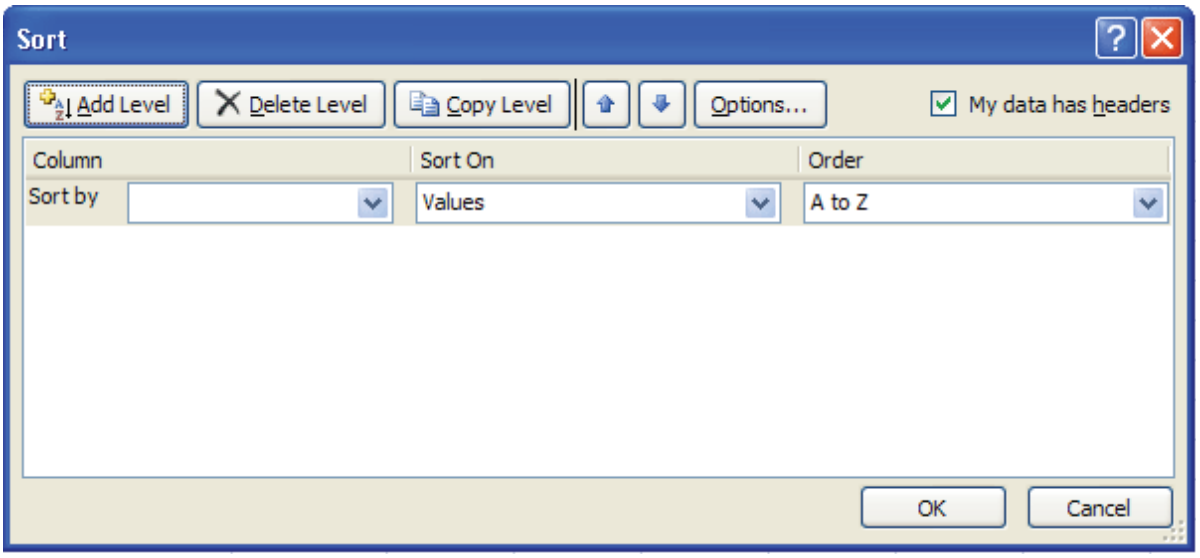
	BBC 1	
4		Millions
5	National Lottery	6.27
6	Ready Steady Cook	6.33
7	Vicar of Dibley	6.34
8	Ground Force	6.71
9	Holby City	6.99
10	Lenny Henry	7.03
11	DIY SOS	7.2
12	Changing Rooms	7.38
13	Antiques Roadshow	7.68
14	Casualty	8.82
15		

To sort your BBC 1 viewing figures, do the following:

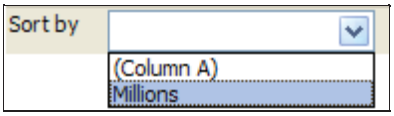
- From the Excel tabs at the top of the screen, click **Data**:



- From the **Sort & Filter** panel, click **Sort**
- A dialogue box appears:



The **Sort By** drop-down list seems empty. Click the down arrow to reveal the columns you selected:

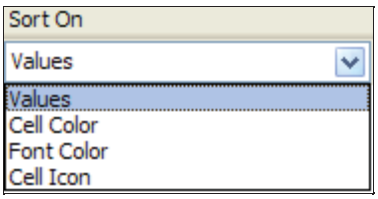


We want to sort this by the values in the Millions column. So select Millions from the

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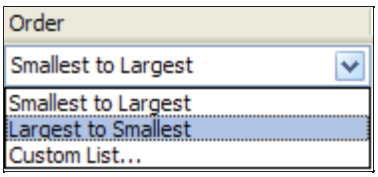
Sort by list.

Sort On is OK for us - it has Values. But click to see the options in the drop down list:

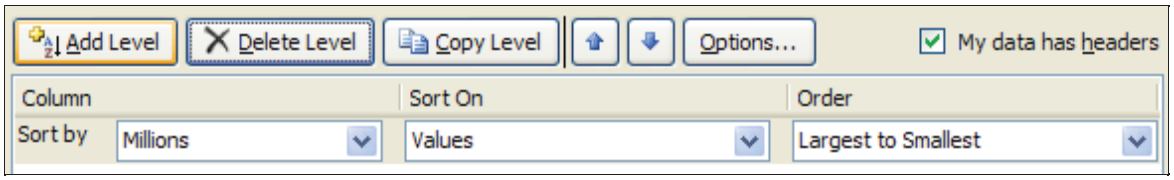


Values is the one you'll use the most. Once we have a **Sort By** and **Sort On** option selected, we can then move on to the **Order**.

Click the down arrow to see the options on the Order list:

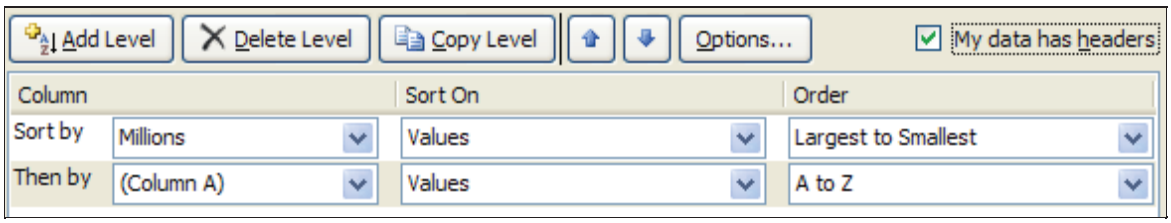


Select **Largest to Smallest**. Your Sort dialogue box should then look like this:



If you clicked OK, your data would be sorted. But the level buttons at the top can come in handy. If two items in your data have the same numbers, then you can specify what to sort by next. For example, if we have two programmes that have 6.3 million viewers, we could specify that the names of the programmes be sorted alphabetically.

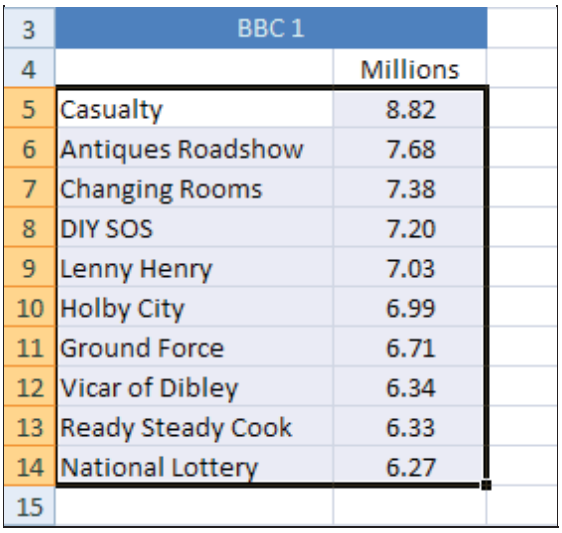
To do this, click the **Add Level** button, and you'll see some additional choices appear. You'll see the same lists as the Sort By box. If you select Column A, and then Descending, Excel will do an alphabetical sort if two items have the same viewing figures.



In the image above, we've added a "Then By" part, just in case there is a tie. You don't have to do this, as we have no numbers that are the same. Click OK to sort your data, though.

If everything went well, your sorted data should look like this:

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	BBC 1	
4		Millions
5	Casualty	8.82
6	Antiques Roadshow	7.68
7	Changing Rooms	7.38
8	DIY SOS	7.20
9	Lenny Henry	7.03
10	Holby City	6.99
11	Ground Force	6.71
12	Vicar of Dibley	6.34
13	Ready Steady Cook	6.33
14	National Lottery	6.27
15		

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But that's all we need to do for the sort. You can move on to creating your first chart in Excel.

Create a Chart in Excel 2007 to 2013 -->

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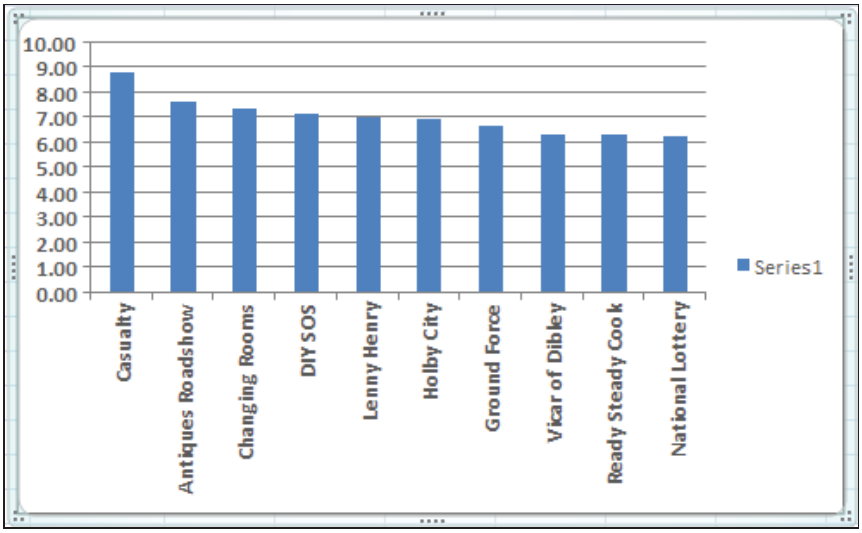
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C# .NET

Java for Beginners

We're now going to create a chart from our BBC1 Viewing figures. If you haven't yet completed the sorting tutorial, go back one page and follow along with the lesson. You'll then have a some sorted viewing figures to create a chart from.

When our chart is finished, though, it will look like this:



A little later, you'll see how to improve on this basic chart.

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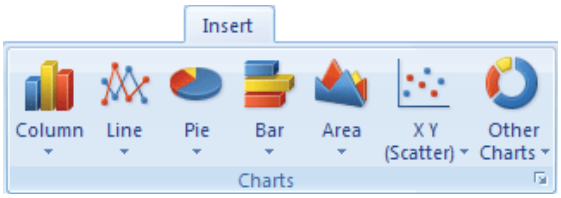
To start making your chart, highlight the BBC1 programmes, and the viewing figures. If you have just finished the sorting section, this data should still be highlighted, and look like this:

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3	BBC 1	
4		Millions
5	Casualty	8.82
6	Antiques Roadshow	7.68
7	Changing Rooms	7.38
8	DIY SOS	7.20
9	Lenny Henry	7.03
10	Holby City	6.99
11	Ground Force	6.71
12	Vicar of Dibley	6.34
13	Ready Steady Cook	6.33
14	National Lottery	6.27
15		

With your programmes and the viewing figures highlighted, do this:

- From the tabs on the Excel Ribbon, click on **Insert**
- Locate the **Charts** panel. It looks like this in Excel 2007:

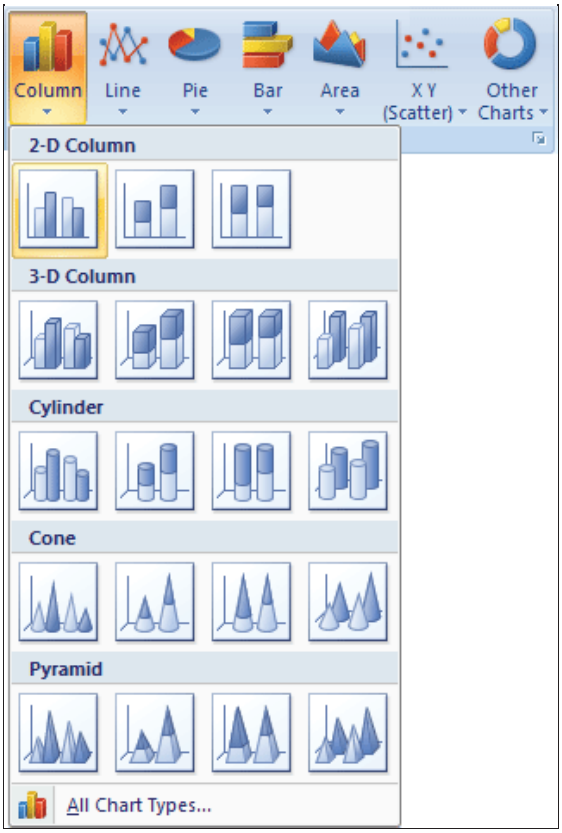


In later versions of Excel, the Charts panel looks like this:

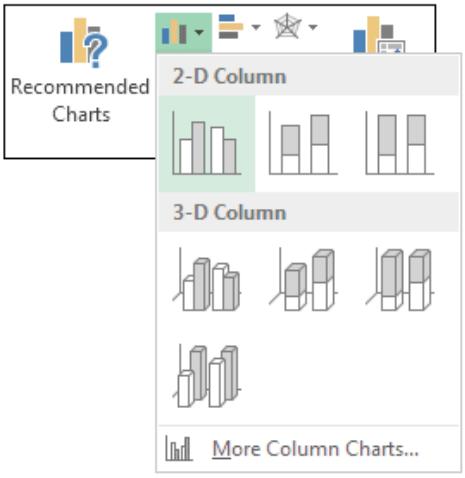


For this first one, we'll create a Column Chart. So, in Excel 2007, click the down arrow on the **Column** item of the Chart Panel. You'll see a list of available charts to choose from. Select the first one, the chart highlighted below (2D Column):

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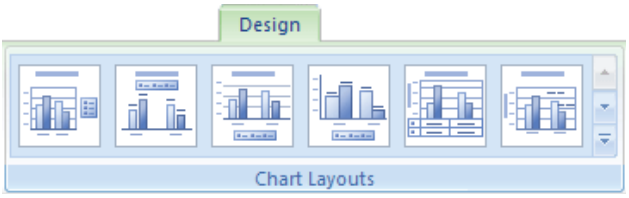


The Column drop down list in later versions of Excel looks like this:



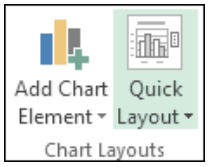
When you make your selection, a new chart appears on the same spreadsheet that you have open. The chart should look the same as the one at the top if this page.

But notice that the Excel Ribbon has changed. The design menu is selected, along with options for Chart Layouts:

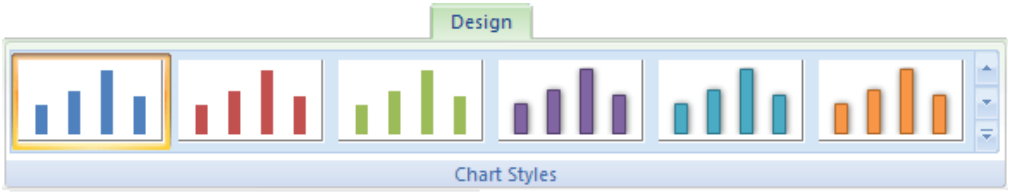


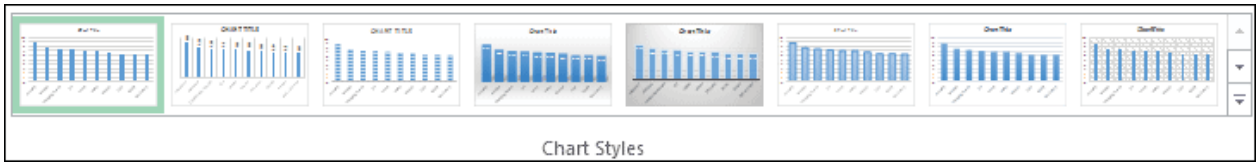
In Excel 2013, you'll see these layouts on the left, in the **Chart Layouts** panel, under **Quick Layouts**:

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Also on the Design Ribbon, you'll see options for Chart styles:





Why Excel graphs suck...

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You'll see how to use these later. For now, your chart may be covering your viewing figures. In the next part, we'll see how to move and resize a chart.

Move and Resize an Excel 2007 to 2013 Chart -->

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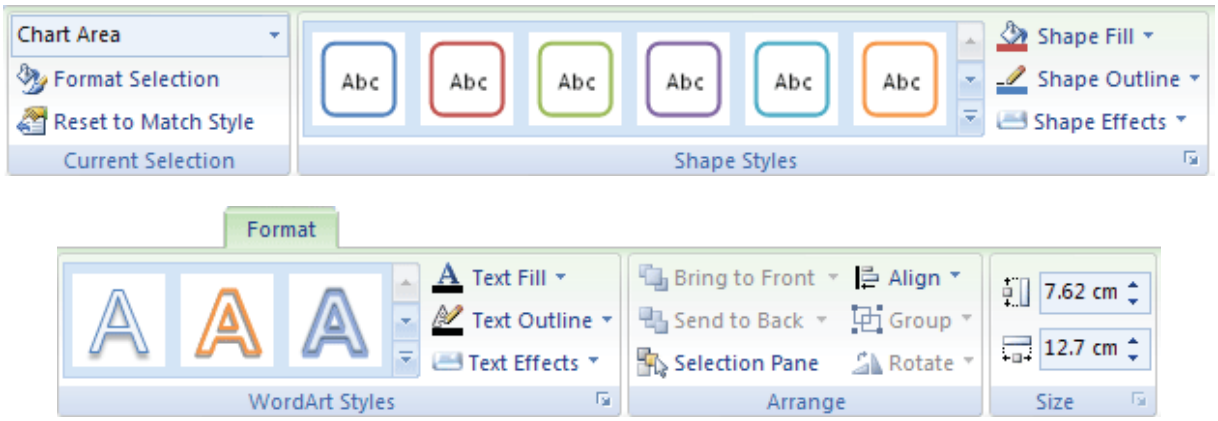
C# .NET

Java for Beginners

In the previous lesson, you saw how to use the **Layout** panels to change the layout of the chart itself. The **Format** panels allow you to create some great looking charts with just a few mouse clicks.

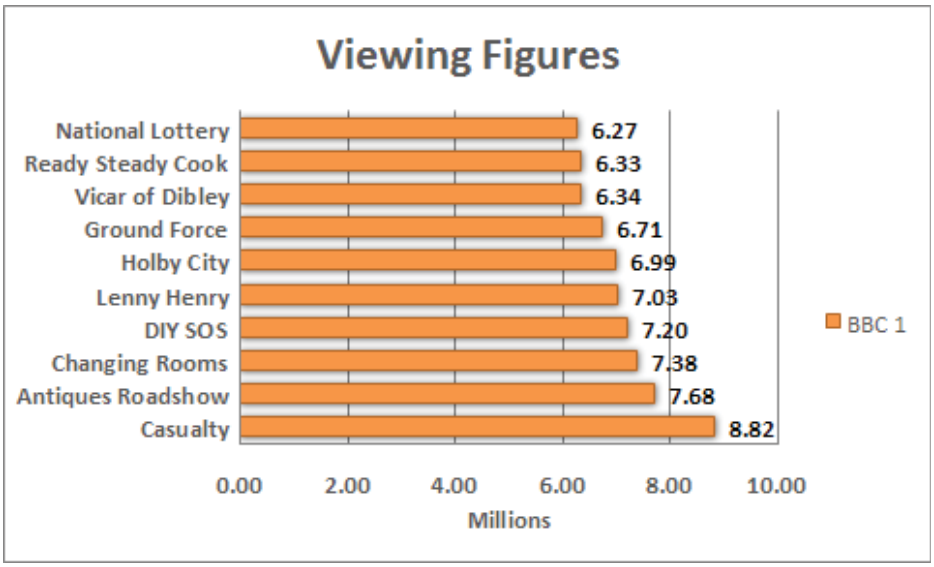
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Click on your chart to select it, and then click the **Format** menu at the top of the Excel Ribbon. You should see this long menu, split in two here:

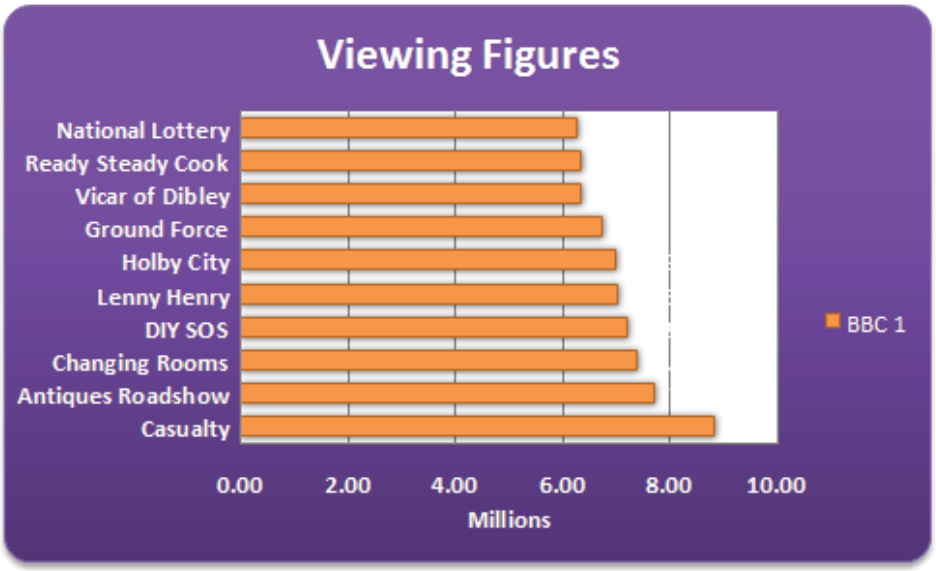


Using the various **Format Panels** on the Excel Ribbon, we'll format our chart from this:

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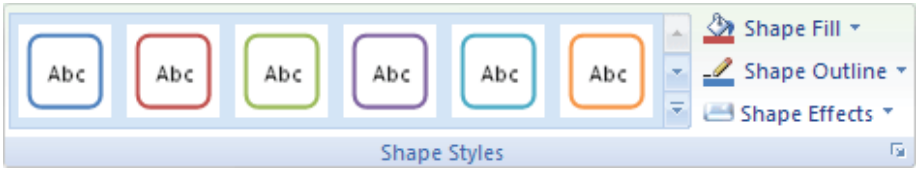


To this:



OK, it may look a bit gaudy! But at least it's lively. You can create a chart like this quite easily:

- First, click on your chart to highlight it
- Click the **Format** menu on the Excel Ribbon
- Locate the **Shape Styles** panel:



Click the down arrow on the right of the panel to see the available styles (there might not be so many styles in Excel 2013, so you my have to select a different colour):

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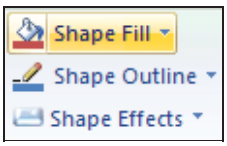


When you move your mouse over a style, your chart will change automatically. But you won't be able to see the full effect until you click away from the chart. We went for Style 28, the one that's highlighted in the image above. You get the rounded corners, the drop shadow and the colour fill.

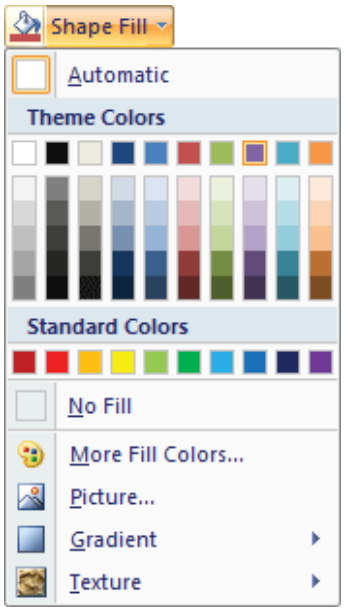
Create your own Chart Style in Excel

You can create all that yourself, though. If you want to create your own style, try the following:

Fill your chart with a colour by clicking the down arrow on **Shape Fill** on the Shape Styles panel:

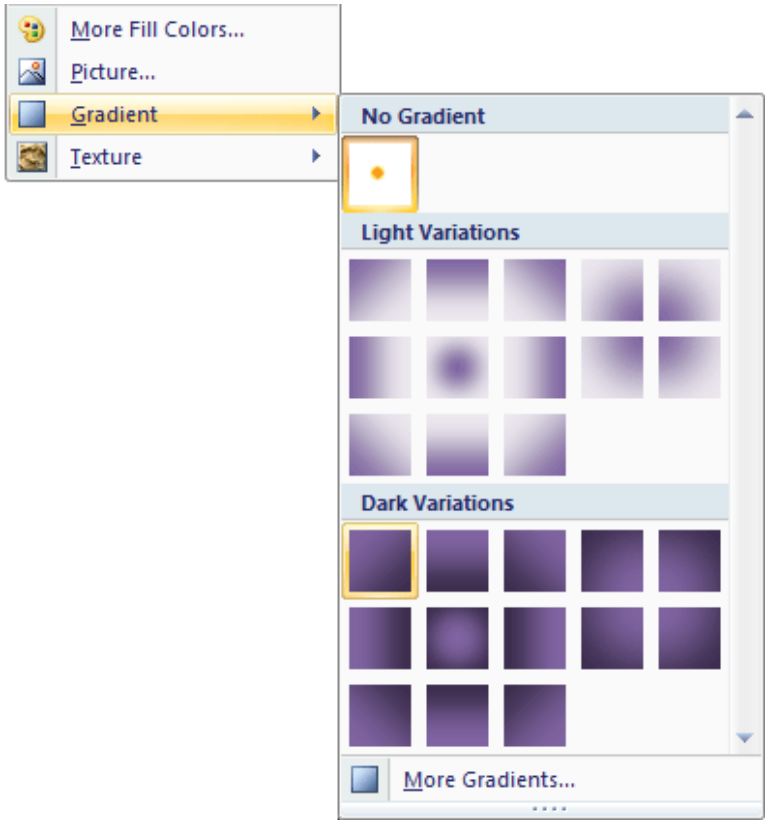


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Select a colour from the list. Or click "More Fill Colors". Once your chart has a colour, you can liven it up a bit.

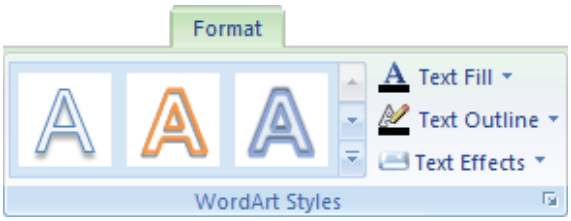
Still on the same menu, click on **Gradient**. The sub menu appears:



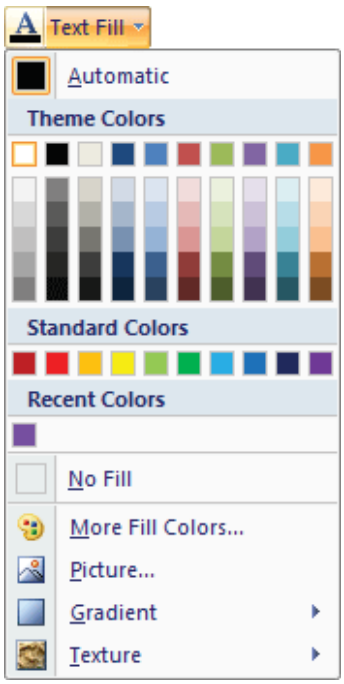
We went for one of the Dark Variations.

Next, you can spruce up the text on your chart. Locate the **WordArt Styles** panel:

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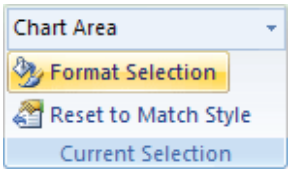


Click the **Text Fill** button to see the available colours:



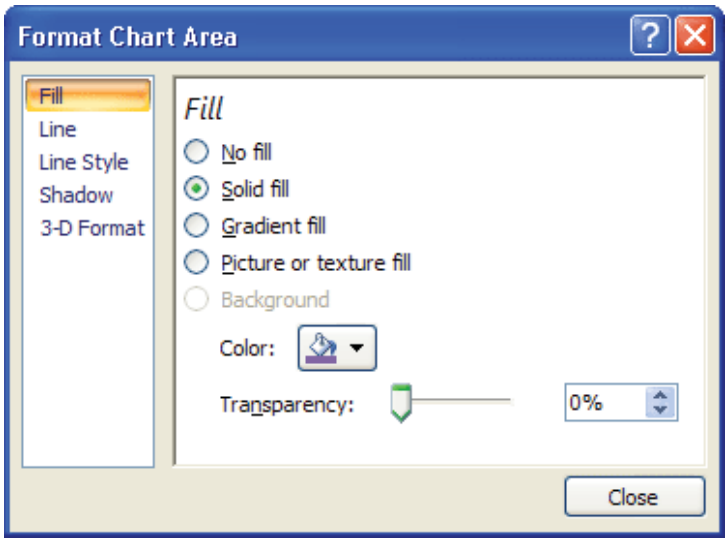
Once you have the chart background and text formatted the way you want it, you can add some rounded corners, and a bit of drop shadow. You can apply both of those from the Format Chart Area dialogue box. Here's how.

To bring up the Format Chart Area dialogue box, click the **Format Selection** button on the **Current Selection** panel:

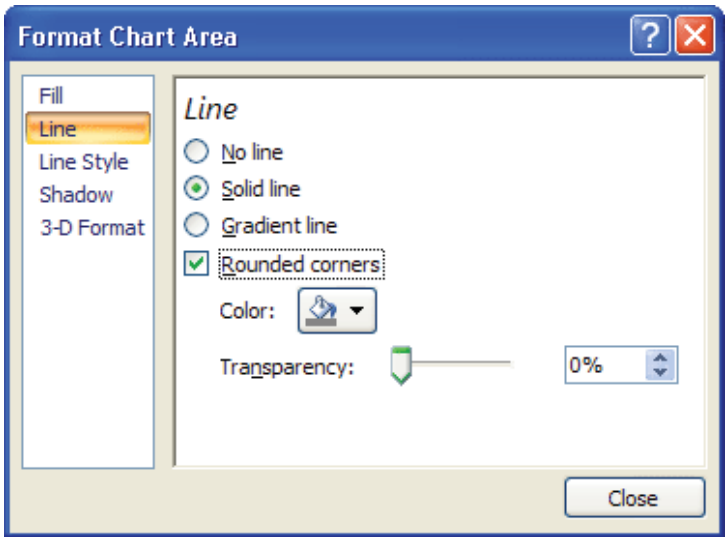


You'll then see the following dialogue box appea (If you're using Excel 2013, you'll see a panel appear on the right of your screen instead of a dialogue box):

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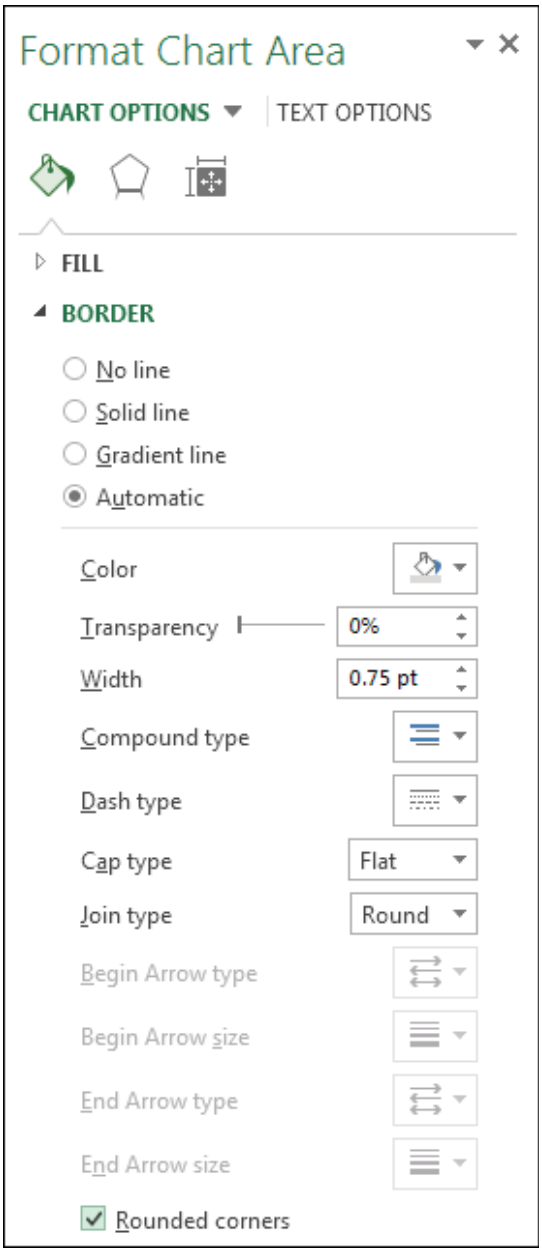


To get rounded corners, click on **Line** in Excel 2007. You'll then see the following options:



In Excel 2010, you'll have a **Border Styles** menu on the left. Click that to see the Rounded Corners option. For Excel 2013, click the **Border** category to exapand it. The Rounded Corners options is at the bottom:

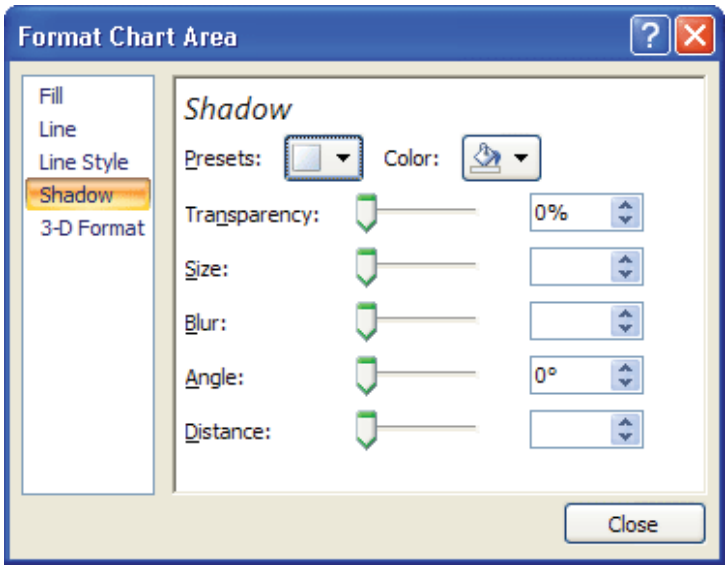
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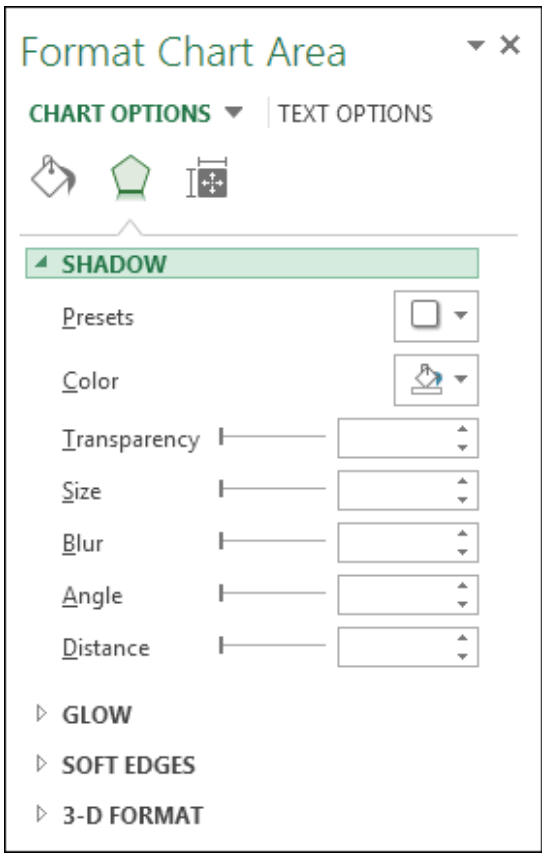
Put a tick in the box for Rounded Corners.

To get a Shadow for your chart, click the Shadow option on the left of your dialogue box. The options will change to these:

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For Excel 2013 users, click the Hexagon symbol at the top, just to the right of th epaint bucket:

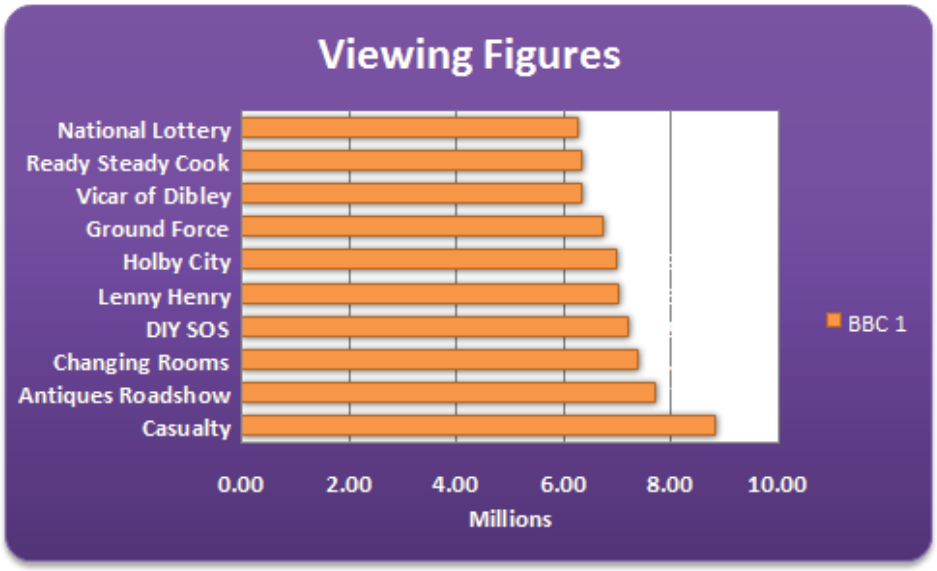


Click the Presets button to see a list of pre-made shadows:

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Select the one you like. Then click Close on the dialogue box. Your chart will then have rounded corners and a drop shadow.



OK, you should now a very smart chart. Playing around with the various options on the Format Chart Area dialogue box can really bring an Excel chart to life!

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Next up, we'll have a go at pie charts:

Create a Pie Chart in Excel 2007 to 2013 -->

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How to Create a Pie Chart in Excel

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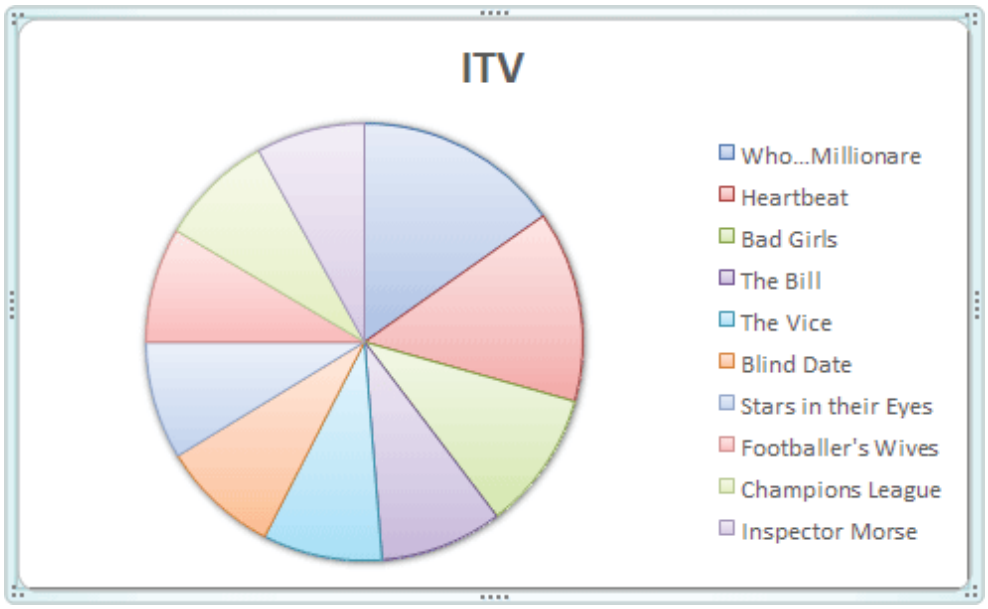
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Pie charts are quite easy to create in Excel 2007 and Excel 2010. In case you're not sure what a Pie Chart is, here's the basic one you'll be creating. Later, you'll add some formatting to this:



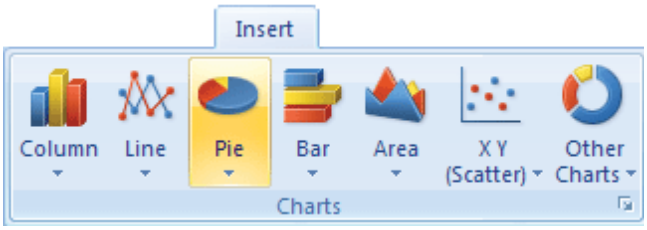
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To make a start, you need to highlight some data. If you've been following along with the previous tutorials, then you'll have some viewing figures data. You've created a 2D chart with the BBC data. This time we'll use the ITV data. If you don't have this data, create the following simple spreadsheet. The cells to use are D4 to E14:

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	ITV
Who...Millionare	10.99
Heartbeat	10.22
Bad Girls	7.42
The Bill	6.54
The Vice	6.37
Blind Date	6.31
Stars in their Eyes	6.26
Footballer's Wives	6.17
Champions League	6.09
Inspector Morse	5.81

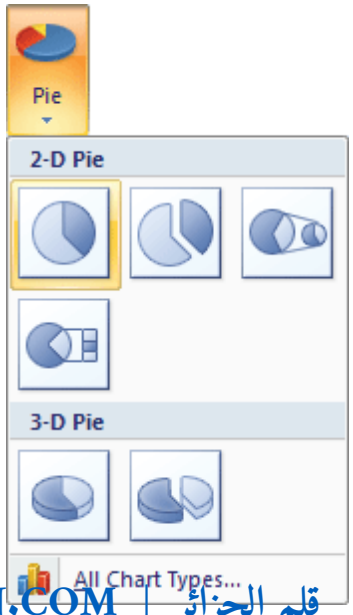
- Click inside cell E4 and change "Millions" to ITV, if you already have the data from a previous lesson
- Highlight the cells D4 to E14
- Click the **Insert** menu at the top of Excel
- Locate the **Chart** panel, and the **Pie** item:



In Excel 2013, the Pie chart is harder to spot. But it's highlighted in green in the image below:

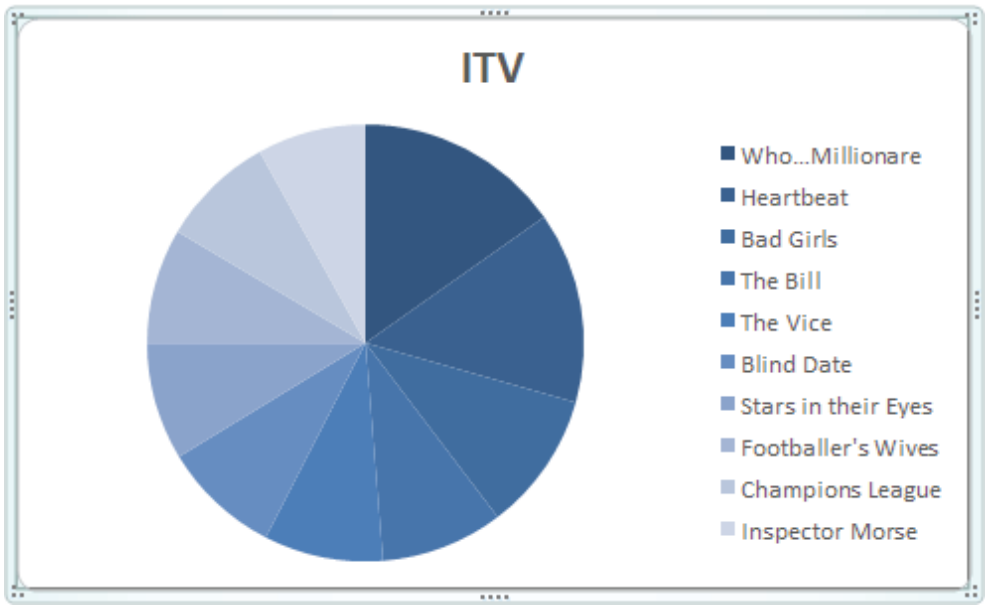


Click the down arrow and select the first Pie chart:

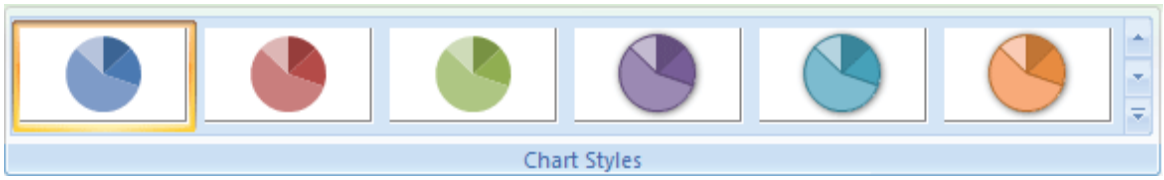


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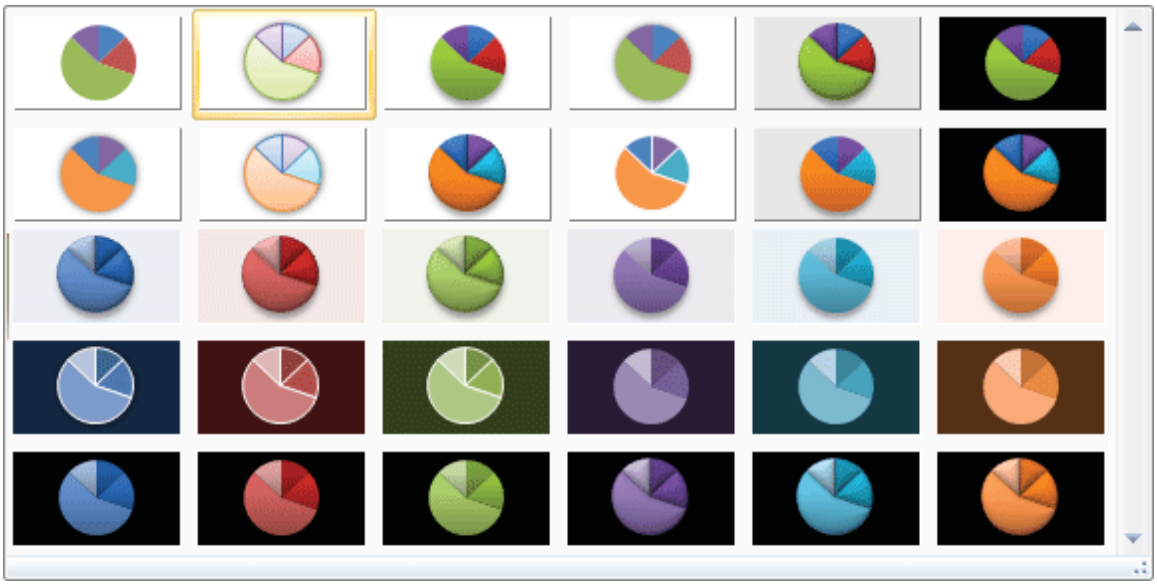
- A new Pie chart is inserted
- Move your new pie chart by dragging it to a new location
- Notice how all the segments of the pie chart are the same colour in Excel 2007:



To get different colours, make sure that your chart is selected and locate the **Chart Style** panel:



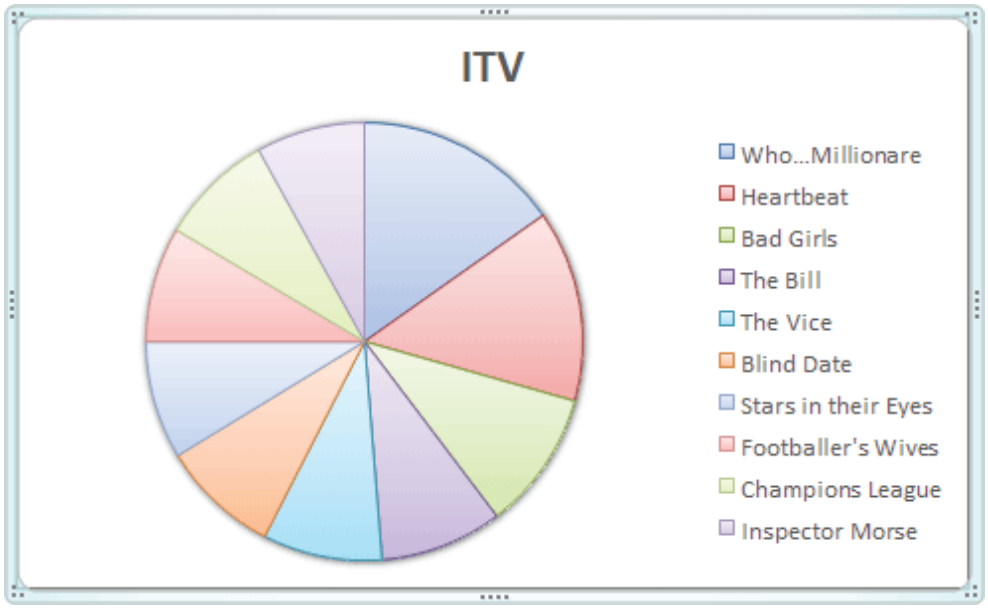
Click the down arrow to the right of the Chart Style panel to reveal the available styles :



We've gone for the second one, Style two. If you haven't got this style, select a similar one, such as style 4 in Excel 2013. The chart will then look like this (your

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labels may well be at the bottom, though, depending on which version of Excel you have):



But it looks pretty good for just a few mouse clicks! We can still do a bit more to it, though. In the next part, you'll see how to add the viewing figures to the pie chart segments.

Add Data Labels to a Pie Chart in Excel 2007 to 2013 -->

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How to Move and Resize a Chart

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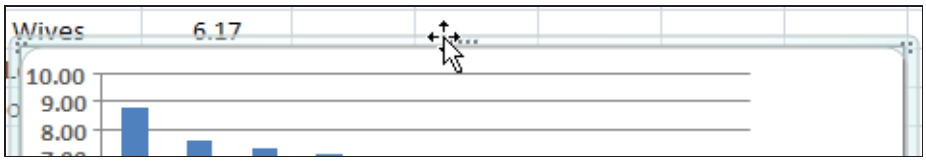
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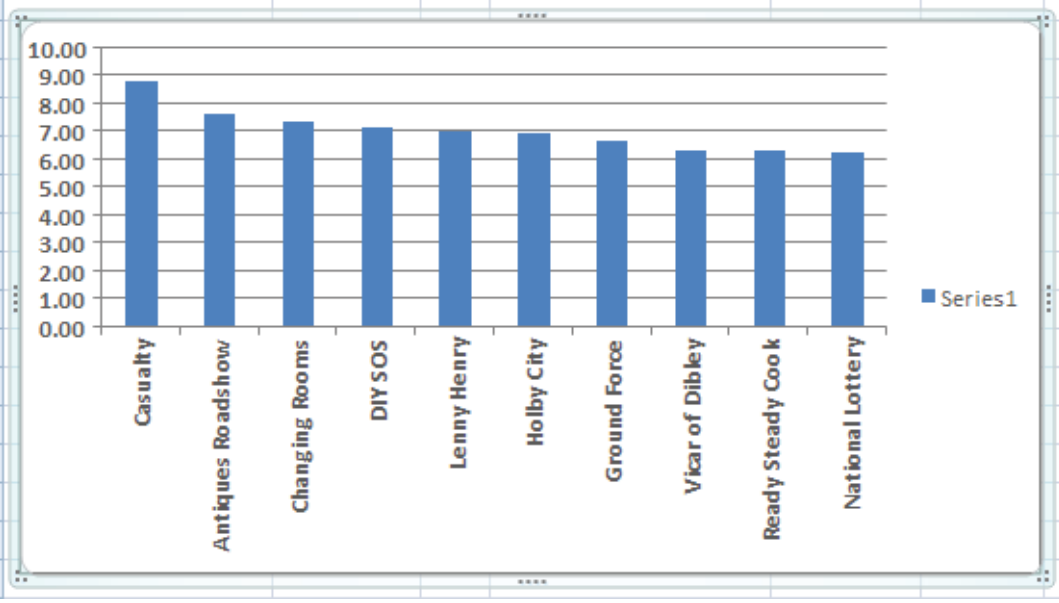
You might find that your chart from the previous lesson is covering your data. In the image below, our chart is overlapping the ITV data. To move it, hold your mouse over the chart until your cursor changes shape: (We found that the best place for your mouse is over the dots in Excel 2007, as we had problems moving a chart when the cursor was anywhere else! Moving charts in later versions of Excel is easier.)



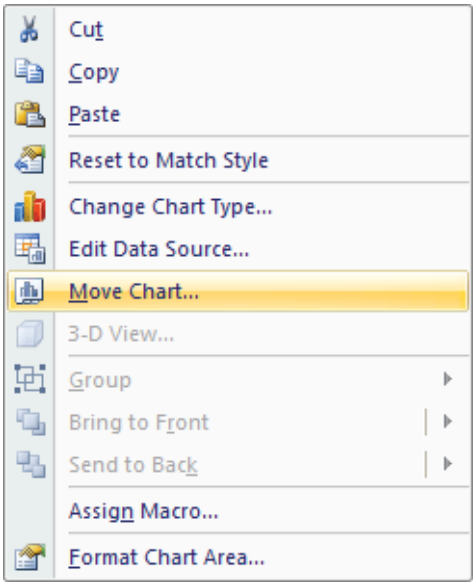
Press and hold down the mouse button when your cursor looks like the one in the image above, and then drag your chart to a new location. In the image below, we've placed the chart below the data.

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	BBC 1		ITV	
		Millions		Millions
5	Casualty	8.82	Who...Millionare	10.99
6	Antiques Roadshow	7.68	Heartbeat	10.22
7	Changing Rooms	7.38	Bad Girls	7.42
8	DIY SOS	7.20	The Bill	6.54
9	Lenny Henry	7.03	The Vice	6.37
10	Holby City	6.99	Blind Date	6.31
11	Ground Force	6.71	Stars in their Eyes	6.26
12	Vicar of Dibley	6.34	Footballer's Wives	6.17
13	Ready Steady Cook	6.33	Champions League	6.09
14	National Lottery	6.27	Inspector Morse	5.81

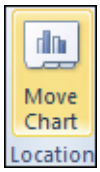


You can also place your chart in a different worksheet. To do this in Excel 2007, right click anywhere on your chart. From the menu, select **Move Chart**:

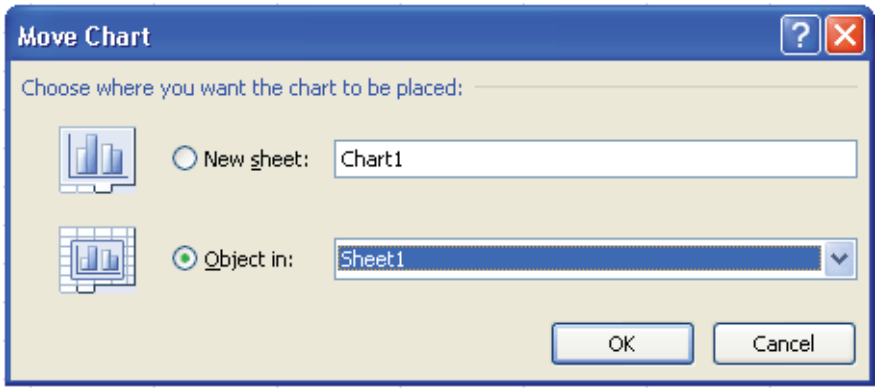


In Excel 2010 and 2013 there is a **Location** panel to the right of **Chart Styles**. Click the **Move Chart** item:

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In all versions, you'll then get a dialogue box popping up:

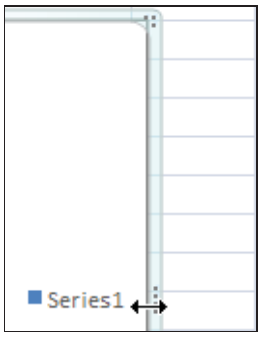


If you want your chart in a new worksheet, select the first option. Then delete the text "Chart1" from the textbox, and then type a name of your own.

If you look along the bottom of Excel , you'll see Sheet1, Sheet2, and Sheet3. Your data is in Sheet1. If you click the drop down list to the right of **Object in** on the dialogue box above, you'll see the other worksheets you have open. You can select one from the list and click OK. But for this first chart, leave it in Sheet1.

How to Resize an Excel Chart

You can resize a chart, and any elements on it, by moving your mouse over the sizing handles. For the chart itself, the sizing handles are the dots around the edges of the chart in Excel 2007:



In later versions, the sizing handles are white squares:

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When your mouse changes shape to a double-headed arrow, hold down your left mouse button. Then drag to a new location. You can resize using the corners, or the edges..

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In the next part, you'll see how to use Chart Styles and Chart Layouts in Excel.

Chart Styles and Chart Layouts in Excel 2007 to 2013 -->

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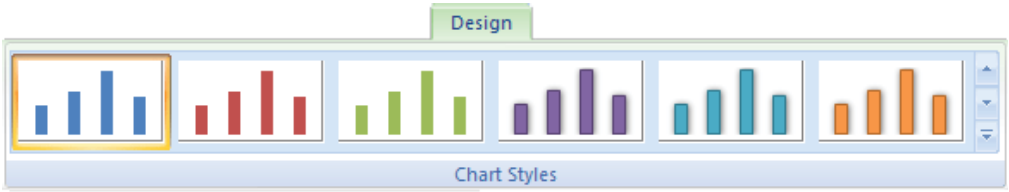
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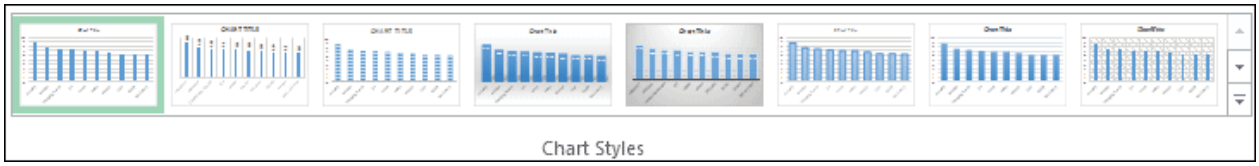
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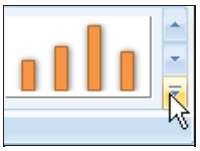
You can easily change the Style of your chart. If you can't see the Styles, click anywhere on your chart to select it, and you should see the Ribbon change. The Styles will look like this in Excel 2007:



In later versions of Excel, your Chart Styles will look like this:

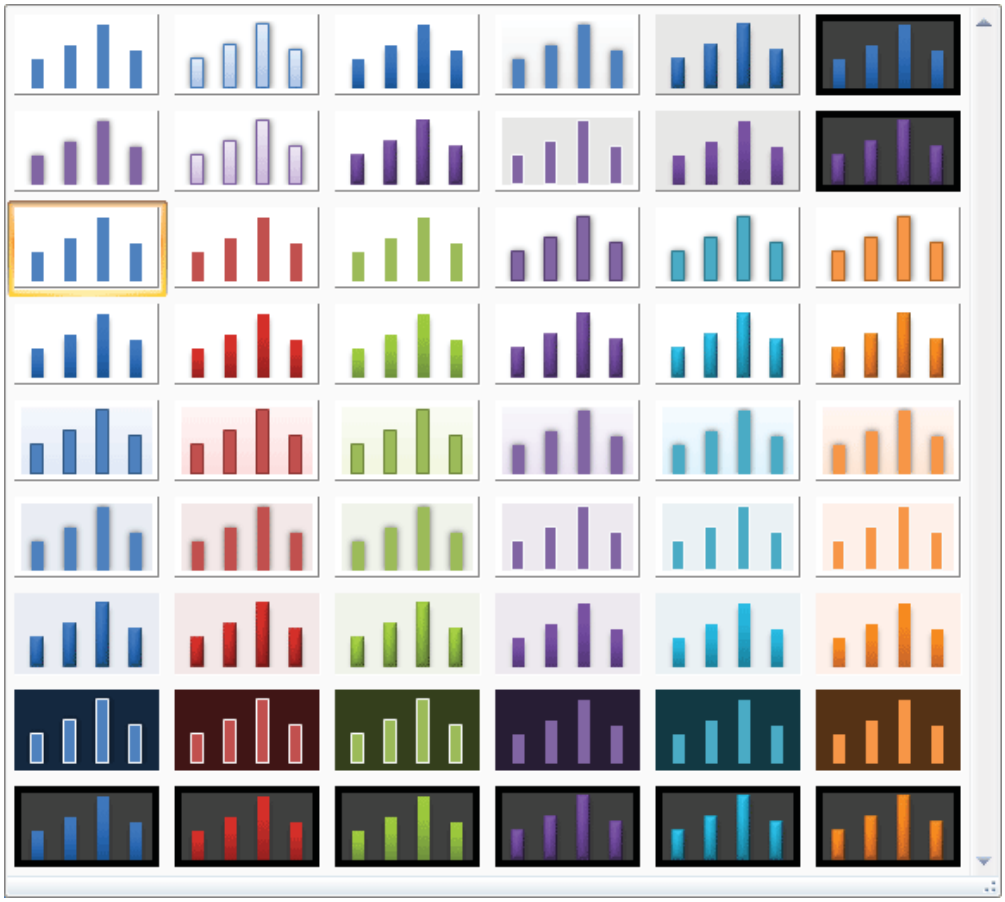


Click on any chart style, and your chart will change. To see more styles, click the arrows to the right of the Chart Styles panel:

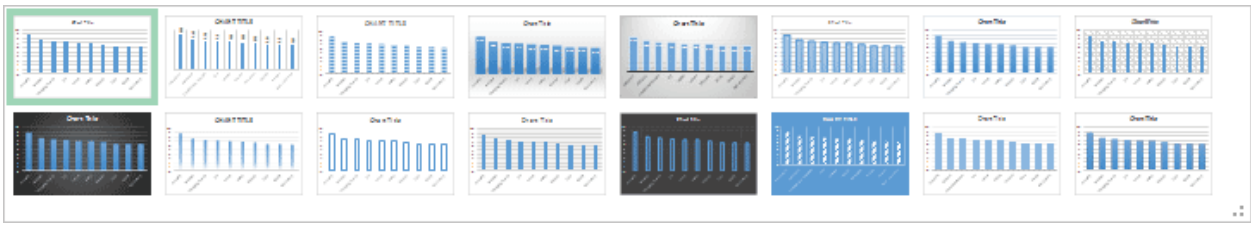


You'll then see a drop down sheet of new styles (Excel 2007):

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And here's the Styles in Excel 2013:

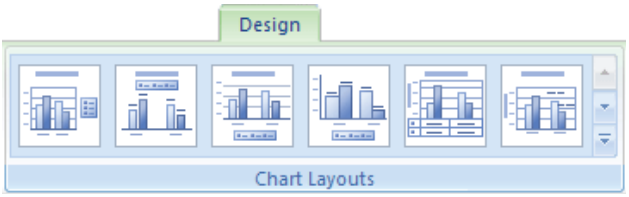


Work your way through the Styles, and click on each one in turn. Watch what happens to your chart when you select a style.

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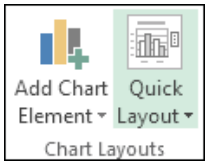
Chart Layouts

You can also change the layout of your chart in the same way. Locate the **Chart Layout** panel on the **Design** tab of the Excel Ribbon bar. It looks like this in Excel 2007:



In later versions you may have to click the **Quick Layout** option on the **Chart Layouts** panel:

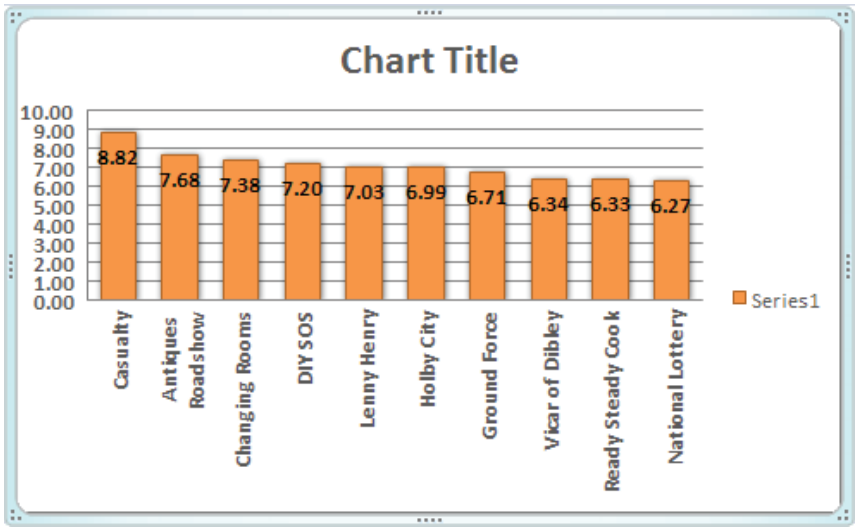
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Click the down arrow to the right of the Chart Layouts panel to see the available layouts you can choose from:

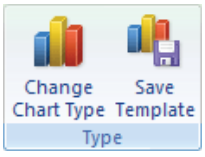


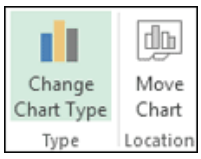
Again, click on each one in turn and see what happens to your chart. In the image below, we've gone for Layout 10:



Changing the Chart Type - 2D Bar Charts

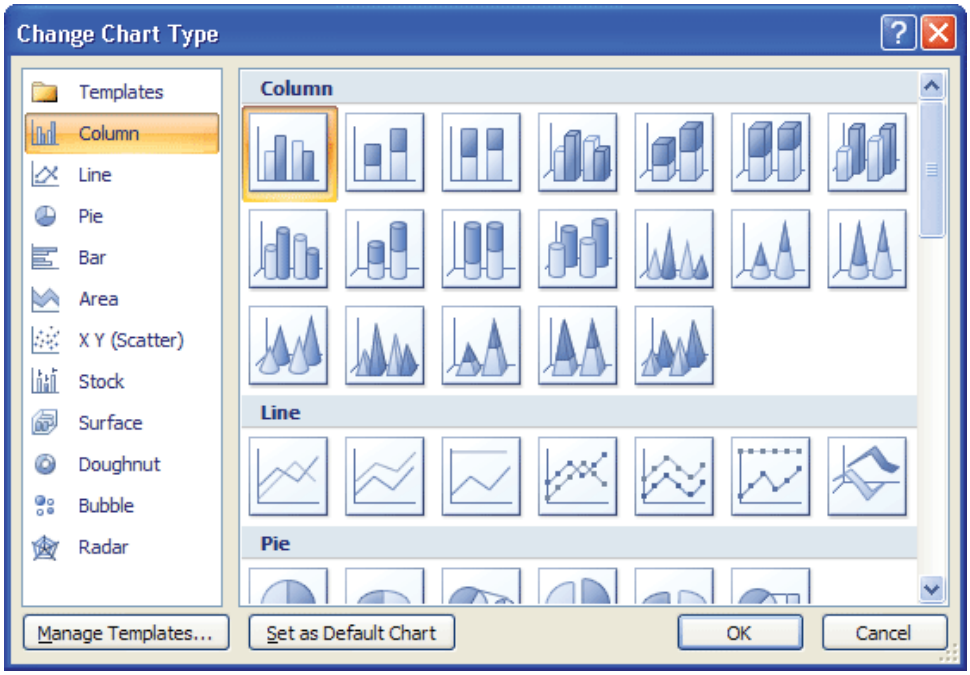
You can change the type of chart, as well. Instead of having a 2D column chart, as above, you can have a 2D bar chart. To change the chart type, locate the **Type** panel on the Excel Ribbon bar (you need to have your chart selected to see it):



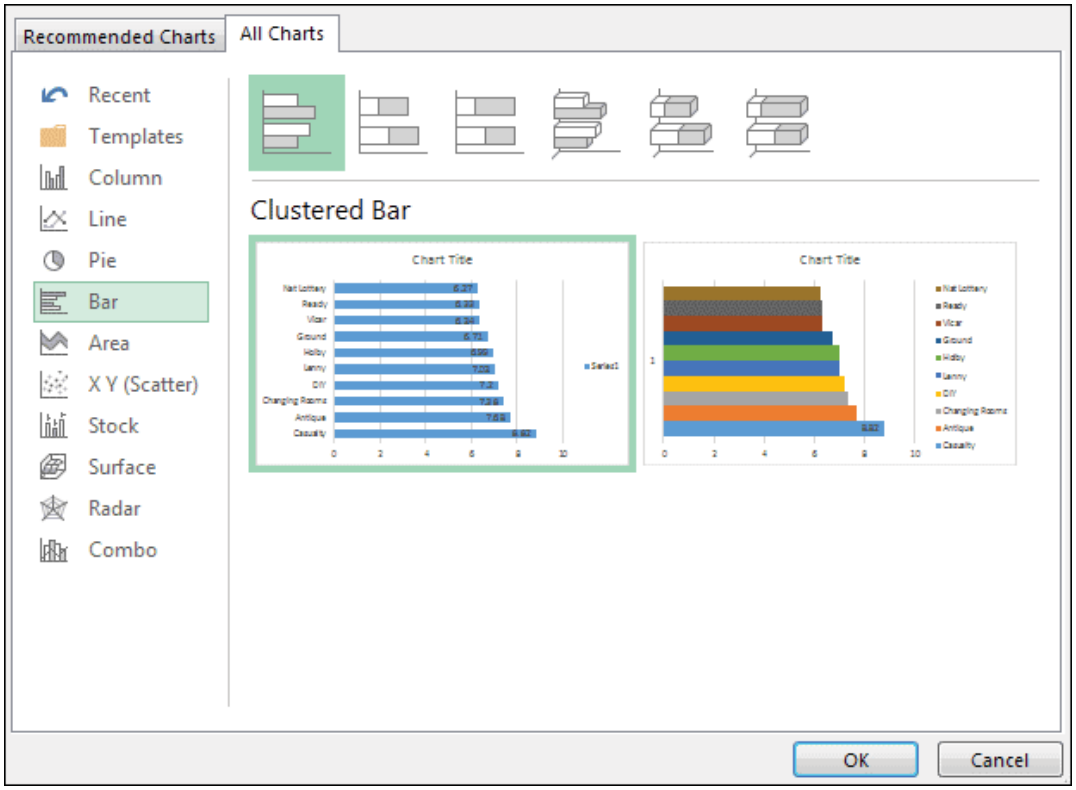


Then click **Change Chart Type**. You'll see a dialogue box appear. This one is from Excel 2007:

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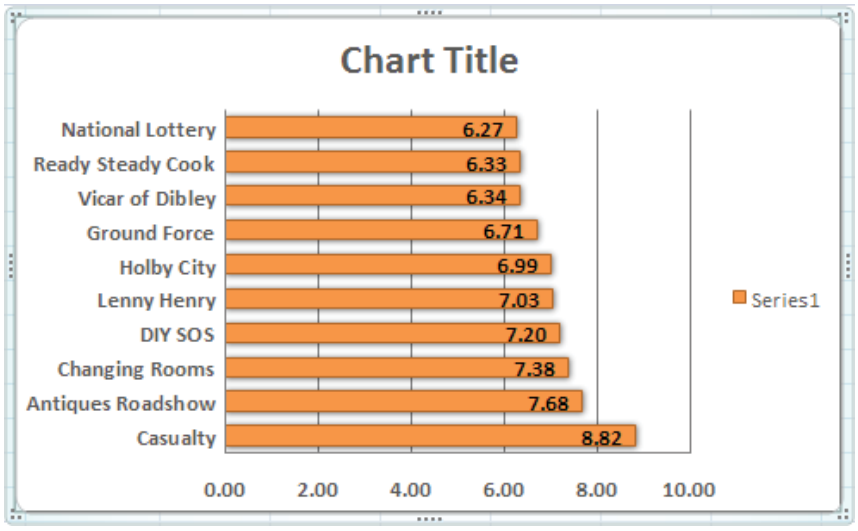


The dialogue box looks slightly different in Excel 2013:



Select **Bar** from the list on the left of the dialogue box, and click on the first Bar chart (Clustered Bar). Click OK to see your chart change:

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You can experiment with the types of chart in the dialogue box. But reset it to Bar chart, as above.

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In the next part, you'll see how to format a chart, so that you can change the Series 1 and Chart Title headings.

Chart and Series Titles in Excel 200 to 2013 -->

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The Chart Title and Series Title

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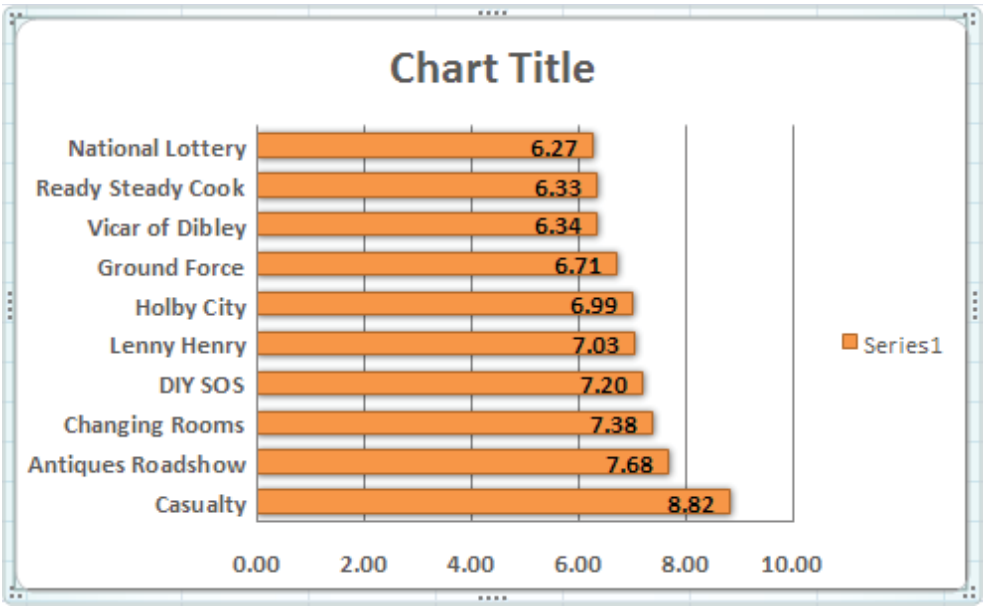
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Your chart from the previous section should now look like this:



Once you have your chart in place, there are plenty of formatting options in Excel. In the chart above, for example, the title says "Chart Title". And there's a not terribly descriptive orange square that says "Series 1" (your bars may be blue). We'll see how to change that in a moment. But first, the Chart Title. (If you don't have a title in Excel 2010, select the first layout in the **Chart Layouts** panel.)

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How to Change the Chart Title

To change the title of your chart, click on the title to select it:

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The circles surrounding the title tell you that it is selected. Once the title is selected, click on the letter "C" of Chart. Hold your left mouse button down and highlight the two words, as in the image below:



Once your title is highlighted, you can change it by simply typing a new one:



While the title is highlighted, you can select a different font and font size, if you want (on the Home panel in the Excel Ribbon at the top.)

To deselect the title, click anywhere outside of it.

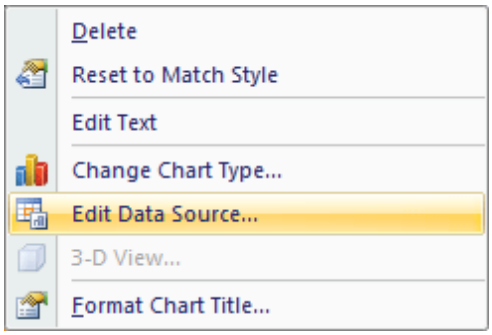
Free Text Mining in Excel
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Enable sentiment & text analysis in Excel with Textalytics add-in

Formatting a Series Title

To change the **Series 1** text on the Chart heading to something more descriptive, select the title as you did above:

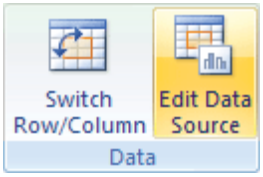


Make sure the circles are there, and then right click. You should see the following menu appear in Excel 2007:

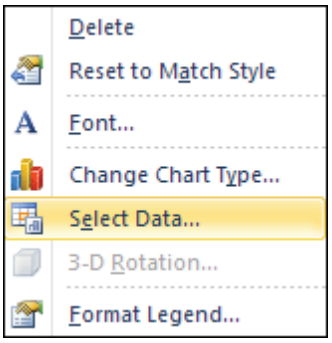


Click on "Edit data source". Alternatively, click the **Edit data source** item on the **Data** panel on the Excel 2007 Ribbon:

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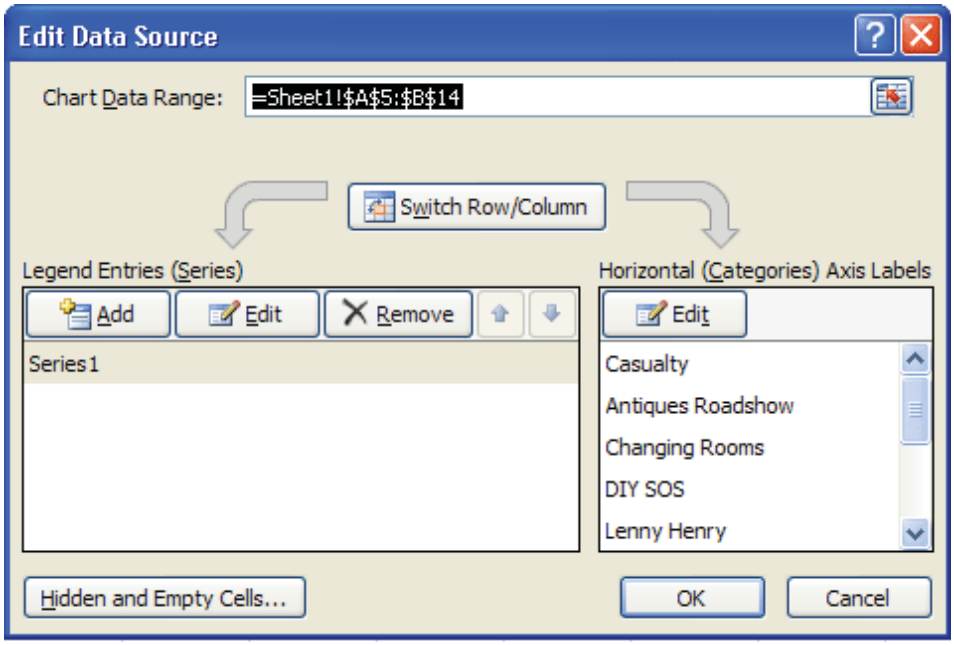


For Excel 2010 and 2013 users, your menu looks like this:



The item to click on the menu above will say **Select Data** instead of **Edit Data Source**.

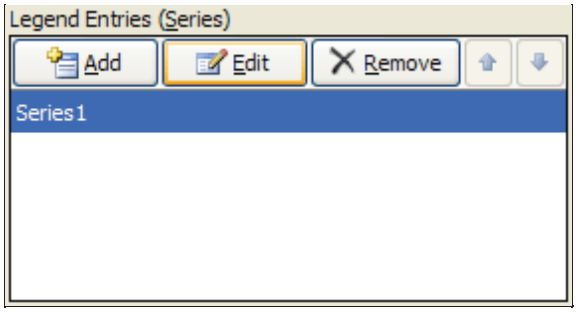
In both versions you should then see the following dialogue box appear.



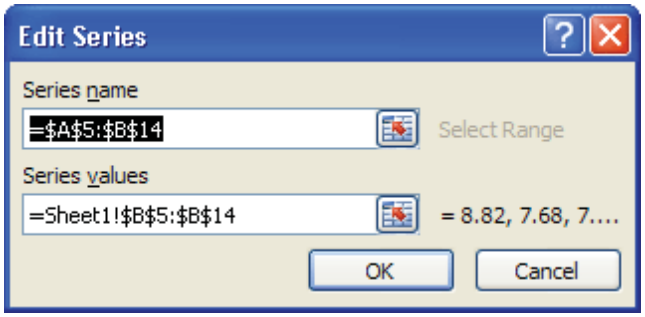
The **Chart Data Range** at the top of the dialogue box is highlighting the cells A5 to B14. This is the data we selected for the chart. Below this there is an area for **Legend Entries (Series)** and **Horizontal Axis Labels**. We'll see more of these later. For now though, we just want to change Series 1 into something more descriptive.

So click on Series 1 to highlight it. Then click the Edit button, as in the image below:

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When you click the **Edit** button, you'll see a new dialogue box appear - **Edit Series**. It should look like this:

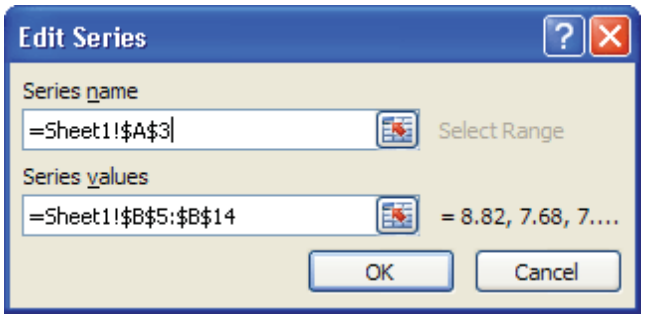


Notice the cells being referenced in the **Series name** area. They are cells A5 to B14. These same cells are also highlighted on the spreadsheet:

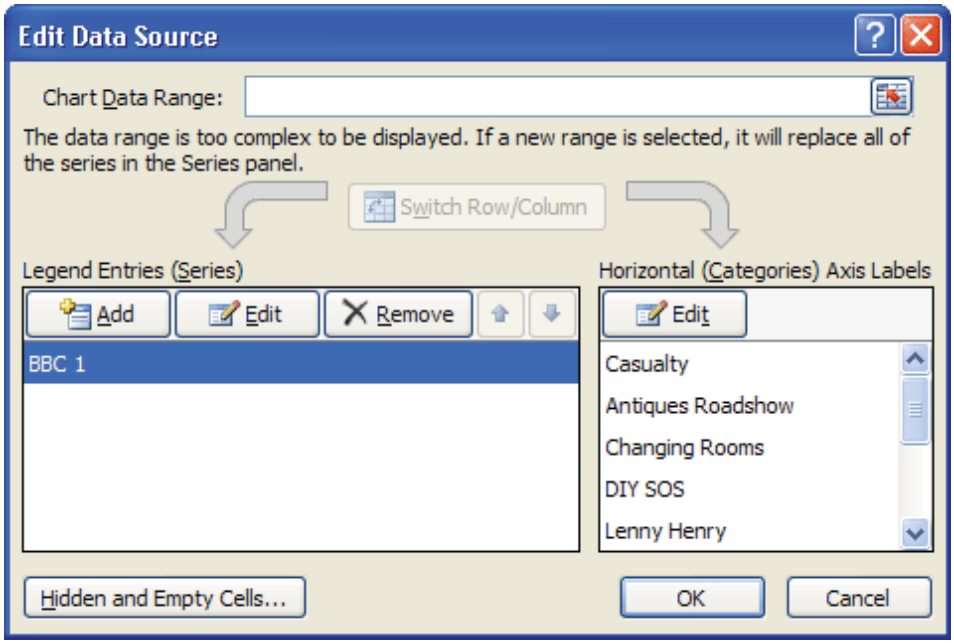
2		
3	BBC 1	
4		Millions
5	Casualty	8.82
6	Antiques Roadshow	7.68
7	Changing Rooms	7.38
8	DIY SOS	7.20
9	Lenny Henry	7.03
10	Holby City	6.99
11	Ground Force	6.71
12	Vicar of Dibley	6.34
13	Ready Steady Cook	6.33
14	National Lottery	6.27
15		
16		

Click on the BBC title instead, the one on Row 3 above. Your Edit Series dialogue box will have changed. The Series Name area will now say A3 (amongst all those dollars):

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Click OK to get back to your **Edit Data Source** dialogue box. The Series legend will now say BBC:



Click OK to return to your spreadsheet. But look what's happened to the chart. The **Series 1** has gone. Next to the orange square, we now have BBC 1:



We'll meet these boxes again when we create a chart from scratch. For now, let's see some more formatting option you can do with an Excel chart.

The Chart Layout Panels in Excel 2007 to 2013 -->

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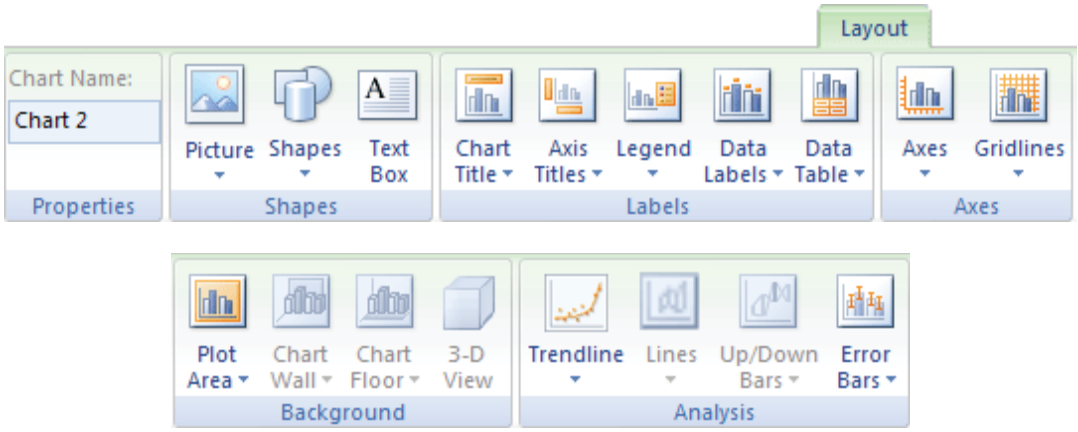
C# .NET

Java for Beginners

In the previous part of this lesson on charts, you saw how to format a chart with various dialogue boxes.

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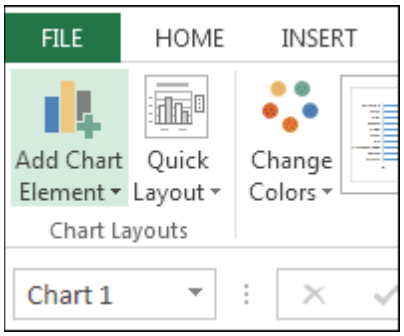
You can also format your charts using the menu items on the Excel Ribbon bar, at the top of the screen. With your chart selected, click the **Layout** menu (Not Excel 2013. See below for your Layout options). You should see this:



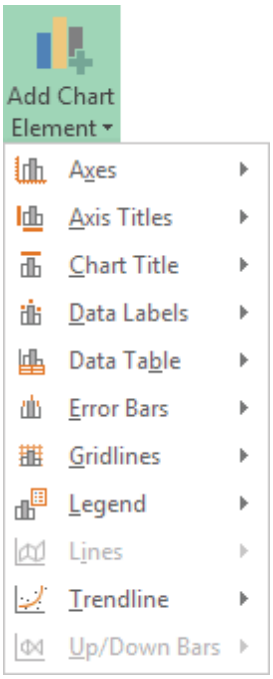
The Layout menu is a bit big for this page, so we've split it in two. But the chart Layout panel is split into a number of different sections (six in our version), and allows you to change the information in the chart.

For Excel 2013 users, your Layout options are on the Design tab still, on the far left, just under the File menu:

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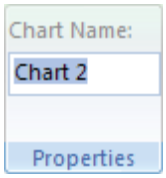


Click Add Chart Element to see th efollowing drop down list:



For all versions of Excel, The first thing you may want to do is to give your chart a name.

To change the name of your chart in Excel versions 2007 and 2010, locate the **Properties** panel on the Layout menu:

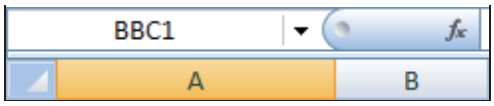


Highlight the default name in the textbox and type a new one:

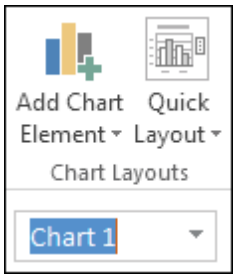


If you now click away from your chart, and then click back on it, you'll notice the name of the chart change:

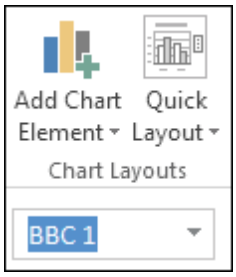
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For Excel 2013 users, locate the Name box just below Chart Layouts:

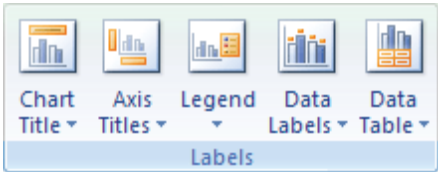


Highlight the default Chart 1. Type a new name (BBC 1) and press enter:



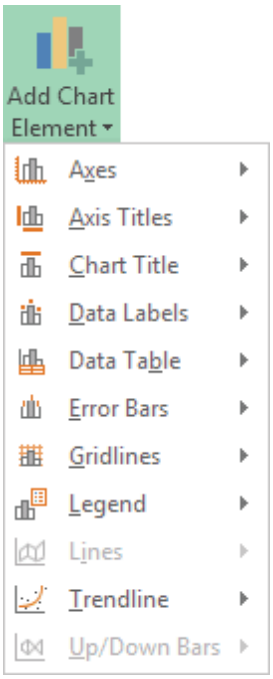
The Labels Panel in Excel 2007/2010

The **Labels** panel on the Layout menu lets you format the titles and legends on your chart. Here it is:

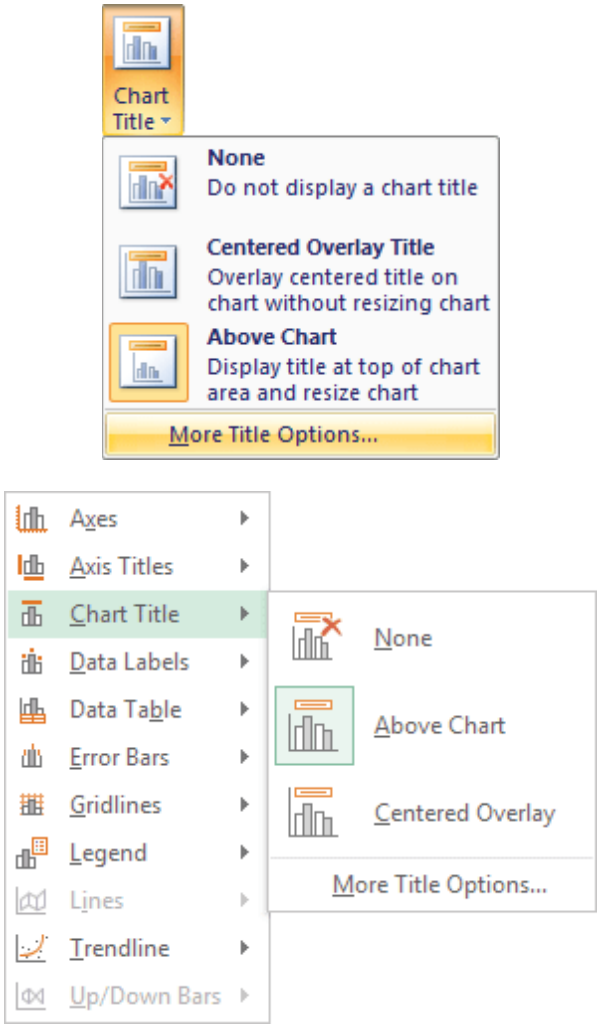


Or this for Excel 2013 users:

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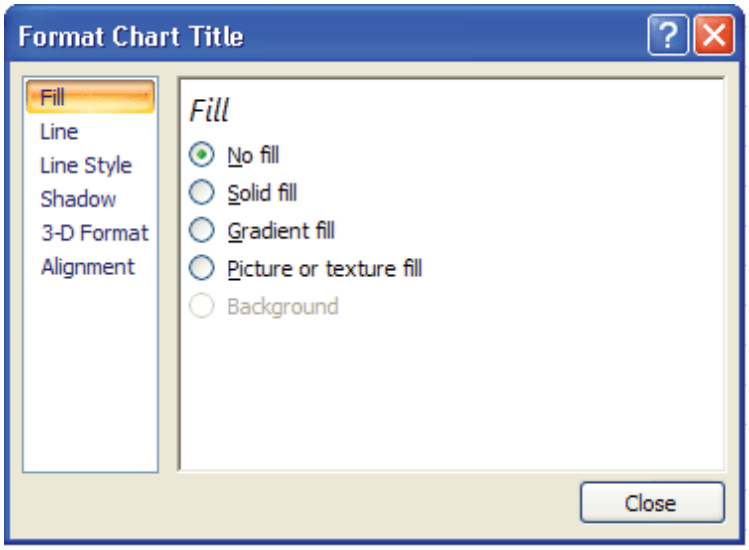


The first one is **Chart Title**. Click the arrow to see the options:



Click each item on the menu in turn to see what they do. Then click **More Title Options**. The following dialogue box will appear (Excel 2010 has more options. Excel 2013 users, see below for your options.):

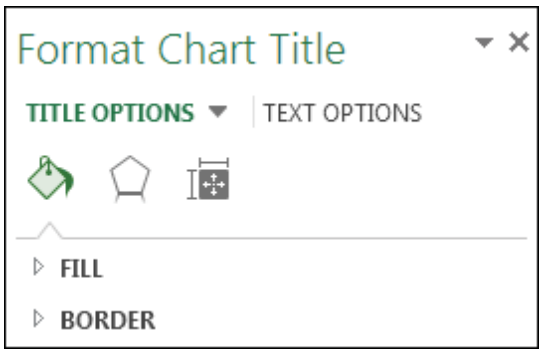
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As you can see, there are options to change the Fill, Line, Line Style, Shadow, 3-D format, and Alignment. Play around with the options on the dialogue box to see what they do. The only thing you're changing here is the Chart Tile. Click Close when you're done. If you don't like what you see, click the undo arrow at the top of Excel.

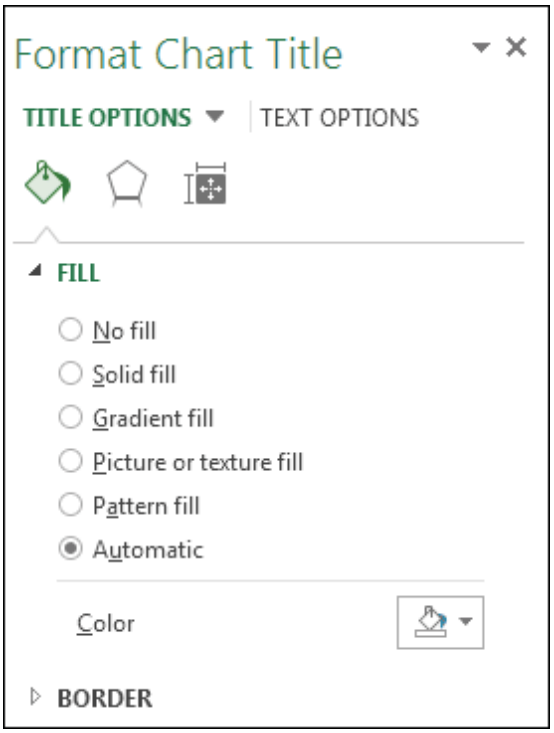
Formatting Chart Titles in Excel 2013

Excel 2013 users won't see a dialogue box. Instead, you'll see a panel appear on the right of the screen. This one:



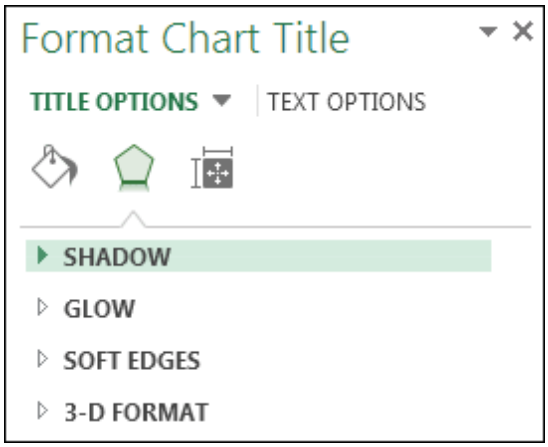
Click an arrow to see further options. Here are the options for Fill:

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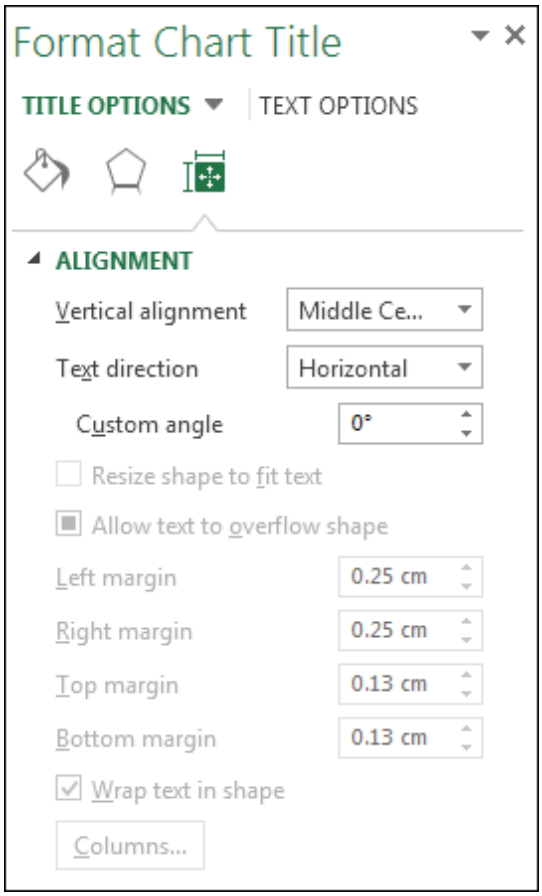
You can also click the icons at the top. There are three of them: a paint bucket, an Hexagon, and a resize symbol.

Click the Hexagon and you'll see these options:

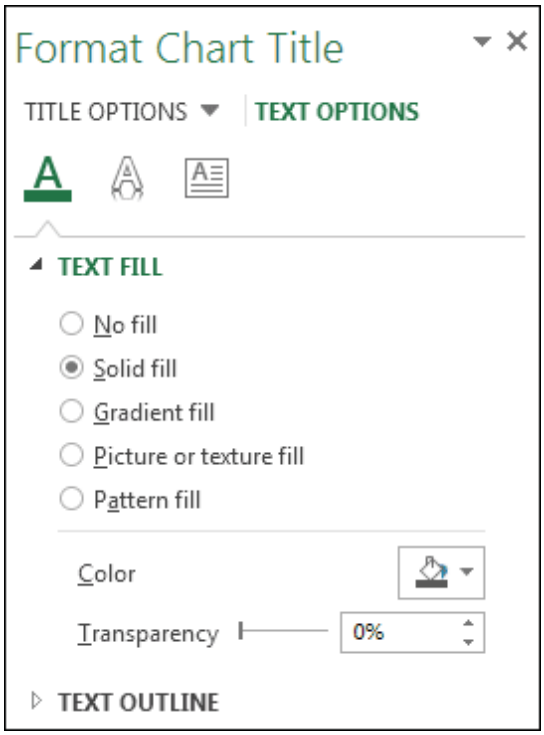


Click the Rezise symbol and the options will change to these:

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As well as the three symbols, you can click the Text Options, you to the right of Title Options at the top. You'll then see even more options, this time to change the text itself:



Play around with all and see how they work.

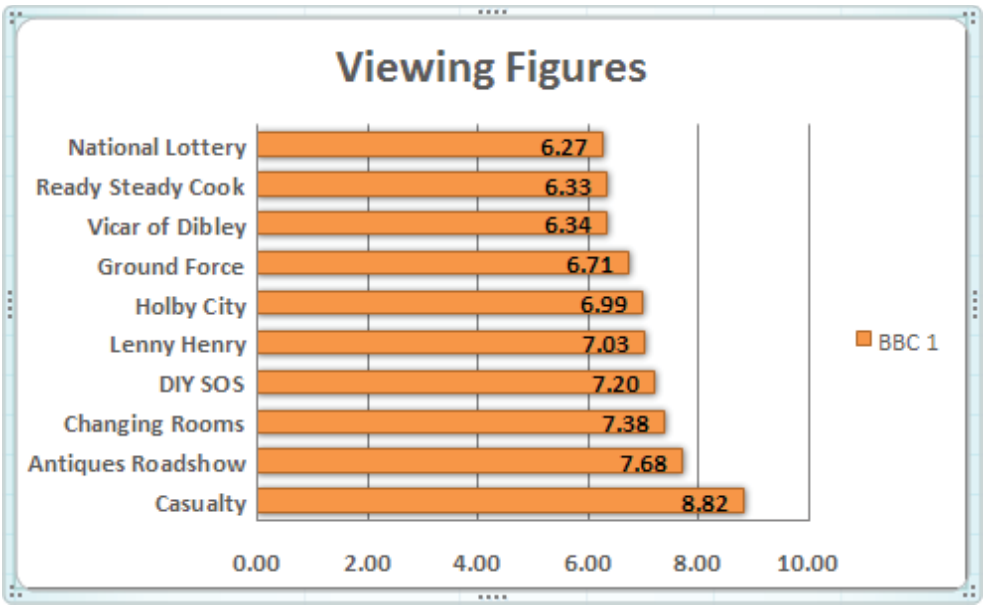
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Change the Axis Title in Excel 2007/2010

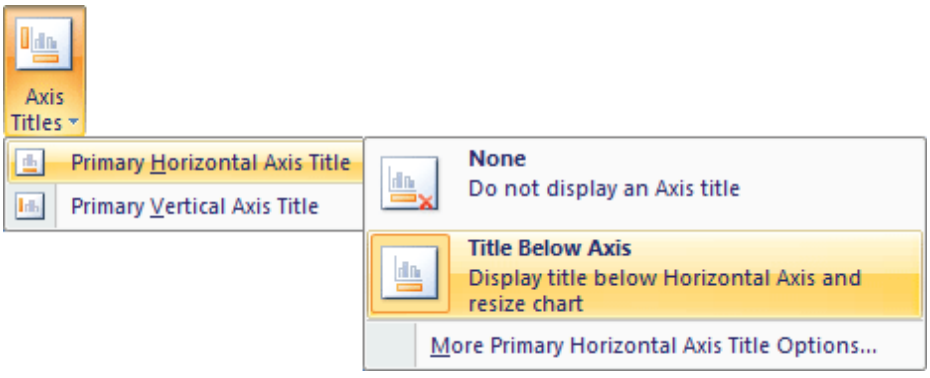
The next item on the **Labels** panel is the **Axis Title**. Click the down arrow to see the options:



At the moment, our chart has no Axis Title. It just has numbers running across the bottom. Someone looking at the chart won't know what the numbers represent. Here's what our Chart looks like at the moment:

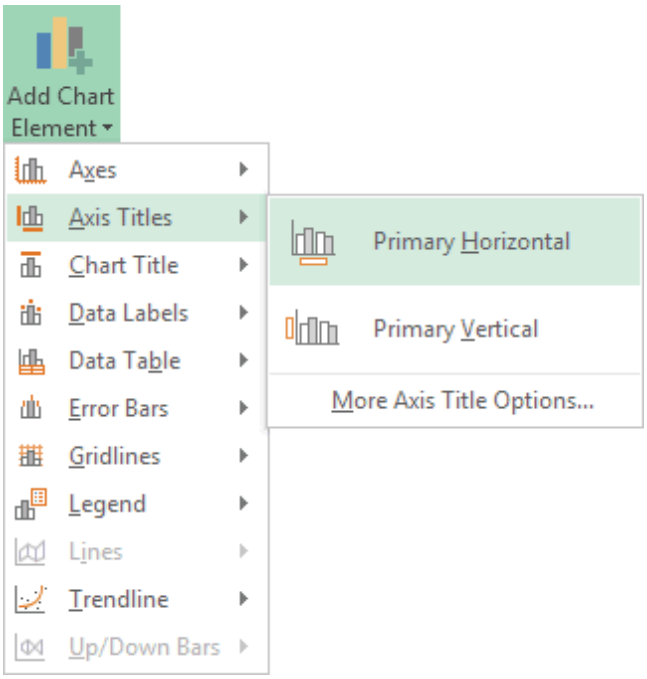


To add an Axis title in Excel 2007 and 2010, click on **Primary Horizontal Axis Title**. From the sub menu, click **Title Below Axis**.



In Excel 2013, select **Primary Horizontal** on the **Axis Titles** menu of **Add Chart Elements**:

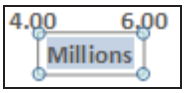
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When you click **Title Below Axis** or **Primary Horizontal**, a new title will be added to the chart:



Highlight the default text, and type your own:



Click away from the chart to see what it looks like:



We now have some explanation for what the numbers represent. You can add a Vertical Axis, as well. Click on **Primary Vertical Axis** Title and see how it works.

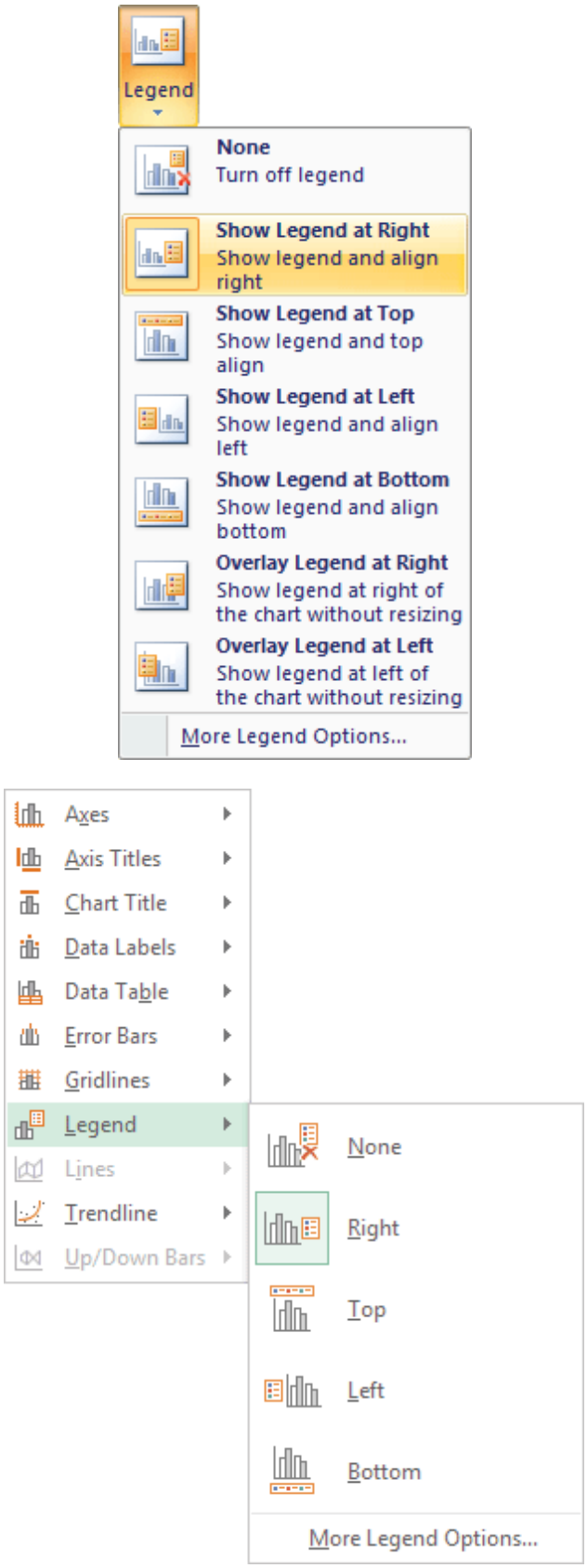
Chart Legend

The Chart's Legend is this one:



At the moment, our Legend is on the right of the chart. But you can move this. Click the **Legend** item on the **Layout** panel to see the various options:

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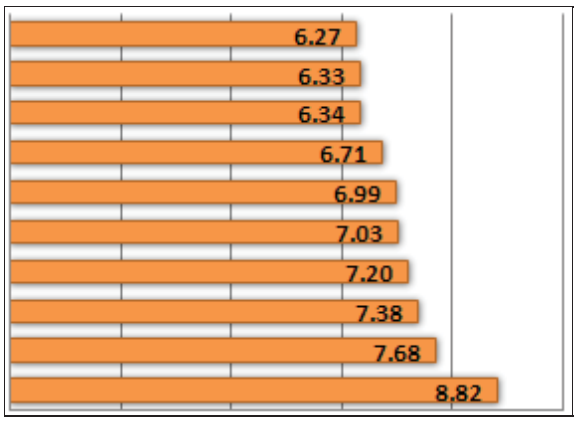


Click an option on the menu and watch what happens to your Legend. You should see it move around your chart.

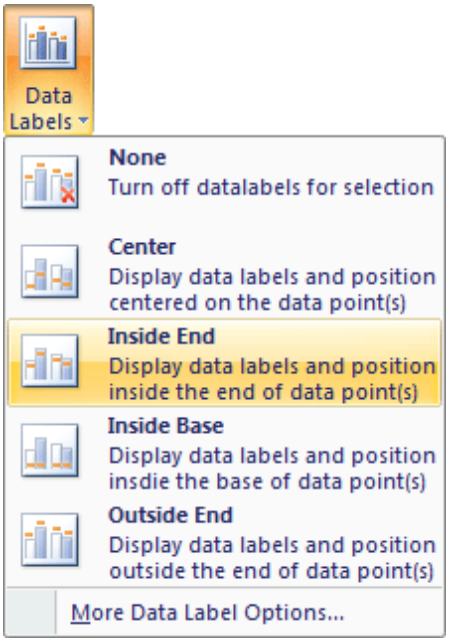
Adding Data Labels to an Excel Chart

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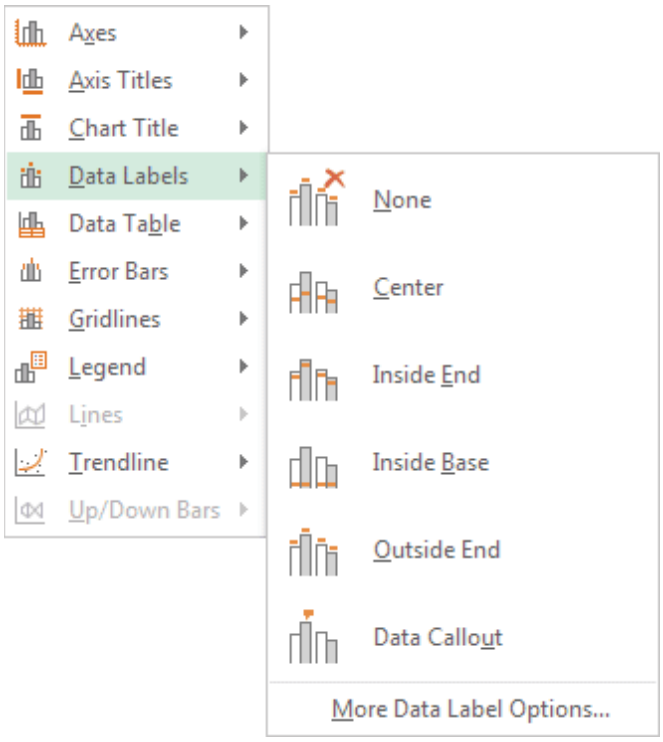
A Data Label is information overlaid on the chart bars. In our chart below, we have numbers overlaid on the orange bars:



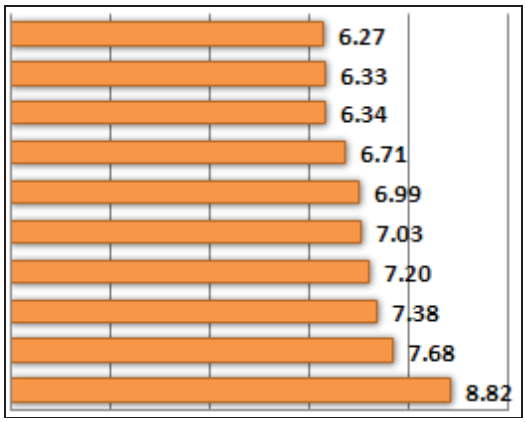
You can format these Data Labels. Click the **Data Labels** item on the **Labels** panel to see the following options:



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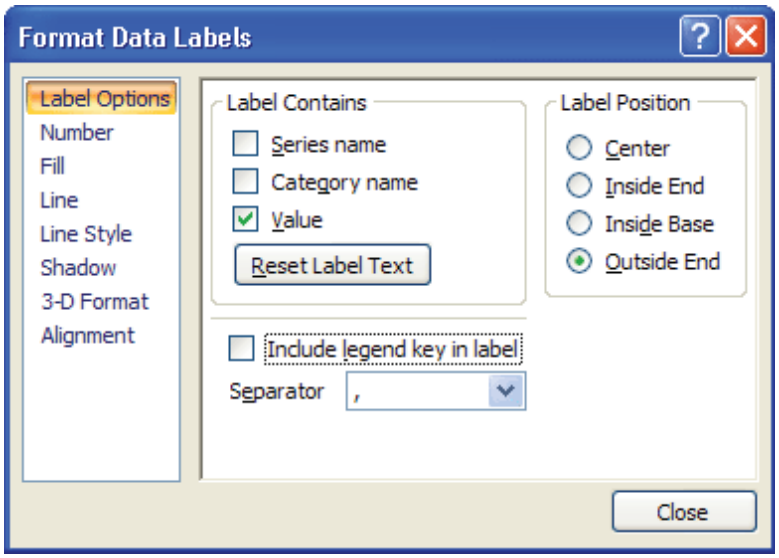


The one wat we have at the moment is **Inside Edge**. Click on **Outside End** and your Data Labels will look like this:



You can also see the options if you click **More Data Label Options** from the menu. You'll then see this dialogue box (In Excel 2013, again, you won't see a dialogue box. Instead, you'll see the Format panel appear on the right of your screen. The same options as below will be available, however.):

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Again, play around with the options to see what they do. The first two, Label Options and Number, are the ones you'll probably use most often.

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In the next part, we'll take a look at the Format Chart panels in Excel . You can create some impresive looking charts very quickly on this panel!

Format Chart Panels in Excel 2007 to 2013 -->

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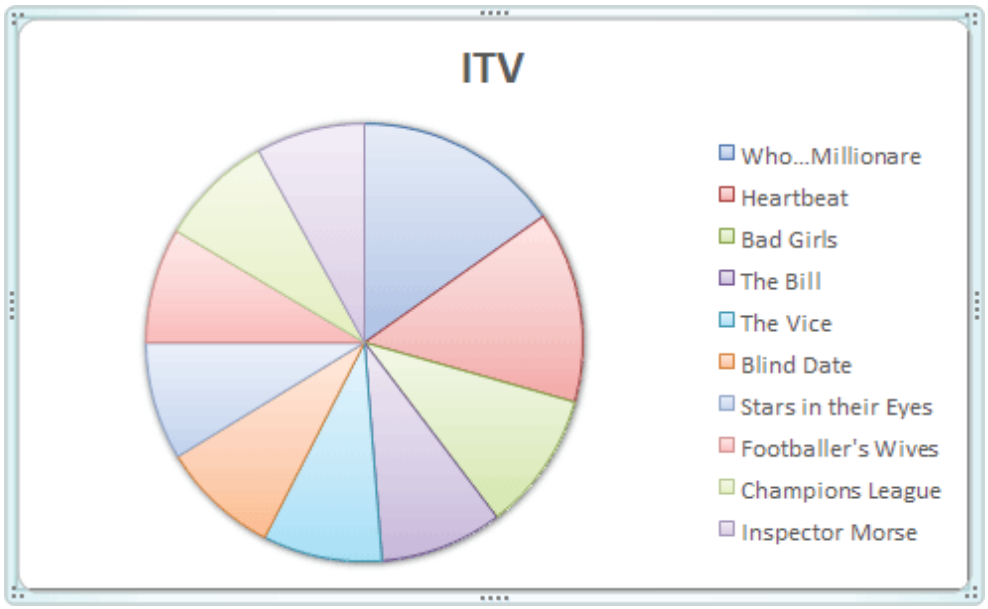
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In the previous tutorial, you created an Excel Pie Chart that looks something like this:



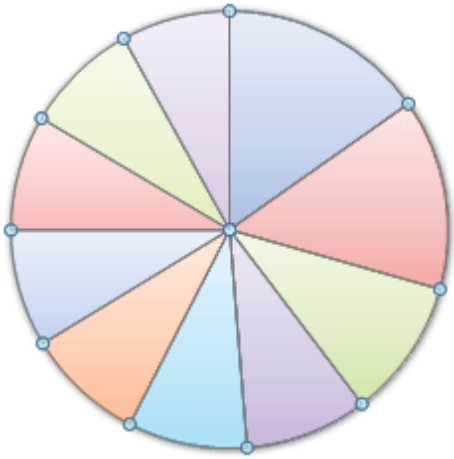
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At the moment, though, there's no information about what each segment represents. We're going to add the numbers from our ITV viewing figures. These ones:

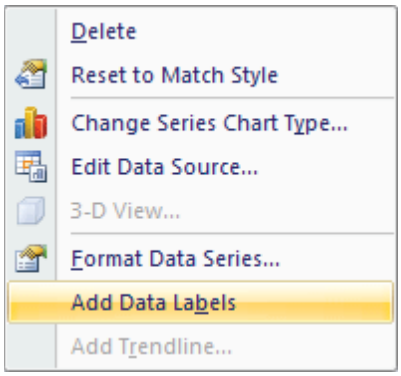
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	ITV
Who...Millionare	10.99
Heartbeat	10.22
Bad Girls	7.42
The Bill	6.54
The Vice	6.37
Blind Date	6.31
Stars in their Eyes	6.26
Footballer's Wives	6.17
Champions League	6.09
Inspector Morse	5.81

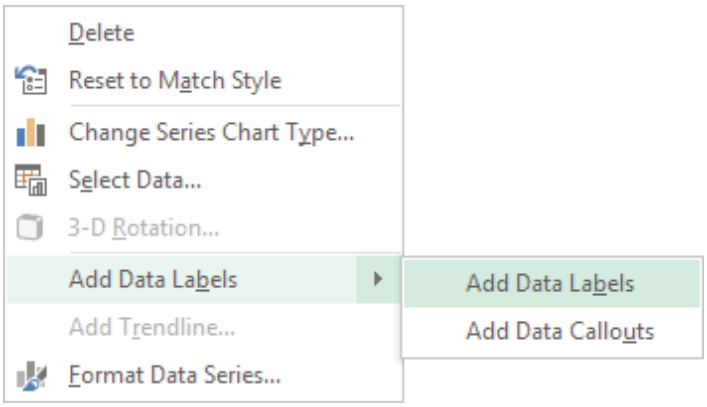
To add the numbers from our E column (the viewing figures), left click on the pie chart itself to select it:



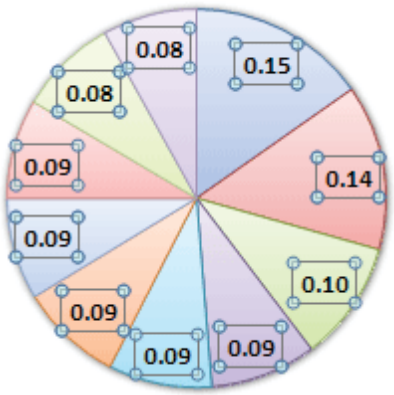
The chart is selected when you can see all those blue circles surrounding it. Now right click the chart. You should get the following menu:



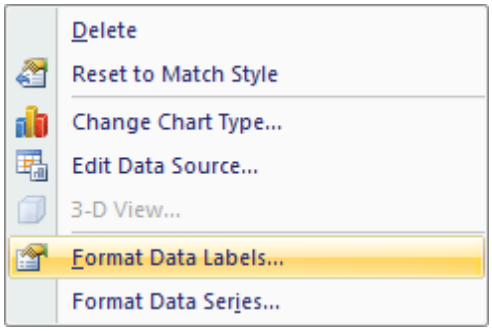
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From the menu, select **Add Data Labels**. New data labels will then appear on your chart:

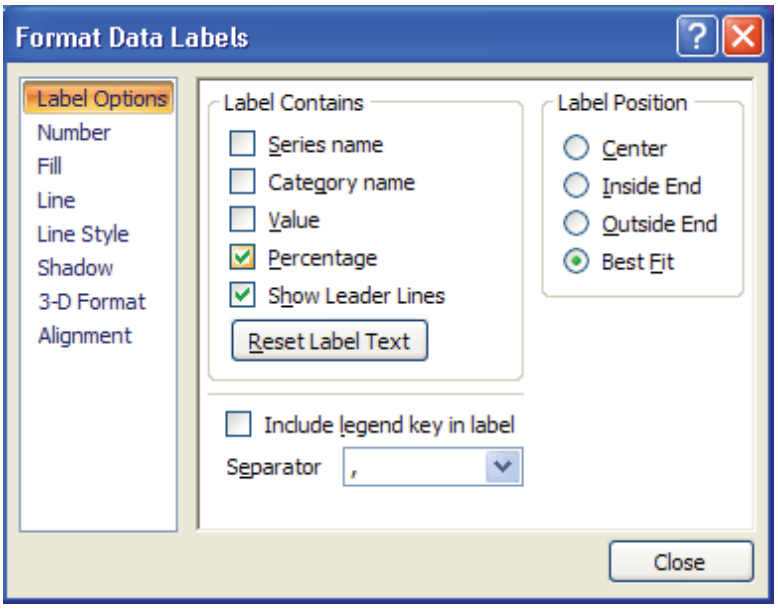


The values are in percentages in Excel 2007, however. To change this, right click your chart again. From the menu, select **Format Data Labels**:

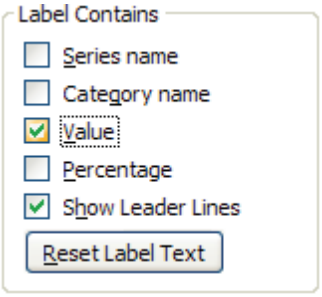


When you click Format Data Labels , you should get a dialogue box. This one:

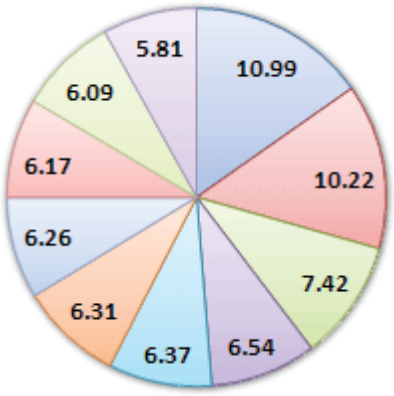
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If there's a tick in Percentage, untick this and select Value:



Your chart will then have the correct numbers:



Overall, the chart looks OK. But we can add some formatting to it. in the next part, you'll see how to format each individual segement of the Pie Chart. We'll change the colour of one segement, and separate it.

Format Pie Chart Segements in Excel 2007 to 2013 -->

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How to Format Pie Chart segments

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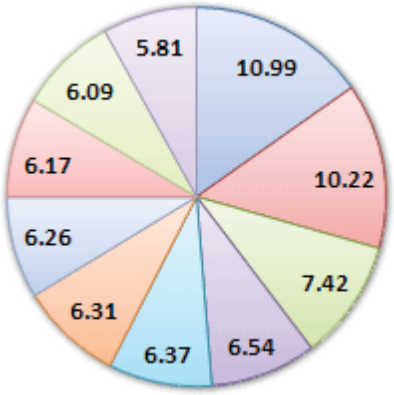
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From the previous lesson, your Pie Chart segements look like this:



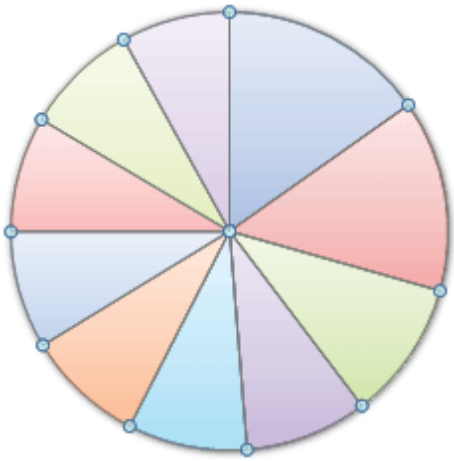
You can change the colour of each slice of your pie chart, and even move a slice. Let's change the colours first.

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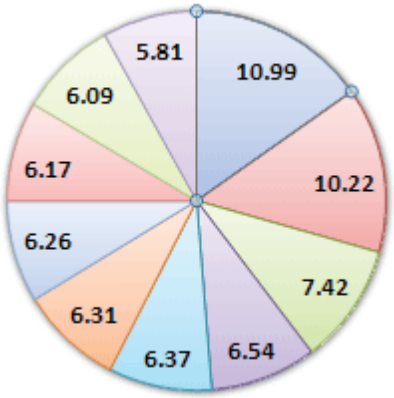
Change the Colour of a Pie Chart Segement

Left click on the pie chart itself to select it:

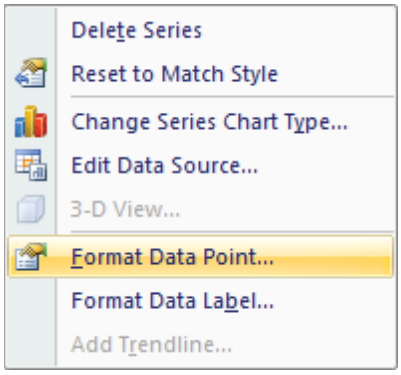
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It is selected when you can see those round handles. Now left click on one of the segments to select just that individual slice. It's a little bit tricky, but if you do it right your pie chart should look like this:

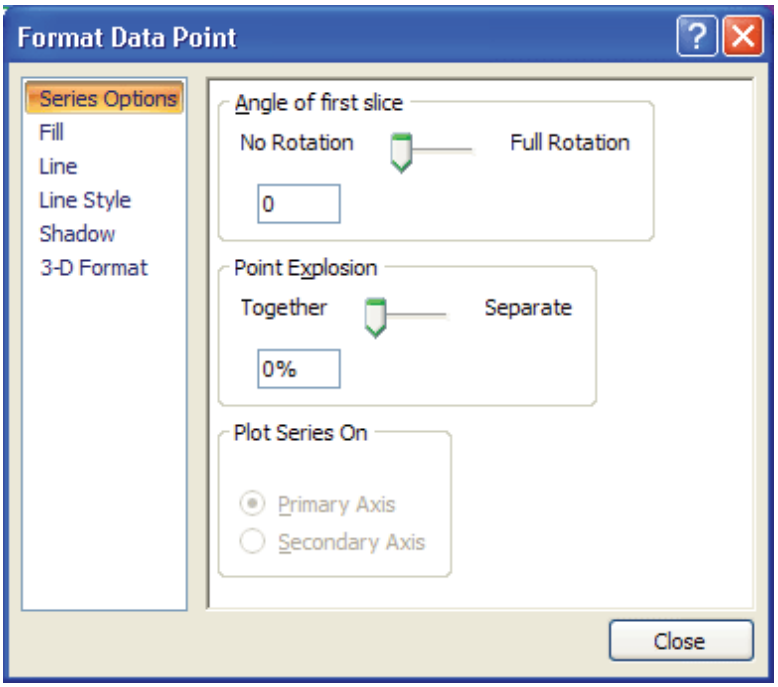


In the image above, only the 10.99 segment is selected. You should see round circles surrounding just that segment. Now right click your segment and, from the menu that appears, select **Format Data Point**:

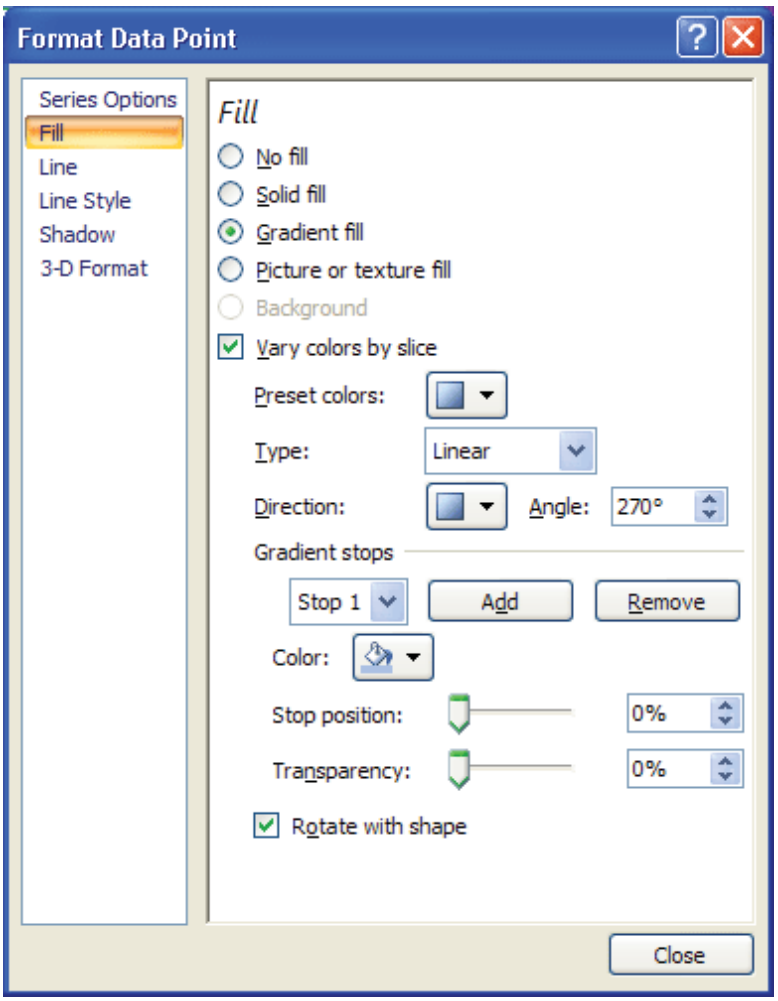


You should see the following dialogue box appears (you'll see a panel appear on the right of your screen in Excel 2013. The same options will be available as the ones below, however):

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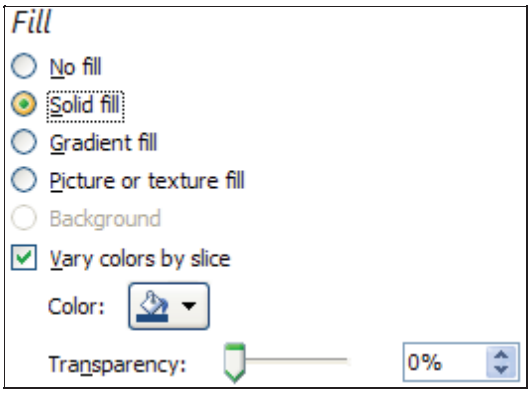


Click on **Fill** from the options on the left (Excel 2013 user should click the paint bucket icon at the top, then click to expand the Fill option). The dialogue box changes to this:

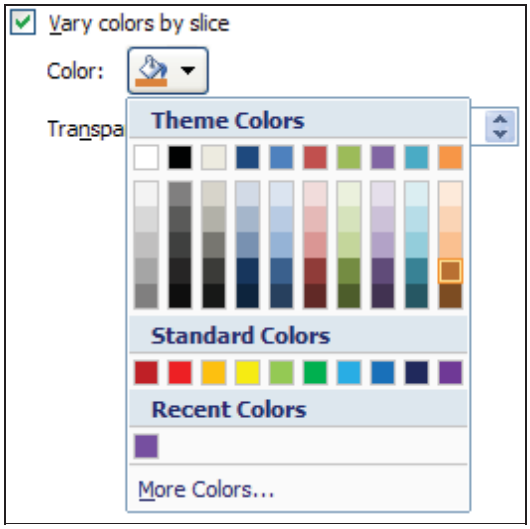


There are quite a lot of options to experiment with. But select the **Solid Fill** option:

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Now click the colour picker, and choose a new colour for the segment:



We've gone for a dark orange colour, but select any colour you like.

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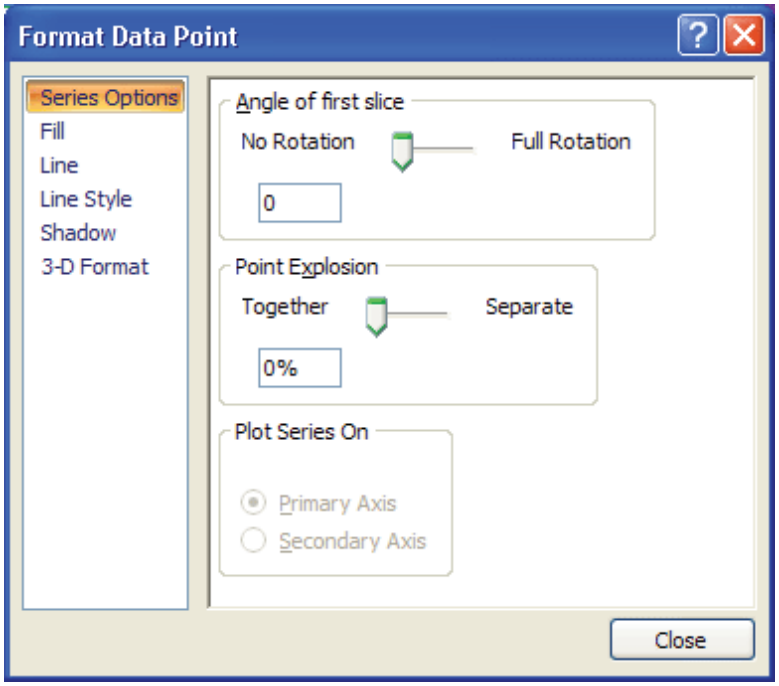
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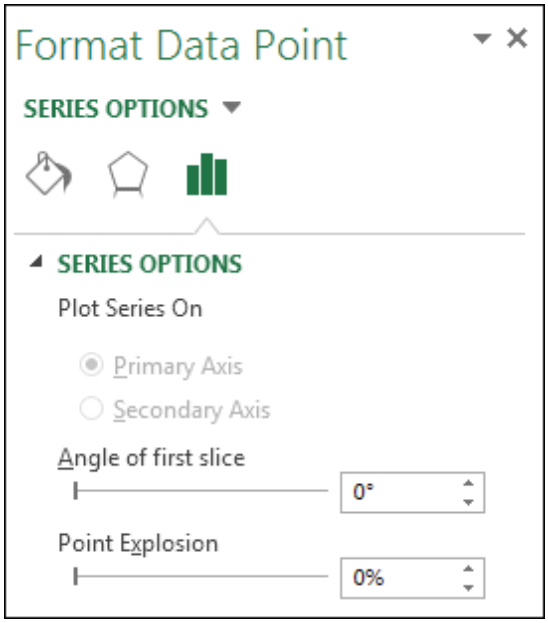
Move a Pie Chart Segement in Excel

To move the slice that you've just coloured, click back on **Series Options** from the options on the left:

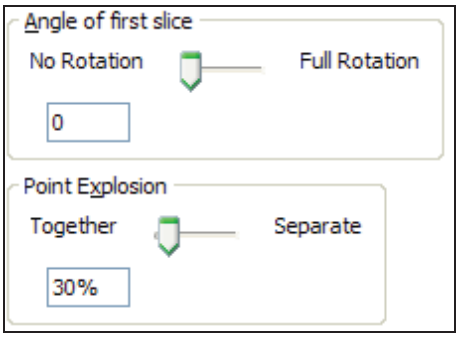
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In Excel 2013, click the three bars icon:

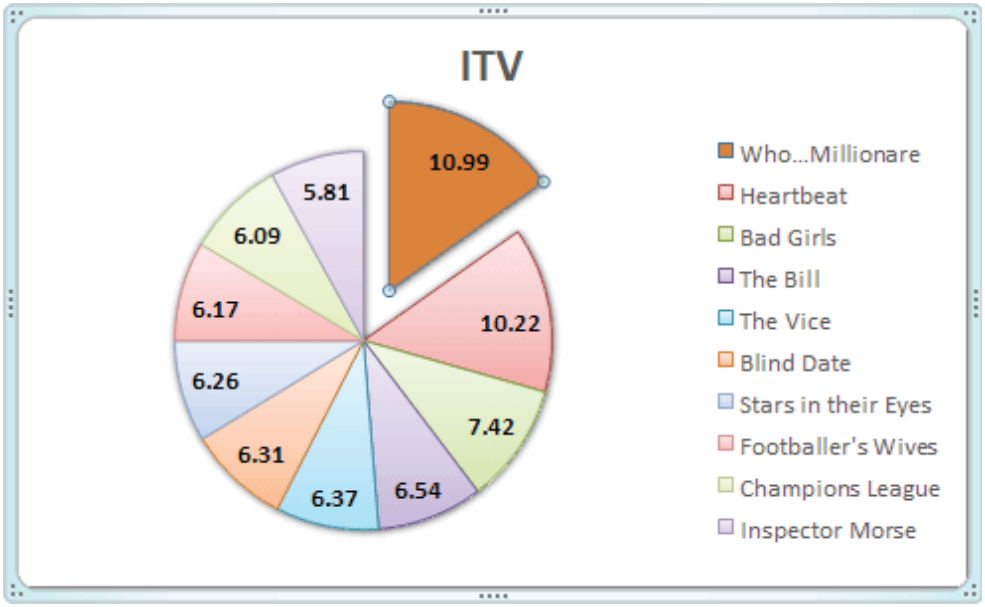


Set the Point Explosion slider to about 30%



Now click the Close button. Your chart should look something like this one:

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Change the rest of the slices in exactly the same way. You can format the rest of the chart exactly like you did for the Bar chart. But it looks quite impressive as it is!

In the next part, we'll look at our third and final chart style - a 2D Line Chart.

Create a 2D Line Chart in Excel 2007 to 2013 -->

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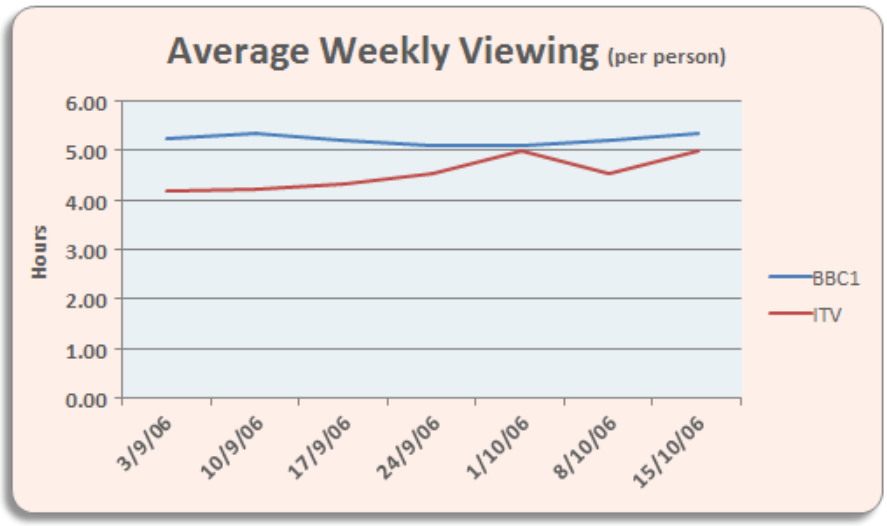
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For this last chart, we'll compare the viewing figures of BBC1 and ITV. A line chart is better for this type of data. The chart we'll create looks like this:



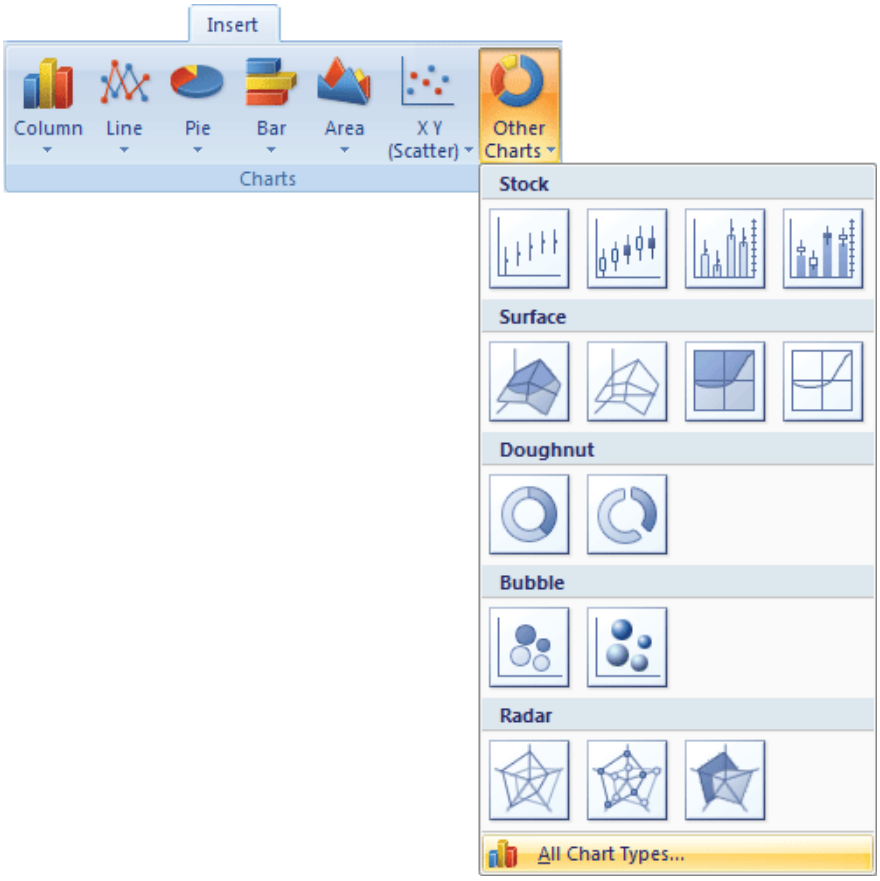
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We're comparing how many hours per week a person watches BBC1 with how many hours they watch ITV. You'll need some data, of course. Start a new spreadsheet and enter the same data as below:

	A	B	C	D	E	F	G	H
1	Average Weekly Viewing (Hrs.Mins per person 15/10/06 to 3/09/06)							
2								
3		3/9/06	10/9/06	17/9/06	24/9/06	1/10/06	8/10/06	15/10/06
4	BBC1	5.27	5.37	5.23	5.13	5.12	5.21	5.37
5	ITV	4.19	4.23	4.33	4.54	5.00	4.57	5.01
6								

Once you have your spreadsheet data, highlight the cells A3 to H5. Now click **Insert** from the Excel Ribbon bar. Locate the **Charts** panel, and click on **Other Charts**. From the menu, select **All Chart Types** (In Excel 2013, there is no Other Charts option. See below for what you should do):

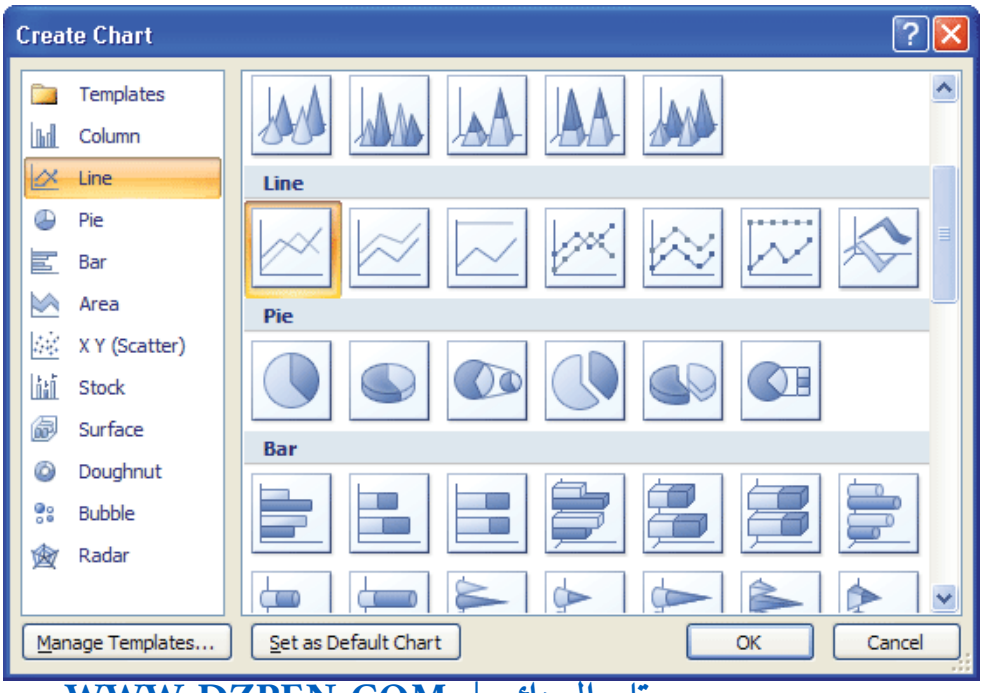
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In Excel 2013, click the **Recommended Charts** item instead of Other Charts:

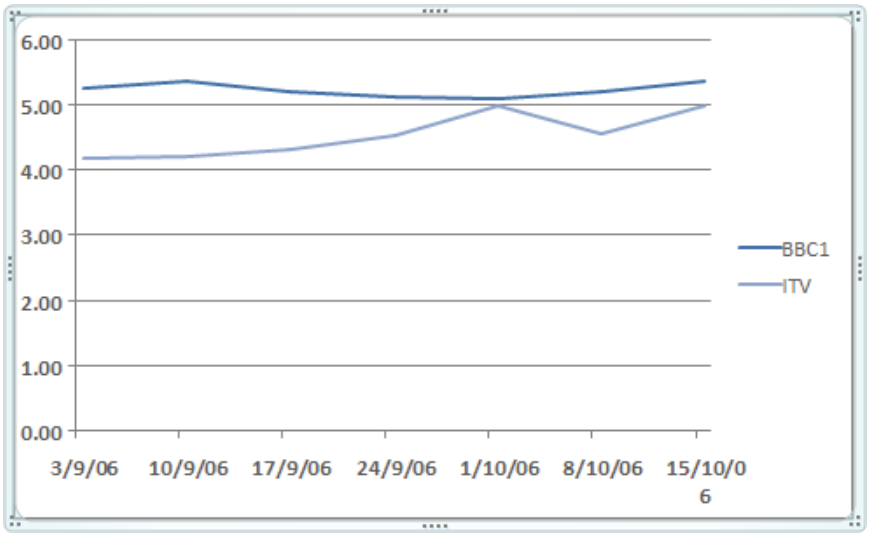


When you click **All Chart Types**, you'll get a dialogue box popping up (Excel 2013 users shoudl click the **All Charts** tab on their dialogue box):

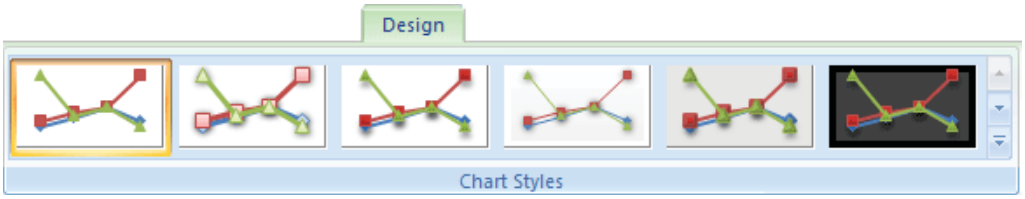


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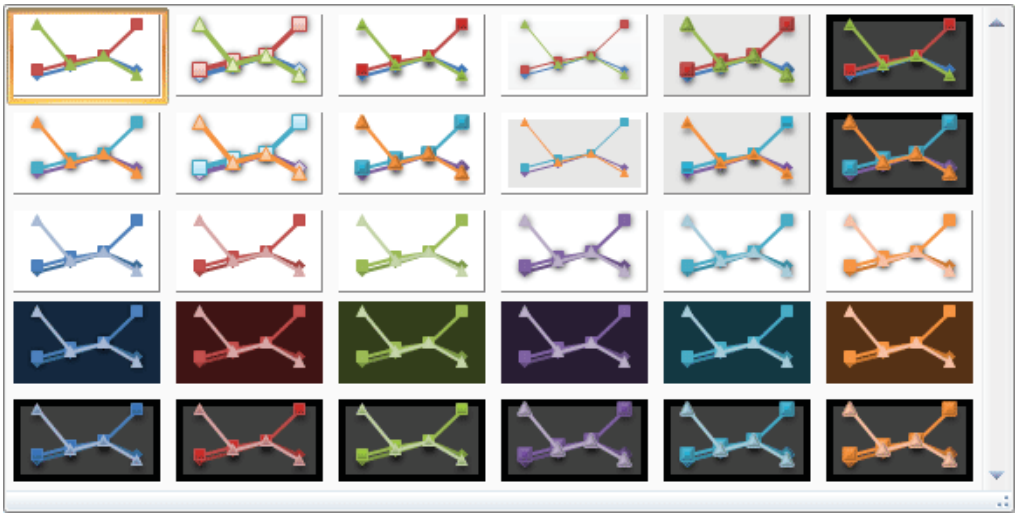
From the dialogue box, the left hand side shows all the chart templates. Click on **Line**. Select the first Line chart, the one highlighted in the image above. Click OK and Excel will insert your chart. It should look like this:



The chart looks a bit plain, at the moment. You can change the colour of the lines for BBC and ITV. Locate the **Chart Styles** panel on the **Design** menu:

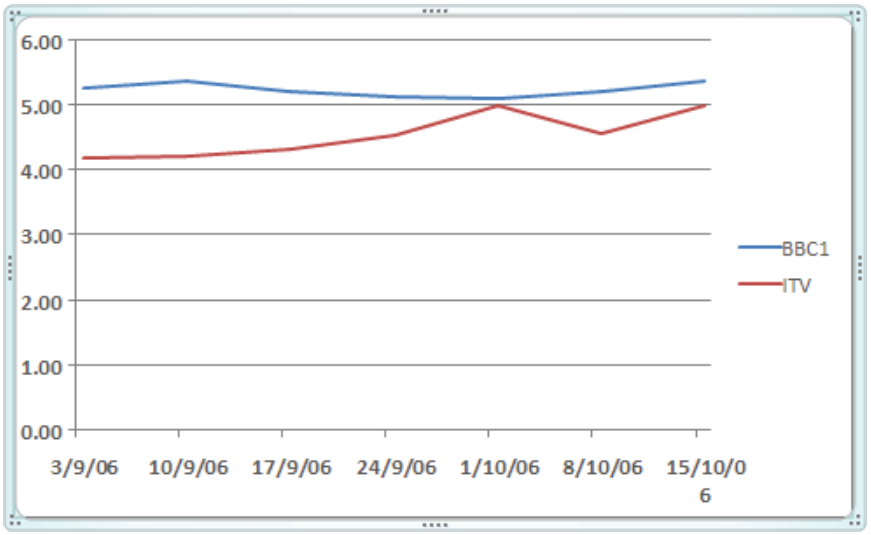


Click the down arrow on the right of the **Chart Styles** panel to reveal the available styles:



We've gone for the first one, top left. When you select a style, your chart will change:

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The lines are more distinct now. The dates at the bottom don't look too impressive, though! In the next part, you'll see how to format the dates on the bottom Axis.

Format Data Axis in Excel 2007 to 2013 -->

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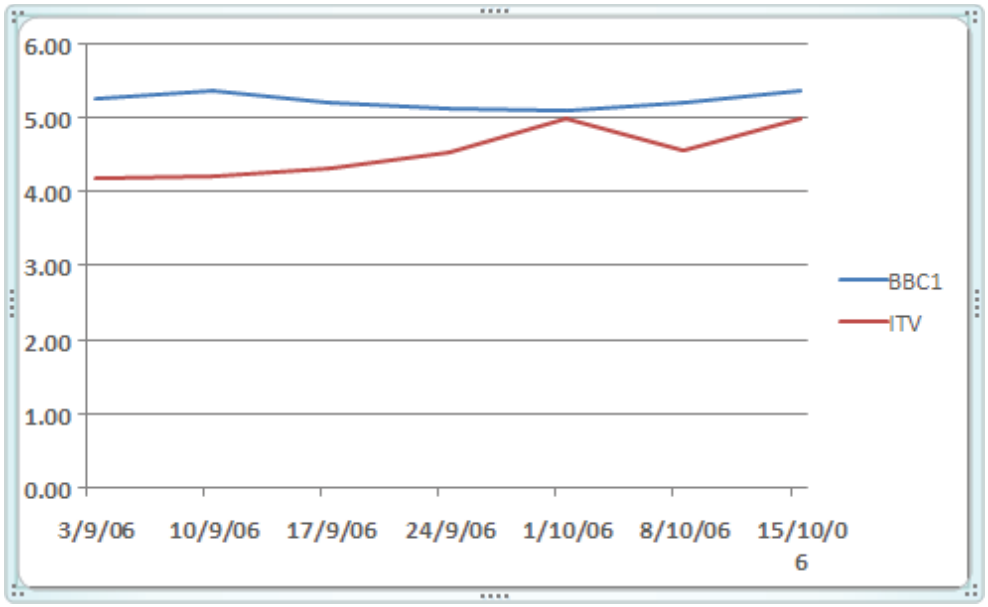
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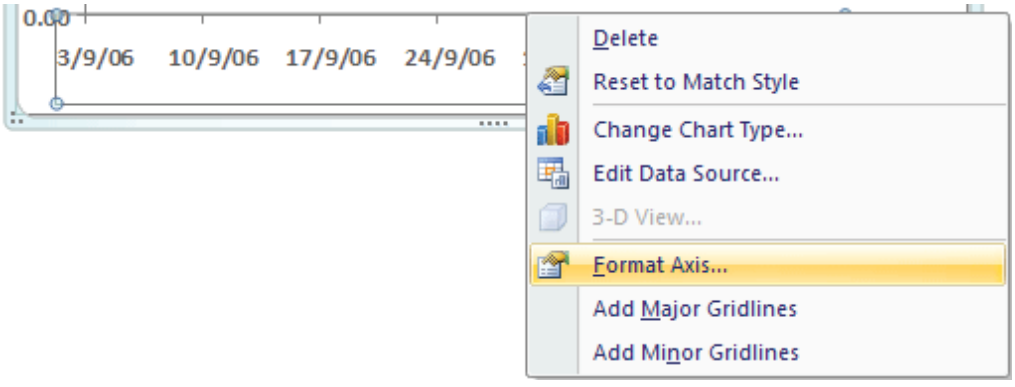
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Java for Beginners

From the previous lesson, your 2D Excel Line Chart should look like this:

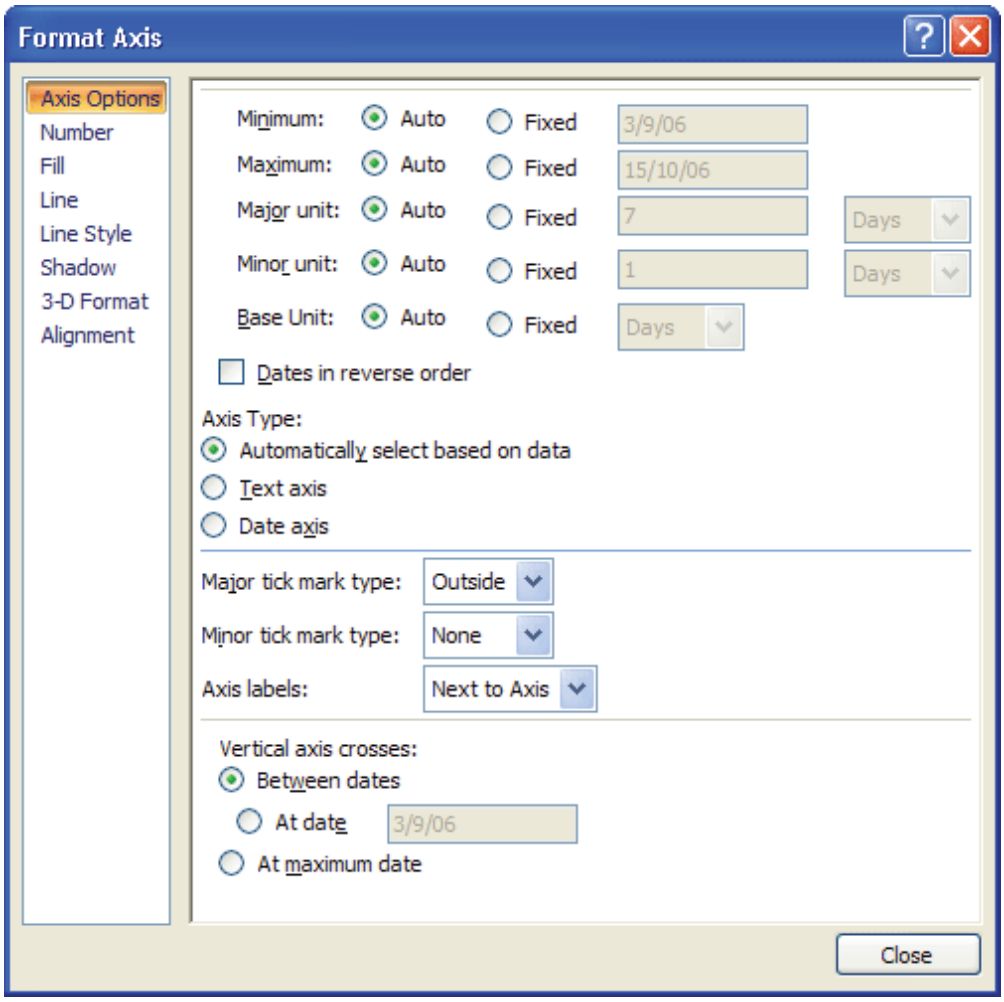


To format the dates on the bottom Axis, click on them with your left mouse button. With the dates Axis selected, right click. You should see this menu:

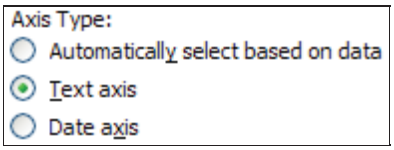


Select **Format Axis** from the menu, and you'll see the following dialogue box appear (Excel 2013 users will see a panel appear on the right of the screen, instead of a dialogue box):

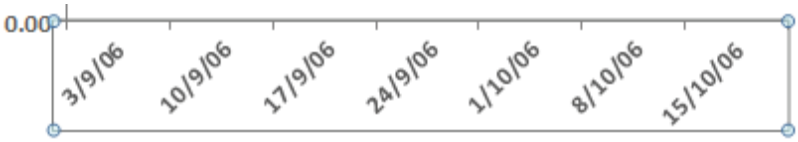
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Under **Axis Type**, select **Text Axis**:



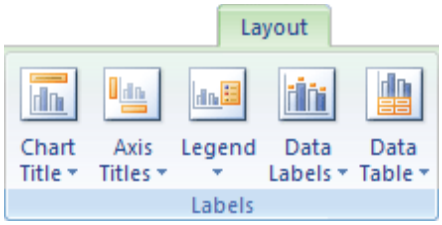
Your dates should end up in the middle. (Our version of Excel was a little buggy. We had to click Date axis, then click back on Text axis to get the dates in the middle.)



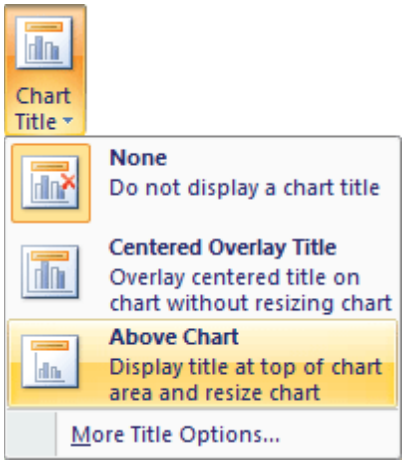
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Adding an Axis Title

To add an Axis label at the top of your chart, if you have Excel 2007 or Excel 2010, click the **Layout** menu at the top of Excel. Then locate the **Labels** panel:

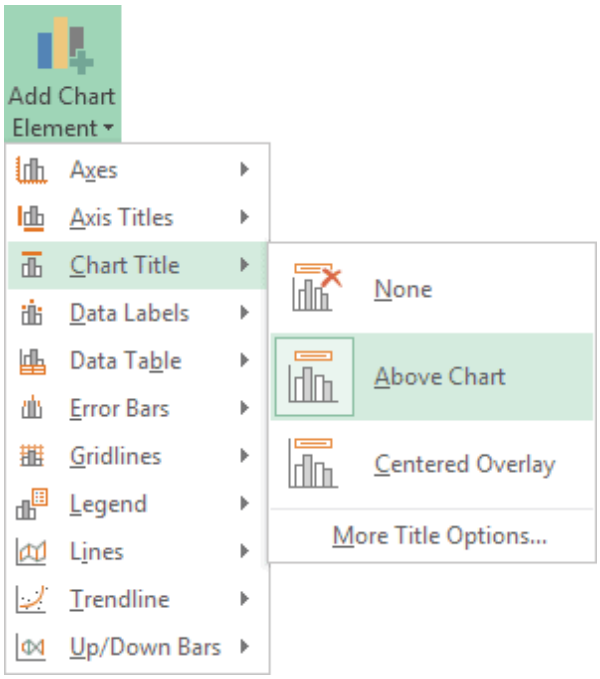


Click on **Chart Title**. From the menu, select **Above Chart**:

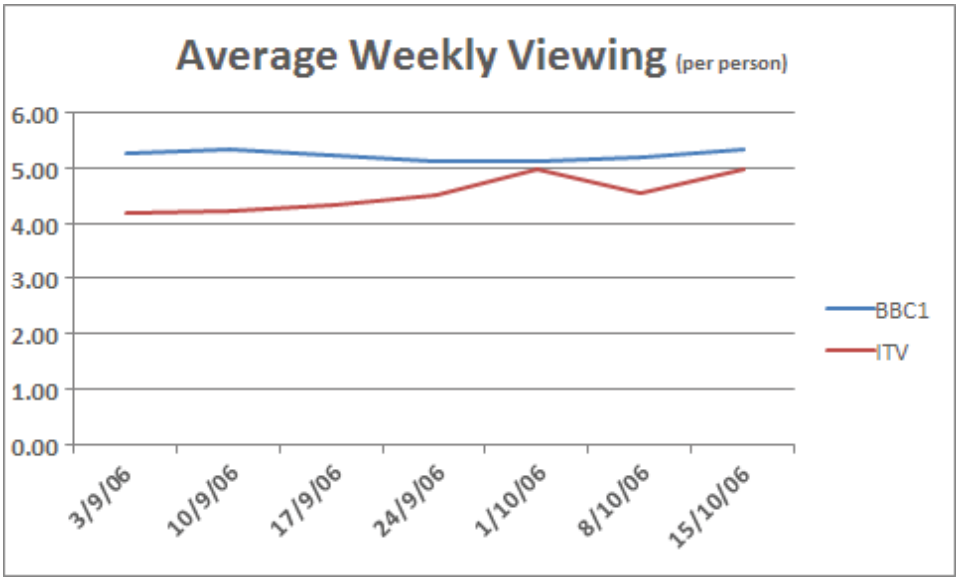


If you have Excel 2013, however, stay on the **Design** Ribbon and locate the **Chart Layouts** panel on the left, just under the File menu. Click **Add Chart Element**, then **Chart Title > Above** Chart:

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You will then see a default title appear at the top of the chart. Highlight the text, and type a title of your own:

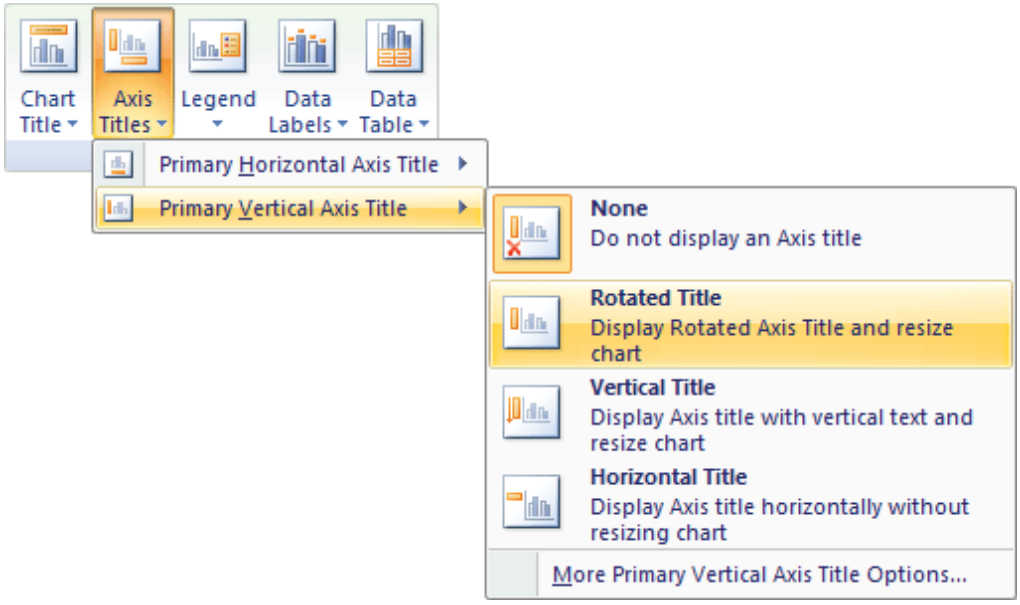


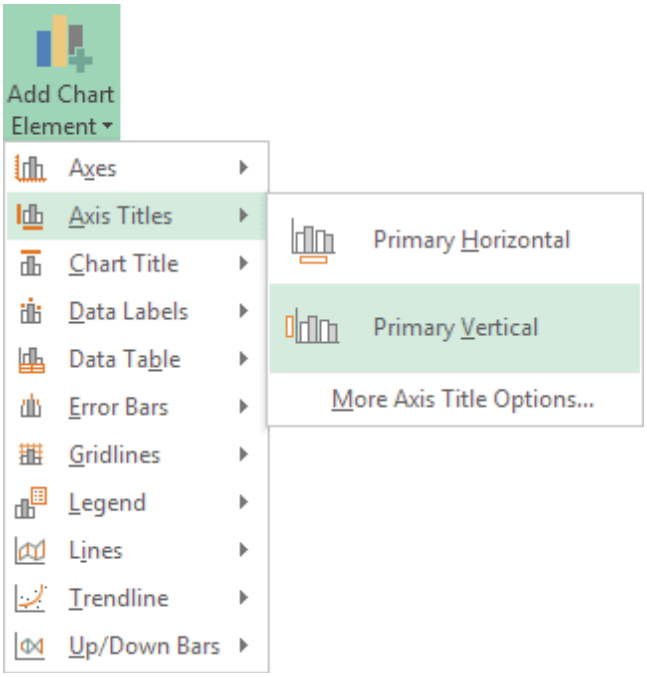
Add a Left Axis

We now need to add an Axis for the numbers running up the left of the chart. The numbers are the hours per week that people watch each channel - 0 to 6.

From the Labels menu still, select **Axis Titles > Primary Vertical Axis Title > Rotated Title**:

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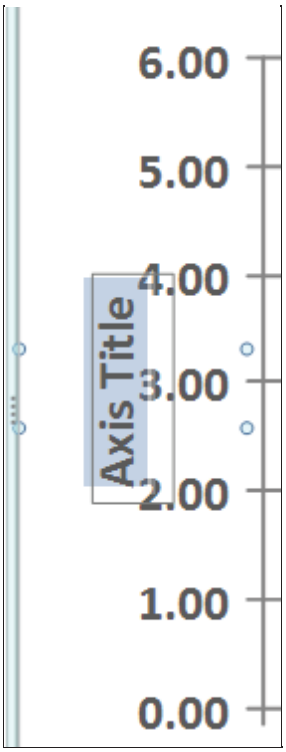




(Excel users won't have **Rotated Title** option - the title will roate by itself.)

This will add a title like the following one:

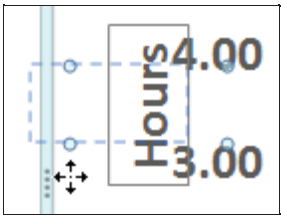
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Highlight the default title and type **Hours**. You can move the title to the left by clicking and dragging. This is a little tricky, though! Use the Zoom tool at the bottom of Excel to zoom in on your target:

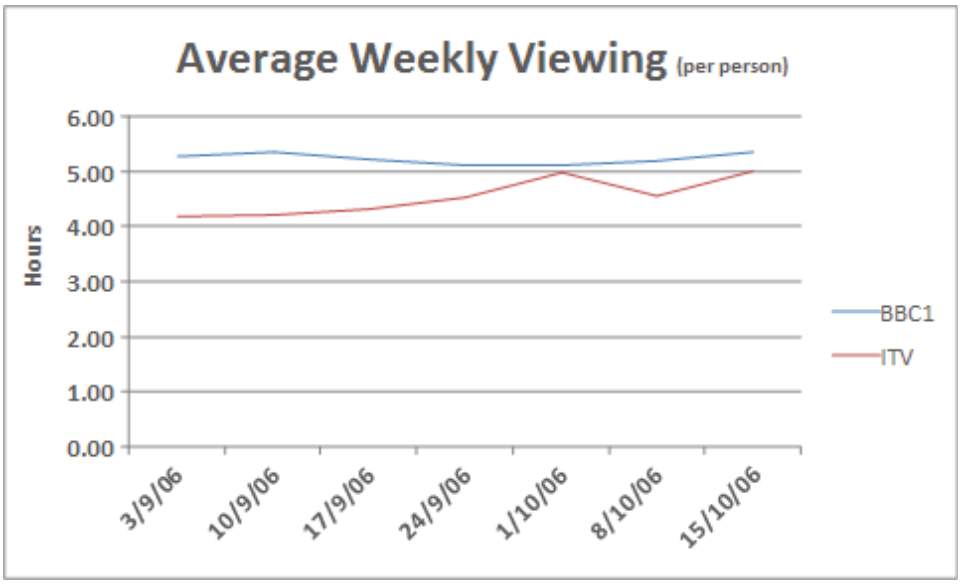


Move the Axis in to position:

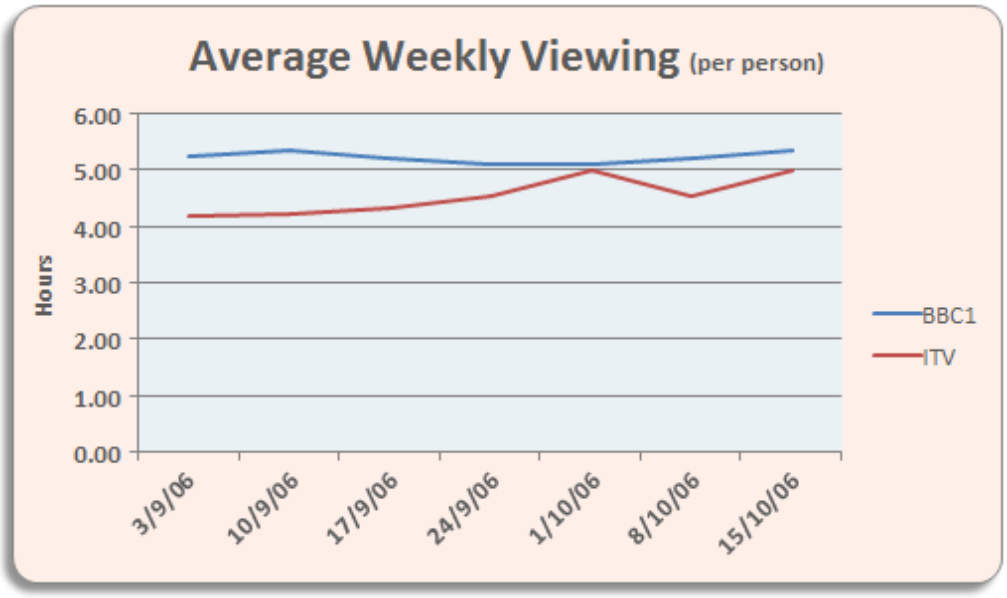


When you're done, your chart should now look like this one:

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Spruce it up a bit by adding a bit of fill colour, rounded edges, and shadow. You've already done this previously, so we won't go through it again. When you're done, it may look like ours:



And that's it for line charts. If you've been following along from the beginning, you should now have some impressive Excel chart skills.

In the next part, we'll move on and do some more work on Formulas.

Excel 2007 to 2013 and Formulas -->

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In earlier parts of this course, you used addition formula quite a lot. You saw that the basic way to add things up was by doing this:

=A1 + B1 + C1

You've also used the in-built SUM function:

=SUM(A1:C1)

Whichever of these two you used, the answer was the same - Excel will add up whatever numbers you have in the cells A1, B1, and C1. The two methods above are adding up consecutive cells. But what if you want to add up the following, non-consecutive cells: A1, B1, C1, D9?

Well, you can combine the two methods. So you can do it like this:

= Sum(A1:C1) + D9

or you can do it like this:

= Sum(A1:C1, D9)

For the first method, just type a plus sign after your SUM function, followed by the cell you want to include:

= Sum(A1:C1) + D9

You can include as many other cells as you like:

= Sum(A1:C1) + D9 + E12 + G25

You can even use another SUM function:

= Sum(A1:C1) + SUM(G1:H1)

But you are just telling Excel which cells in your spreadsheet that you want to include in your addition formula.

The second method to add up non-consecutive cells starts in the same way: use a

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SUM function, and separate your consecutive cells with a colon:

= Sum(A1:C1)

To include the non consecutive cells, type a comma, followed by the cell you want to include:

= Sum(A1:C1, D9)

You can include other cells, as well:

= Sum(A1:C1, D9, E12, G25)

The thing to note is that all the cells are between the round brackets of the SUM function. Excel knows that SUM means to add up, so it sees each cell reference separated by commas, and then includes them in the addition.

To give you some practice, try this exercise.

Exercise

Create a simple spreadsheet with the number 3 in cells A1, B1, C1 and D1. Enter another number 3 in cell A2. Use one of the non consecutive addition formulas above to add up the values in all five cells. Your spreadsheet will then look like this, once you have the correct formula:

	A	B	C	D
1	3	3	3	3
2	3			
3				
4	15			
5				

In the picture above, cell A4 displays the correct answer.

Selecting Non Consecutive Cells

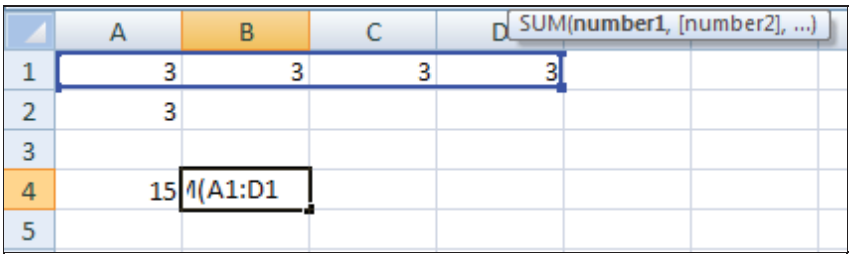
Another way to select non-consecutive cells for your SUM functions is by holding down the CTRL key on your keyboard, and then left click in the cell you want to add. Try this:

- Click inside a different cell in your spreadsheet (B4, for example). Then click inside the formula bar at the top
- Now type the following into the formula bar (Don't forget to add the colon at the end):

=SUM(A1:

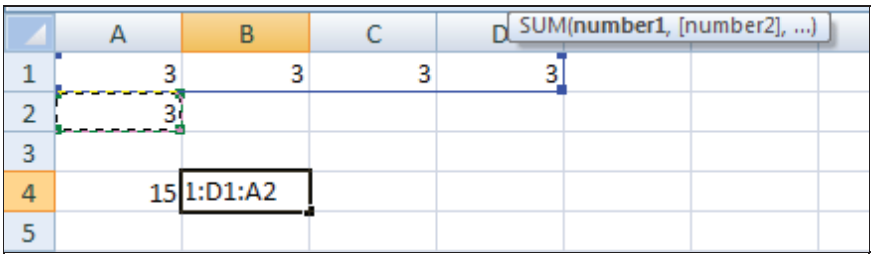
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- The cell A1 will be highlighted on the spreadsheet. It will have sizing handles, so that you can stretch the selection
- Hold your left mouse button over the bottom right blue square, and drag to cell D1. You spreadsheet should look like this:



Excel will add the cells to your formula. But it will also add a colon after D2. We don't want this, because a colon means "add up a range of cells". So delete the colon and type a comma instead.

Now that you have the cells A1 to D1 selected, hold down the left CTRL key on your keyboard. Keep it held down, and click inside cell A2 with your left mouse button:

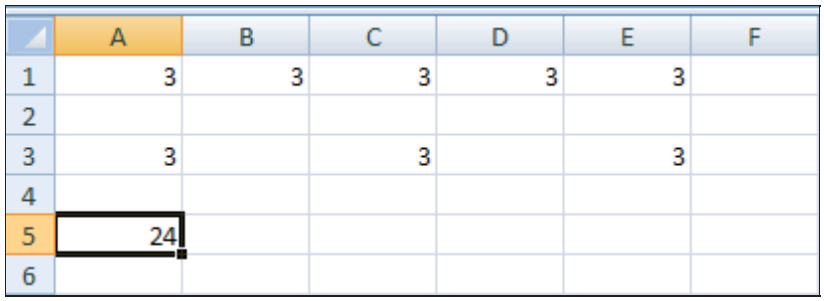


The cell A2 is highlighted, in the image above. Excel will add this to your formula.. To finish off, add the right bracket). Then press the enter key on your keyboard. Using this method, you can add as many individual cells as you want for your formula.

Why Excel graphs suck...
interactionworker.blogspot.com
... and what you can do about it. Check the Interaction Worker blog.

Exercise

On a new sheet, enter the number 3 in the following cells: A1, B1, C1, D1, E1. Then type a 3 in the cells A3, C3 and E3. Using non-consecutive addition, display your answer in cell A5. The finished spreadsheet will then look like ours below:



The answer to the addition, 24, is displayed in A5. Only one Sum function was used

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here, with the other cells separated by commas.

Adding up shouldn't cause you too many problems. The tricky part is selecting all the cells that you want to include. In the next part, we'll at multiplication.

Multiply in Excel 2007 to 2013 -->

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In an earlier section, you saw how to multiply two numbers. You use the asterisk symbol between two cell references:

= A4 * B5

If you need to multiply more than two numbers, you don't have to do this:

= A4 * A5 * A6 * A7 * A8

You can use the colon (:) notation to shorten the formula. With addition, you used the word SUM, and placed your formula between round brackets:

= SUM(A4:A8)

With multiplication, you can use the word PRODUCT instead. Like this:

= PRODUCT(A4:A8)

The only thing that has changed here is the name of the inbuilt function: PRODUCT instead of SUM. But Excel 2007 will see the word Product and multiply whatever is between the round brackets.

You can use PRODUCT in the same way you did for SUM. For example, if you wanted to add up values in cells A4 to A8, and cells B4 and B5, you'd do it like this:

= PRODUCT(A4:A8, B4, B5)

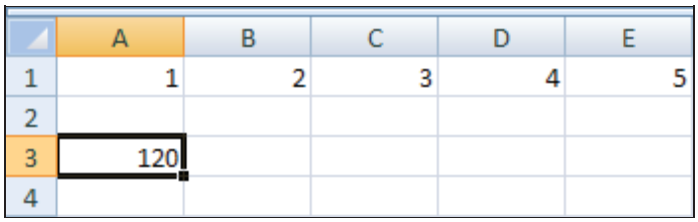
To give you some practice, try these exercises.

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Exercise

On a new worksheet, enter the number 1, 2, 3, 4 and 5. Put them into cells A1 to E1. Now use PRODUCT to multiply all five numbers. Place your answer in cell A3. If you get it right, your spreadsheet should look like ours:

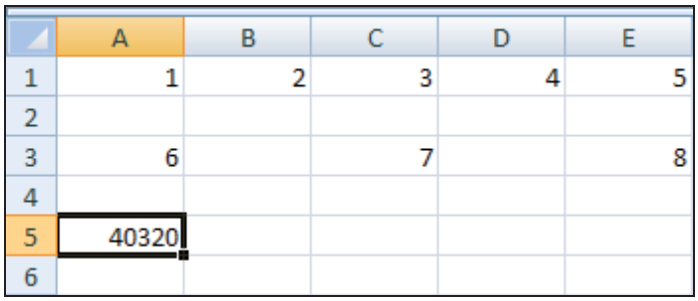
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	A	B	C	D	E
1	1	2	3	4	5
2					
3	120				
4					

Exercise

For this exercise, delete your answer in cell A3. (You can do this by clicking into cell A3, and then hitting the Delete key on your keyboard). Now type a 6 in cell A3, a 7 in cell C3, and an 8 in cell E3. Use PRODUCT to multiply all 8 numbers. Place your answer in cell A5. Your spreadsheet will look like ours below, when you have the correct answer:



	A	B	C	D	E
1	1	2	3	4	5
2					
3	6		7		8
4					
5	40320				
6					

In the next part, you'll see how to subtract and divide.

Subtract and Divide in Excel 2007 to 2013 -->

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In this part of the tutorials, you'll see how to Subtract and Divide in Excel. First up is subtraction.

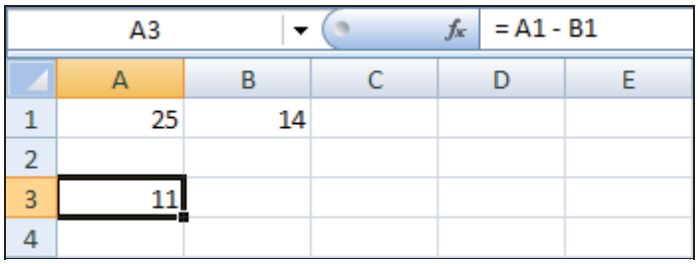
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Subtraction in Excel

You saw that to subtract one number from another, you just use the minus sign:

= A1 - A2

The image below shows the value in cell A2 being deducted from the value in cell A1. The formula has been entered in cell A3.



If you want to subtract more than two cells you can do it like this:

= A1 - B1 - C1

In a later section, you'll see why that formula may not give you the answer you were expecting. But subtraction in Excel is fairly straightforward, and shouldn't cause you too many problems.

Division in Excel

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Dividing one value from another involves using the forward slash symbol (/). An example of its use is this:

= A1 / C1

Here, we're just telling Excel to divide the cell value on the left of the slash symbol by the cell value on the right. Division is fairly straightforward, too.

You can combine all the basic arithmetic operators to produce more complex formulas. We'll see how to do that now.

Combine Arithmetic Operators in Excel 2007 to 2013 -->

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In the small town of Evercrease, the Council managed to collect half a million pounds from its citizens. Unfortunately, the Council spent all of this, and another 69 thousand besides. Naturally, the good people of Evercrease objected to being asked for another 69 thousand pounds. So they got rid of the council and appointed a new one. Have a look at last year's budget, and see if you can do better. Here's the budget where the previous council overspent by 69 thousand pounds:

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	A	B	C	D	E	F	G
1	**Budget**	500,000					
2							
3	**Salaries**			Number		Total	
4	Police Officers	£16,000		3		48000	
5	Ambulance drivers	£12,000		2		24000	
6	Firemen/women	£15,000		2		30000	
7	School teachers	£16,000		5		80000	
8	Refuse collectors	£14,000		3		42000	
9	Your salary	£11,000		1		11000	
10							
11	**Total Cost Salaries**	£235,000					
12	**Money Left**	£265,000					
13							
14	**Equipment and Costs**			Number		Total	
15	Police Cars	5000		4		20000	
16	Ambulances	10000		2		20000	
17	Fire engines	12000		2		24000	
18	Bin Lorry	12000		2		24000	
19	School Books	200		55		11000	
20							
21	**Total Cost Equipment**	£99,000					
22	**Money Left**	£166,000					
23							
24	**Extras**			Number		Total	
25	Village care	20000		1		20000	
26	Fairs and Fetes	50000		1		50000	
27	Concerts(indoors)	30000		2		60000	
28	Concerts(outdoors)	50000		2		100000	
29	Ducks	200		10		2000	
30	Swans	500		6		3000	
31							
32	**Total Cost Extras**	235000					
33	**Final Budget**	-£ 69,000.00					
34	**Total Spending**	£ 569,000.00					
35	**Monthly Spending**	£ 47,416.67					
36	**Budget Minus Extras**	£ 334,000.00					
37							

The final budget figure is in cell B33. It says minus £69 000. Your job is to construct the same budget as above, but making sure that you do not have a minus figure in cell B33. Otherwise, the people will fire you as well!

The first thing to do is to create the budget exactly as you see it above. When you have exactly the same figures as in the image, you can then start to amend things. For example, do you really need all those ducks and swans? What happens to your budget if you reduce the number of teachers from 5 to 4? Or the number of police cars from 4 to 2?

As soon as you make your reductions, you should see the figure in cell B33 change. At least it will if you have entered the correct formulas! Here's a little help on the formulas you need.

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Budget Help

The first thing to do is to enter a figure of 500 000 in cell B1. This is the budget - how much is available to spend. You'll be referring to this figure in later cells. Then start on the budget sections.

The first section is Salaries. In the cells A4 to A9, enter the same labels as our image (Police Officers, Ambulance Drivers, etc). Enter the salaries in cells B4 to B9. In cells D4 to D9, enter how many of each are on the payroll. In cells F4 to F9, enter a formula to work out the cost of each profession. So 3 Police Officers multiplied by £16 000 is … ?

In cells B11, calculate the total cost of the salaries. In cell B12, calculate how much you have left to spend once the salaries have been deducted.

Do the same for the Equipment and Costs section. When you get to cell B22, you need to add the Salaries to the Equipment and Costs. Then you need to deduct your answer from the budget in cell B1. A combination formula will get you this.

The main calculations are in cells B32 to B36. For cell B32, calculate the total cost of the extras. For cell B33, this is just the Money Left. You then need to work out your Total Spending, how much you are spending each month. And the budget minus all those extras.

There is a lot of work to do with this spreadsheet. But completing it will bring your Excel skills on a lot!

In the next section, we'll move on to the inbuilt functions in Excel. First up are Averages.

The Average Function in Excel 2007 to 2013 -->

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If you're trying to work out an average, you're trying to calculate what the most common value is. For example, if a class of eight students took exams, you may want to know what the average exam score was. In other words, what result most students can expect to get. In order to calculate an average, you'd add up all eight exam scores and divide by how many students took the exam. So if the total for all eight students was 400, dividing by 8 would get you 50 as the average grade. If any students were below the average, you can tell at a glance.

In Excel , there is an easy way to calculate the average of some numbers - just use the inbuilt Average function.

Start a new spreadsheet and enter the following exams scores in cells A1 to A8, as in the image below:

	A	B	C
1	9		
2	7		
3	6		
4	7		
5	8		
6	4		
7	3		
8	9		
9			

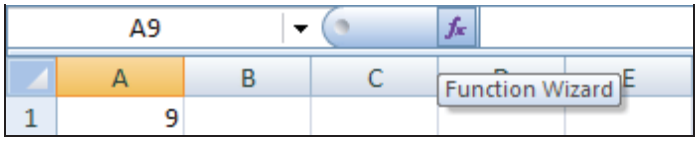
Click in cell A9, and we'll see how to use the Average function in Excel 2007. There are two ways we can do this. Try method 1 first.

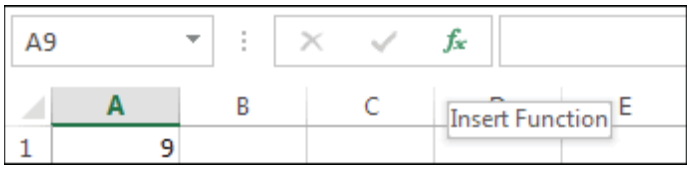
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Method 1

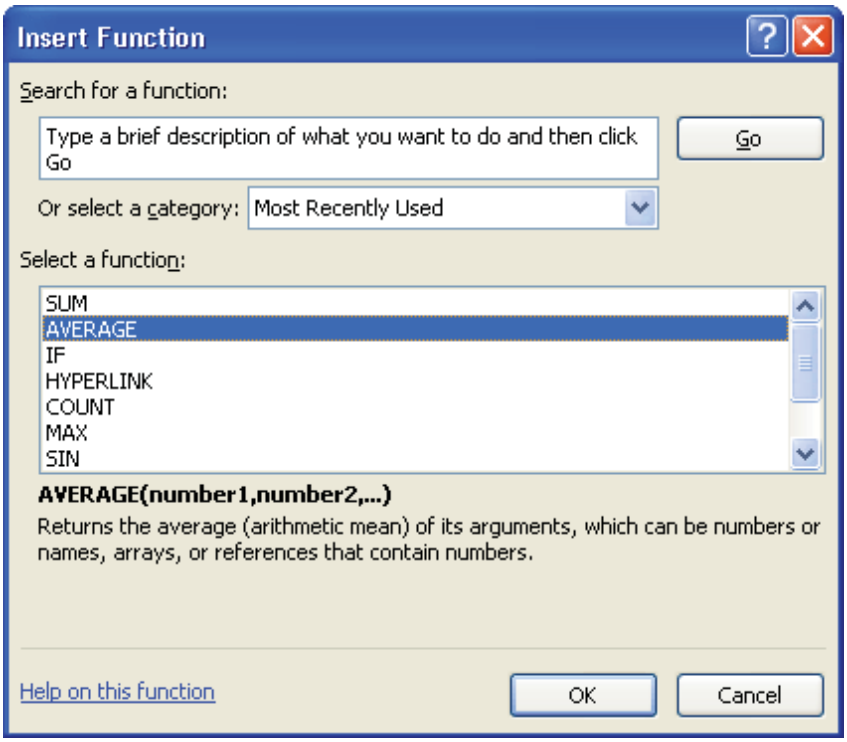
Next to the formula bar, you'll see an FX button. This is the Formula Wizard:

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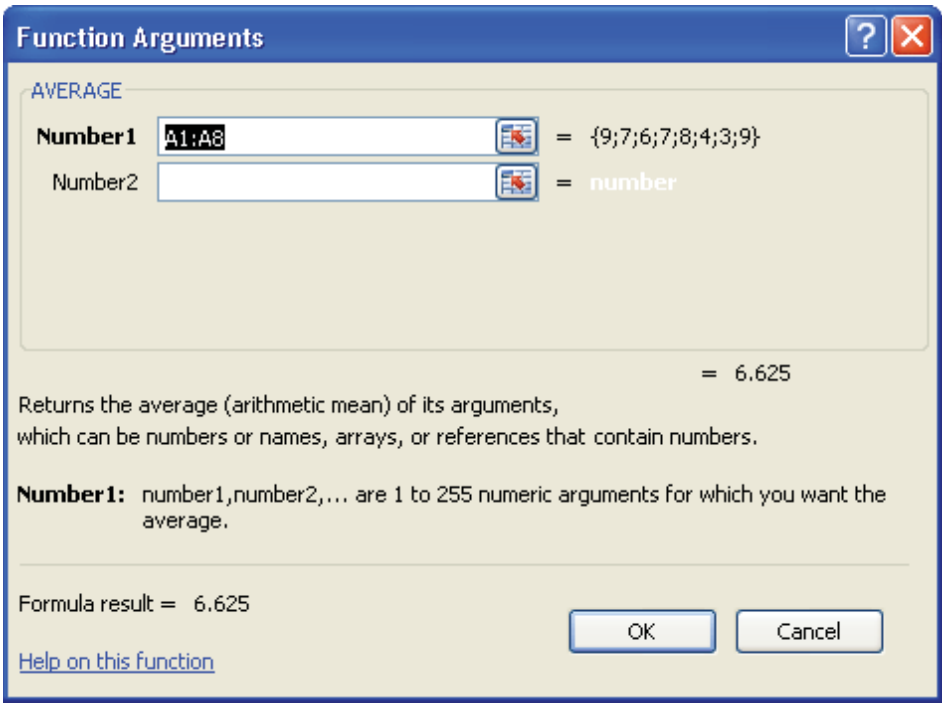
When you click the FX button, you'll see the **Insert Function** dialogue box appear:



The Insert Function dialogue box shows a list functions. These are the just the common ones. To see more functions, click the drop down list to the right of Select a category. The one we want is displayed under Select a function, though - Average. Click on this, and then click OK.

When you click OK, another dialogue box appears. On this dialogue box, you select the data that you want to include in your function:

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If you look in the Number1 box, you'll see Excel has guessed which cells we want to use for our Average function - A1:A8. It evens gives the answer to the Function - 6.625.

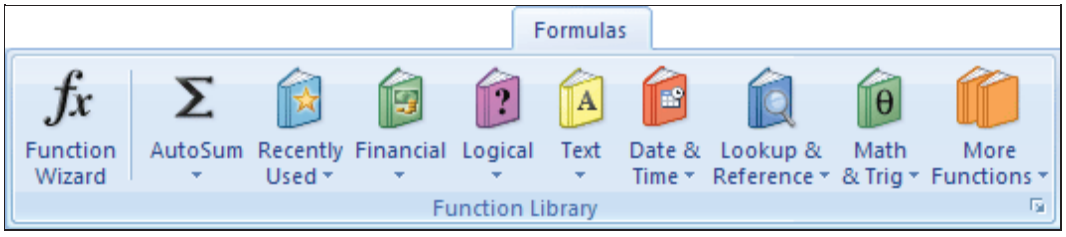
Click OK to insert the function.

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Method 2

The second way to enter a Function in Excel is through the panels on the Ribbon. Try this:

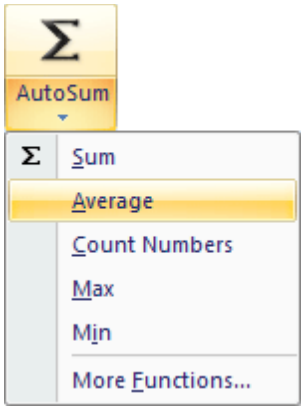
- Click inside cell B9 on your spreadsheet. This is where we'll place the Average for the cells A1 to A8.
- Click the **Formulas** menu at the top of Excel
- Locate the **Function Library** panel. Here it is in Excel 2007



And here it is in later versions:

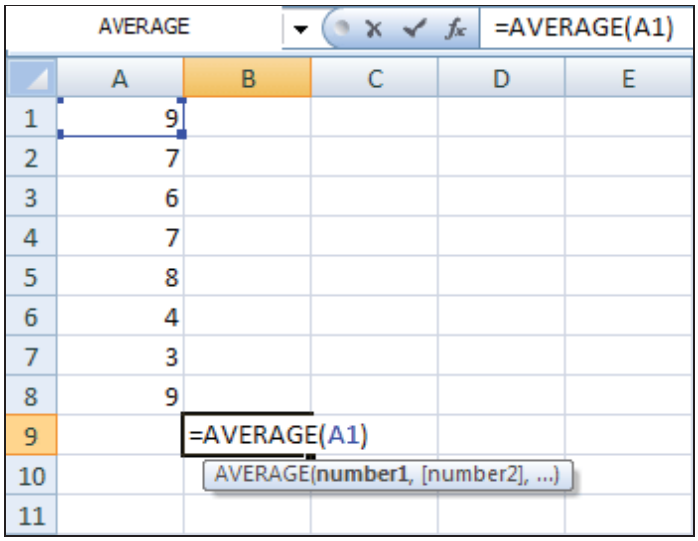


As you can see, in Excel functions are split into categories. The Average function is in a few places. The easiest way to use Average is with AutoSum. Click the down arrow on AutoSum to see the following:



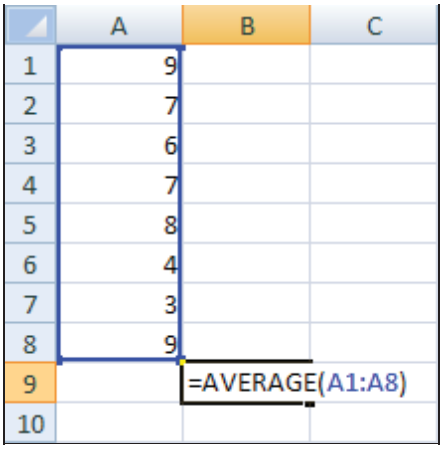
Now click Average from the menu. Because the answer is going in cell B9, Excel doesn't know which cells you want to use in the function, so it can't give you a quick answer. AutoSum is good when the data is in the same row or column. But when it's not, you have to tell it what to calculate.

So click inside cell A1 and you'll see the cell selected

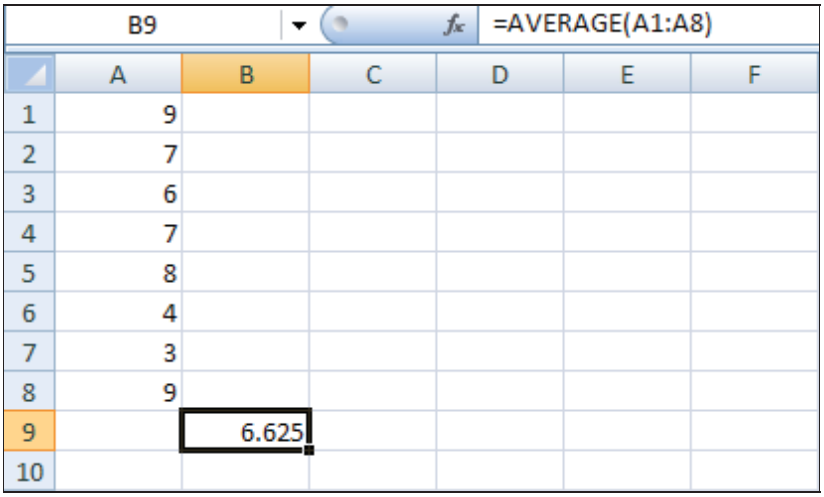


Hold down your left mouse button over the bottom right blue square, and drag to cell A8:

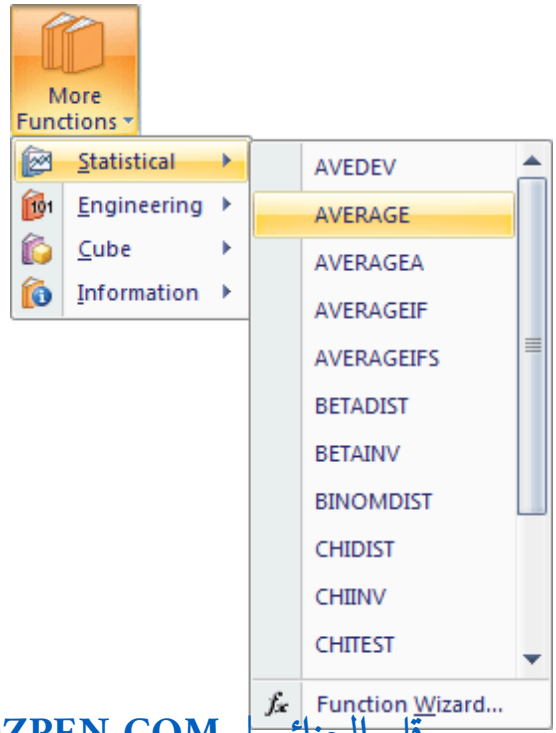
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Excel fills in the cells for your function. Let go of the left mouse button, and then press the Enter key on your keyboard. The correct answer is place in cell B9:



You can also find the Average function on the More Functions menu. Click Statistical, and you'll see it there:



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Of course, once you know the correct function, you could simply type it all out in the Formula bar yourself!

Try this exercise.

Exercise

You start your own online business and find that sales for the first week are these:

Monday £120.45
Tuesday £187.43
Wednesday £106.87
Thursday £143.69
Friday £117.52
Saturday £87.93
Sunday £92.12

Use a function to work out how much you earned, on average, each day.

In the next part, we'll take a look at Date functions in Excel.

The Date Function Excel 200 to 2013 -->

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There are a numbers of different reasons why you would want a Date or Time function in a spreadsheet: If you're running your own company, you might want to record when an order was received and when it was processed. You could then calculate the difference between the two, so that you check how fast the orders were being processed. We'll do that now.

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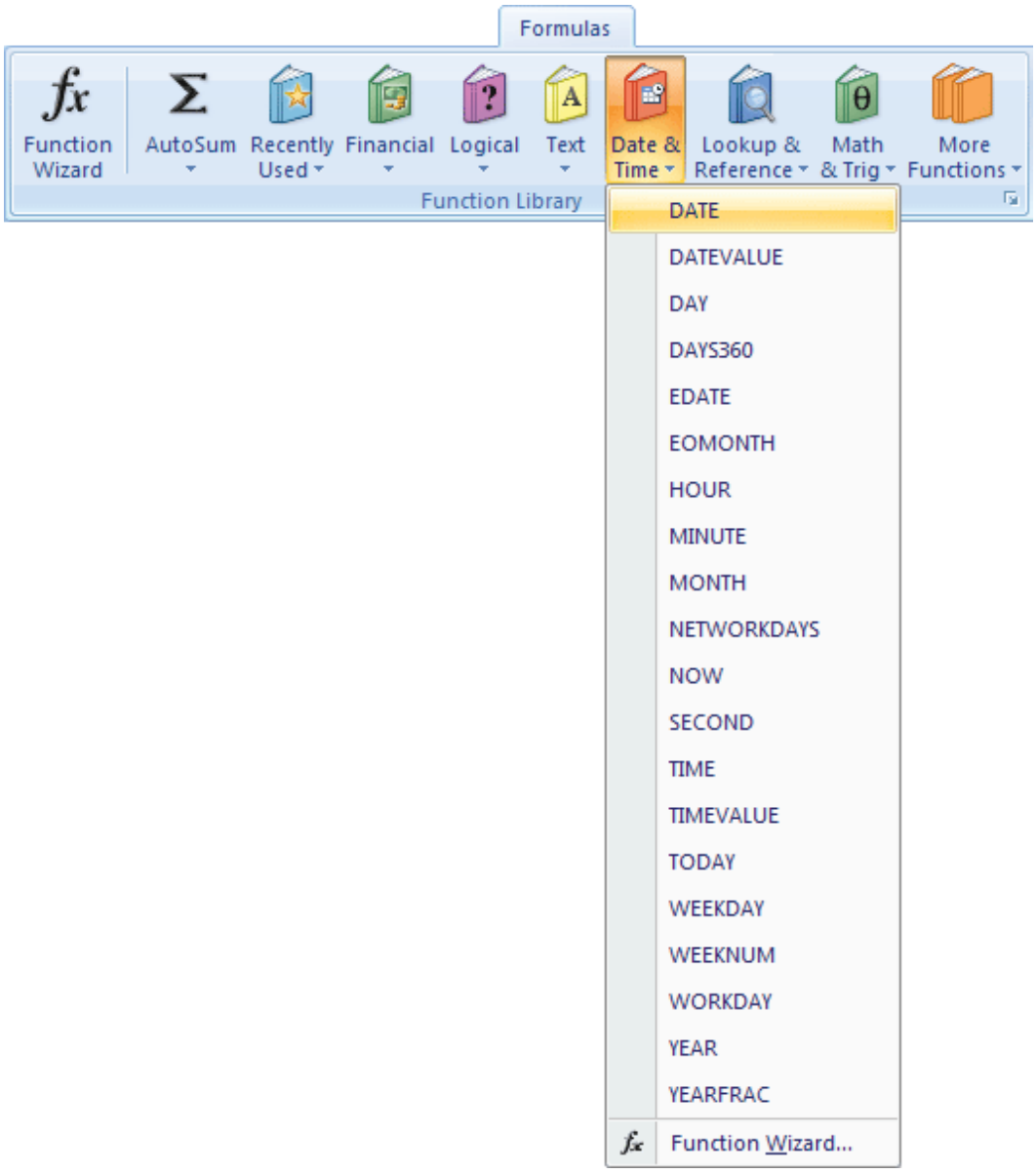
The Excel Date Function

As an example of how to use date functions in Excel, we'll contruct as simple spreadsheets 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 :

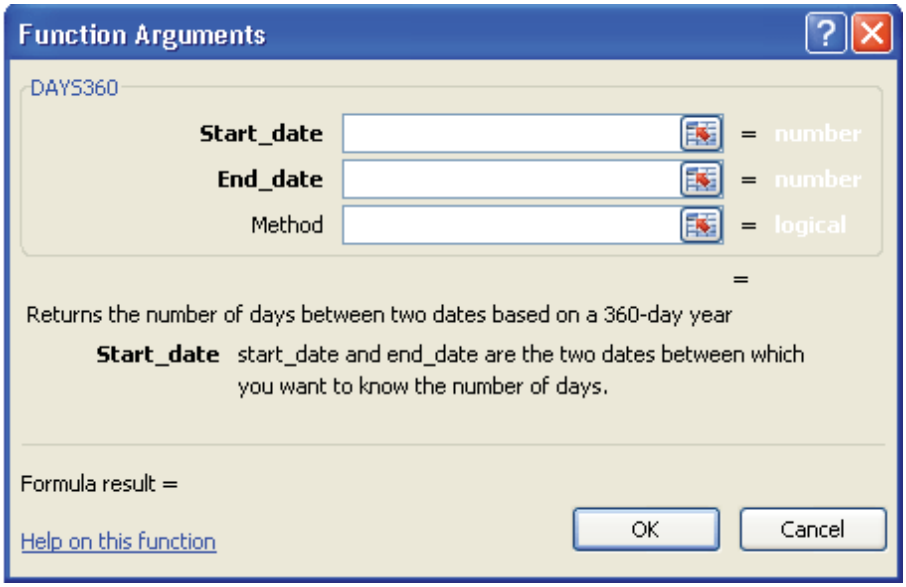
	A	B	C	D
1	Date Order Taken	Date Order Sent	Time Taken	
2				
3				
4				
5				

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**:

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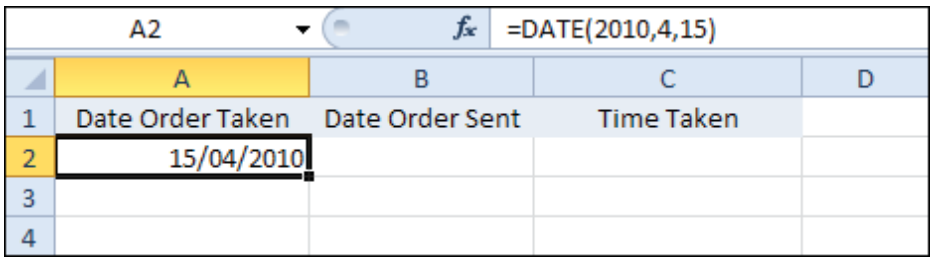
As you can see, there's quite a lot of Date and Time functions! Click on **Date** from the menu, and you'll get the following dialogue box:



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You're now being asked enter a full date.

- In the Year box, enter 2010
- In the Month box, enter the number 4
- In the Day box, enter the number 15
- Click the OK button
- Excel will enter the Date in your selected cell, A2 for us

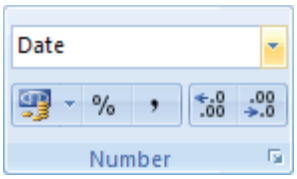


Notice the DATE Function in the Formula bar:

=DATE(2010, 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 the **Home** tab from the Ribbon at the top of Excel. Locate the **Number** panel, and you'll see Date already displayed:



Click the down arrow to see more options:

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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 2010			
3				
4				

In cell B2, under your Date Order Sent heading, enter another Date Function. This time, have the date read May 3, 2010:

	A	B	C	D
1	Date Order Taken	Date Order Sent	Time Taken	
2	15 April 2010	03 May 2010		
3				
4				

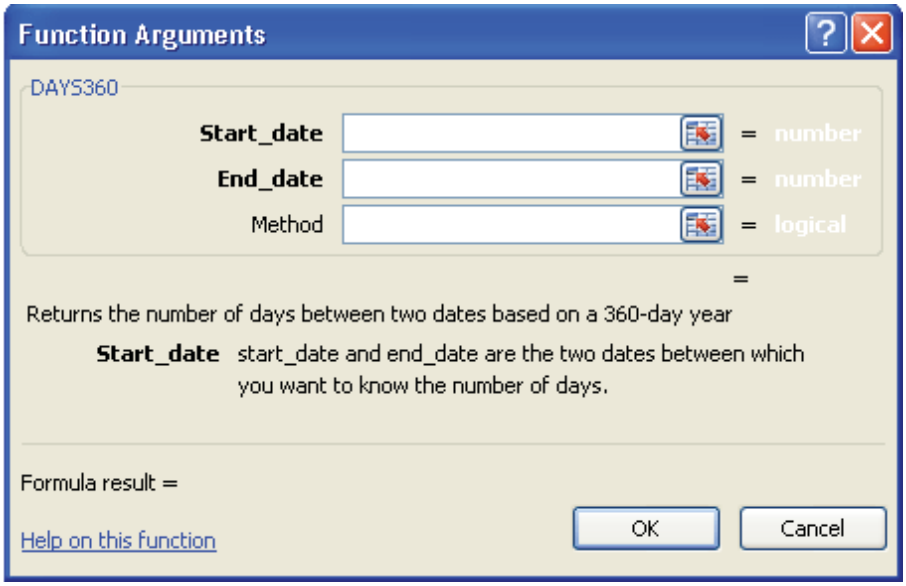
In cell C2, under Time Taken, we'll work out how many days the order took to be sent out.

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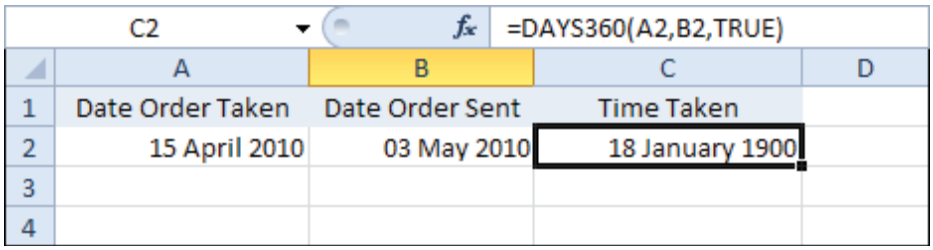
The Days360 Function in Excel

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 2010 and the 3rd of May 2010. So click inside cell C2 and do the following:

Click on the **Formulas** tab 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:



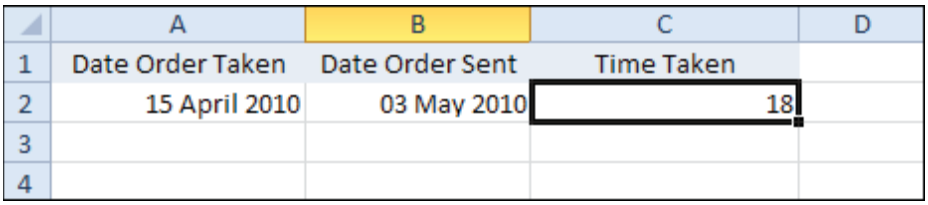
The Days360 function needs a start date and an end date. You can enter your cell references here. So in the **Start_date** box, enter A2. In the **End_Date** box, enter B2. If you enter the word True in the **Method** box, Excel will calculate using the European date system. Click OK, to return to your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



(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:

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	A	B	C	D
1	Date Order Taken	Date Order Sent	Time Taken	
2	15 April 2010	03 May 2010	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.

In the next part, we'll take a look at how to handle Time functions in Excel .

Time Functions in Excel 2007 to 2013 -->

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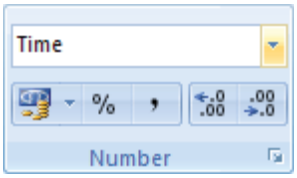
There are a number of ways to enter the current time in an Excel spreadsheet. Try this:

- Click inside a blank cell on your spreadsheet
- Click into the Formula Bar at the top
- Type the following inbuilt function:

= Now( )

Hit the enter key, and you'll get the current date and time. If you only want the time, you can format the cell to get rid of the date part:

- Click on the cell that contains your Now() function
- From the Excel menu bar, click on **Home**
- Locate the **Number** panel, and you may see Time already set (it might say **Custom** in later versions of Excel):



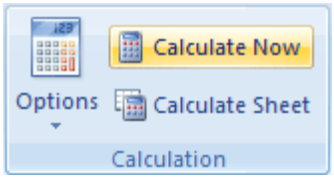
- Click the down arrow to see menu options
- From the menu, click on **Time**
- Click on **More** to see more Time options

Excel doesn't update the Time function every second, so it's not like a normal clock. But you can update the Now function to get the correct time. (Well, it's correct if your system clock is correct!)

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The easiest way to update the Time in Excel is to click inside the cell that holds your Time formula. Then, from the Formulas menu, locate the Calculation panel.

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Click the "Calculate Now" button, and Excel will update the time.

Excel also updates the time when you enter another calculation elsewhere in the spreadsheet. For example, click in any other cell on your spreadsheet. Now enter a simple formula like = 2 + 2. When you press the Enter key on your keyboard, Excel will update your time function as well.

To get some practise with using Times in Excel, try the Timetable Project in the next part. You'll also see a different way to enter the time.

A Timetable Project in Excel 2007 to 2013 -->

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In this Excel timetable project, we'll set ourselves some chores to do around the house. We'll plan an exact time to start a task, and how long it will take to finish. We'll be adding one time to another.

So create the same spreadsheet as the one in the image below (you don't need to use the same colours):

	A	B	C	D
1	Job	Start Time	Time Job Takes	
2				
3	Wash Pots			
4	Hoover			
5	Rest			
6	Dust			
7	Windows			
8	Rest			
9				

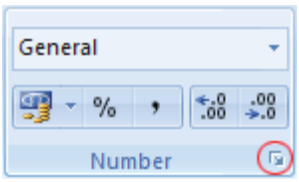
What we're going to do is enter a **Start Time** for our chores. This will be 9 in the morning. Then we'll estimate how long it takes to wash the pots, which we'll place in the **Time Job Takes** column. We'll add the "Time Job Takes" to the "Start Time" to get a new start time for the Hoover chore. But you'll see how it works as we go along.

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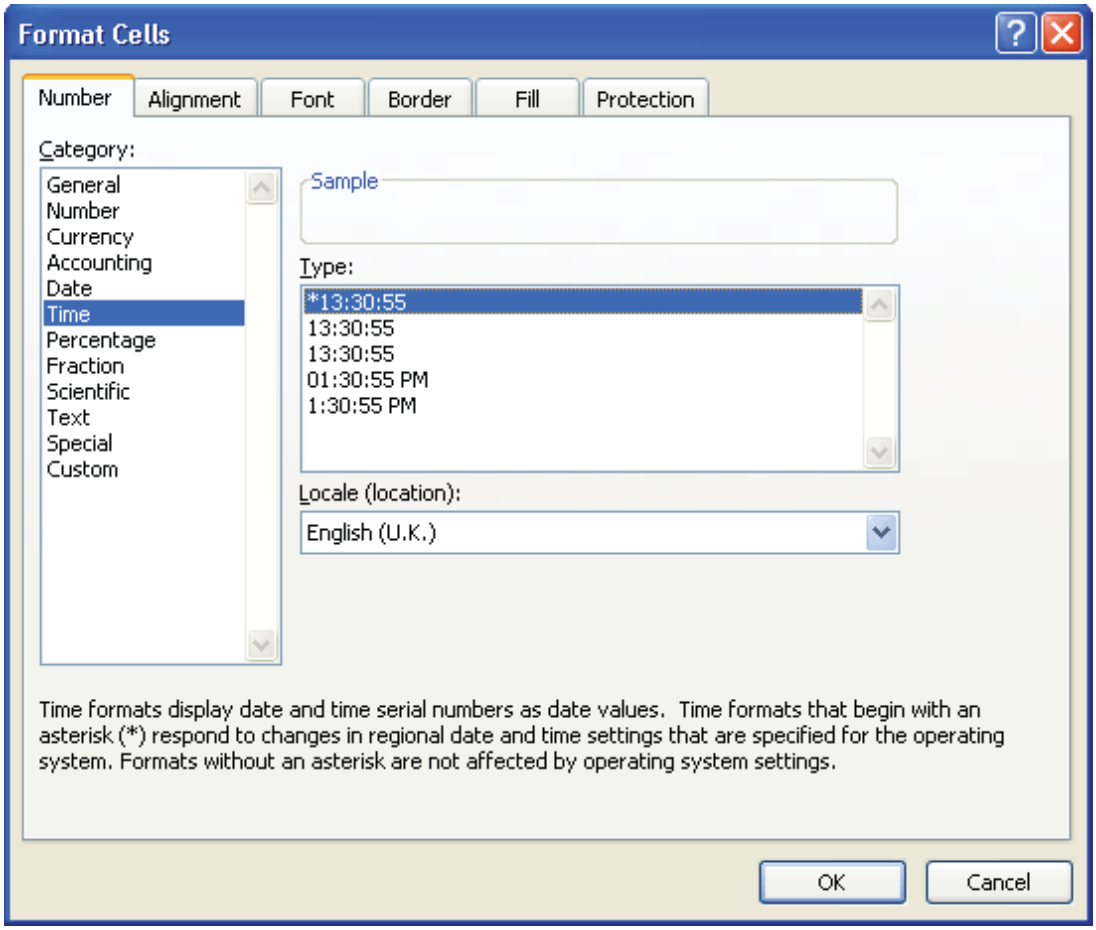
The first thing to do is to format the **Start Time** column:

- Highlight the Start Time column, from cell B3 to cell B8
- From the Excel menu bar, click on Home
- Locate the Number panel:

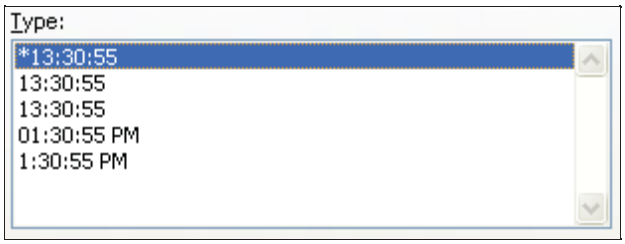
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Click on the arrow (circled above) to bring up the **Format Cells** dialogue box, and then click the **Time** category:

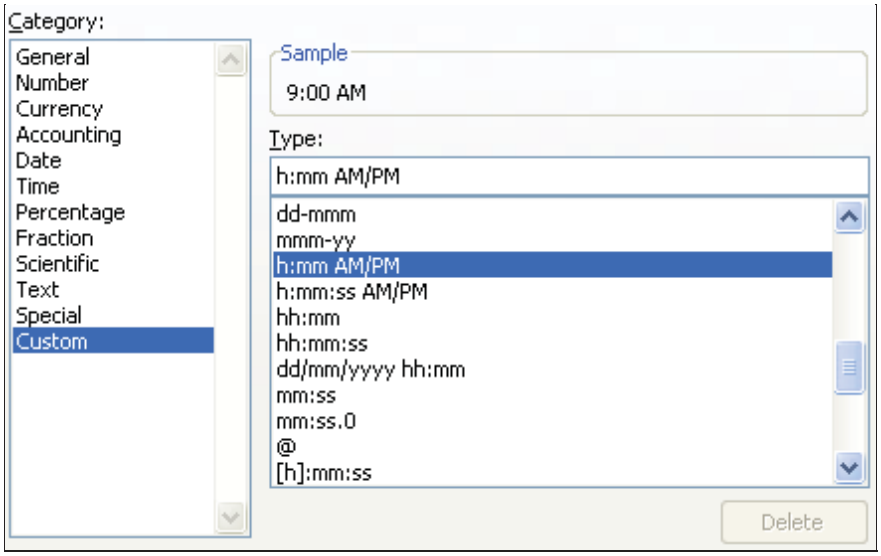


- Under **Category** on the left, click on **Time**. Under the time **Types** on the right, select the first one.
- Don't click OK yet, but have a look at the time format that Excel is going to enter:



Excel will enter the hours, then minutes and the seconds. We don't need the seconds. Unfortunately, this version of Excel doesn't give you a time format without seconds. To remedy this, click on **Custom** under the **Category** list on the left. Then, under **Type**, select "h:mm AM/PM", as in the image below:

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Click OK when you're done.

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We'll now enter our first time.

- Click on cell B3, then click inside the formula bar
- Type in 09:00 (the colon in between the numbers is important)
- Press the enter key on your keyboard
- Excel will now see cell B3 as a time - 9.00 AM

	A	B	C	D
1	Job	Start Time	Time Job Takes	
2				
3	Wash Pots	9:00 AM		
4	Hoover			
5	Rest			
6	Dust			
7	Windows			
8	Rest			
9				

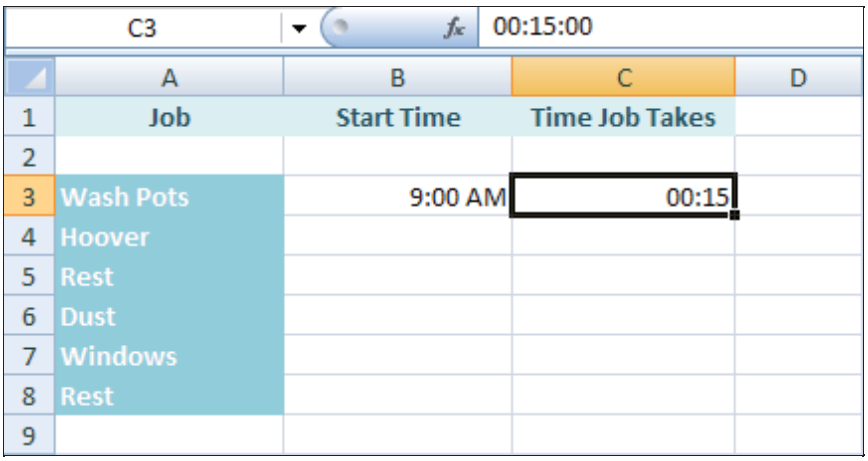
There is a simpler way to format a cell as Time, though. Try this:

- Click inside cell C3
- Click inside the formula bar
- Type in 0**:**15
- Press the Enter key on your keyboard

Because you included the colon (**:**), Excel knows that you want to format the cell as a time. The **0:15** then means 15 minutes (We'll assume that we're very fast at washing pots - it's all that practice!).

But your spreadsheet will now look like this:

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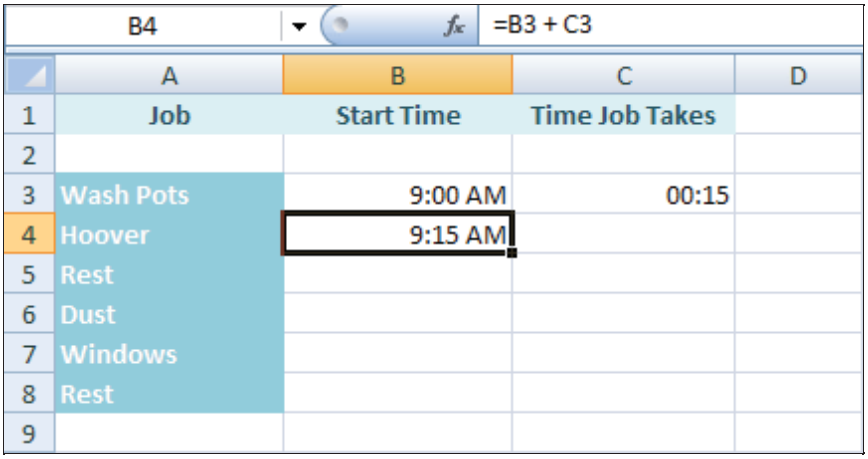


If we started at 9.00, and the job took 15 minutes, the next start time will be 9.15. We can enter a formula for this:

- Click into cell B4 to highlight it
- Then click inside the formula bar
- Enter the following formula:

= B3 + C3

- Press the enter key
- Excel will place a time of 09:15 AM in cell B4



The start time for our next chore, then is 9.15 AM. We can use **AutoFill** for the rest of the B column:

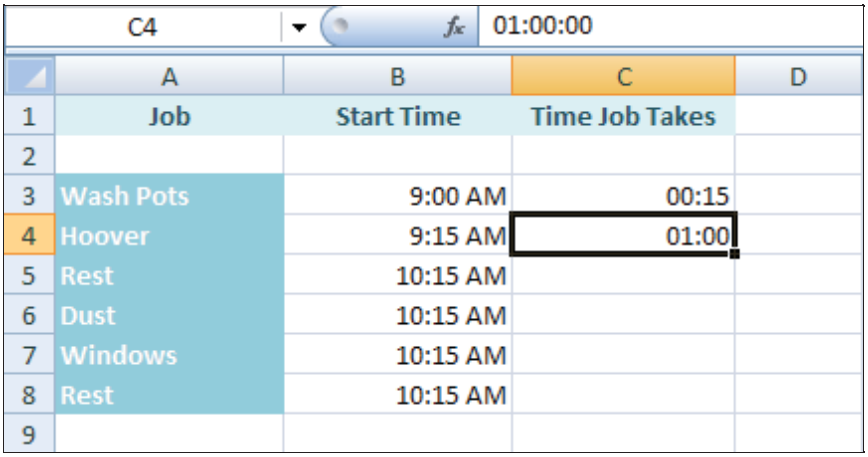
- Click in to cell B4 on your spreadsheet
- Move your mouse the bottom right of cell B4, and the pointer will change shape. When you see the black cross, the AutoFill cursor, hold down your left mouse button and drag down to cell B9
- Let go of the left mouse button and Excel will AutoFill the other formulas

Because we haven't yet entered any other figures for the "Time job Takes" column, a time of 9.15 will appear in all the cells.

- Click onto cell C4 on your spreadsheet
- Now click in to the formula bar at the top, and type in 01:00 (meaning one hour)

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- Hit the Enter key on your keyboard and Excel will change all the cells from B5 to B8 to a time of 10:15 AM
- Your spreadsheet should look like ours:

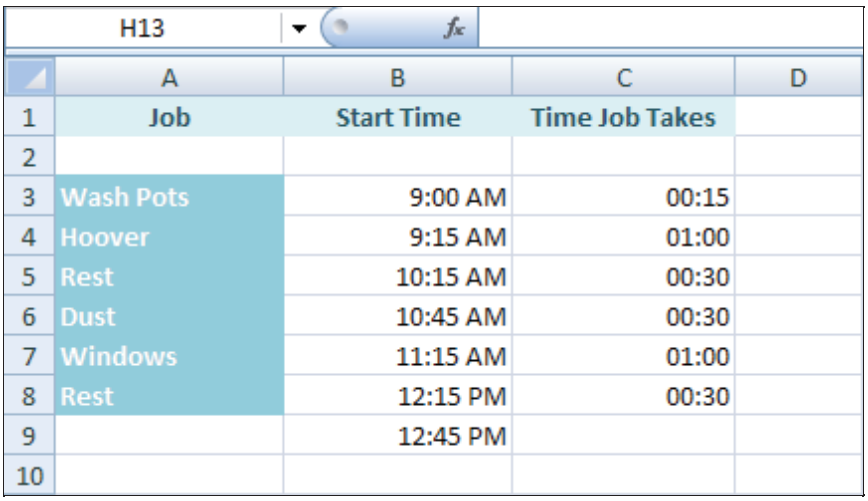


	A	B	C	D
1	Job	Start Time	Time Job Takes	
2				
3	Wash Pots	9:00 AM	00:15	
4	Hoover	9:15 AM	01:00	
5	Rest	10:15 AM		
6	Dust	10:15 AM		
7	Windows	10:15 AM		
8	Rest	10:15 AM		
9				

Complete the rest of the spreadsheet for yourself. Enter these times in the C column:

Rest: 30 minutes
Dust: 30 minutes
Windows: One hour
Rest 30 minutes

If you complete it all correctly, you should have a spreadsheet like ours in the image below:



	A	B	C	D
1	Job	Start Time	Time Job Takes	
2				
3	Wash Pots	9:00 AM	00:15	
4	Hoover	9:15 AM	01:00	
5	Rest	10:15 AM	00:30	
6	Dust	10:45 AM	00:30	
7	Windows	11:15 AM	01:00	
8	Rest	12:15 PM	00:30	
9		12:45 PM		
10				

In the image above, you'll notice that there is a time in cell B9 of 12:45 PM. You should easily be able to get the same figure in your spreadsheet!

Working with date and times can be quite tricky. But it's well worth getting the hang of. We'll move on, though, and have a go at financial functions in Excel.

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The financial function we're going to explore is called PMT( ). You use this function when you want to calculate things like the monthly payment amounts on a loan, or how much per month a mortgage will cost you. We'll use it to work out how much per month a loan will cost us. Here's what we'll do.

We've decided to take out a loan of ten thousand pounds from our friendly banker. We're going to be paying it back over 5 years. The question is, how much per month is this going to cost us?

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The PMT( ) Function in Excel

The PMT( ) function expects certain values in between its two round brackets. The values that go in round brackets are known as arguments. The arguments for the PMT( ) function are these:

PMT(rate, nper, pv, fv, type**)**

Only the first three are needed, and you can miss the final two out, if you like.

We'll work out our monthly loan costs with the help of the PMT( ) function. First, create a new spreadsheet like the one below:

	A	B	C	D	E	F
1	Loan Amount	10000				
2						
3	Interest Rate	Num of Payments	Present Value	Monthly Amount	Total Paid Back	
4						
5						

If you look at cell B1 on the spreadsheet, you'll see a figure of £10, 000. This is the amount we want to borrow. The labels on Row 3 show what else we need: An interest rate, the number of payments we'll make over the 5 years, the present value of the loan, the amount we'll have to pay back each month, and the total amount paid back after 5 years. But we only need the first three for our PMT() function.

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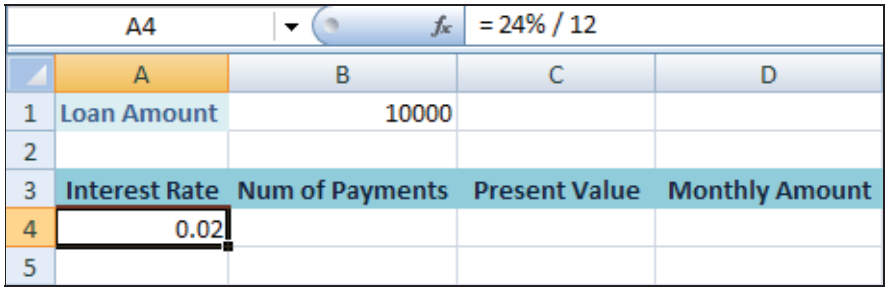
In cell A4, we'll need an interest rate. In cell B4 we'll need the number of payments, and in cell D4 we'll need the Present Value of the loan. First is interest rate.

Imagine that the interest rate given to us by the bank is 24 percent per year. For the PMT( ) function, we need to divide this figure by 12 (the number of months in a year) So try this:

- Click into cell A4 on your spreadsheet
- Enter the following formula:

= 24% / 12

- Hit the enter key to see the answer appear, as in the image below:



Now that we have an interest rate, the next thing we need for the PMT( ) function is how many payments there are in total. We have to pay something back every month for 5 years. Which is a simple formula. So,

- Click into B4 on your spreadsheet and enter the following:

= 12 * 5

- Hit the enter key to see a figure of 60 as the answer.

This figure of 60 is for the second argument of the PMT( ) function - the **nper**. This is just the number of payments.

Now that you have a figure in cell A4 (**rate**), and a figure in cell B4 (**nper**), there's only one more to go - the Present Value (**pv**).

The Present Value of a loan, also known as the Principal, is what the loan is worth at the present time. Since we haven't made any payments yet, this is just 10, 000 for us.

- Click into cell C4 on your spreadsheet and enter the following:

= B1

- Hit the enter key
- You'll see a figure of 10, 000 appear, and your spreadsheet should now look ours below:

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	A	B	C	D	E
1	Loan Amount	10000			
2					
3	Interest Rate	Num of Payments	Present Value	Monthly Amount	Total Paid Back
4	0.02	60	10000		
5					
6					

OK, we now have all the parts for our PMT() function: a rate (A4), an nper (B4), and a pv (C4). Try this:

- Click into cell D4 on your spreadsheet
- Enter the following function:

=PMT(A4, B4, C4)

Hit the enter key on your keyboard, and you'll see the monthly amount appear. The figure you should have is -£287.68. The reason there is a minus sign before the total is because it's a debt: what you owe to the bank.

But this is what your spreadsheet should look like:

D4 fx =PMT(A4, B4, C4)

	A	B	C	D	E
1	Loan Amount	10000			
2					
3	Interest Rate	Num of Payments	Present Value	Monthly Amount	Total Paid Back
4	0.02	60	10000	-£287.68	
5					
6					

The only thing left to do is see how much this loan will cost us at the end of 5 years. All you need to do here is multiply the monthly amount in cell D4 by the number of payments in cell B4. Enter your formula for this in cell E4, and you spreadsheet will look like ours below:

	A	B	C	D	E
1	Loan Amount	10000			
2					
3	Interest Rate	Num of Payments	Present Value	Monthly Amount	Total Paid Back
4	0.02	60	10000	-£287.68	-£17,260.78
5					

So a ten thousand pounds loan, at the interest rate the bank is offering, means we'll have to pay back just over 17 thousand pounds over 5 years.

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Tweaking the Values

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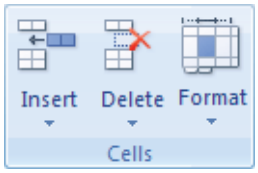
We can change the spreadsheet slightly to give us more control. For your figure in cell B4, the number of payments, you entered 12 * 5. This is 12 months multiplied by 5 years. But what if we wanted to pay the loan back over 10 years, or 15? How much will our monthly payments then be? And will be the final cost of the loan?

Also, the interest rate seems a bit high. What if we can get a better rate elsewhere?

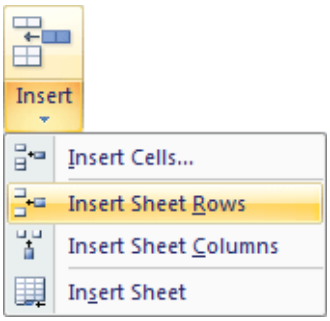
By making a few changes to or spreadsheet, we can amend these values more easily. First we'll need two new rows.

Inserting New Rows in Excel

We need to insert new rows in our spreadsheet. To insert a new row, click into cell A2. Then click on the **Home** tab at the top of Excel. Locate the **Cells** panel, and click the **Insert** item:



From the Insert menu, click on **Insert Sheet Rows**:



Excel will insert a new row for you. Do this again to get two blank rows. Add two new labels, **Num of Years** and **Interest**. Your spreadsheet sheet will then look like this:

	A	B	C	D	E
1	Loan Amount	10000			
2	Num of Years				
3	Interest				
4					
5	Interest Rate	Num of Payments	Present Value	Monthly Amount	Total Paid Back
6	0.02	60	10000	-£287.68	-£17,260.78
7					

Adapting the PMT Formula

We can adapt the formulas we've entered so far, in order to make them more usable. As an example, we'll adapt the interest rate.

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To get the interest rate for cell A4, we entered a formula:

= 24% / 12

Instead of having the interest rate in cell A4, however, we can place it at the top, in cell B3 on our new Row. We can then alter the interest rate by simply typing a new one in cell B3. To clear all that up, try the following:

- Click inside cell B3, which is the Interest cell in the image above
- Click inside the formula bar
- Type in = 24%
- Cell B3 should now read 24.00% (In Excel 2010 and 2013 you may have to format the cell to a **Percentage** value from the **Home** tab then the **Numer** item.)

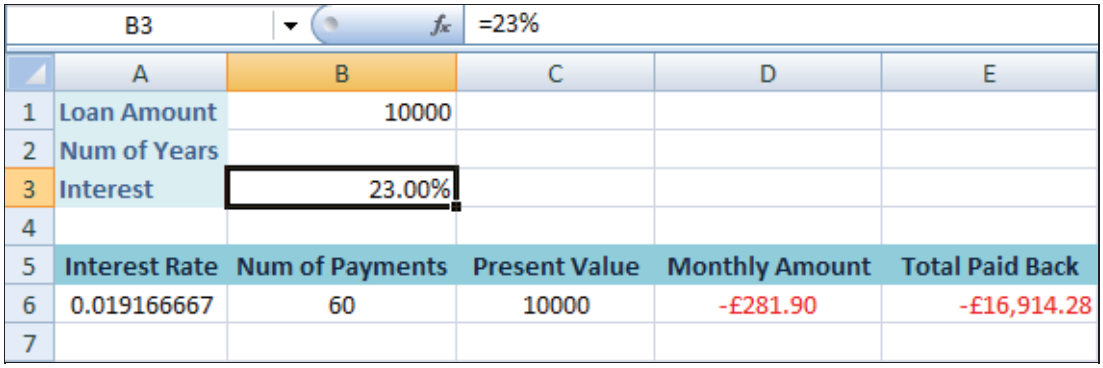
To change the formula for your interest rate click inside of cell A6. Change the formula from this:

= 24% / 12

to this:

= B3 / 12

Hit the enter key on your keyboard and nothing should change on your spreadsheet. But the difference is that you can enter a new interest rate in cell B3, and see how this effects the loan amounts. Try it out by typing 23% in cell B3:



As you can see, the interest rate has changed to a rather long figure. But notice the Monthly Amount - it has gone down to £281.90. The total amount we have to pay back has changed, too. Play around with the interest rate in cell B3, just to get a feel for how it works.

Exercise

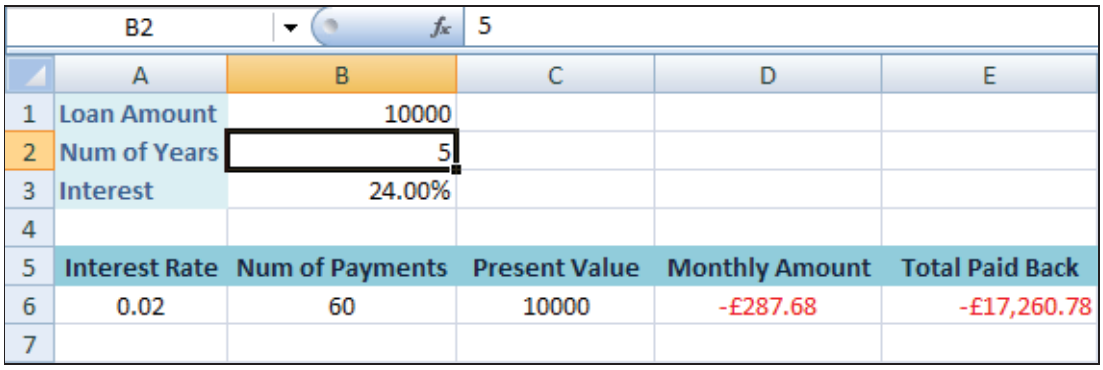
In cell B6 of your spreadsheet, you have the following formula:

= 12 * 5

This calculates the number of months for the loan. Change this formula so that the number of years is coming from B2. Your finished spreadsheet should look like ours

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below:



B2 | 5

	A	B	C	D	E
1	Loan Amount	10000			
2	Num of Years	5			
3	Interest	24.00%			
4					
5	Interest Rate	Num of Payments	Present Value	Monthly Amount	Total Paid Back
6	0.02	60	10000	-£287.68	-£17,260.78
7					

If you play around with the values in cells B1, B2 and B3 you should be able quickly see the new loan repayments.

In the next part, you'll see what Conditonal Logic is, and how to use it in Excel. First, try this project. It's all to do with Averages, so shouldn't cause you too many problems.

The Student Averages Project -->

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Study the following spreadsheet:

	A	B	C	D	E	F	G	H	I	J	K
1		Steven	Mary	Ann	Raymond	Mark	Paul	Eliza	Kelly		Averages
2	Maths	76	89	43	48	51	76	87	56		
3	English	55	85	78	61	47	87	91	73		
4	Science	65	82	39	58	52	65	57	45		
5	History	45	91	56	72	49	56	78	56		
6	Geography	51	84	54	64	47	64	67	67		
7	Art	43	63	49	62	39	89	64	63		
8	Computer Studies	63	95	45	59	41	92	89	52		
9	French	35	91	65	26	28	51	92	56		
10											
11	Overall Average										
12											

The spreadsheet is the school exam marks of 8 students. A total of 8 subjects were taken. For this review, work out the Averages for all 8 subjects studied, which is in the K column above. Also, work out the Overall Averages for each student (row 11 above).

The first thing to do is to recreate the spreadsheet above. You can then use one of the methods for working out Averages that you have explored in this section. You're going to be needing your completed spreadsheet in the next section - so don't skip it!

Move on to Conditional Logic in Excel 2007 to 2013 -->

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Microsoft Excel 2007 to 2013 - The IF Function

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The IF function can be quite useful in a spreadsheet. It is used when you want to test for more than one value. For example, has a bill been paid or not? If it has, you can deduct the amount from the money you have left to spend; if it hasn't, keep it on your debt list. Later, you'll see how to use the IF Function to grade student exam scores. If the student has above 80, award an A grade; if the student has below 30, award a fail grade. First, here's what an IF Function looks like:

IF(logical_test, value_if_true, value_if_false,)

The thing to note here is the three items between the round brackets of the word IF. These are the arguments that the IF function needs. Here's what they mean:

logical_test
The first argument is what you want to test for. Is the number in the cell greater than 80, for example?

value_if_true
This is what you want to do if the answer to the first argument is YES. (Award an A grade, for example)

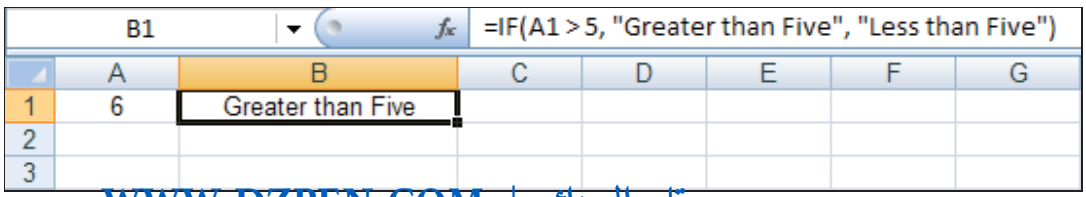
value_if_false
This is what you want to do if the answer to the first argument is NO. (Award a FAIL grade.)

If that's not terribly clear, an example may clear things up. Open a new spreadsheet, and do the following:

- Widen the B column a bit, as we'll be putting a message in cell B1
- Now click in cell A1 and type the number 6
- Type the following in the formula bar (The right angle bracket after A1 means "Greater Than".)

=IF(A1 > 5, "Greater than Five", "Less than Five")

Hit the enter key on your keyboard and your spreadsheet should look like ours below:



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(Make sure you have all the commas and double quotes in the correct place, otherwise Excel will give you an error message. That right angle bracket (>) is known as a Conditional Operator. You'll meet some others shortly.)

But what we're saying in the IF function is this:

logical_test: Is the value in cell A1 greater than 5?
value_if_true: If the answer is Yes, display the text "Greater than Five"
value_if_false: If the answer is NO, display the text "Less than Five"

So your first tell Excel what you want to check the cell for, then what you want to do if the answer is YES, and finally what you want to do if the answer is NO. You separate each part with a comma.

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Exercise

Try this:

- Click into cell A1
- Change the 6 into a 4
- Hit the enter key on your keyboard

What happens?

Exercise

Now type the number 5 in cell A1. What happens now?

For the last exercise above, Excel should tell you that 5 is "Less than 5"! It does this because the answer to your logical test was NO. We were testing if the number in cell A1 was greater than 5. Since 5 is not greater than 5, the answer to the question is NO. We've told Excel to display a message of "Less than 5", if the answer was NO. In other words, we didn't tell Excel what to do if the value in cell A1 was the same as 5.

The solution to this is to use a different Conditional Operator. We used the Greater Than (>) operator. Here's some more:

< Less Than

>= Greater than Or Equal To

<= Less than Or Equal To

<> Not Equal To

For the second and third operators above, you type an angle bracket followed by the equals sign. There are no spaces between the two. For the final one, it's a left angle bracket followed by a right angle bracket.

So for our exercise, the symbol we should have used was the one for Greater than Or

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Equal To. Change your IF function to this and try again:

=IF(A1 >= 5, "Greater than or Equal to Five", "Less than Five")

Exercise

Test the A1 cell to see if the value is less than or equal to 5. If it is, display a suitable message. If it's not, display the message "Greater than Five".

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Complex If Functions

The If Functions you've just met are consider fairly simple ones. They can get really complex!

Consider our Student Exam problem. The spreadsheet we created to track our students looks like this, from an earlier section:

	A	B	C	D	E	F	G	H	I	J	K
1		Steven	Mary	Ann	Raymond	Mark	Paul	Eliza	Kelly		Averages
2	Maths	76	89	43	48	51	76	87	56		65.75
3	English	55	85	78	61	47	87	91	73		72.13
4	Science	65	82	39	58	52	65	57	45		57.88
5	History	45	91	56	72	49	56	78	56		62.88
6	Geography	51	84	54	64	47	64	67	67		62.25
7	Art	43	63	49	62	39	89	64	63		59.00
8	Computer Studies	63	95	45	59	41	92	89	52		67.00
9	French	35	91	65	26	28	51	92	56		55.50
10											
11	Overall Average	54.13	85.00	53.63	56.25	44.25	72.50	78.13	58.50		

However, we want to display the following grades as well:

A If the student scores 80 or above
B If the student scores 60 to 79
C If the student scores 45 to 59
D If the student scores 30 to 44
FAIL If the student scores below 30

With such a lot to check for, what will the IF Function look like? Here's one that works:

=IF(B2>=80, "A", IF(B2>=60, "B", IF(B2>=45, "C", IF(B2 >=30, "D", "Fail"))))

Quite long, isn't it? Look at the colours of the round brackets above, and see if you can match them up. What we're doing here is adding more IF Functions if the answer to the first question is NO. If it's YES, it will just display an "A".

But take a look at our Student Exam spreadsheet now:

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B14 =IF(B2>=80, "A", IF(B2>=60, "B", IF(B2>=45, "C", IF(B2 >=30, "D", "Fail"))))

	A	B	C	D	E	F	G	H	I	J	K
1		Steven	Mary	Ann	Raymond	Mark	Paul	Eliza	Kelly		Averages
2	Maths	76	89	43	48	51	76	87	56		65.75
3	English	55	85	78	61	47	87	91	73		72.13
4	Science	65	82	39	58	52	65	57	45		57.88
5	History	45	91	56	72	49	56	78	56		62.88
6	Geography	51	84	54	64	47	64	67	67		62.25
7	Art	43	63	49	62	39	89	64	63		59.00
8	Computer Studies	63	95	45	59	41	92	89	52		67.00
9	French	35	91	65	26	28	51	92	56		55.50
10											
11	Overall Average	54.13	85.00	53.63	56.25	44.25	72.50	78.13	58.50		
12											
13		Steven	Mary	Ann	Raymond	Mark	Paul	Eliza	Kelly		
14	Maths	B	A	D	C	C	B	A	C		
15	English	C	A	B	B	C	A	A	B		
16	Science	B	A	D	C	C	B	C	C		
17	History	C	A	C	B	C	C	B	C		
18	Geography	C	A	C	B	C	B	B	B		
19	Art	D	B	C	B	D	A	B	B		
20	Computer Studies	B	A	C	C	D	A	A	C		
21	French	D	A	B	Fail	Fail	C	A	C		
22											

After the correct answer is displayed in cell B14 on the spreadsheet above, we used AutoFill for the rest!

Don't worry if that long IF statement is making your brain hurt - it is quite complicated.

In the next part, we'll take a look at Conditonal Formatting. This is about colouring cells depending on their values. Looks nice on a spreadsheet!

Conditional Formatting in Excel 2007 to 2013 -->

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You can use something called Conditional Formatting in your Excel spreadsheets. Conditional Formatting allows you to change the appearance of a cell, depending on certain conditions. What we'll do is to colour the Overall Averages on our Student Exam spreadsheet, depending on the grade. Here's the spreadsheet we'll be working on.

	A	B	C	D	E	F	G	H	I
1		Steven	Mary	Ann	Raymond	Mark	Paul	Eliza	Kelly
2	Maths	76	89	43	48	51	76	87	56
3	English	55	85	78	61	47	87	91	73
4	Science	65	82	39	58	52	65	57	45
5	History	45	91	56	72	49	56	78	56
6	Geography	51	84	54	64	47	64	67	67
7	Art	43	63	49	62	39	89	64	63
8	Computer Studies	63	95	45	59	41	92	89	52
9	French	35	91	65	26	28	51	92	56
10									
11	Overall Average	54.13	85.00	53.63	56.25	44.25	72.50	78.13	58.50

- Open up your Student Exam spreadsheet (You did complete it, didn't you?)
- Highlight the cells with Overall Grades, which should be cells B11 to I11

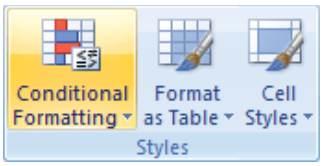
The Overall Averages range from 44 to 85. We'll colour each grade, depending on a scale. A different colour will apply to the following grades:

- 50 and below
- 51 to 60
- 61 to 70
- 71 to 80
- 81 and above

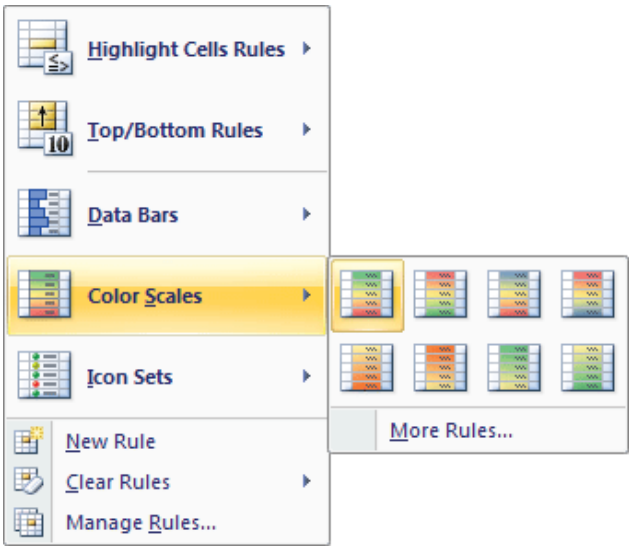
So five different bands, and a colour for each. To set the Conditional Formatting in Excel, do the following:

- With your Overall Averages highlighted, click on the Home menu at the top of Excel
- Locate the **Styles** panel, and the **Conditional Formatting** item:

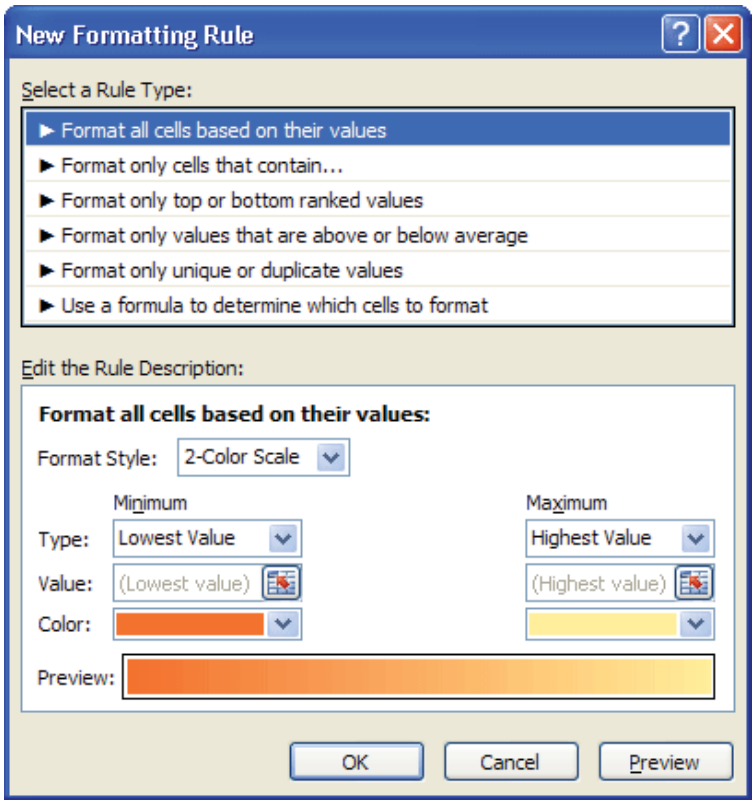
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The Conditional Formatting menu gives you various options. The easiest one is the Colour Scales option. Select one of these and Excel will colour the cell backgrounds for you:

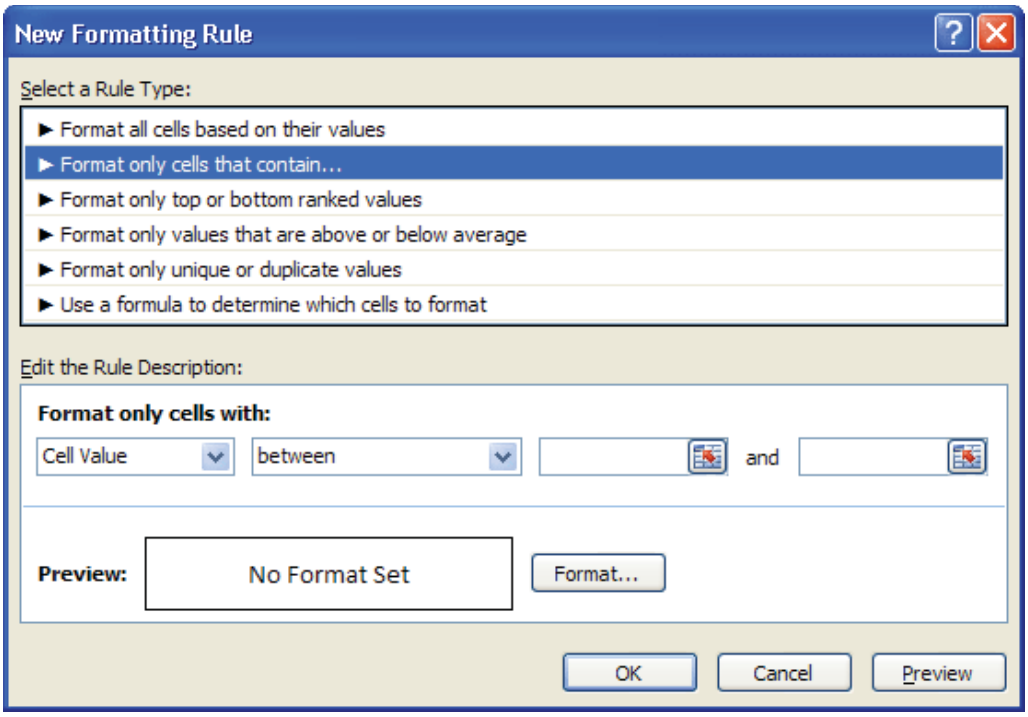


That's not quite what we're looking for, though. We'd like to choose our own values. So click on **More Rules**, from the **Colour Scales** submenu. You'll see the following rather complex dialogue box:



The one we want is the second option, **Format only cells that contain**. This will allow us to set up our values. When you click this option, the dialogue box changes to this:

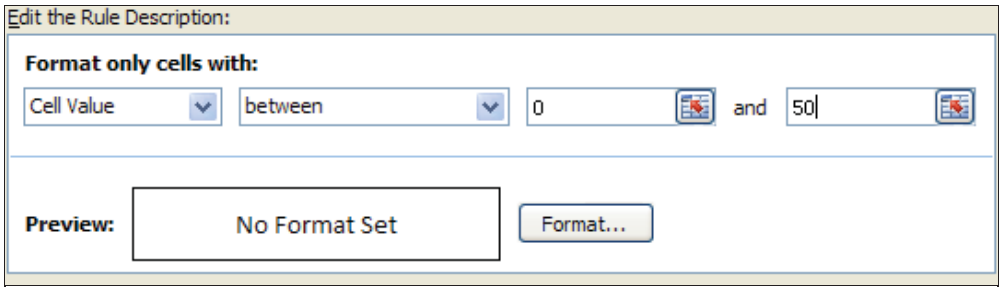
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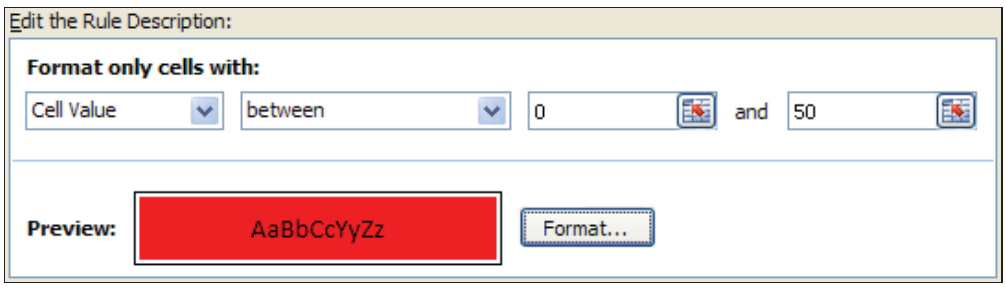
The part we're interested in is the bottom part, under the heading **Edit the Rule Description**. It says **Cell Value** and **Between**, in the drop down boxes. These are the ones we want. We only need to type a value for the two boxes that are currently blank in the image above. We can then click the **Format** button to choose a colour.

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So type 0 in the first box and 50 in the second one:



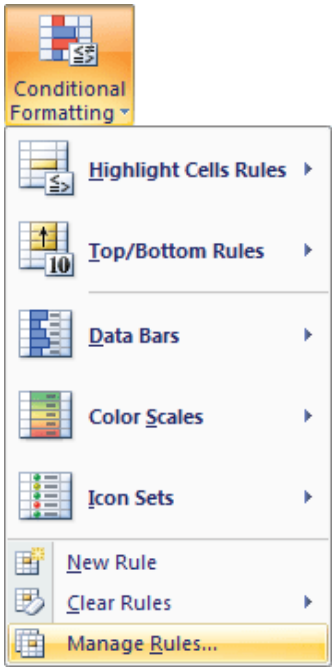
Then click the **Format** button. You'll get another dialogue box popping up. This is just the Format Cells one though. You've met this before. Click on the Fill tab and choose a colour. Click OK and you should see something like this under Edit the Rule Description:



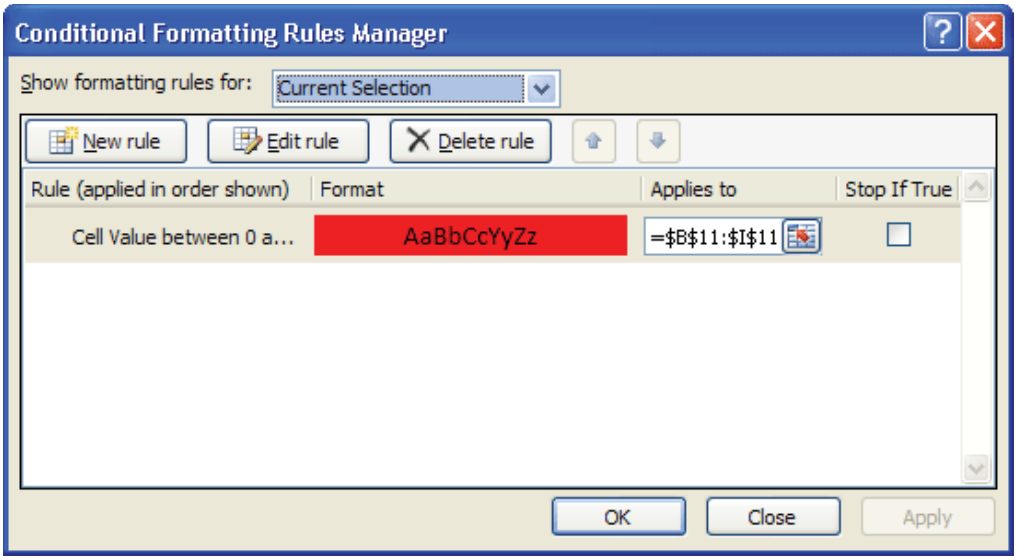
The Preview is showing the colour we picked. So we've said, "**If** the Cell Value is between 0 and 50 **then** colour the cell Red".

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Click OK on this dialogue box to get back to Excel. You should find that one of the cells has turned red. To format the rest of the cells, click on Conditional Formatting on the Styles panel again. From the menu, click on **Manage Rules**:

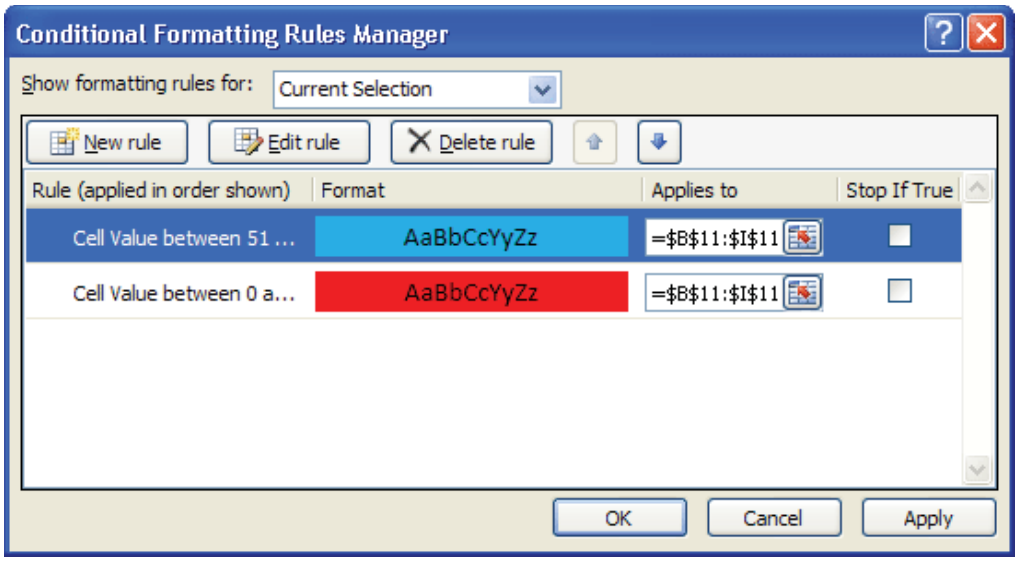


You'll get yet another complex dialogue box popping up! This one:



Our first rule is already there - Cell Value Between. The only thing we're doing here is adding New Rules, similar to the one we've just set up. Click the **New Rule** button then. You'll see the exact same dialogue boxes you used to set up the first rule. Set a new colour for the next scores - 51 to 60. Choose a colour, and keep clicking OK until you get back to the Rules Manager dialogue box. It should now look something like this one:

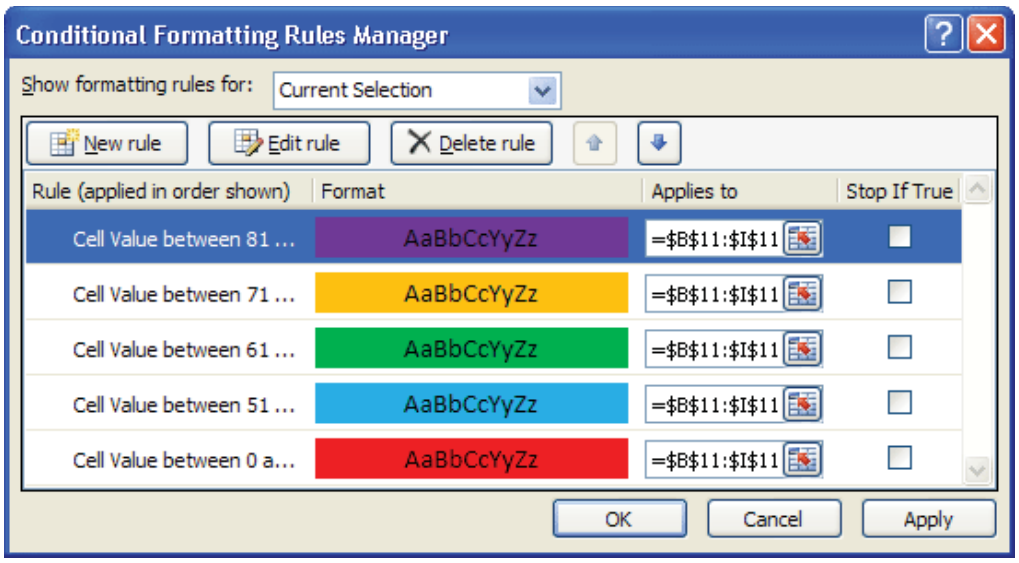
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We now have to colours in our range. Do the rest of the scores, choosing a colour for each. The scores are these, remember:

- 50 and below
- 51 to 60
- 61 to 70
- 71 to 80
- 81 and above

When you've done them all, your dialogue box should have five colours:



The colours above are entirely arbitrary, and you don't have to select the same ones we did. The point is to have a different colour for each range of scores. But click OK when you're done. Your Overall Averages will then look something like this:

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	A	B	C	D	E	F	G	H	I
1		Steven	Mary	Ann	Raymond	Mark	Paul	Eliza	Kelly
2	Maths	76	89	43	48	51	76	87	56
3	English	55	85	78	61	47	87	91	73
4	Science	65	82	39	58	52	65	57	45
5	History	45	91	56	72	49	56	78	56
6	Geography	51	84	54	64	47	64	67	67
7	Art	43	63	49	62	39	89	64	63
8	Computer Studies	63	95	45	59	41	92	89	52
9	French	35	91	65	26	28	51	92	56
10									
11	Overall Average	54.13	85.00	53.63	56.25	44.25	72.50	78.13	58.50
12									

Formatting your spreadsheet in this way allows you to see at a glance relevant information. In the spreadsheet above, it's obvious who's failing - just look for the red cells!

In the next part, we'll look at a useful function that counts things - COUNT IF.

Count IF -->

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Microsoft Excel 2007 to 2013 - CountIF in Excel

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Another useful function that uses Conditional Logic is CountIF. This one is fairly straightforward. As its name suggests, it counts things! But it counts things IF a condition is met. For example, keep a count of how many students have an A Grade.

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To get you started with this function, we'll use our Student Grade spreadsheet and count how many students have a score of 70 or above. First, add the following label to your spreadsheet:

H	I	J	K	L
Eliza	Kelly		Num of Students Above 70	
87	56			
91	73			
57	45			
78	56			
67	67			
64	63			
89	52			
92	56			
78.13	58.5			

As you can see, we've put our new label at the start of the K column.

We can now use the CountIF function to see how many of the students scored 70 or above for a given subject.

The CountIF function looks like this:

COUNTIF(range, criteria**)**

The function takes two arguments (the words in the round brackets). The first argument is range, and this means the range of cells you want Excel to count. Criteria means, "What do you want Excel to look for when it's counting?".

So click inside cell K2, and then click inside the formula bar at the top. Enter the

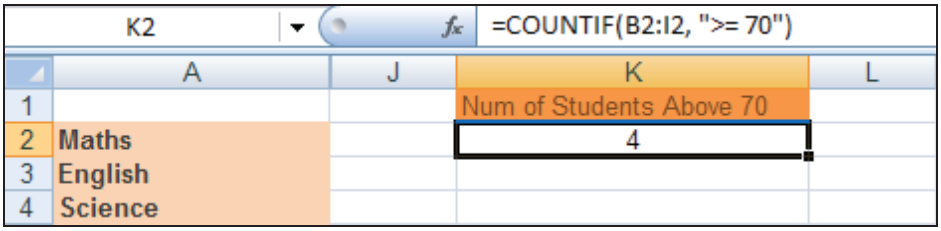
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following formula:

=CountIf(B2:I2**, "**>= 70**")**

The cells B2 to I2 contain the Math scores for all 8 students. It's these scores we want to count.

Press the enter key on your keyboard. Excel should give you an answer of 4:



(If you're wondering where the columns B to I have gone in the image above, we've hidden then for convenience sake!)

To do the rest of the scores, you can use AutoFill. You should then have a K column that looks like this:

	A	J	K	L
1			Num of Students Above 70	
2	Maths		4	
3	English		5	
4	Science		1	
5	History		3	
6	Geography		1	
7	Art		1	
8	Computer Studies		3	
9	French		2	
10				

By using CountIF, we can see at a glance which subjects students are doing well in, and which subjects they are struggling in.

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Exercise

Add a new label to the L column. In the cells L2 to L9, work out how many students got below 50 for a given subject. You should get the same results as in the image below:

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	A	K	L	M
1		Num of Students Above 70	Num of Students Below 50	
2	Maths	4	2	
3	English	5	1	
4	Science	1	2	
5	History	3	2	
6	Geography	1	1	
7	Art	1	3	
8	Computer Studies	3	2	
9	French	2	3	
10				

In the next part, we'll look at a function similar to CountIF - SumIF.

SUM IF -->

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Microsoft Excel 2007 to 2013 - SumIF

Another useful Excel function is SumIF. This function is like CountIf, except it adds one more argument:

SUMIF(range, criteria, sum_range)

Range and criteria are the same as with CountIF - the range of cells to search, and what you want Excel to look for. The Sum_Range is like range, but it searches a new range of cells. To clarify all that, here's what we'll use SumIF for. (Start a new spreadsheet for this.)

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Five people have ordered goods from us. Some have paid us, but some haven't. The five people are Elisa, Kelly, Steven, Euan, and Holly. We'll use SumIF to calculate how much in total has been paid to us, and how much is still owed.

So in Column A, enter the names:

	A	B	C	D
1	Customer			
2				
3	Elisa			
4	Kelly			
5	Steven			
6	Euan			
7	Holly			
8				

In Column B enter how much each person owes:

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	A	B	C	D
1	Customer	Total Goods Ordered		
2				
3	Elisa	£120.00		
4	Kelly	£134.00		
5	Steven	£123.00		
6	Euan	£145.00		
7	Holly	£156.00		
8				

In Column C, enter TRUE or FALSE values. TRUE means they have paid up, and FALSE means they haven't:

	A	B	C	D
1	Customer	Total Goods Ordered	Has Paid	
2				
3	Elisa	£120.00	TRUE	
4	Kelly	£134.00	FALSE	
5	Steven	£123.00	FALSE	
6	Euan	£145.00	TRUE	
7	Holly	£156.00	FALSE	
8				

Add two more labels: Total Paid, and Still Owed. Your spreadsheet should look something like this one:

	A	B	C	D
1	Customer	Total Goods Ordered	Has Paid	
2				
3	Elisa	£120.00	TRUE	
4	Kelly	£134.00	FALSE	
5	Steven	£123.00	FALSE	
6	Euan	£145.00	TRUE	
7	Holly	£156.00	FALSE	
8				
9				
10	Total Paid			
11	Still Owed			
12				

In cells B10 and B11, we'll use a SumIF function to work out how much has been paid in, and how much is still owed. Here's the SumIF function again:

SUMIF(range, criteria, sum_range)

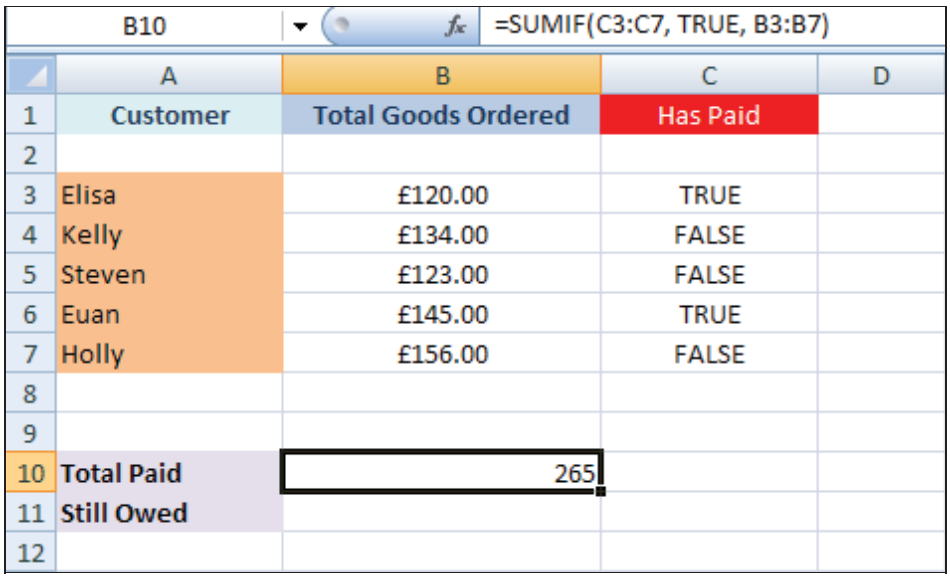
So the range of cells that we want to check are the True and False values in the C column; the criteria is whether they have paid (True); and the Sum_Range is what we want to add up (in the B column).

In cell B10, then, enter the following formula:

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=SUMIF(C3:C7, TRUE, B3:B7)

When you press the enter key, Excel should give you the answer:



	A	B	C	D
1	Customer	Total Goods Ordered	Has Paid	
2				
3	Elisa	£120.00	TRUE	
4	Kelly	£134.00	FALSE	
5	Steven	£123.00	FALSE	
6	Euan	£145.00	TRUE	
7	Holly	£156.00	FALSE	
8				
9				
10	Total Paid	265		
11	Still Owed			
12				

So 265 is has been paid in. But we told SumIF to first check the values in the cells C3 to C7 (range). Then we said look for a value of TRUE (criteria). Finally, we wanted the values in the B column adding up, if a criteria of TRUE was indeed found (sum_range).

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Exercise

Use SumIF to work out how much is still owed. Put your answer in cell B11.

We'll leave the subject of Conditional Logic. In the next section, more things you can do with Excel!

Data Tables in Excel 2007 to 2013 -->

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In Excel, a Data Table is a way to see different results by altering an input cell in your formula. As an example, we're going to alter the interest rate, and see how much a £10,000 loan would cost each month. The interest rate will be our input cell. By asking Excel to alter this input, we can quickly see the different monthly payments. Want to know how much we'd pay back each month if the interest was 24 percent per year. But other banks may be offering better deals. So we'll ask Excel to calculate how much we'd pay each month if the interest rate was 22 percent a year, 20 percent a year, and 18 percent a year.

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The formula we need is the Payment one you met in a previous section - PMT( ). Here it is again:

PMT(rate, nper, pv, fv, type**)**

We only need the first three arguments. So for us, it's just this:

PMT(rate, nper, pv**)**

Rate means the interest rate. The second argument, **nper**, is how many months you've got to pay the loan back. The third argument, **pv**, is how much you want to borrow.

Let's make a start then. On a new spreadsheet, set up the following labels:

	A	B	C	D
1	Payment Terms			
2				
3	Interest Rate			
4	Num of Months			
5	Loan Amount			
6				

So we'll put our starting interest rate in cell B3 (**rate**), our loan length in cell B4

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(**nper**), and our loan amount in cell B5 (**pv**).

Enter the following in cells B3 to B5:

	A	B	C	D
1	Payment Terms			
2				
3	Interest Rate	24.00%		
4	Num of Months	60		
5	Loan Amount	£10,000.00		
6				

So you need to enter 24.00% in cell B3, 60 in cell B4, and £10,000 in cell B5.

We'll enter our formula now. Click inside cell D2 and enter the following:

=PMT(B3 / 12, B4, -B5**)**

Cell B3 is the interest rate. But this is for the entire year. In the formula, we're diving whatever is in cell B3 by 12. This will get us a monthly interest rate. B4 in the formula is the number of months, which is 60 for us. B5 has a minus sign before it. It's a minus figure because it's a debt.

When you press the enter key on your keyboard, Excel should give you an answer of £287.68.

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Now that we have our function in place, we can create an Excel Data Table. First, though, we need to tell Excel about those other interest rates. It will use these to work out the new monthly payments. Remember, Excel is recalculating the PMT function. So it needs some new values to calculate with.

So enter some new values in cells C3, C4, and C5. Enter the same ones as in the image below:

	A	B	C	D
1	Payment Terms			
2				£287.68
3	Interest Rate	24.00%	22.00%	
4	Num of Months	60	20.00%	
5	Loan Amount	£10,000.00	18.00%	
6				

We have put the PMT function in cell D2 for a reason. This is one Row up, and one Column to the right of our first new interest rate of 22%. The new monthly payments are going to go in cells D3 to D5. Excel needs the table setting out this way.

So that Excel can work out the new totals, you have to highlight both the new values and the Function you're using.

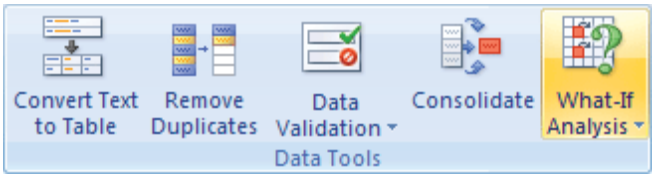
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So highlight the cells C2 to D5. Your spreadsheet should look like this:

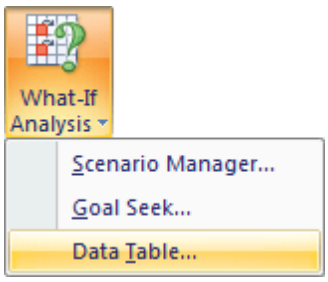
	A	B	C	D
1	Payment Terms			
2				£287.68
3	Interest Rate	24.00%	22.00%	
4	Num of Months	60	20.00%	
5	Loan Amount	£10,000.00	18.00%	
6				

As you can see, the cells C2 to D5 are now highlighted. This includes our new interest rate values in the C column, and our PMT function in cell D2. We can now create an Excel Data Table. This will work out new monthly payemnts for us. So do this:

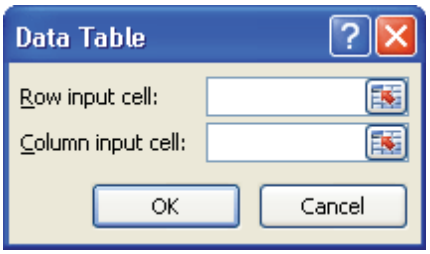
- From the Excel menu bar, click on **Data**
- Locate the **Data Tools** panel
- Click on the "What if Analysis" item:



When you click on the "What if Analysis" item, you'll see the following menu:



Click on **Data Table**, and you'll see this small dialogue box:

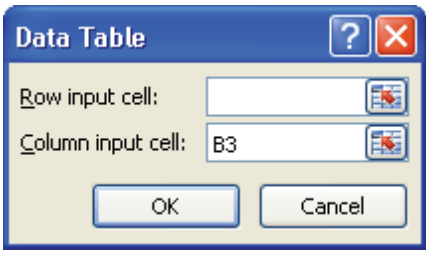


In the dialogue box, there is only a **Row input cell** or a **Column input cell**. We want Excel to fill downwards, down a column. So we need the second text box on the dialogue box "Column input cell". If we were filling across in rows, we would use the "Row input cell" text box.

The Input Cell for us is the one that contains our original interest rate. This is the cell you want Excel to substitute.

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So click inside the Column input cell box and enter B3:



Click OK. When you do, Excel will work out the new monthly payments:

	A	B	C	D
1	Payment Terms			
2				£287.68
3	Interest Rate	24.00%	22.00%	£276.19
4	Num of Months	60	20.00%	£264.94
5	Loan Amount	£10,000.00	18.00%	£253.93
6				

So if we could get an 18 percent interest rate, our monthly payments would be £253.93.

If you click inside any of the cells D3 to D5, then look at the formula bar, you will see this:

{=TABLE(,B3)}

That's Excel's way of telling you that a Table has been created, based on the input cell B3

We'll try one more Data Table in the next part. We'll try an easier formula, this time

Our Second Data Table in Excel 2007 to 2013 -->

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We'll do one more Data Table, just so that you get the hang of things. This time, we'll use a more simple formula than PMT, and we'll use Rows instead of Columns. This is the scenario:

> You have 250 items that you want to sell on EBay. Your unique selling point is this - All items are only £5 each! Except, you feel £5 may be a bit expensive for the goods you're selling! What you want to know is how much profit you'll make if you reduce your prices to £4.50, how much if you reduce to £4.00, and how much for a reduction to £3.50. Assume that everything gets sold.

To start creating your Table, construct a spreadsheet like the one below. Make sure that you start on a new sheet.

	A	B	C	D	E
1	Number of Items	250			
2	Price Per Item	£5.00			
3	Reductions	0	£4.50	£4.00	£3.50
4	Profits				
5					

In cell B1 is the number of items we want to sell (250). Cell B2 has the original price (£5.00). And the **Reductions** Row has our new values. Cell B3 has a 0 because there's no reduction for £5.00. Row 4 is where our Profits will go.

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The formula to work out the profits is simply the **Number of Items** multiplied by the **Price Per Item**. So click inside cell B4 and enter the following formula:

= B1 * B2

Your spreadsheet will then look like this:

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	A	B	C	D	E
1	Number of Items	250			
2	Price Per Item	£5.00			
3	Reductions	0	£4.50	£4.00	£3.50
4	Profits	£1,250.00			
5					

So if we manage to sell all our items at £5, we'll make £1,250. We're a bit dubious, though. Realistically, all our items won't sell at this price! Let's use an Excel Data Table to work out how much profit we'd make at the other prices.

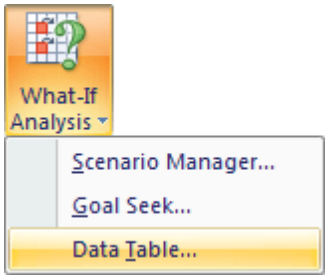
Again, we put the answer in cell B4 for a reason. This is because when you want Excel to calculate a Data Table in Rows, the formula must be inserted one Column to the Left of your first new value, and then one Row down. Our first new value is going in cell C3. So one column to the left takes us to the B column. One row down is Row 4. So the formula goes in cell B4.

Next, click inside cell B3 and highlight to cell E4. Your spreadsheet should now look like this one:

	A	B	C	D	E
1	Number of Items	250			
2	Price Per Item	£5.00			
3	Reductions	0	£4.50	£4.00	£3.50
4	Profits	£1,250.00			
5					

Excel is going to use our formula in cell B4. It will then look at the new values on Row 3 (not counting the zero), and then insert the new totals for us. To create a Data Table then, do the following:

- From the Excel menu bar, click on **Data**
- Locate the **Data Tools** panel
- Click on the "What if Analysis" item
- Select **Data Table** from the menu



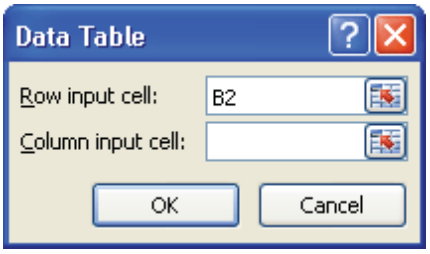
Just like last time, you'll get the Data Table dialogue box. The one we want now, though, is Row Input Cell. But what is the Input Cell this time?

Ask yourself what you are trying to work out, and what you want Excel to recalculate. You want to work out the new prices. The formula you entered was:

= B1 * B2

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Excel is going to be changing this formula. You only need to decide if you want Excel to alter the B1 or the B2. B1 contains the number of items; B2 contains the price of each item. Since we're trying to work out the profits we'd get if we change the price, we need Excel to change B2. So enter B2 for the Row Input Cell:



When you click OK, Excel will work out the new profits:

	A	B	C	D	E
1	Number of Items	250			
2	Price Per Item	£5.00			
3	Reductions	0	£4.50	£4.00	£3.50
4	Profits	£1,250.00	£1,125.00	£1,000.00	£875.00
5					

So setting a price of £3.50 per item, you'd make £875 profit. You'd make £1,000 at £4.00 per item, and £1,125 if you sell for £4.50.

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Hopefully, Data Tables weren't too difficult! But they are a useful tool when you want to analyse values that can change. In the next section, we'll take a look at scenarios.

Scenarios in Excel 2007 to 2013 -->

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Scenarios come under the heading of "What-If Analysis" in Excel. They are similar to tables in that you are changing values to get new results. For example, What if I reduce the amount I'm spending on food? How much will I have left then? Scenarios can be saved, so that you can apply them with a quick click of the mouse.

An example of a scenario you might want to create is a family budget. You can then make changes to individual amounts, like food, clothes, or fuel, and see how these changes effect your overall budget.

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We'll see how they work now, as we tackle a family budget. So, create the spreadsheet below:

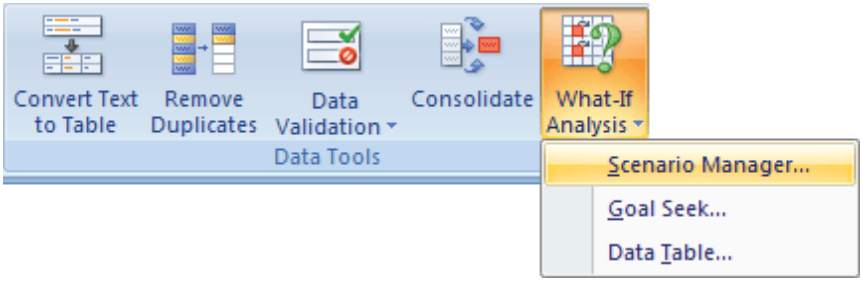
	A	B	C	D	E	F
1		The Family Budget				
2		OUTGOINGS		INCOME		
3	Mortgage	440		1200		
4	Fuel Bills	85				
5	Council Tax	45				
6	Credit Cards	29				
7	Food	280				
8	Clothes	150				
9	Phone Bill	45				
10	Direct Debits	80				
11						
12	Total Outgoings	1154				
13	Income Left			46		
14						

The figure in B12 above is just a SUM function, and is your total debts (=SUM(B3:B10). The figure in D3 is how much you have to spend each month (not a lot!). The figure in D13 is how much you have left after you deduct all your debts. In cell D13, then, enter =D3 - B12

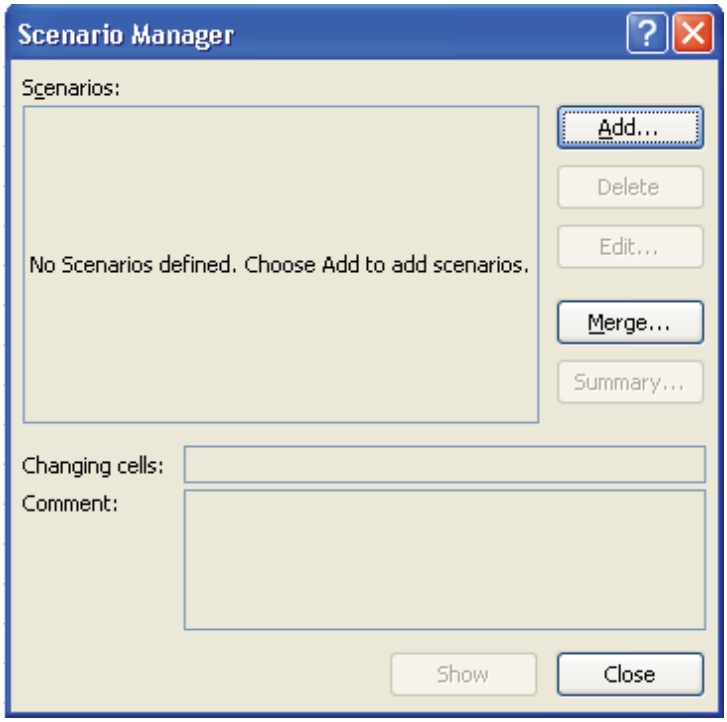
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With only 46 pounds spending money left each month, clearly some changes have to be made. We'll create a scenario to see what effect the various budgets cuts have.

- From the top of Excel click the **Data** menu
- On the Data menu, locate the **Data Tools** panel
- Click on the **What if Analysis** item, and select **Scenario Manager** from the menu:

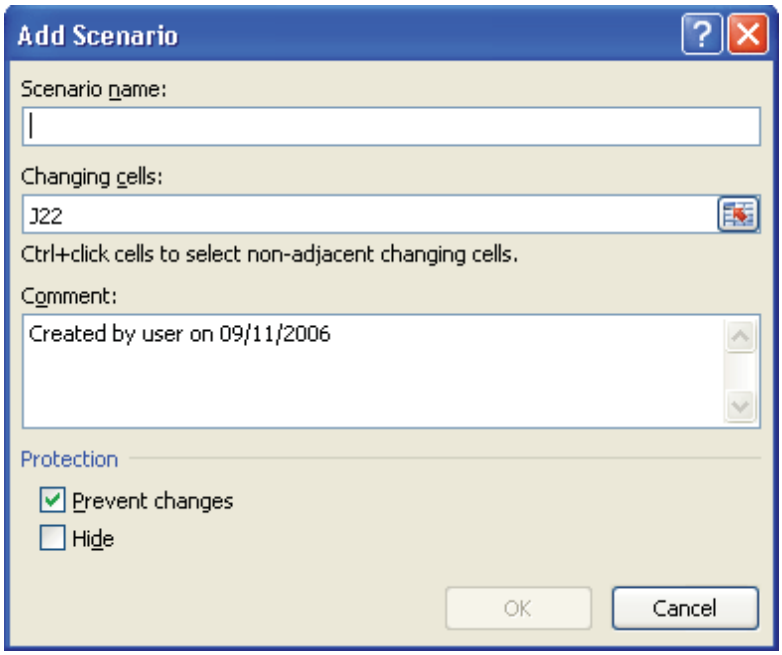


When you click **Scenario Manager**, you should the following dialogue box:



We want to create a new scenario. So click the **Add** button. You'll then get another dialogue box popping up:

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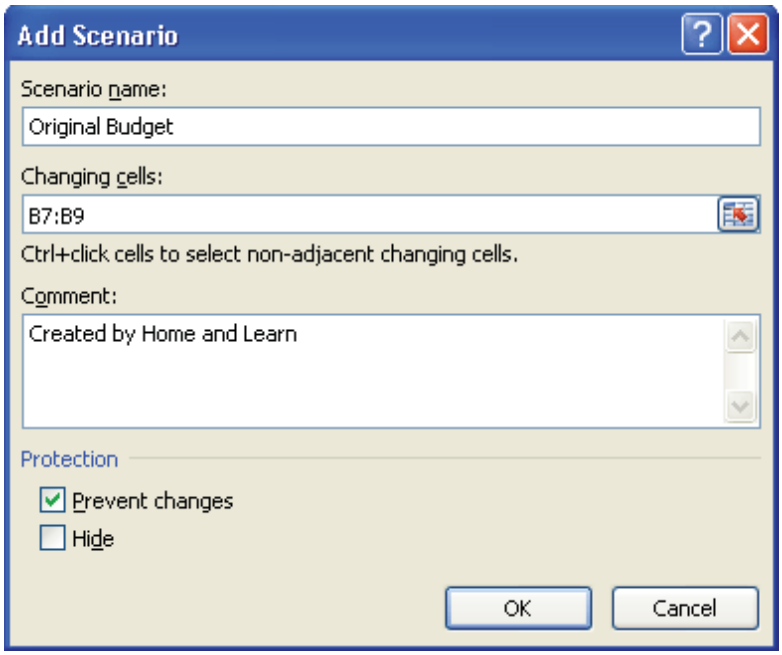
The J22 in the image is just whatever cell you had selected when you brought up the dialogue boxes. We'll change this. First, type a Name for your Scenario in the **Scenario Name** box. Call it **Original Budget**.

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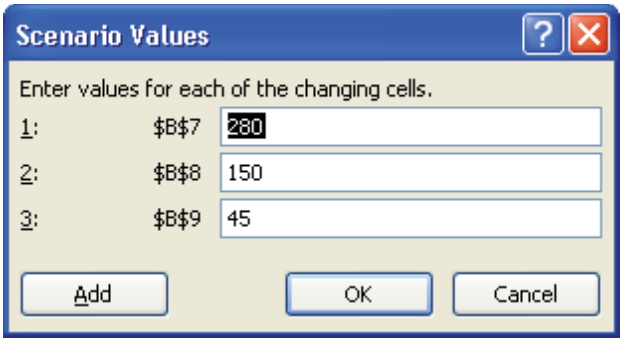
Excel now needs you to enter which cells in your spreadsheet will be changing. In this first scenario, nothing will be changing (because it's our original). But we still need to specify which cells will be changing. Let's try to reduce the Food bill, the Clothes Bill, and the Phone bill. These are in cells B7 to B9 in our spreadsheet. So in the **Changing Cells** box, enter B7:B9

Don't forget to include the colon in the middle! But your Add Scenario box should look like this:

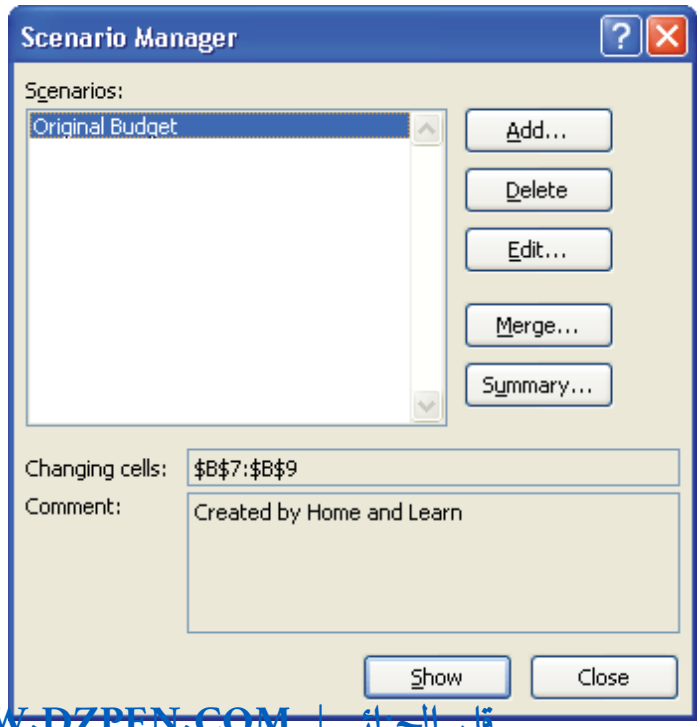
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Click OK and Excel will ask you for some values:



We don't want any values to change in this first scenario, so just click OK. You will be taken back to the Scenario Manager box. It should now look like this:

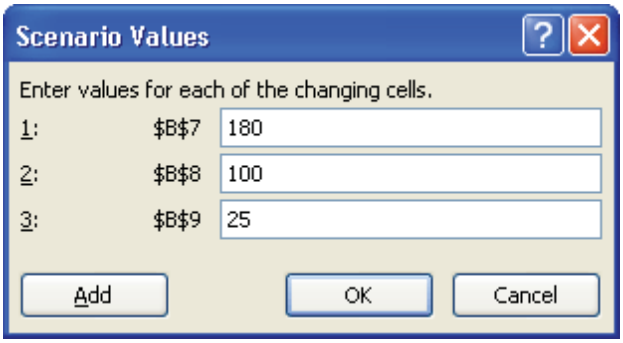


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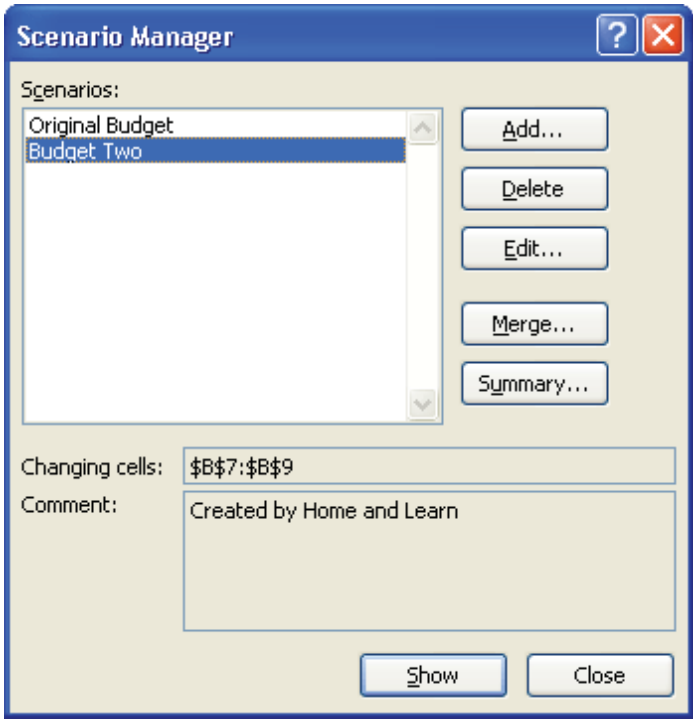
Now that we have one scenario set up, we can add a second one. This is where we'll enter some new values - our savings.

Click the Add button again. You'll get the Add Scenario dialogue box back up. Type a new Name, something like **Budget Two**. The Changing Cells area should already say B7:B9. So just click OK.

You will be taken to the Scenario Values dialogue box again. This time, we do want to change the values. Enter the same ones as in the image below:

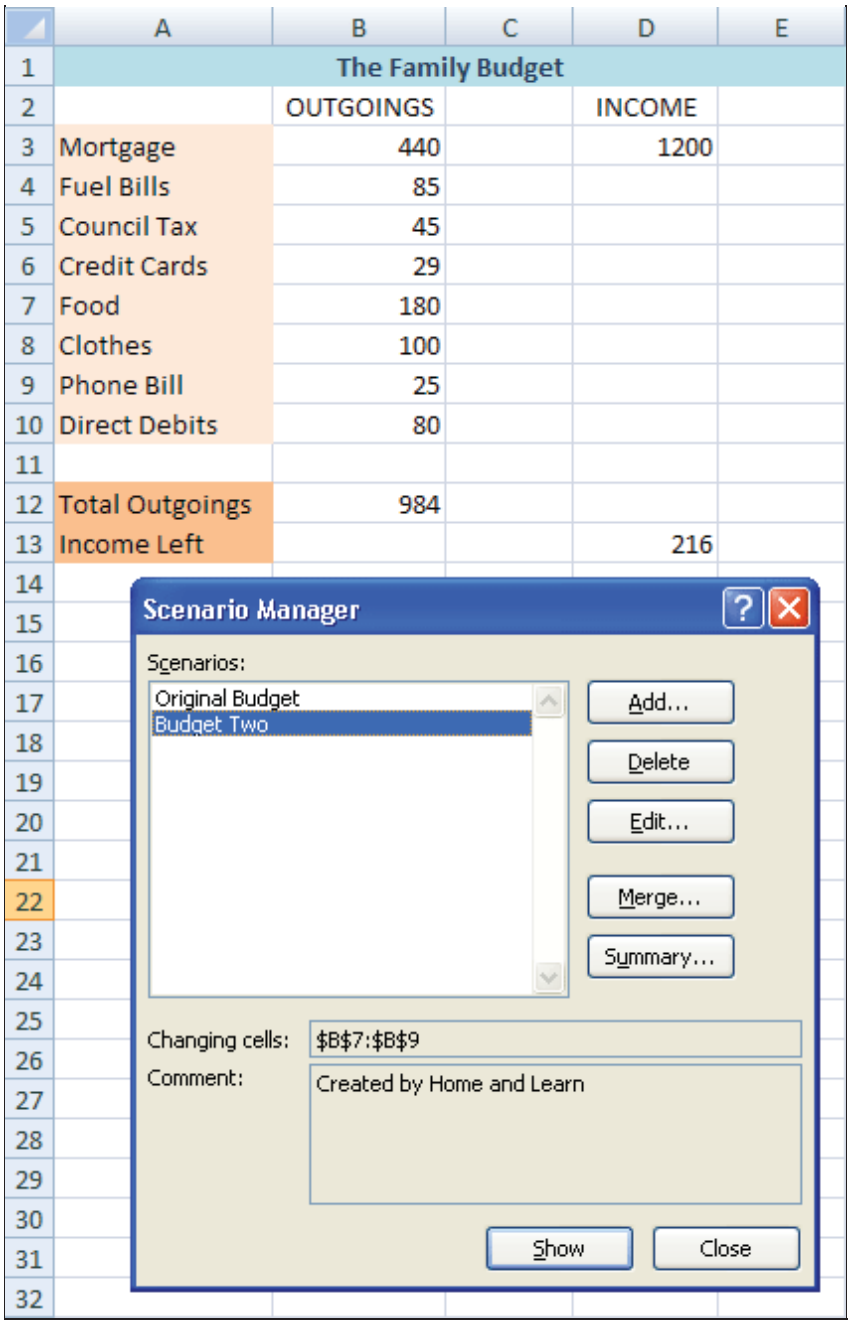


These are the new values for our Budget. Click OK and you'll be taken back to the Scenario Manager. This time, you'll have two scenarios to view:



As you can see, we have our Original Budget, and Budget Two. With Budget Two selected, click the **Show** button at the bottom. The values in your spreadsheet will change, and the new budget will be calculated. The image below shows what it looks like in the spreadsheet:

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Click on the Original Budget to highlight it. Then click the Show button. The first values will be displayed!

Click the **Close** button on the dialogue box when you're done.

So a Scenario offers you different ways to view a set of figures, and allows you to switch between them quite easily.

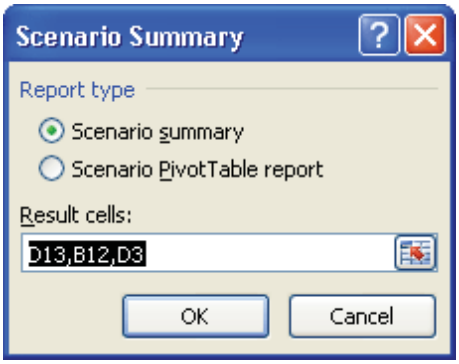
How to Create a Report from a Scenario

Another thing you can do with a scenario is create a report. To create a report from

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your scenarios, do the following:

- Click on **Data** from the Excel menu bar
- Locate the **Data Tools** panel
- On the Data Tools panel, click **What if Analysis**
- From the What if Analysis menu, click **Scenario Manager**
- From the Scenario Manager dialogue box, click the Summary button to see the following dialogue box:



What you're doing here is selecting cells to go in your report. To change the cells, click on your spreadsheet. Click individual cells by holding down the CTRL key on your keyboard, and clicking a cell with your left mouse button. Select the cells D3, B12 and D13. If you want to get rid of a highlighted cell, just click inside it again with the CTRL key held down. Click OK when you've selected the cells. Excel will then create your Scenario Summary:

Scenario Summary	Current Values:	Original Budget	Budget Two
Changing Cells:			
B7	280	280	180
B8	150	150	100
B9	45	45	25
Result Cells:			
D13	46	46	216
B12	1154	1154	984
D3	1200	1200	1200

Notes: Current Values column represents values of changing cells at time Scenario Summary Report was created. Changing cells for each scenario are highlighted in gray.

All right, it's not terribly easy to read, but it looks pretty enough. Perhaps it will be enough to convince our family to change their ways. Unlikely, but a nice diagram never hurts!

We'll now move on to Goal Seek.

Goal Seek in Excel 2007 to 2013 -->

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Goal Seek is used to get a particular result when you're not too sure of the starting value. For example, if the answer is 56, and the first number is 8, what is the second number? Is it 8 multiplied by 7, or 8 multiplied by 6? You can use Goal Seek to find out. We'll try that example to get you started, and then have a go at a more practical example.

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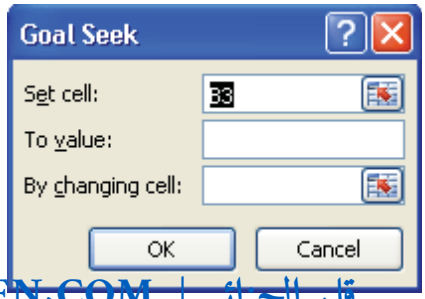
Create the following Excel spreadsheet

B3 fx = B1 * B2

	A	B	C	D
1	Number Certain	8		
2	Number Unsure	6		
3	Answer We Want	48		
4				

In the spreadsheet above, we know that we want to multiply the number in B1 by the number in B2. The number in cell B2 is the one we're not too sure of. The answer is going in cell B3. Our answer is wrong at the moment, because we has a Goal of 56. To use Goal Seek to get the answer, try the following:

- From the Excel menu bar, click on **Data**
- Locate the **Data Tools** panel and the **What if Analysis** item. From the What if Analysis menu, select **Goal Seek**
- The following dialogue box appears:



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The first thing Excel is looking for is "Set cell". This is not very well named. It means "Which cell contains the Formula that you want Excel to use". For us, this is cell B3. We have the following formula in B3:

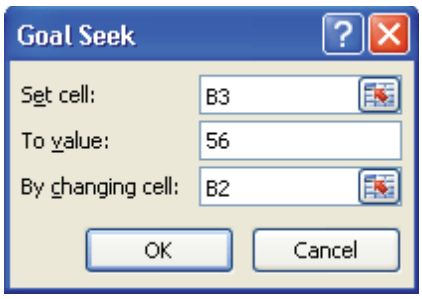
= B1 * B2

So enter B3 into the "Set cell" box, if it's not already in there.

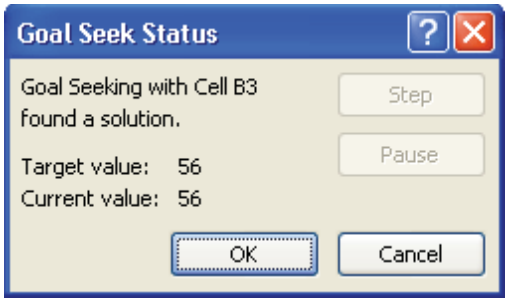
The "To value" box means "What answer are you looking for"? For us, this is 56. So just type 56 into the "To value" box

The "By Changing Cell" is the part you're not sure of. Excel will be changing this part. For us, it was cell B2. We're weren't sure which number, when multiplied by 8, gave the answer 56. So type B2 into the box.

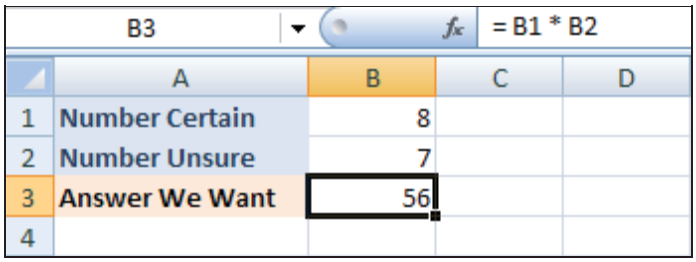
You Goal Seek dialogue box should look like ours below:



Click OK and Excel will tell you if it has found a solution:



Click OK again, because Excel has found the answer. Your new spreadsheet will look like this one:



As you can see, Excel has changed cell B2 and replace the 6 with a 7 - the correct answer.

We'll now try a more practical example.

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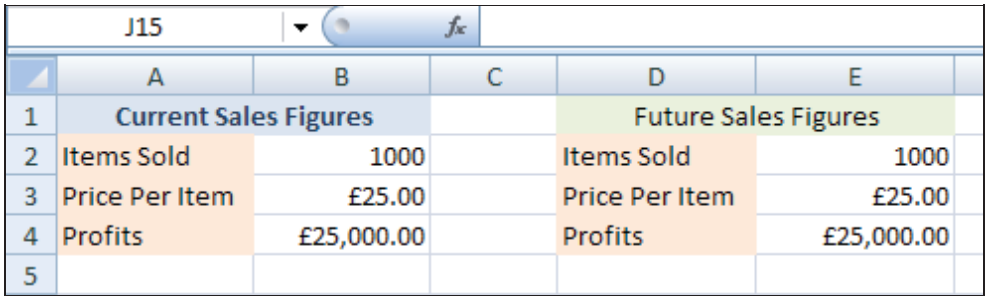
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Goal Seek Number Two

Consider this problem:

> Your business has a modest profit of 25,000. You've set yourself a new profit Goal of 35,000. At the moment, you're selling 1000 items at 25 each. Assume that you'll still sell 1000 items. The question is, to hit your new profit of 35,000, by how much do you have to raise your prices?

Create the spreadsheet below, and we'll find a solution with Goal Seek.



	A	B	C	D	E
1	Current Sales Figures			Future Sales Figures	
2	Items Sold	1000		Items Sold	1000
3	Price Per Item	£25.00		Price Per Item	£25.00
4	Profits	£25,000.00		Profits	£25,000.00
5					

The spreadsheet is split into two: Current Sales, and Future Sales. We'll be changing the Future Sales with Goal Seek. But for now, enter the same values for both sections. The formula to enter for B4 is this:

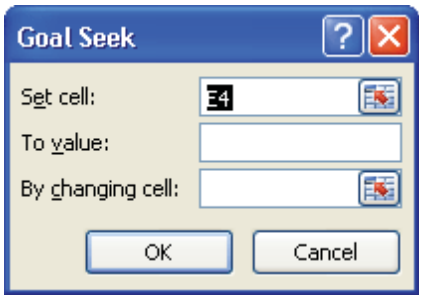
= B2 * B3

And the formula to enter for E4 is this:

= E2 * E3

The current Price Per Item is 25.00. We want to change this with Goal Seek, because our prices will be going up to hit our new profits of 35,000. So try this:

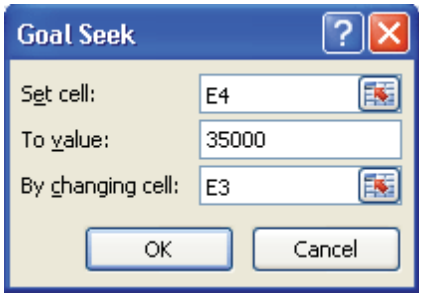
- From the Excel menu bar, click on Data
- Locate the Data Tools panel and the What if Analysis item. From the What if Analysis menu, select Goal Seek
- The following dialogue box appears:



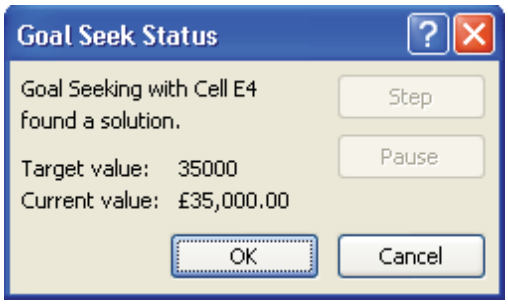
For "Set cell", enter E4. This is where the formula is. The "To Value" is what we want our new profits to be. So enter 35000. The "By changing cell" is the part we're not

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sure of. For us, this was the price each item needs to be increased by. This was coming from cell E3 on our spreadsheet. So enter E3 in the "By changing cell" box. Your Goal Seek dialogue box should now look like this:



Click OK to see if Excel can find an answer:



Excel is now telling that it has indeed found a solution. Click OK to see the new version of the spreadsheet:

	A	B	C	D	E
1	Current Sales Figures			Future Sales Figures	
2	Items Sold	1000		Items Sold	1000
3	Price Per Item	£25.00		Price Per Item	£35.00
4	Profits	£25,000.00		Profits	£35,000.00
5					

Our new Price Per Item is 35. Excel has also changed the Profits cell to 35 000.

Exercise

You've had a meeting with your staff, and it has been decide that a price change from 25 to 35 is not a good idea. A better idea is to sell more items. You still want a profit of 35 000. Use Goal Seek to find out how many items you'll have to sell to meet your new profit figure.

In the next part, well take a closer look at cell references in Excel.

Cell References in Excel 2007 to 2013 -->

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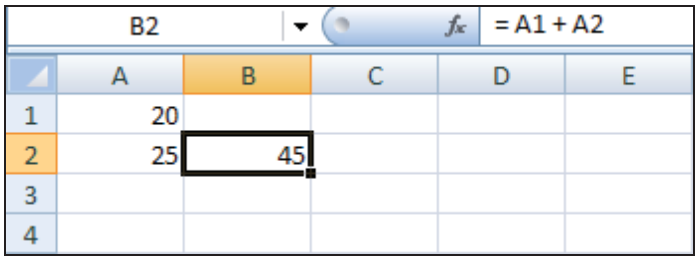
C# .NET

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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.

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



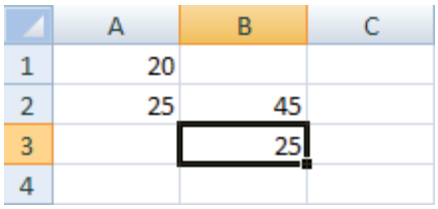
In cell B2, you need the following formula:

= A1 + A2

What do you think would happen if we copied an 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:

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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?

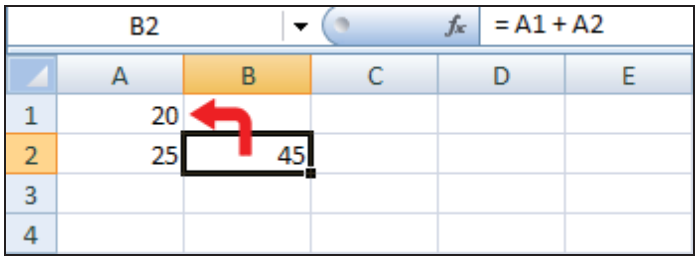
With cell B3 still highlighted, look at the formula bar at the top of Excel. You should see this formula:

= A2 + A3

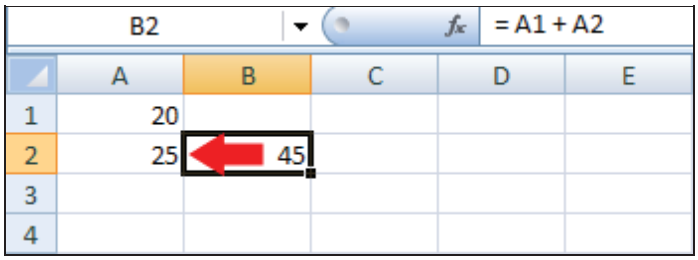
Click into B2, however, and the formula is this:

= 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 at 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):

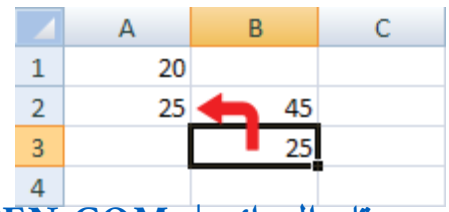


The second cell reference (A2) is one column to the left of cell B2:



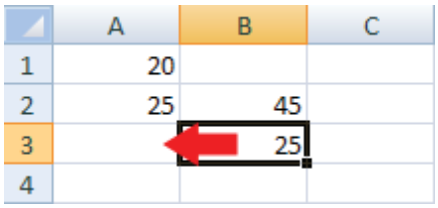
When you clicked into cell B3 and selected Paste from the menu, Excel was not only pasting the formula, it was pasting this "up 1, left 1". Take a look at the two images below. We're now starting at cell B3. Have a look at where the two red arrows are pointing now.

The first cell reference:



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The second cell reference:



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

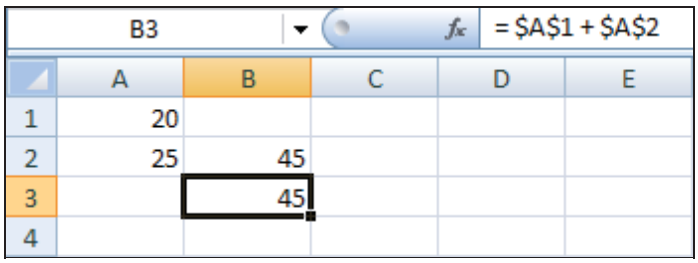
If you want the correct answer in cell B3, you have to stop Excel from using this Relative Cell Referencing that it's currently doing. What you need is Absolute Cell Referencing.

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:

= A1 + A2

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



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).

In the next part, we'll take a look at Named Ranges in Excel.

Named Ranges in Excel 2007 to 2013 -->

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

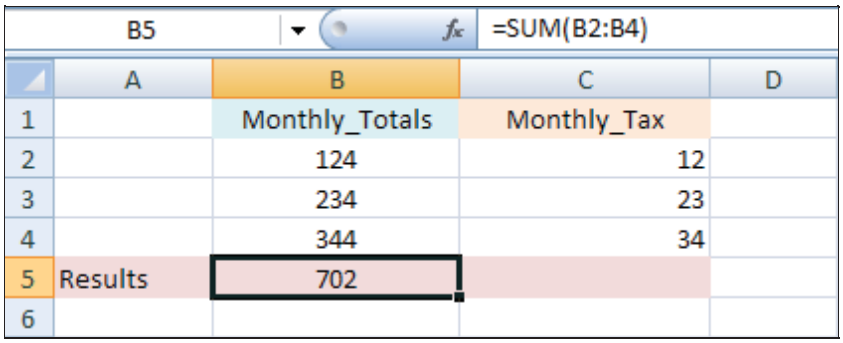
= SUM(B2:B4**)**

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 and create the spreadsheet below:



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

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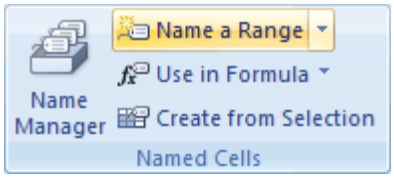
Define a Name

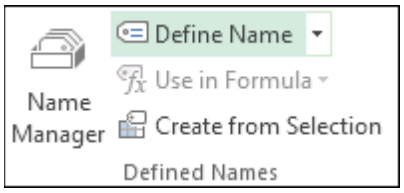
Setting up a Named Range is a two-step process. You first Define the Name, and then you Apply it. To Define your name, do this (make sure you have the formula in cell B5):

- Highlight the cells B2 to B4 (NOT B5), then click the **Formulas** menu

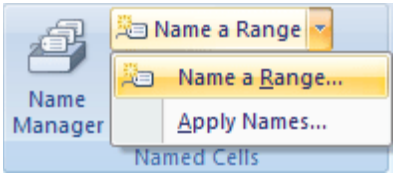
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- Locate the **Named Cells** panel in Excel 2007. In Excel 2010 and 2013, locate the **Defined Names** panel instead.
- Click **Name a Range** in Excel 2007 and **Define Name** in Excel 2010 and 2013

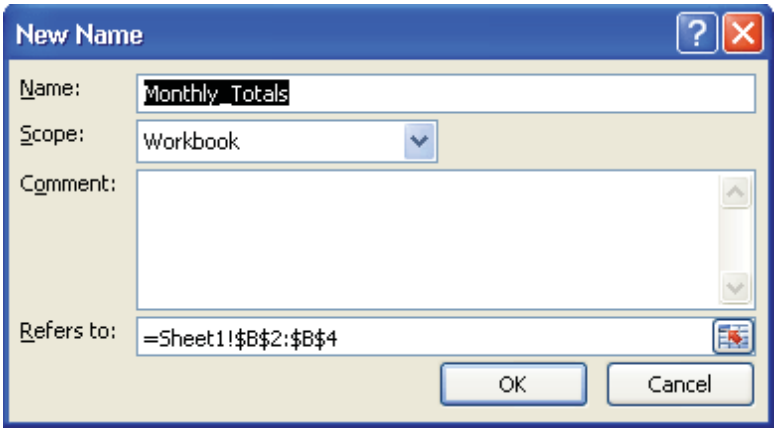




From the **Name a Range** menu, click **Name a Range** (**Define Name** again in Excel 2010/13):



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.

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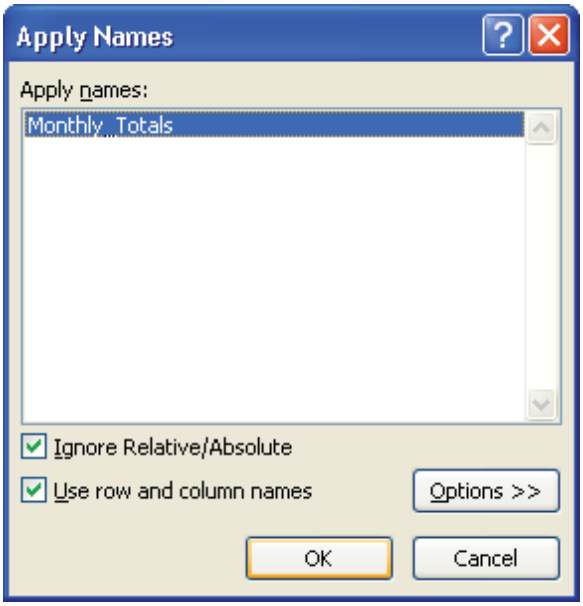
Apply a Name

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

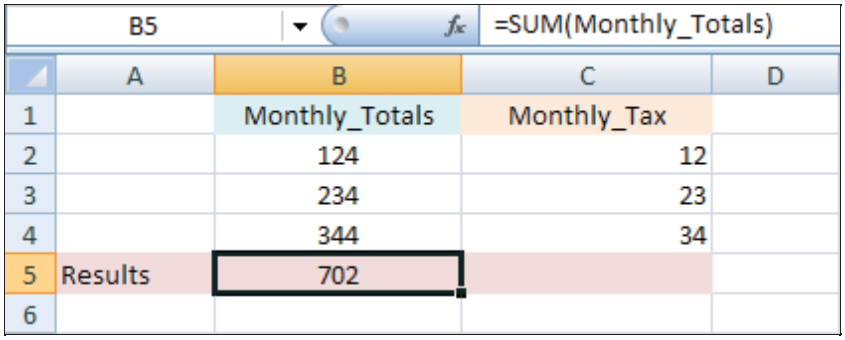
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On the **Named Cells** panel, Click **Name a Range.** For Excel 2010/13 users click **Define Name > Define Name**

- 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:



In the image above, cell B5 now says:

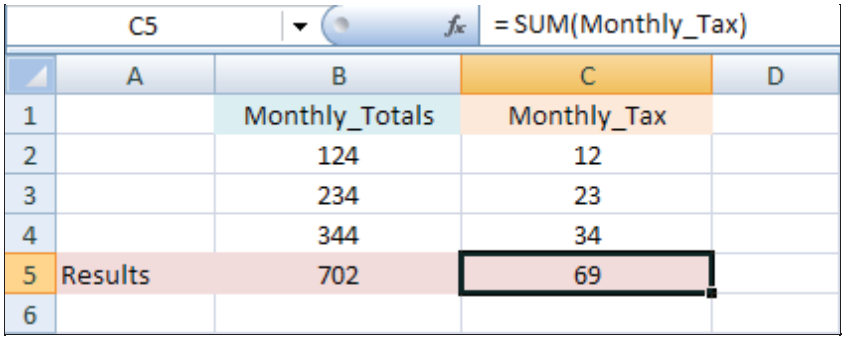
=SUM(Monthly_Totals**)**

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:

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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.

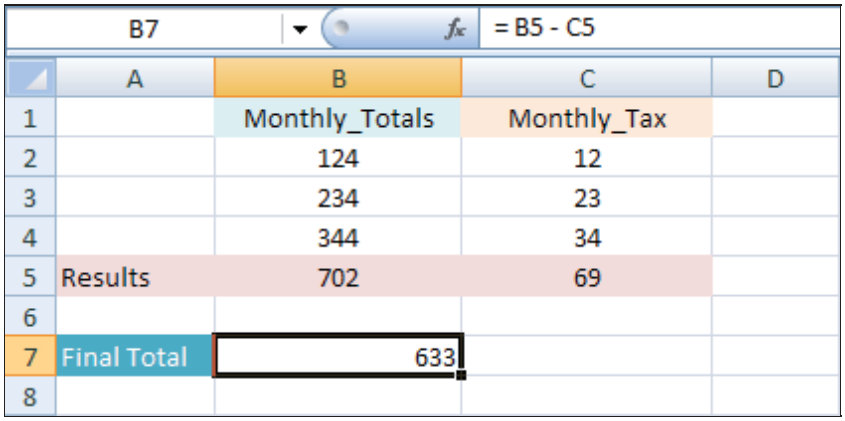
Using Named Ranges in Formulas

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** (Excel 2007). In Excel 2010/13, click **Define Name > Define Name** from the **Defined Names** panel.
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:



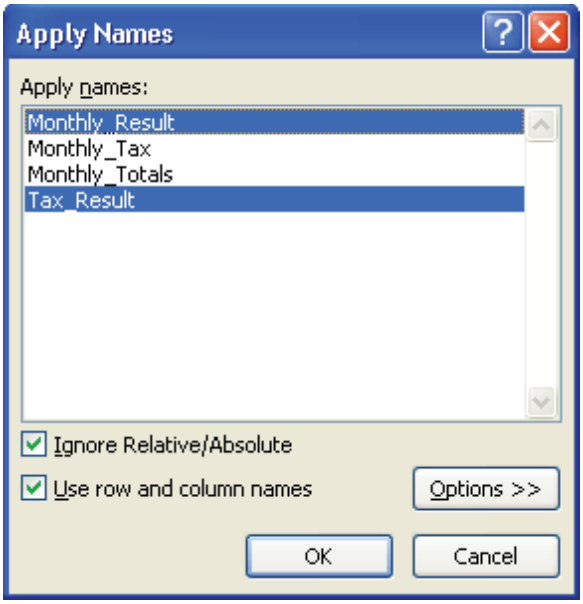
Click in to cell B7, next to your new label, and enter the following formula:

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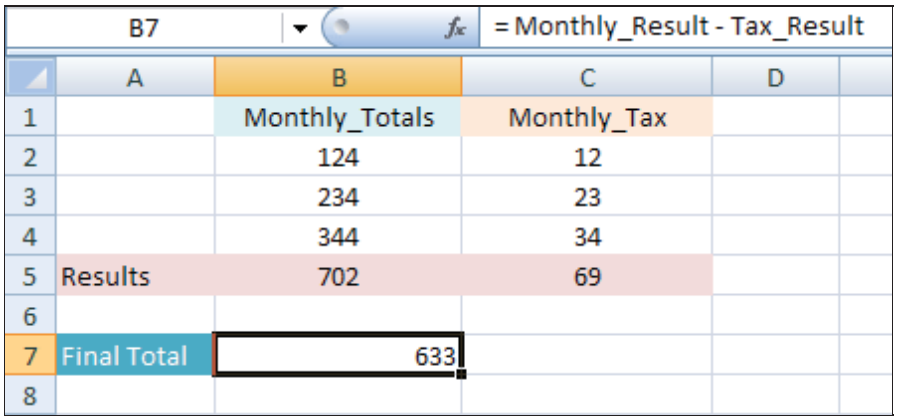
= B5 - C5

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** (Excel 2007). In Excel 2010/13, click **Define Name > Apply Names** from the **Defined Names** panel.
- 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:



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.

In the next part, we'll take a look at how to set up your own custom names that you can use in formulas.

Custom Names in Excel 2007 to 2013 -->

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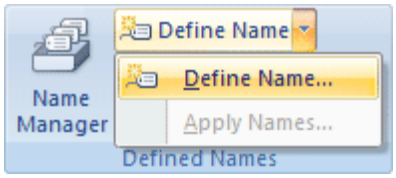
You can set up a custom name to be used as a constant. An example of a constant is PI when working with circles. If you need to use PI in formulas you don't need to type out 3.1415 all the time, you can just do this:

= PI() * 5

We'll use the spreadsheet below to set up our own custom name:

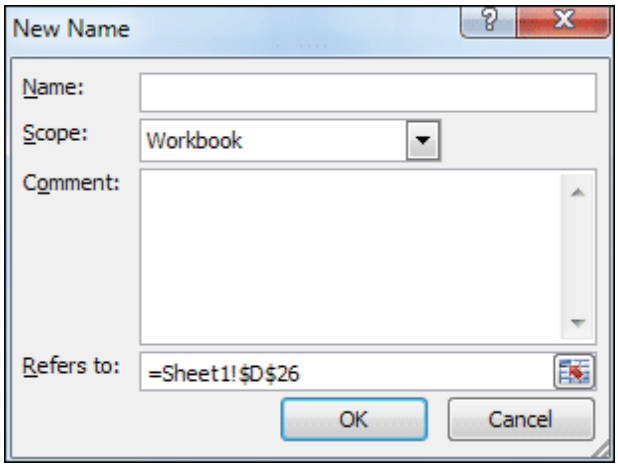
	A	B	C	D
1	Item Number	Shoe Type	Price	Discount
2	156	Slingbacks	£48.00	
3	229	Stacked heel	£70.00	
4	312	Stiletto	£85.00	
5	471	Platforms	£30.00	
6	583	Kitten heel	£57.00	
7	612	Mules	£40.00	
8	773	Sandals	£37.00	
9	823	Wedge	£35.00	
10	982	Pumps	£45.00	
11				

We'd like to work out a discount, depending on the shoe type. So Slingback shoes might have a discount of 5 percent but Stacked Heels might have a discount of 12 percent. To set up a custom name, click on the **Formulas** ribbon at the top of Excel. On the **Defined Names** panel, select **Define Name > Define Name**: (In Excel 2010 and 2013, locate the **Defined Names** panel instead.)

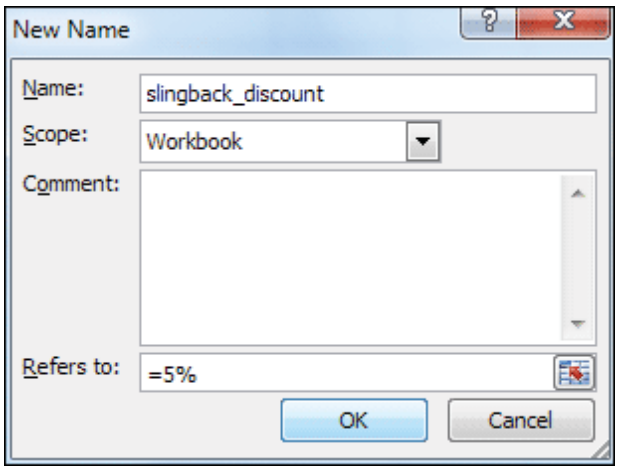


You should see the **New Name** dialogue box appear:

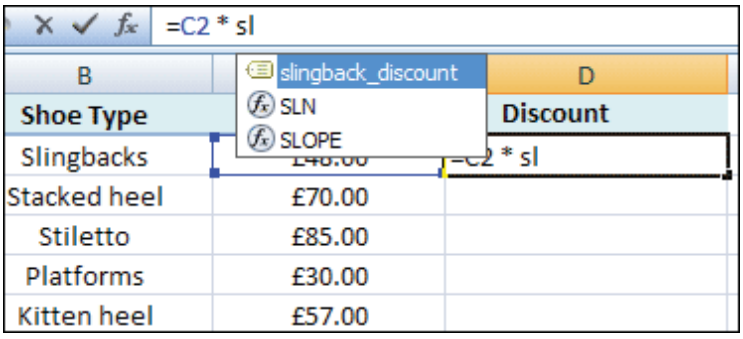
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In the Name area at the top, type **slingback_discount**. In the **Refers to** textbox at the bottom, you can type a cell reference or a formula. Type **=5%** in the textbox, though. Then click OK when your dialogue box looks like this:



To use your new custom name click into cell D2 to select it. Then click into the formula bar at the top. Type **= C2** *. Then start typing your custom name. As soon as you type the "sl" you'll see a popup box appear:



The popup box should have your custom name on the list. Double click it and Excel will add it to your formula. Because we typed **=5%** in the **Refers to** textbox of the New Name dialogue box the constant **slingback_discount** will always be 5%.

Press Enter when the formula is complete and you should see the discount appear in cell D2:

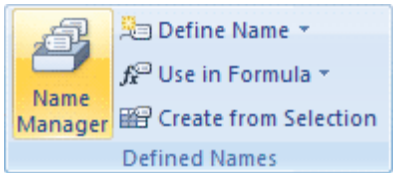
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D2 =C2 * slingback_discount

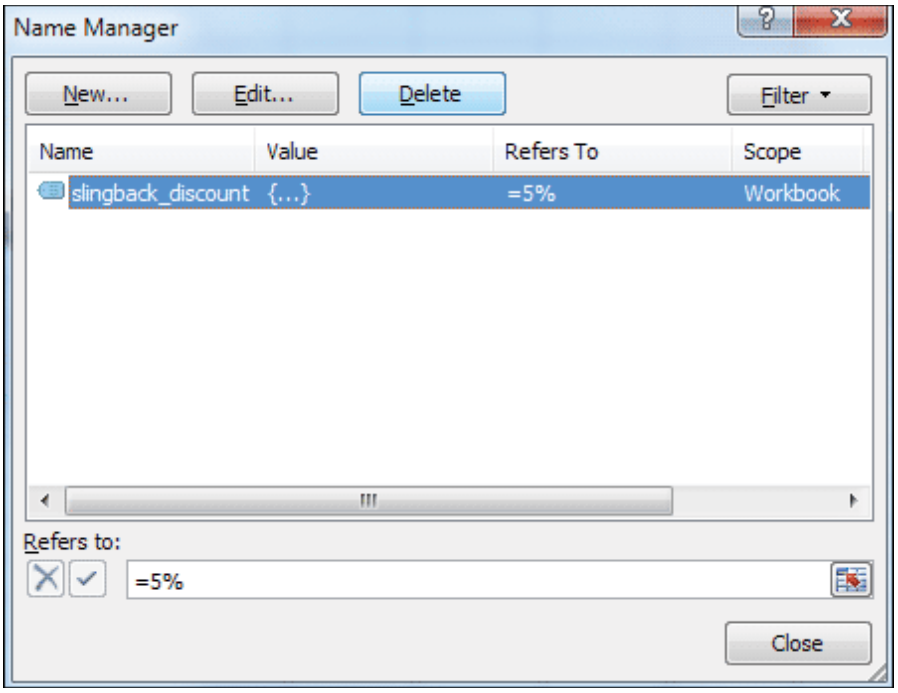
Item Number	Shoe Type	Price	Discount
156	Slingbacks	£48.00	£2.40
229	Stacked heel	£70.00	
312	Stiletto	£85.00	
471	Platforms	£30.00	
583	Kitten heel	£57.00	
612	Mules	£40.00	
773	Sandals	£37.00	
823	Wedge	£35.00	
982	Pumps	£45.00	

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If you want to delete a custom name, click the **Name Manager** on the **Defined Names** panel:



You'll see the following dialogue box appear:



If you want to edit your custom name, click the Edit button at the top. To delete a name, simply select the name from the list then click the Delete button.

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In the next section, we'll explore Pivot tables in Excel.

Pivot Tables in Excel 2007/2010 -->

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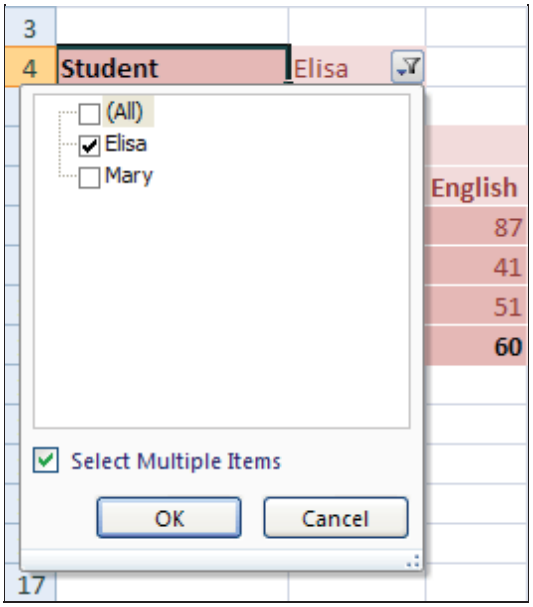
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A Pivot Table is way to present information in a report format. The idea is that you can click drop down lists and change the data that is being displayed. For example, choose just one student from a drop down list and view only his or her scores. Pivot tables are a lot easier to grasp when you see them in action. Here's the one we're going to create in this section:

3								
4	**Student**	Elisa						
5								
6	**Student Averages**	**Subject**						
7	**Month**	**Art**	**English**	**French**	**History**	**Maths**	**Science**	**Grand Total**
8	**January**	89	87	62	81	65	58	74
9	**March**	92	41	56	91	71	41	65
10	**Febuary**	83	51	57	84	72	89	73
11	**Grand Total**	**88**	**60**	**58**	**85**	**69**	**63**	**71**
12								
13								

Look at Row 4. This shows that the student is Elisa. If we click Elisa's drop down arrow, we'll see this:

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Now we have another student to select (we'll only use two students, for this tutorial). We could untick Lisa, and tick Mary instead. Then her scores would display.

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The Subject and Month cells also have drop down lists. So we could view only January's scores, and just for Art and English, for example.

So this is a Pivot Table - a report that we can manipulate by selecting items from drop down lists. Let's make a start.

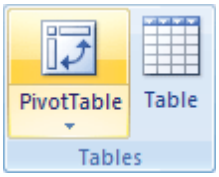
The first thing you need for a Pivot Table is some data to go in it. Instead of typing all the data out, you can simply grab ours. Go to this web page on our website and save the spreadsheet to your own hard drive:

Download the Data for the Pivot Table (Right click and select **Save Link/Target As**)

Once the spreadsheet is on your own computer, open it up. You should see this (If you get a warning across the top, click on Enable Editting):

The Pivot Table Data in an Excel Spreadsheet (New window)

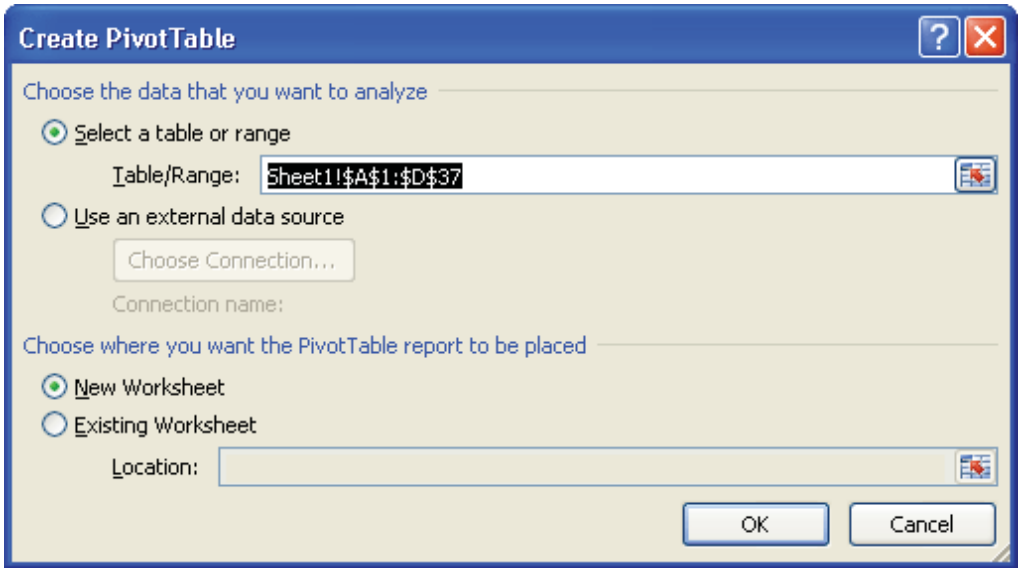
Highlight the data that will be going in to your Pivot Table (cells A1 to D37).On the Excel Ribon, click the **Insert** tab. From the Insert tab, locate the **Tables Panel**.



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On the **Tables** panel click **Pivot Tables**. The **Create Pivot Tables** dialogue box appears:

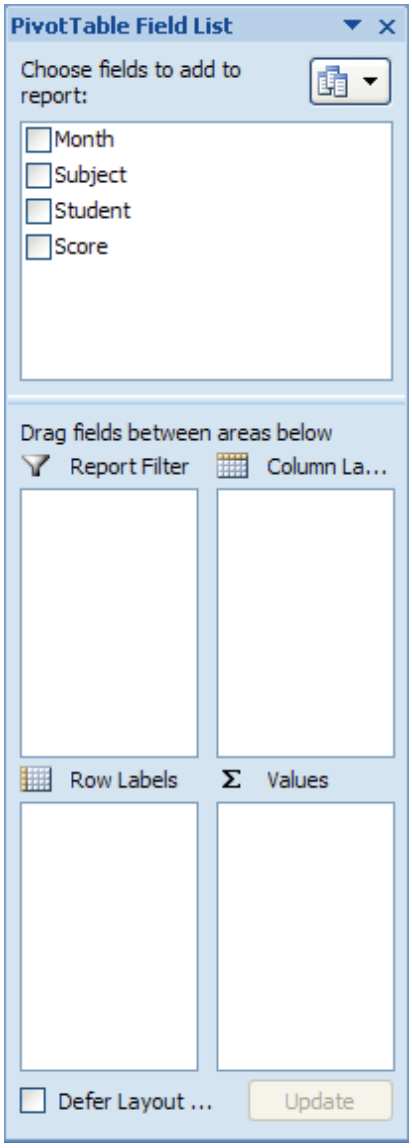


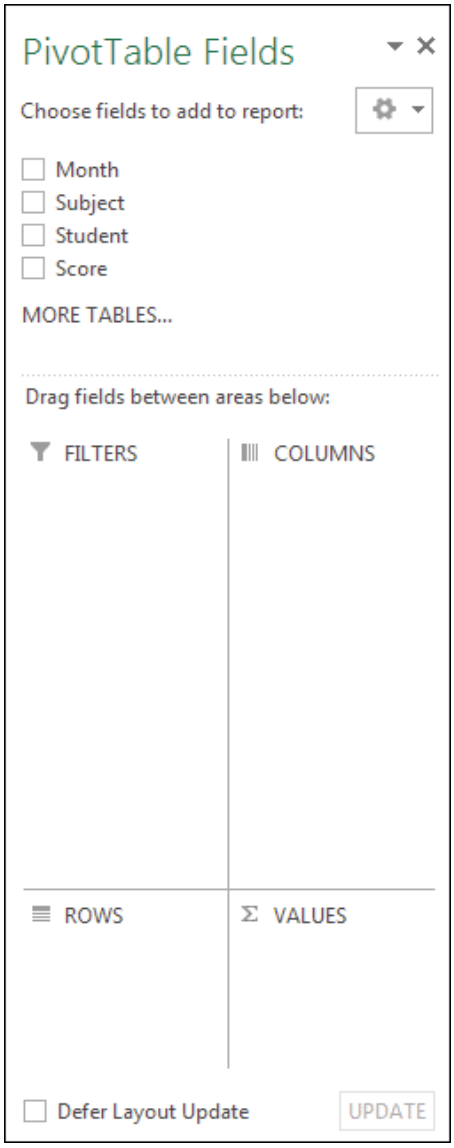
In the dialogue box above, the data that we highlighted is in the **Table/Range** textbox. You can select different cells by clicking the icon to the right of the Table/Range textbox. You can also specify an external data source, such as a text file, for the data in your Pivot Table.

We've selected a **New Worksheet** as the place where the Pivot Table will be placed. Click OK.

When you click OK, Excel presents you with a rather complex layout. The area on the right should look something like one of these below, depending on which version of Excel you have:

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It helps to have a look again at what we're trying to create. Here's the completed Pivot Table again:

3								
4	**Student**	Elisa						
5								
6	**Student Averages**	**Subject**						
7	**Month**	**Art**	**English**	**French**	**History**	**Maths**	**Science**	**Grand Total**
8	**January**	89	87	62	81	65	58	74
9	**March**	92	41	56	91	71	41	65
10	**Febuary**	83	51	57	84	72	89	73
11	**Grand Total**	**88**	**60**	**58**	**85**	**69**	**63**	**71**
12								
13								

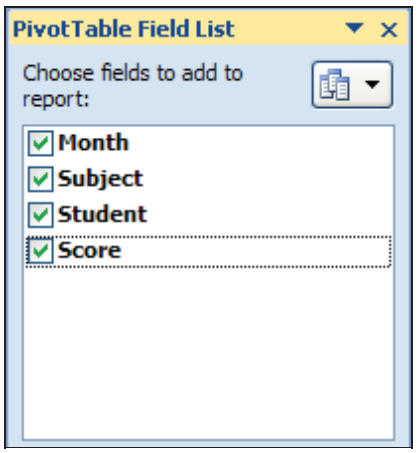
Now take a look at the **Pivot Table Field List** image again, the one above the completed pivot table. It has tick boxes for Month, Subject, Student, and Score. These are column headings from the original spreadsheet data. We've put the Month in cell A7 on our Pivot Table, Subject is in cell B6, Student is in cell B4, and Score is the Average scores in cells C8 to G10. You'll see how it works, though.

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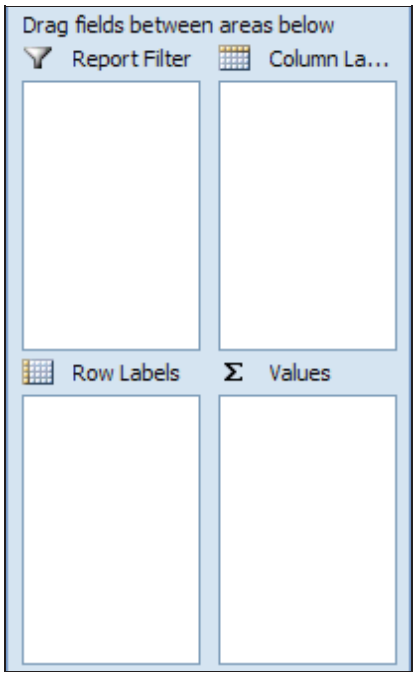
The idea is that you tick a box in the Pivot Table Field List, and then drag it to the four areas below. Excel will take care of the rest.

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So, tick all four boxes in the field list:



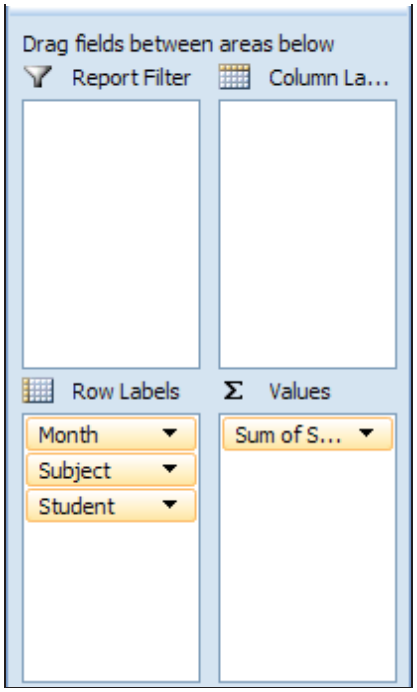
Excel will create a basic (and messy) Pivot Table for you. But we're going to put our 4 fields into the 4 areas below. Here are the 4 areas we can drag to:



For the **Report Filter**, we want the name of a Student. For the **Column Labels**, we want the Subject, and for the **Row Labels**, we'll just have the Month. The **Values** will be the Average scores.

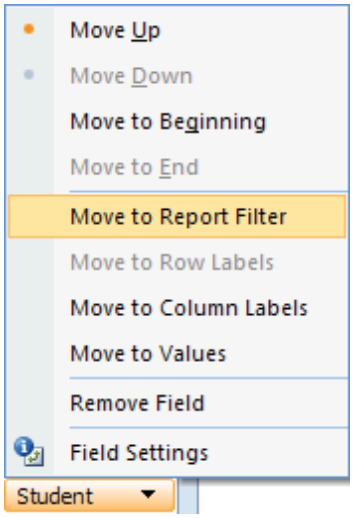
If you look at the Field areas after you have ticked all four boxes, however, you may see something like this:

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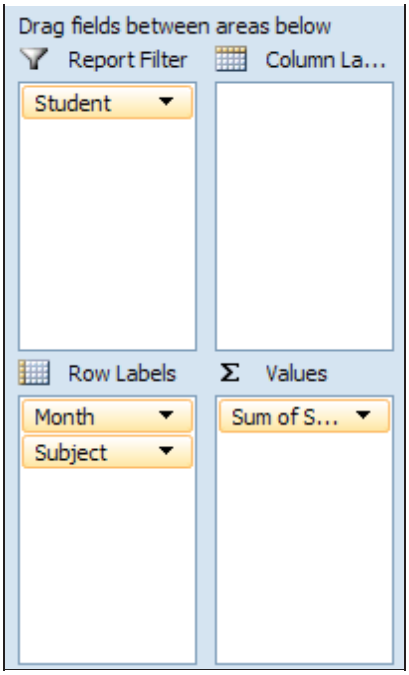
Month, Subject and Student have all been grouped under **Row Labels**. You can drag and drop these, though.

So click on **Student** in the **Row Labels** box. Hold down your left mouse button, and then drag it in to the **Report Filter** box. If you don't fancy dragging and dropping, simply click the Student item with your left button. From the menu that appears, select **Move to Report Filter**:

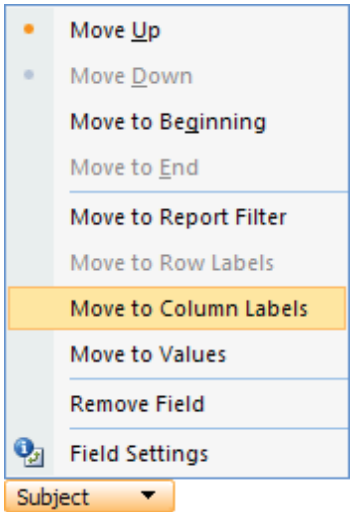


Your Field areas will then look like this:

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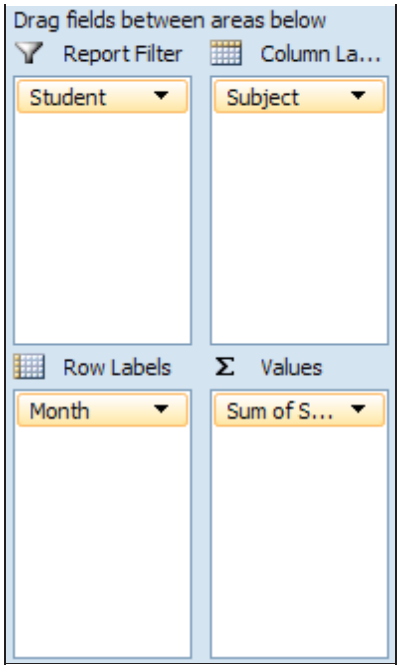


Move Subject from **Row Labels** to the **Column Labels** area:



Your Field areas will then look like this:

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The Pivot Table on your spreadsheet will look a lot different, too. It should be looking like this:

	A	B	C	D	E	F	G	H	I
1	Student	(All)							
2									
3	Sum of Score	Column Labels							
4	Row Labels	Art	English	French	History	Maths	Science	Grand Total	
5	January	150	174	154	139	118	93	828	
6	March	140	82	146	158	106	82	714	
7	Febuary	142	119	150	145	126	145	827	
8	Grand Total	432	375	450	442	350	320	2369	
9									

Our Pivot Table is coming along, but the scores are all wrong, and it needs tidying up a bit. We'll continue this tutorial in the next part, below.

Excel Pivot Tables, Part Two -->

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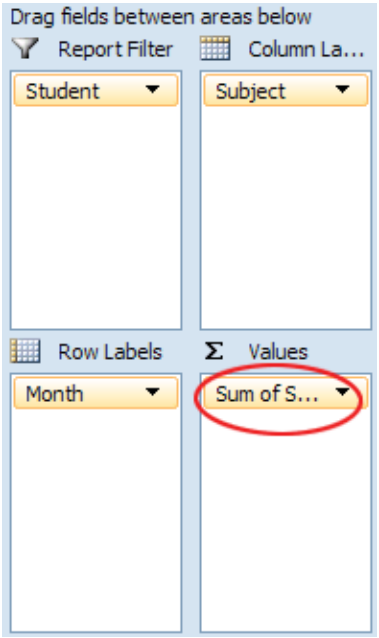
Java for Beginners

The reason why the scores from our Pivot Table are so strange is because Excel is using the wrong formula. It's using a Sum total when we want it to use an Average.

Here's the Pivot Table so far:

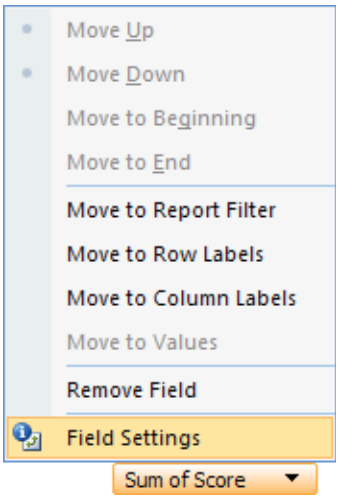
	A	B	C	D	E	F	G	H	I
1	Student	(All)							
2									
3	Sum of Score	Column Labels							
4	Row Labels	Art	English	French	History	Maths	Science	Grand Total	
5	January	150	174	154	139	118	93	828	
6	March	140	82	146	158	106	82	714	
7	Febuary	142	119	150	145	126	145	827	
8	Grand Total	432	375	450	442	350	320	2369	
9									

The numbers have all been added up. But we want averages, instead. To change the formula, click on **Sum of Score** under the **Values** field area:

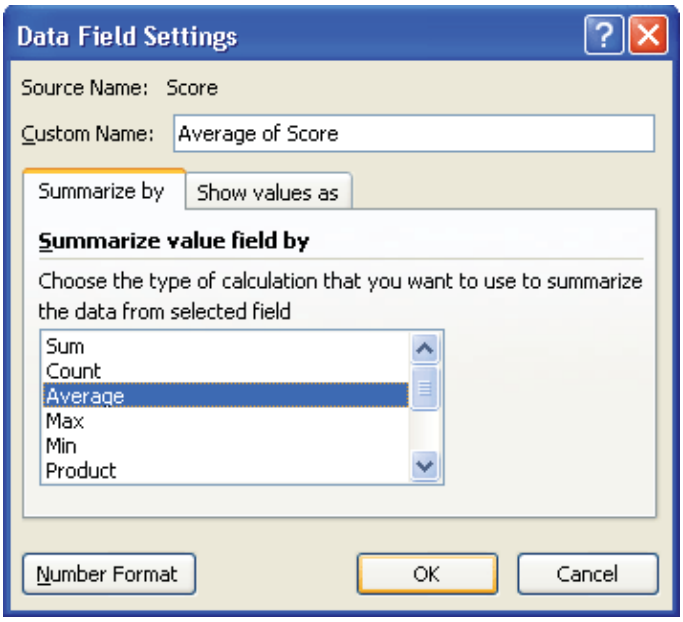


You'll see the following menu:

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Select, **Field Settings** (or **Value Field Settings** in Excel 2010 and 2013). You'll then see the following dialogue box:



Change the Formula from Sum to **Average**, and then click OK. Your Average formula won't be formatted to any decimal places. So highlight you data. On the **Home** tab in Excel, locate the **Number** panel. Format your Averages so that it has no decimal places. Your Pivot Table will then look like this:

	A	B	C	D	E	F	G	H	I
1	Student	(All)							
2									
3	Average of Score	Column Labels							
4	Row Labels	Art	English	French	History	Maths	Science	Grand Total	
5	January	75	87	77	70	59	47	69	
6	March	70	41	73	79	53	41	60	
7	Febuary	71	60	75	73	63	73	69	
8	Grand Total	72	63	75	74	58	53	66	
9									
10									

Almost there!

Look at cells A3, B3 and A4 above. These all have the not very descriptive names of

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Average of Score, Column Labels, and Row Labels. You can click inside of these cells and type your own headings, in exactly the same way as you would to enter text in a normal cell.

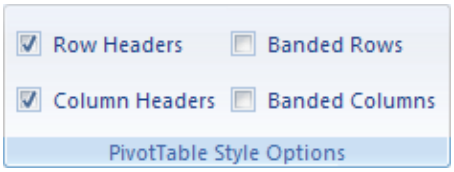
In the new version of the Pivot Table below, we have renamed these cells. We've also centred the data.

	A	B	C	D	E	F	G	H
1	Student	(All)						
2								
3	Student Averages	Subject						
4	Month	Art	English	French	History	Maths	Science	Grand Total
5	January	75	87	77	70	59	47	69
6	March	70	41	73	79	53	41	60
7	Febuary	71	60	75	73	63	73	69
8	Grand Total	72	63	75	74	58	53	66
9								

Only one thing left to do - spruce up the table by adding a bit of colour.

Click anywhere on your Pivot Table to highlight it. Now look at the Ribbon at the top of Excel . You'll notice a **Design** menu. Click on this to see the various design options.

The **Pivot Table Style Options** panel is interesting.



Select **Banded Rows** and see what happens. Now click **Banded Columns**.

Next to this panel, there are lots of Pivot Table Styles to choose from. Select one that catches your eye. Here's our finished Pivot Table again, only with a different Style:

	A	B	C	D	E	F	G	H	I
1	Student	(All)							
2									
3	Student Averages	Subject							
4	Month	Art	English	French	History	Maths	Science	Grand Total	
5	January	75	87	77	70	59	47	69	
6	March	70	41	73	79	53	41	60	
7	Febuary	71	60	75	73	63	73	69	
8	Grand Total	72	63	75	74	58	53	66	
9									

And here's the original:

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3								
4	Student	Elisa						
5								
6	Student Averages	Subject						
7	Month	Art	English	French	History	Maths	Science	Grand Total
8	January	89	87	62	81	65	58	74
9	March	92	41	56	91	71	41	65
10	Febuary	83	51	57	84	72	89	73
11	Grand Total	88	60	58	85	69	63	71
12								
13								

There's a lot more you can do with Pivot Tables, but we hope that this introduction has whetted your appetite! But click the dropdown boxes on your Pivot table and play around with them. Change the values you see on the various lists for Student, Subject, and Month.

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In the next section, you'll learn how to reference other Excel worksheets.

Reference other Worksheets in Excel 2007 to 2013 -->

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The LOOKUP Function

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The LOOKUP function in Excel is used to search one column of data and find data in the corresponding row. For example, if you are searching a column of employee IDs the LOOKUP function can find, say, employee number 12345 in the ID column. Once it has found the ID 12345 it then can return data from that same row. Let's create a spreadsheet to clear things up.

(The LOOKUP function we'll examine is called a VECTOR LOOKUP. There's also an ARRAY LOOKUP, but we won't cover that here.)

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Create the following simple spreadsheet:

	A	B	C	D	E	F
1	**Item Number**	**Shoe Type**	**Price**		**LOOKUP Result**	
2	312	Stiletto	85			
3	583	Kitten heel	57			
4	229	Stacked heel	70			
5	471	Platforms	30			
6	823	Wedge	35			
7	773	Sandals	37			
8	612	Mules	40			
9	982	Pumps	45			
10	156	Slingbacks	48			
11						

So we have item numbers in the A column, then a list of products in the B column. Prices are in the C column. Our spreadsheet only has 10 items, but it could have hundreds, even thousands of entries. What we'd like to do is to take an item number and see what Shoe Type, or what Price corresponds to that item number. An item number of 229, for example, would return either "Stacked heel" or a price of 70. We can use the LOOKUP function for this.

The LOOKUP function needs three between its round brackets. It needs these:

LOOKUP(value_to_lookup, data_to_search, results_column)

The value to lookup would be 229 in our example. This is in the A column. So the data to search is A2 to A10. If we want the results to come from the B column, we need the data from B2 to B10. If we wanted the Price to be returned, the data would be in C2 to C10.

So we can add the following LOOKUP function to return a Shoe Type:

=LOOKUP(229, A2:A10, B2:B10)

Or this one, for the Price:

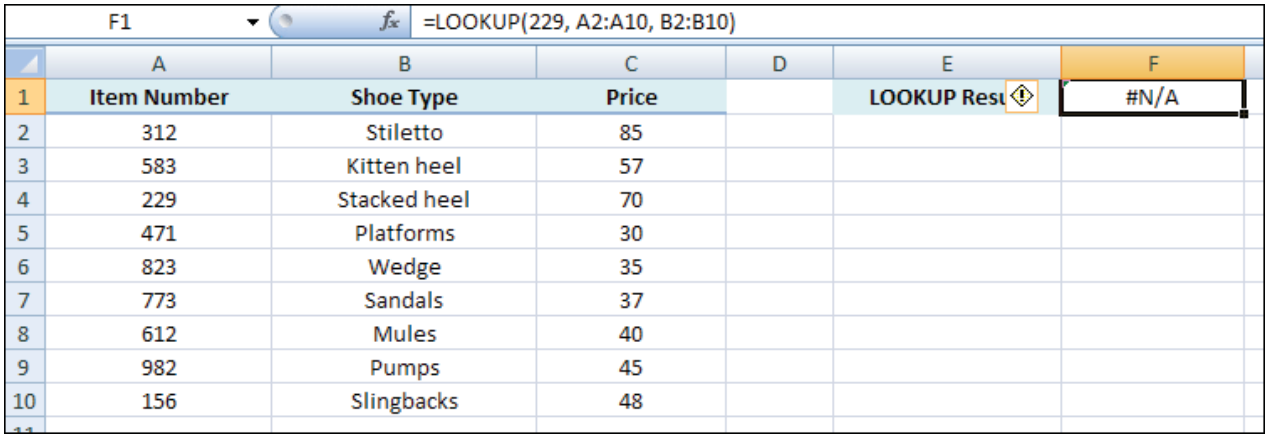
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=LOOKUP(229, A2:A10, C2:C10)

So click into cell F1 in your spreadsheet. Click inside the formula bar and enter:

=LOOKUP(229, A2:A10, B2:B10)

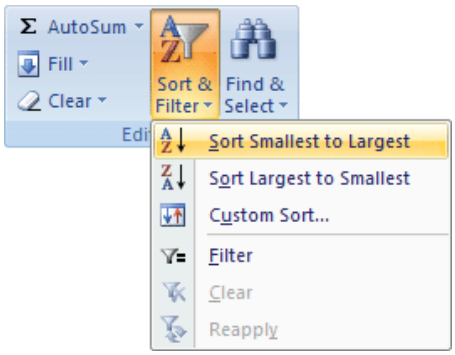
When you've entered the formula, press Enter. You'll immediately see that there is a problem:



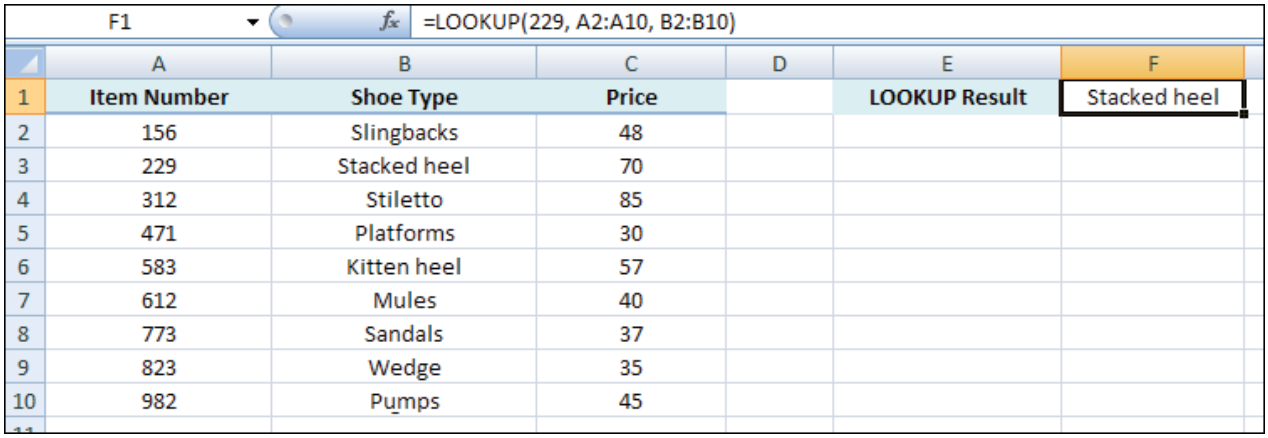
	A	B	C	D	E	F
1	Item Number	Shoe Type	Price		LOOKUP Resu	#N/A
2	312	Stiletto	85			
3	583	Kitten heel	57			
4	229	Stacked heel	70			
5	471	Platforms	30			
6	823	Wedge	35			
7	773	Sandals	37			
8	612	Mules	40			
9	982	Pumps	45			
10	156	Slingbacks	48			

Cell F1 has #N/A in it, indicating there the value is not available. The reason for this error is that LOOKUP needs the data you're searching to be sorted, otherwise problems like this will occur.

To sort the data, highlight the cells A2 to C10. With the cells highlighted, click the **Editing** panel on the **Home** ribbon. From the Editing panel, click **Sort & Filte**r. Then select **Smallest to Largest** from the menu:



When your data is sorted, LOOKUP should produce the correct result:



	A	B	C	D	E	F
1	Item Number	Shoe Type	Price		LOOKUP Result	Stacked heel
2	156	Slingbacks	48			
3	229	Stacked heel	70			
4	312	Stiletto	85			
5	471	Platforms	30			
6	583	Kitten heel	57			
7	612	Mules	40			
8	773	Sandals	37			
9	823	Wedge	35			
10	982	Pumps	45			

So the Shoe Type for item number 229 is Stacked heel.

There are some things to be aware of with the LOOKUP function. If the item you're searching for is less

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than the smallest item in your data then an error will occur. As an example, try entering 100 as the first number in your LOOKUP function:

=LOOKUP(100, A2:A10, B2:B10)

The N/A error should appear in cell F1 again.

If LOOKUP can't find your value then it will return the highest value lower than your number. So for us, the highest value lower than 229 is 156.

As well as entering a number like 229 you can change it to a cell reference. So the formula could be this:

=LOOKUP(F1, A2:A10, B2:B10)

In cell F1 you'd enter the value you want to search for.

The value you're searching for doesn't have to be a number. You can enter text as well. For example, suppose we wanted to return the item number for Mules. We'd do it like this:

=LOOKUP("Mules", B2:B10, A2:A10)

The value to search for is now text, surrounded by double quotes. For us, the text is in the B column, B2 to B10. The Item Number is in the A column, A2 to A10. Excel will search for the text "Mules" in the B column and return the Item Number from the A column. (Instead of typing Mules in double quotes you can change it to a cell reference, if you prefer.)

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In the next section, we'll take a look at VLOOKUP.

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In the last section, you saw how to use VLOOKUP. We're now going to create a business invoice that relies heavily on VLOOKUP. This is intermediate excel, so don't worry too much if you don't understand it all - just skip ahead to the next section and come back to it at a later date.

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But the Invoice we're going to create looks like this:

Home and Learn

Address:	Beatrice House	Email:	enquiry@homeandlearn.co.uk
Postode:	SR2 7LH	Website:	www.homeandlearn.co.uk

Invoice Number: 12343

Customer Name:	Doe , Jane	Phone:	019112344
Address:	22 high street , A Town , A City , EV4 EV4	Email:	jane@123456.com

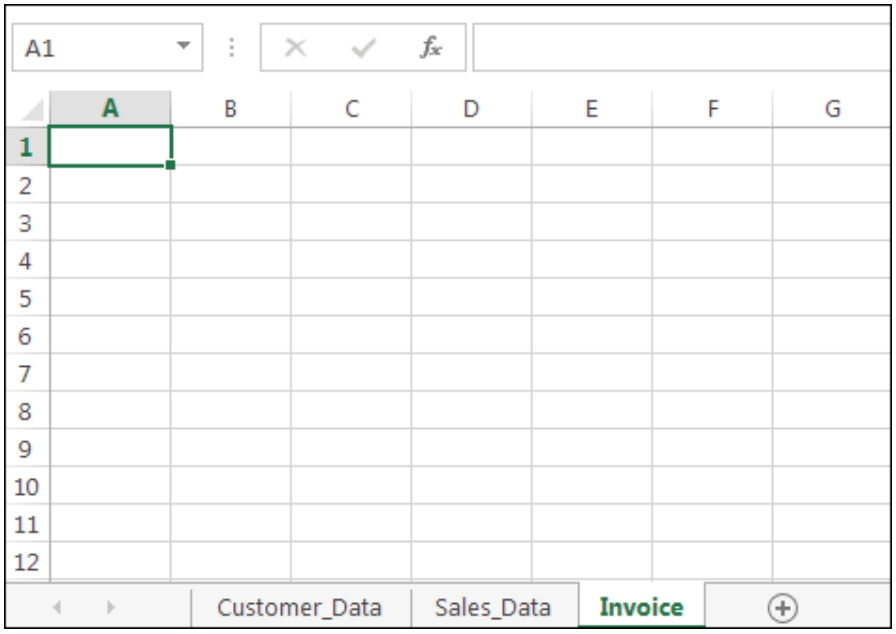
Date	Description	Quantity	Price	Total
05/04/2013	yellow widget	3	£10.00	£30.00
			Sales Tax	20%
			Final Total	£36.00

The invoice works by typing an invoice number into cell B5 (the 12343 in the image above). When you press the Enter key on your keyboard, data will be pulled from two more worksheets. The two worksheets contain Customer Data and Sales Data. The Customer's Name, Address, etc, gets pulled from a worksheet called **Customer_Data**, and information about what the customer bought is pulled from a worksheet called **Sales_Data**. All the information on the Invoice worksheet is automatically updated when you change the invoice number is cell B5.

Let's make a start, then. Create a new spreadsheet for this. If you're using Excel 2013, you'll only get one worksheet by default, so add two more at the bottom of Excel. Name the first worksheet **Customer_Data**, and the second one **Sales_Data**. The third worksheet should be changed to **Invoice**. Your new spreadsheet will then look like this at the bottom:

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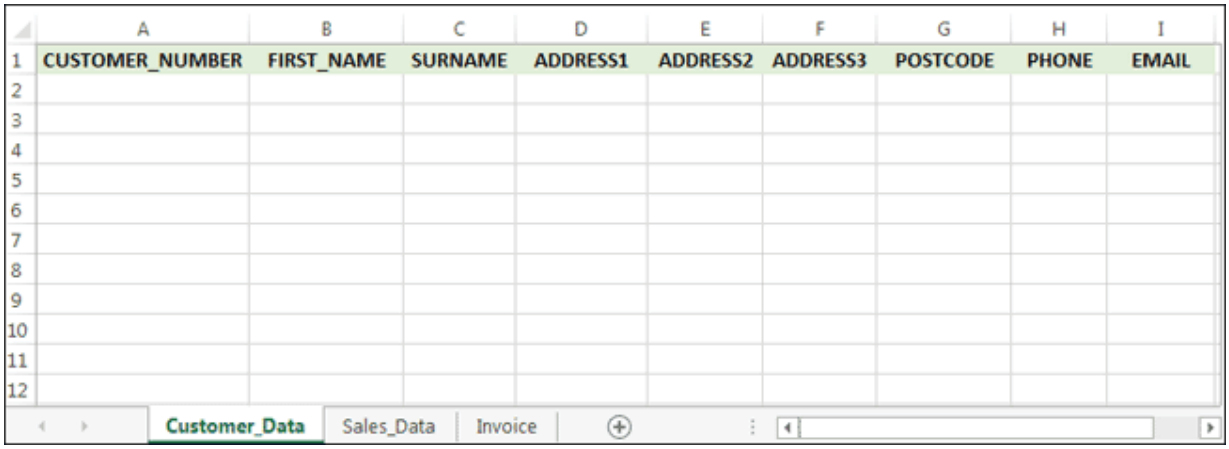




Click on your Customer_Data worksheet to select it. On the first row, enter the following headings:

CUSTOMER_NUMBER
FIRST_NAME
SURNAME
ADDRESS1
ADDRESS2
ADDRESS3
POSTCODE
PHONE
EMAIL

You can format this first row, if you like. Make the text bold, and change the background colour of the cells. Your **Customer_Data** worksheet will then look something like this:



Now enter some data under each heading. Enter data for the customers. Make up the details, just as we have below. The Customer number and the Phone number columns should be formatted as **Text**. You can leave the other Columns on **General**. Your worksheet will then look like this:

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	A	B	C	D	E	F	G	H	I
1	CUSTOMER_NUMBER	FIRST_NAME	SURNAME	ADDRESS1	ADDRESS2	ADDRESS3	POSTCODE	PHONE	EMAIL
2	0001	Jack	Attack	12 high street	A Town	A City	EV1 EV1	01911234	jack@123456.com
3	0002	May	Fae	14 high street	A town	A City	EV2 EV2	019112346	Mary@123456.com
4	0003	Bob	Slob	16 high street	A Town	A City	EV3 EV3	019112349	bob@123456.com
5	0004	Jane	Doe	22 high street	A Town	A City	EV4 EV4	019112344	jane@123456.com
6									
7									
8									

Customer_Data | Sales_Data | Invoice

Now click on your Sales_Data worksheet to select it. On the first row, enter the following headings (make sure you format the columns as below, as well):

INVOICE_NUMBER General
CUSTOMER_NUMBER Text
DATE Date
DESCRIPTION General
QUANTITY General
PRICE Currency
TOTAL Currency

Format the first row however you like. It should then look like this:

	A	B	C	D	E	F	G
1	INVOICE_NUMBER	CUSTOMER_NUMBER	DATE	DESCRIPTION	QUANTITY	PRICE	TOTAL
2							
3							
4							
5							
6							
7							
8							
9							

Customer_Data | Sales_Data | Invoice ...

Notice that the first row also has a **Customer_Number** column. This will contain the same number from the **Customer_Data** worksheet.

Now enter some data. You can use the same data as ours below, our just make up your own:

	A	B	C	D	E	F	G
1	INVOICE_NUMBER	CUSTOMER_NUMBER	DATE	DESCRIPTION	QUANTITY	PRICE	TOTAL
2	12340	0001	04-Apr-13	black widget	1	£29.99	£29.99
3	12341	0002	02-Mar-13	red widget	2	£43.50	£87.00
4	12342	0003	25-Mar-13	blue widget	1	£17.49	£17.49
5	12343	0004	05-Apr-13	yellow widget	3	£10.00	£30.00
6							
7							
8							
9							

Customer_Data | Sales_Data | Invoice

The invoice number can be anything you like. But you need to get the Customer Number from your Customer_Data worksheet. The customer numbers we used are these:

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0001, 0002, 0003, 0004

This means that customer number 0001, who is called Jack Attack, has the invoice number 12340; and customer number 0002, Mary Fae, has the invoice number 12341. In other words, the same customer numbers are on both the **Customer_Data** worksheet and the **Sales_Data** worksheet.

Now that we have customer and sales data set up, we can turn our attentions to the actual invoice. We'll do that in the next part. Click the link below to move on.

Business Invoice Part Two -->

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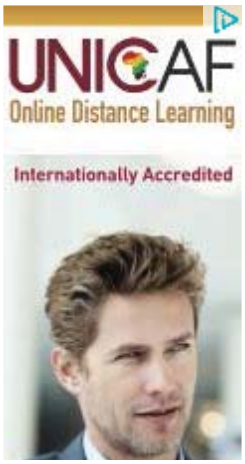
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In the previous lesson, you set up an Excel spreadsheet with three worksheets: Customer Data, Sales Data and Invoice. You have filled out the customer and sales data. It's now time to to set up the invoice.

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Enable sentiment & text analysis in Excel with Textalytics add-in

Click on your Invoice worksheet to select it. Create the following labels:

	A	B	C	D	E	F
1						
2	**Address:**		**Email:**			
3	**Postcode:**		**Website:**			
4						
5	**Invoice Number:**					
6						
7	**Customer Name:**		**Phone:**			
8	**Address:**		**Email:**			
9						
10	**Date**	**Description**	**Quantity**	**Price**	**Total**	
11						
12						
13				**Sales Tax:**		
14				**Final Total:**		
15						

The cell A11, under **Date**, should be formatted as a date. **Description** and **Quantity** can be left on **General**. **Price** and **Total** should be formatted as **Currency**.

This is a very basic invoice, without any formatting. You can format it later, though, if you like. To start pulling data from the other two worksheets, we'll start with the Date, in cell A11.

So click inside cell A11. Now enter the following VLOOKUP formula:

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=VLOOKUP(B5, Sales_Data!A2:Sales_Data!G5, 3)

Just to refresh your memory, inside of the round brackets of the VLOOKUP function, we have three pieces of information:

VLOOKUP(**value_to_lookup**, **data_to_search**, **results_column**)

For us, the value we want to lookup is the invoice number in cell B5. The data to search can be found on the **Sales_Data** worksheet, in cells A2 to G5. (If you added more rows to your sales data then you need to change the G5 to whatever cell is the end of your data.) The column we want, the **Date** column, is column 3 (Column C).

After you've entered the formula, press the enter key on your keyboard. You should see **#N/A** appear. The N/A stands for Not Available. The result is not available because you haven't entered an invoice number yet. Do that now. Look at your **Sales_Data** worksheet and locate one of your invoice numbers. Return to the Invoice worksheet and enter your invoice number. Press the enter key on your keyboard and you should see a date appear in cell A11:

A11 =VLOOKUP(B5, Sales_Data!A2:Sales_Data!G5, 3)

	A	B	C	D	E	F
1						
2	**Address:**		**Email:**			
3	**Postcode:**		**Website:**			
4						
5	**Invoice Number:**	12340				
6						
7	**Customer Name:**		**Phone:**			
8	**Address:**		**Email:**			
9						
10	**Date**	**Description**	**Quantity**	**Price**	**Total**	
11	04/04/13					
12						
13				**Sales Tax:**		
14				**Final Total:**		

The VLOOKUP for the other headings (Description, Quantity, Price, and Total) are very similar. The only thing you need to do here is to change the column number for the final position. So the VLOOKUP function cell B11 would be this:

=VLOOKUP(B5, Sales_Data!A2:Sales_Data!G5, 4)

And the VLOOKUP function cell C11 would be this:

=VLOOKUP(B5, Sales_Data!A2:Sales_Data!G5, 5)

Cell D11 is this:

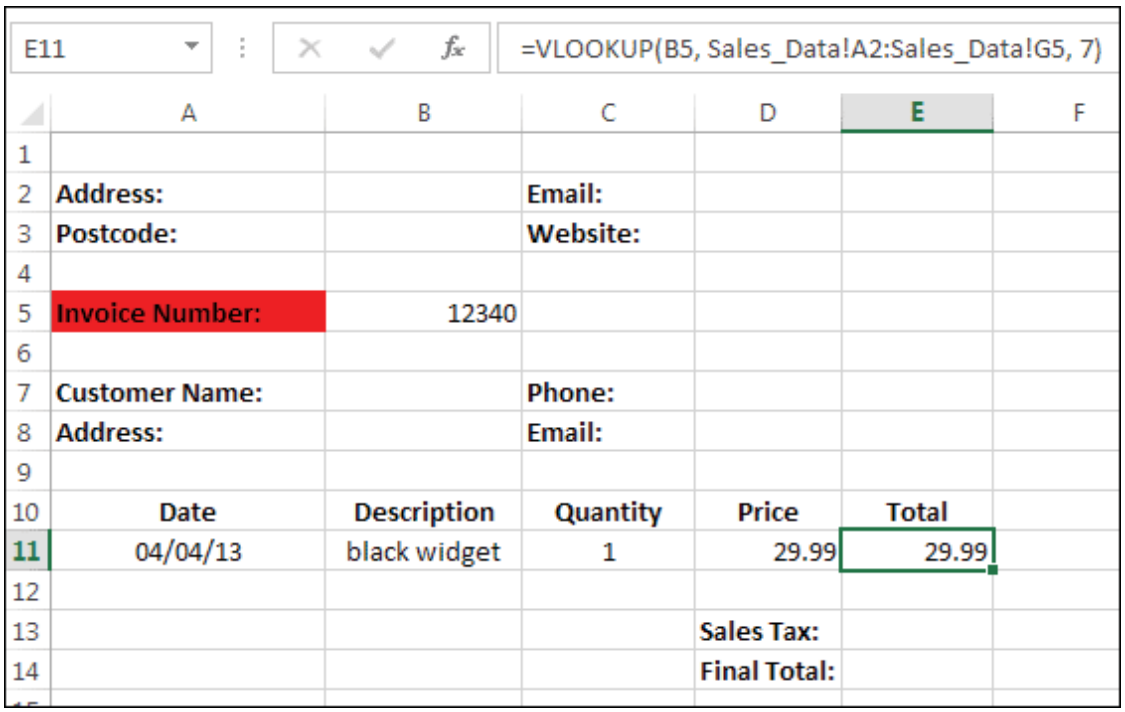
=VLOOKUP(B5, Sales_Data!A2:Sales_Data!G5, 6)

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And cell E11 is this:

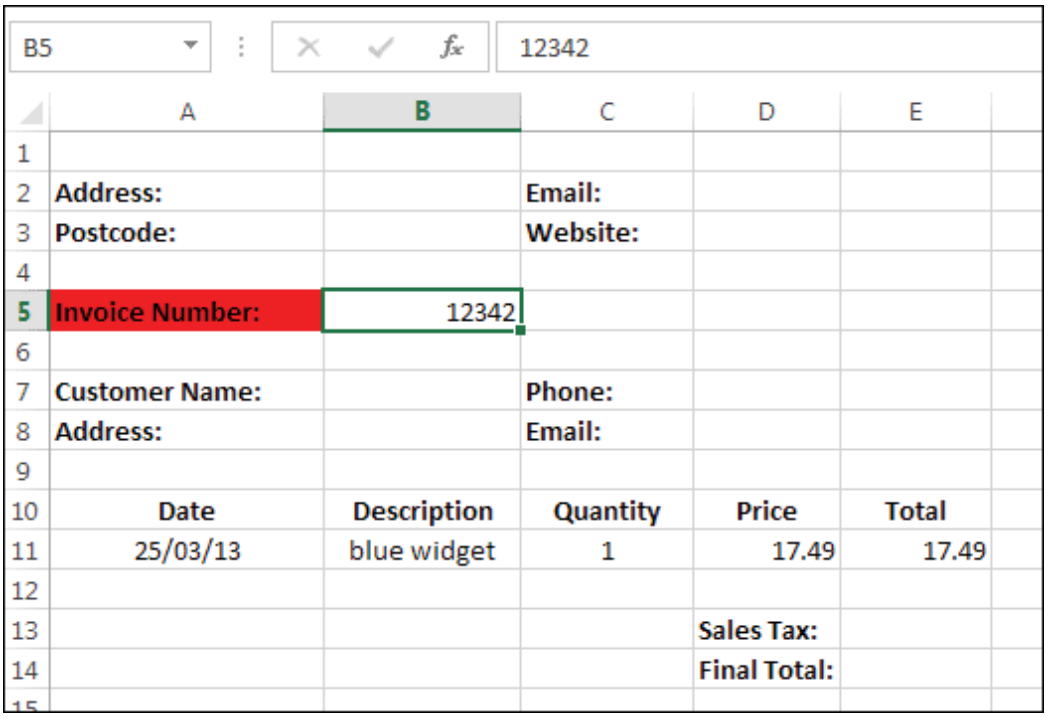
=VLOOKUP(B5, Sales_Data!A2:Sales_Data!G5, 7)

Enter the VLOOKUP function for yourself in these cells. Your spreadsheet should now look like this:



	A	B	C	D	E	F
1						
2	**Address:**		**Email:**			
3	**Postcode:**		**Website:**			
4						
5	**Invoice Number:**	12340				
6						
7	**Customer Name:**		**Phone:**			
8	**Address:**		**Email:**			
9						
10	**Date**	**Description**	**Quantity**	**Price**	**Total**	
11	04/04/13	black widget	1	29.99	29.99	
12						
13				**Sales Tax:**		
14				**Final Total:**		

Now change your invoice number in cell B5. When you press the enter key on your keyboard, you should find that your invoice will update all by itself:



	A	B	C	D	E
1					
2	**Address:**		**Email:**		
3	**Postcode:**		**Website:**		
4					
5	**Invoice Number:**	12342			
6					
7	**Customer Name:**		**Phone:**		
8	**Address:**		**Email:**		
9					
10	**Date**	**Description**	**Quantity**	**Price**	**Total**
11	25/03/13	blue widget	1	17.49	17.49
12					
13				**Sales Tax:**	
14				**Final Total:**	

We now need to get the customer details for the invoice. This is more complicated. It's more complicated because we need to match a customer number from the **Sales_Data** worksheet to a customer number from the **Customer_Data** worksheet.

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We'll see how to do it in the final part, below.

Business Invoice Part Three -->

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A Business Invoice, Part Three

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In the previous section, you pulled sales details about an invoice. In this section, you'll see how to get the customer details and add them to your invoice.

The problem we face is that the customer data is on a separate worksheet to the sales data. The sales data worksheet is where we have the invoice number. The question then is how to associate an invoice number with the customer's details. The answer is the **Customer Number**. We have this on both the **Customer_Data** and the **Sales_Data** worksheets. We need to select a customer's details where the Customer Number matches on both worksheets.

As an example, take the invoice number 12340 on the **Sales_Data** worksheet. In the next column, we have a Customer Number, which is customer 0001:

	A	B
1	INVOICE_NUMBER	CUSTOMER_NUMBER
2	12340	0001
3	12341	0002
4	12342	0003
5	12343	0004
6		

This Customer Number is also on the Customer_Data worksheet:

	A	B	C
1	CUSTOMER_NUMBER	FIRST_NAME	SURNAME
2	0001	Jack	Attack
3	0002	May	Fae
4	0003	Bob	Slob
5	0004	Jane	Doe

We can use nested VLOOKUPs to pull data from both worksheets where the customer number matches, and then insert just the customer details into the Invoice worksheet.



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Nested VLOOKUPs

You can nest one VLOOKUP function inside of another. The technique can be quite tricky to understand, so you may need to re-read this a couple of times!

Let's do the Phone number and email address first, as we'll use CONCATENATE as well as nested VLOOKUPs in the name and address fields, which will add another layer of complexity.

Click inside of cell D7 of your **Invoice** worksheet. Now click inside of the formula bar at the top of Excel and enter the following: (You can enter yours on one line. You can just copy and paste the formula below)

=VLOOKUP(**VLOOKUP(B5, Sales_Data!A2:Sales_Data!B5, 2)**, Customer_Data!A2:Customer_Data!I5, 8)

Press the enter key on your keyboard and you should see a phone number appear in cell D7. This phone number is coming from the Customer_Data worksheet. But how does it work?

First, have a look at what's needed for a single VLOOKUP again:

VLOOKUP(**value_to_lookup**, **data_to_search**, **results_column**)

The first item between the round brackets is value_to_lookup. Previously, we just entered a cell reference here. This cell reference was B5, which was the invoice number. This time, however, we don't need the invoice number from the Sales_Data worksheet. We need the Customer Number. This is in the cell next to the invoice number. Our inner VLOOKUP is designed to get this Customer Number. Here it is:

VLOOKUP(B5, Sales_Data!A2:Sales_Data!B5, 2)

Again, we used B5 as the value to look up. This is the invoice number. The data to search is in the cells A2 to B5 of the Sales_Data worksheet. The result column is column 2, which is the Customer Number.

When this nested VLOOKUP has returned the Customer Number it is used with the outer VLOOKUP:

=VLOOKUP(RETURNED_CUSTOMER_NUMBER, Customer_Data!A2:Customer_Data!I5, 8)

The RETURNED_CUSTOMER_NUMBER above is the result from the inner VLOOKUP. This is then used to search the Customer_Data in cells A2 to I5 of the Customer_Data worksheet. The results column at the end is column 8, which contains the phone number.

Now click inside of cell D8 of your Invoice worksheet. Enter this nested VLOOKUP:

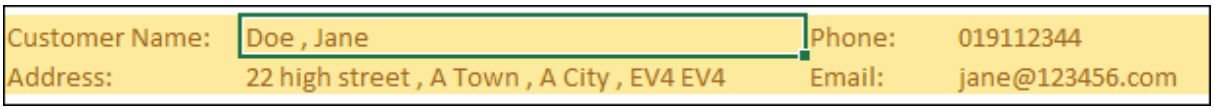
=VLOOKUP(VLOOKUP(B5, Sales_Data!A2:Sales_Data!B5, 2), Customer_Data!A2:Customer_Data!I5, 9)

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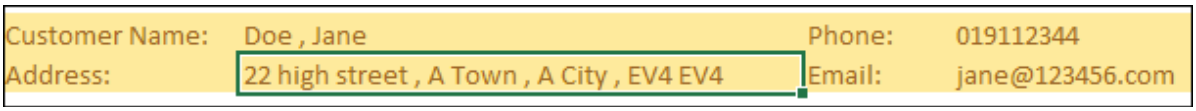
The only difference here is the column number at the end, column 9. This is where we have stored the email address on the Customer_Data worksheet.

Press the enter key on your keyboard and you should see an email address appear in cell D8.

Now that we have an email address and phone number, we can get the customer's name and address. We could have separate cells here: a cell for the first name, a cell for the surname, a cell for the first line of the address, a cell for the next line of the address, and a separate cell for the zipcode/postcode. What we have done, however, is to have one cell for the customer's full name, and one cell for the customer's address. The customer's full name is in cell B7:



And the customer's address is in cell B8:



If you have a look at the customer name you'll see it's in the format LAST_NAME, FIRST_NAME, with a comma separating the two:

Doe, Jane

In order to get this we'll need two nested VLOOKUPs, one for the last name and one for the first name. In order to join the two together, and add a comma, we can use the inbuilt function CONCATENATE. The CONCATENATE function looks like this:

CONCATENATE(TEXT_ITEM_1, TEXT_ ITEM_2, TEXT_ ITEM_3 …**)**

You can have up to 255 Text items. A comma is used to separate each Text item. If you actually want a comma you need to treat it as a Text item. For example, here's our Doe, Jane text using CONCATENATE:

=CONCATENATE("Doe", " ,", "Jane"**)**

So Text_1 is "Doe", Text_2 is "," and Text_3 is "Jane".

With this in mind, here's our nested VLOOKUP with CONCATENATE (you can copy and paste this):

```
=CONCATENATE(VLOOKUP(VLOOKUP(B5, Sales_Data!A2:Sales_Data!B5, 2),
Customer_Data!A2:Customer_Data!C5, 3), ", ", VLOOKUP(VLOOKUP(B5,
Sales_Data!A2:Sales_Data!B5, 2), Customer_Data!A2:Customer_Data!C5, 2) )
```

This is a very long and messy formula. So let's break it down.

```
=CONCATENATE(

VLOOKUP(VLOOKUP(B5, Sales_Data!A2:Sales_Data!B5, 2),
Customer_Data!A2:Customer_Data!C5, 3),
```

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```
", ",
VLOOKUP(VLOOKUP(B5, Sales_Data!A2:Sales_Data!B5, 2),
Customer_Data!A2:Customer_Data!C5, 2)
)
```

The first VLOOKUP gets the surname from the Customer_Data worksheet. This goes as the first Text Item of CONCATENATE. To put the comma in we have ",". This is the second Text Item of CONCATENATE. The third Text item is the other VLOOKUP. This gets the first name from the Customer_Data worksheet.

So click inside cell B7 on your Invoice worksheet. Click into the formula bar and enter (or copy and paste) the CONCATENATE code above. When you press the enter key on your keyboard you should have the surname and first name just like ours.

The address uses the same technique, but the CONCATENATE formula is even longer. (It's only longer because we need the address lines and the zipcode/postcode. Here it is to copy and paste into cell B8 on your Invoice worksheet:

```
=CONCATENATE(VLOOKUP(VLOOKUP(B5, Sales_Data!A2:Sales_Data!B5,
2), Customer_Data!A2:Customer_Data!I5, 4), " , ",
VLOOKUP(VLOOKUP(B5, Sales_Data!A2:Sales_Data!B5, 2),
Customer_Data!A2:Customer_Data!I5, 5), " , ",
VLOOKUP(VLOOKUP(B5, Sales_Data!A2:Sales_Data!B5, 2),
Customer_Data!A2:Customer_Data!I5, 6), " , ",
VLOOKUP(VLOOKUP(B5, Sales_Data!A2:Sales_Data!B5, 2),
Customer_Data!A2:Customer_Data!I5, 7))
```

It looks insanely complicated, but it's just a longer version of the first CONCATENATE. The only difference is that we have more VLOOKUPs and more commas to insert.

Once you've added the new formula, you should have an address in cell B8 of your worksheet.

And that's it! Try it out. Enter a new invoice number into cell B5, one of your invoice numbers from the Sales_Data worksheet. When you press enter, you should see the invoice automatically update itself.

You can format your invoice however you like. Once formatted, the invoice can be printed out and sent to a customer.

One final word on invoices. If you click **File > New** you should find that Excel comes with some invoices templates. Most of these templates use the VLOOKUP techniques you have explored in these lessons. Try them out and you should find that you have a better understanding of how the invoice templates work.

In the next section, you'll learn how to create an Excel template.

Create a Template in Excel 2007 to 2013 -->

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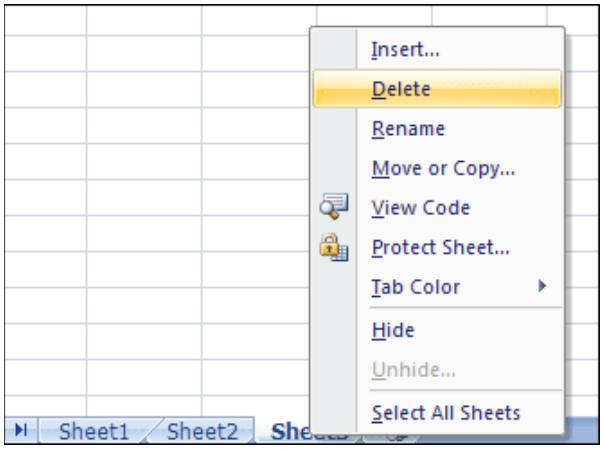
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Java for Beginners

Creating a worksheet template can really save you a lot of time. Templates are especially useful if you find yourself having to create the same spreadsheet over and over. For example, if a spreadsheet has sheets for each month of year it becomes a bit if a chore if you have to type out the heading and formula for each sheet. Instead, you only need to do it once. Then you can save it as a template. If you need a new month, you can then Insert your template. Here's how.

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Open up a new workbook, with all three blank sheets at the bottom. Now delete two of the three sheets (If you have Excel 2013 you don't need to do this as there's only oneworkbook by default):

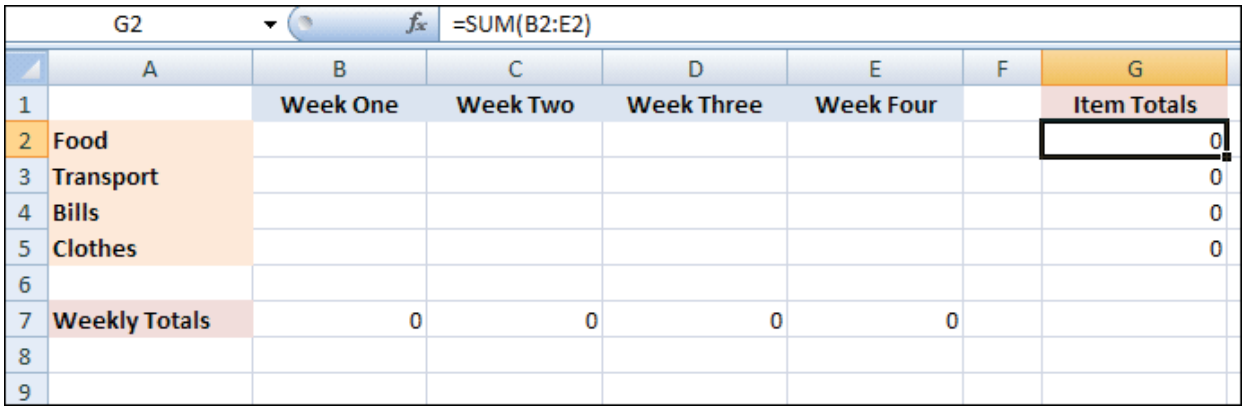


When you have deleted two sheets, the bottom left of your screen should look like this:



Now create the spreadsheet you want to use as a template. In the image below, we've just set up a simple spreadsheet with Week headings at the top and some labels down the left:

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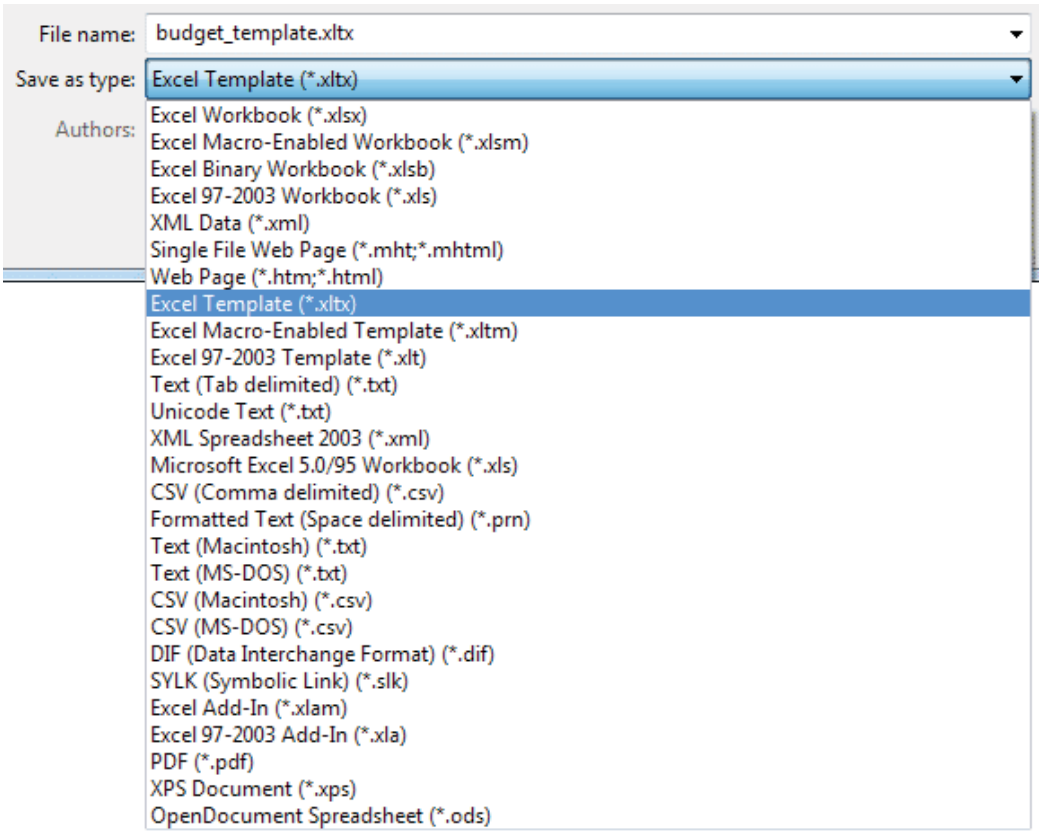


	A	B	C	D	E	F	G
1		Week One	Week Two	Week Three	Week Four		Item Totals
2	Food						0
3	Transport						0
4	Bills						0
5	Clothes						0
6							
7	Weekly Totals	0	0	0	0		
8							
9							

Notice how none of the data is filled in for the weeks. The reason there are zeros for the Weekly Totals and the Item Totals is because we have the formulas in place but no data for the weeks. Once it is saved as a template and inserted into a new workbook, then the data can be added. We won't have to add the formulas because they are already in place.

Once you have your spreadsheet looking the way you want it, click the Office button then **Save** in Excel 2007. In Excel 2010, click **File > Save**. In Excel 2013,click **File >Save**, then under Save As, select **Computer**. Under the Computer heading, click the **Browse** icon.

When the Save As dialogue box appears change the **Save as type** area at the bottom to Excel template. Type a name for your template:

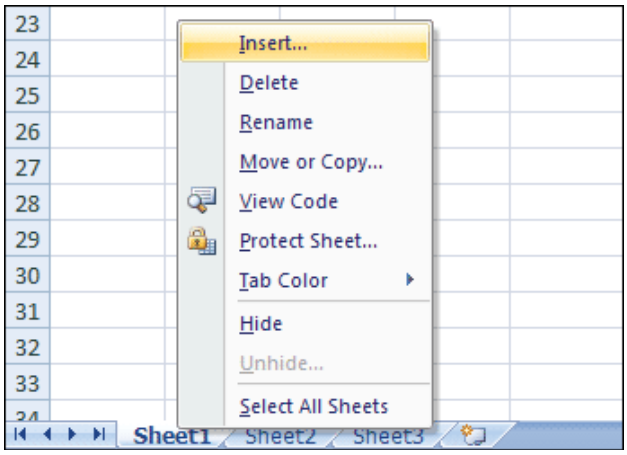


Before clicking Save, notice the file name now ends in **xltx**, and that it is being saved to a Templates folder inside Excel (Custom Office Templates in later versions).

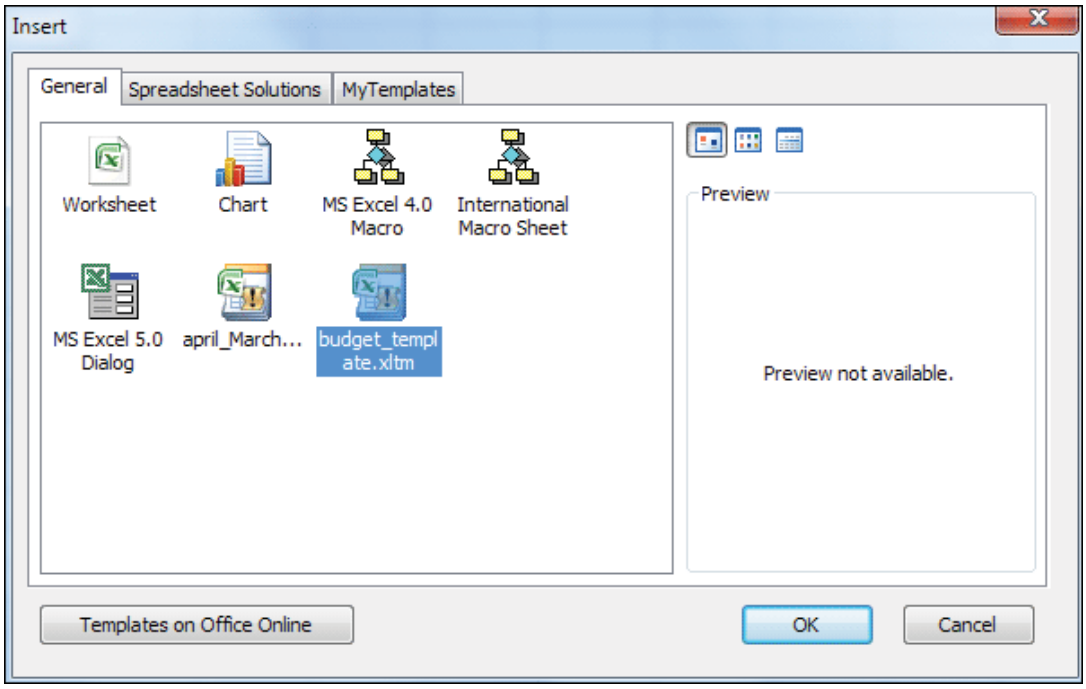
Click the Save button to save your template.

To use your template, close the current worksheet. Create a new blank workbook. Right click a sheet name at the bottom and select **Insert** from the menu that appears:

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The **Insert** dialogue box should appear. Your template should be on the list, in the **General** section:



Select your template, and click OK. Your template spreadsheet should then be inserted into your new workbook. You can delete any sheets your don't need, and rename the template. If you need a new sheet based on your template, right- click a sheet and select Insert from the menu again.

Enabler for Excel
enabler4excel.herokuapp.com
Work with Saleforce.com directly from Excel spreadsheet

In the next part, you'll see how to add a data form to an Excel spreadsheet.

Data Forms in Excel 2007 to 2013 -->

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If your spreadsheet is too big to manage, and you constantly have to scroll back and forward just to enter data, then a Data Form could make your life easier. To see what a Data Form is, we'll construct a simple spreadsheet.

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But a data form is just a way to quickly enter data into a cell. It is used when the spreadsheet is too big for the screen. To get a clearer idea of what a data form is, try this.

- Enter **January** in Cell A1 of a new spreadsheet
- From A1 to L1, AutoFill the rest of the months to **December**
- Now, highlight the columns A1 to L1 (click on the letter A and drag to letter L)
- On the **Home** tab in Excel, locate the **Cells** panel
- On the Cells panel, click the **Format** item. (In Excel 2013, you'll see a menu when you click Format. From the menu, select **Column Width**.)
- From the Format menu, click Width



- Enter a value of say 20 for the Column Width, and click OK
- Some of your months should disappear from the spreadsheet

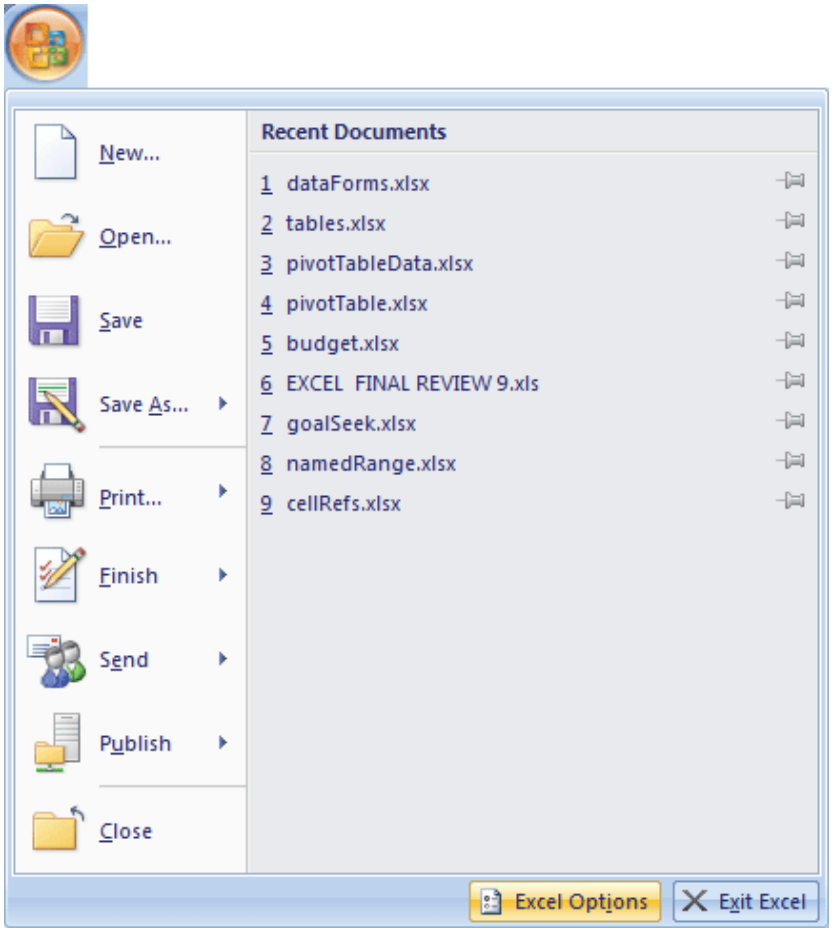
The problem is, if you have to enter data under each month, you'd have to scroll across to complete the row. And then scroll back again to start a new row. Instead of doing this, we'll create a data form. You then enter data in the form to complete a row on your spreadsheet. No more scrolling back and forth!

In the version of Excel 2007 we have, Data Forms have been hidden. They used to be sitting on the Data menu. Now they are not. In fact, quite a few menu options have disappeared in Excel 2007 and Excel 2010.

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Free Text Mining in Excel
textalytics.com/excel-addin
Enable sentiment & text analysis in Excel with Textalytics add-in

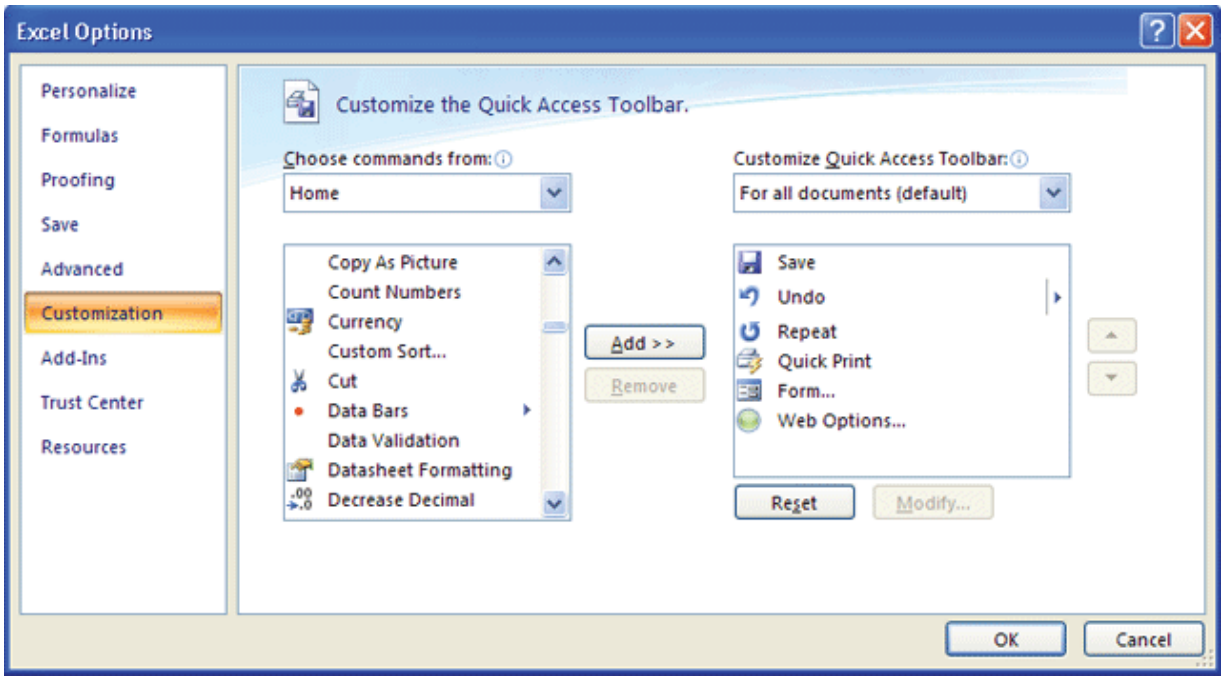
To find Data Forms, click on the Office button in the top left of Excel, for 2007 users. From the Office button menu, click on **Excel Options**:



For Excel 2010 and 2013 users, click the **File** tab in the top left. From the File menu, click **Options**.

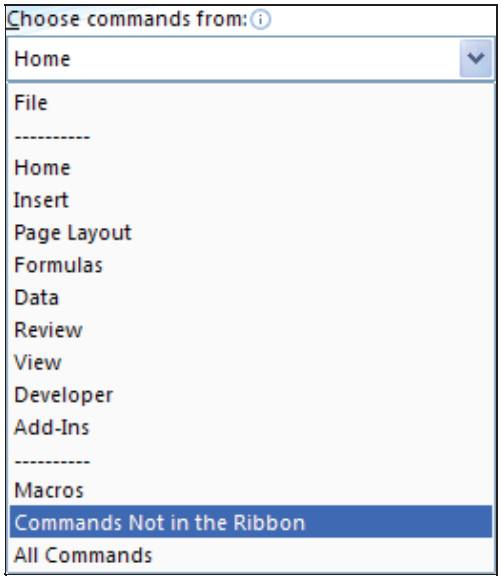
When you click the Excel Options button, you'll see this dialogue box popping up:

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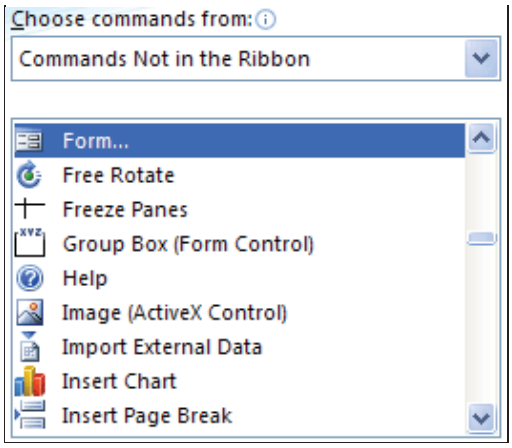
Click the **Customization** item on the left in Excel 2007. In Excel 2010 and 2013 there is a **Quick Access Toolbar** item. Click that instead of Customization. The idea is that you can place any items you like on the Quick Access toolbar at the top of Excel. You pick one from the list, and then click the Add button in the middle.

To add the Data Form option to the Quick Access Toolbar, click the drop down list where it says **Choose Commands From**. You should see this (we've chopped a few options off, in the image below):

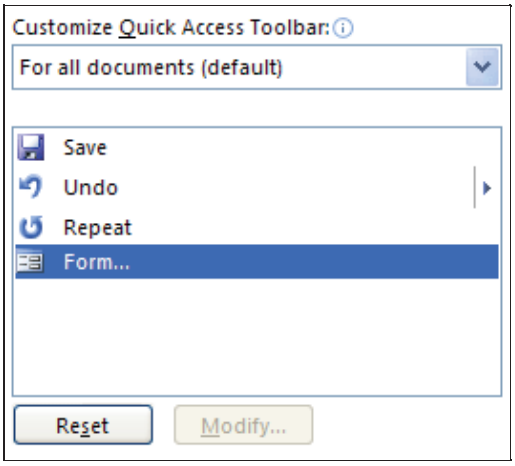


Click on **Commands Not in the Ribbon**. The list box will change:

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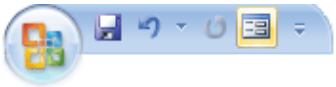


From the Commands Not in the Ribbon list, select **Form**. Now click the **Add** button in the Middle. The list box on the right will then look something like this one:



Explore the other items you can add to the Quick Access Toolbar. You might find your favourite in there somewhere!

When you click OK on the Excel Options dialogue box, you'll be returned to Excel. Look at the Quick Access toolbar, and you should see your new item:

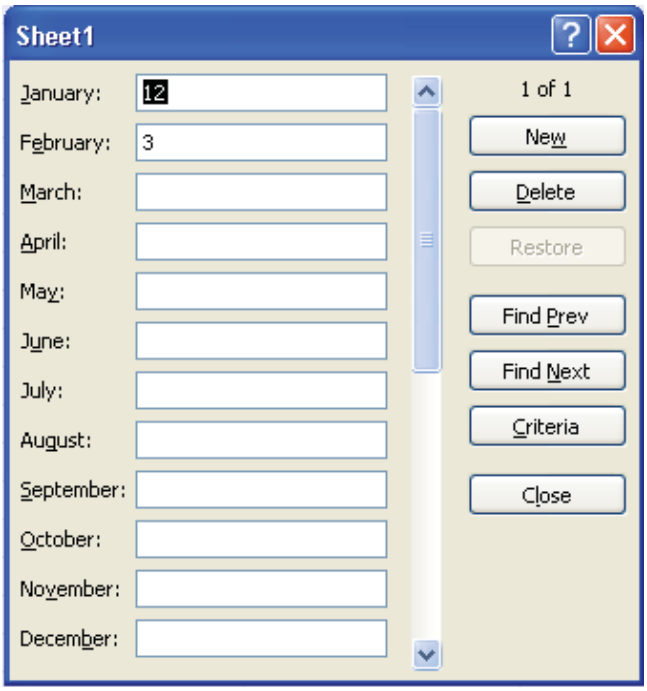


Back to the spreadsheet. Type any number you like in cell A2, under January. Then type a number in cell B2 for February. Now highlight the columns A to L again. This is so that Excel will know which is a column heading and which is the data.

Click the Form item you have just added to the Quick Access toolbar:

You should then see this:

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All the Columns in the spreadsheet are now showing. Enter numbers for the other months. To start a new row in your spreadsheet, you just click the **New** button on the right.

In the next part, you'll see how to add drop down lists to an Excel spreadsheet.

Drop Down Lists in Excel 2007 to 2013 -->

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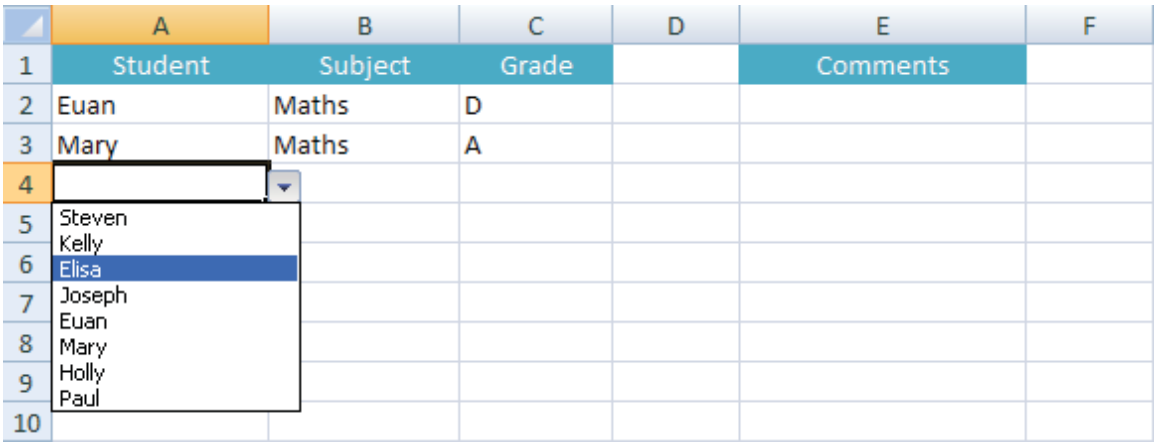
C# .NET

Java for Beginners

If you have to type the same data into cells all the time, then adding a drop down list to your spreadsheet could be the answer. In Excel, this comes under the heading of Data Validation.

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In the example below, we have a class of students on a drop down list. We only have to click a cell in the A column to see this same list of students. You'll see how to do that now. Here's a picture of your finished spreadsheet:



In the image above, we can simply select a student from the drop down list - no more typing! We can also do the same for the Subject and Grade.

So, create the following headings in a new spreadsheet:

Cell A1 Student
Cell B1 Subject
Cell C1 Grade
Cell E1 Comments

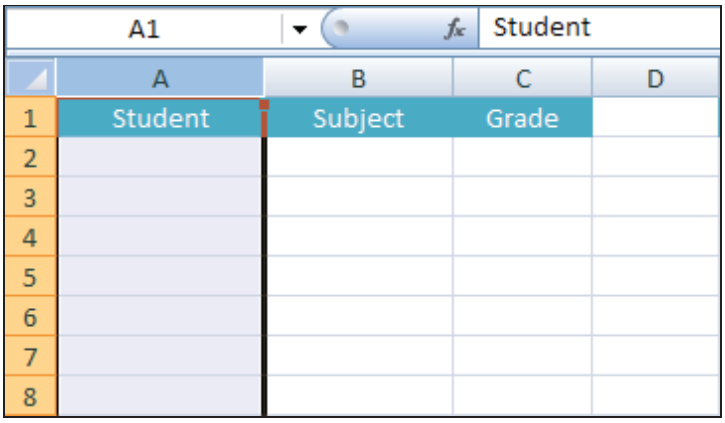
We now need some data to go in our lists. So, type the same data as in the image below. It doesn't need to go in the same columns as ours. But don't type in Columns A, B, C or E.

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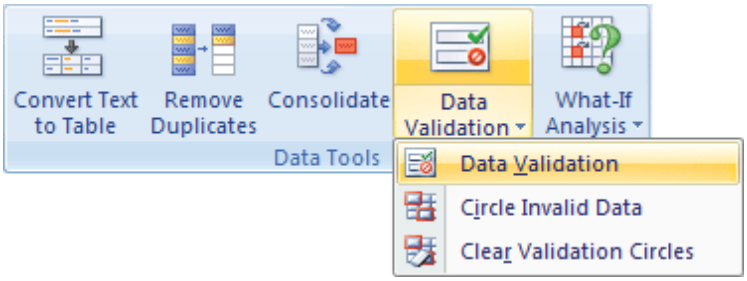
E	F	G	H	I
Comments				
	Steven	Maths	A	
	Kelly	English	B	
	Elisa	History	C	
	Joseph	Geography	D	
	Euan	Art	E	
	Mary	Science	F	
	Holly	Computers		
	Paul	French		

The data in Columns F, G and H above will be going in to our list.

Now click on Column A to highlight that entire column:

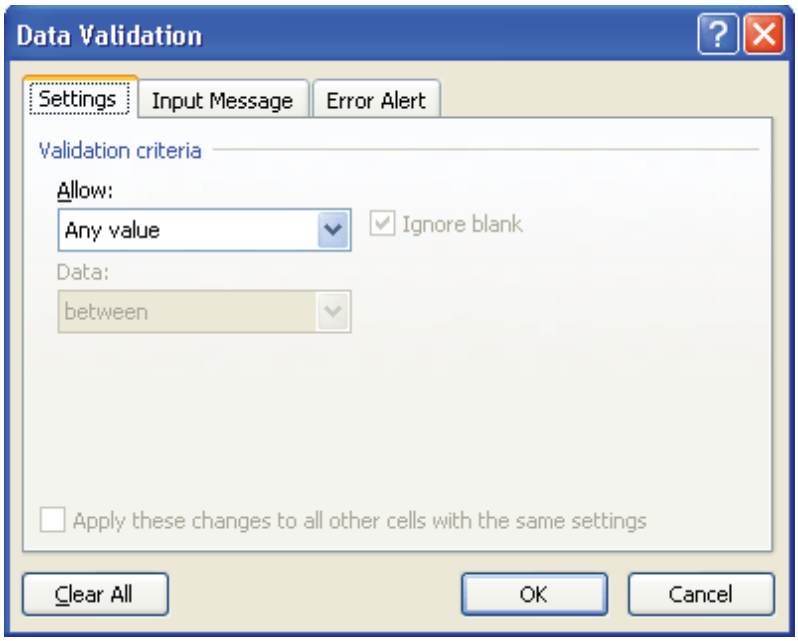


With Column A highlighted, click on **Data** from the Excel Ribbon at the top. From the Data tab, locate the **Data Tools** panel. On the Data Tools panel, click on the **Data Validation** item. Select **Data Validation** from the menu:

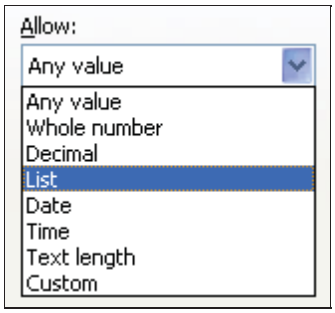


When you click Data Validation, you'll see the following dialogue box appear:

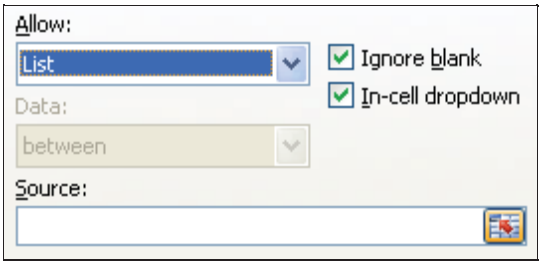
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To create a drop down list, click the down arrow just to the right of "Allow: Any Value" on the **Settings** tab:

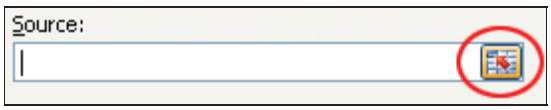


Select **List** from the drop down menu, and you'll see a new area appear:



Source means which data you want to go in your list. You can either just type in your cell references here, or let Excel do it for you.

To let Excel handle the job, click the icon to the right of the Source textbox:

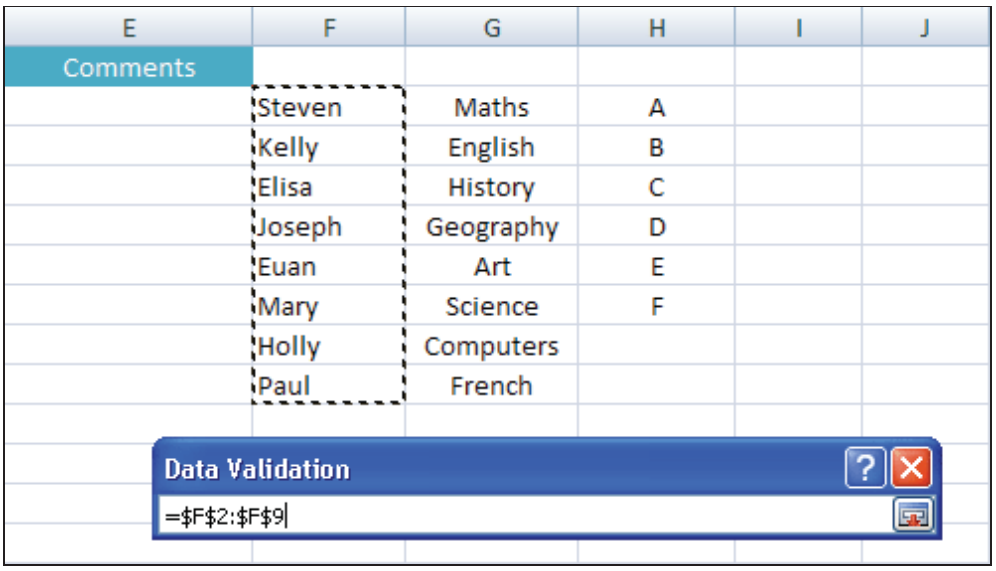


When you click this icon, the Data Validation dialogue box will shrink:

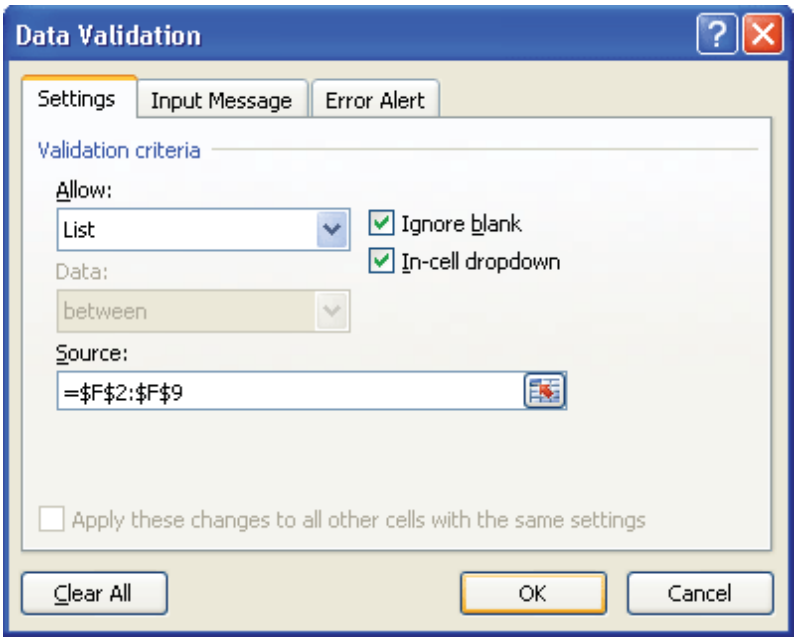


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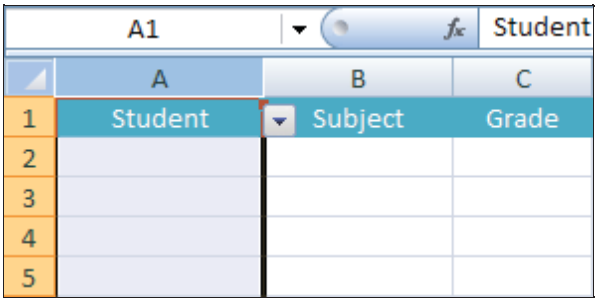
Now select the cells on your spreadsheet that you want in your list. For us, this is the Students:



Once you have selected your data, click the same icon on the Data Validation dialogue box. You'll then be returned to the full size one, with your cell references filled in for you:

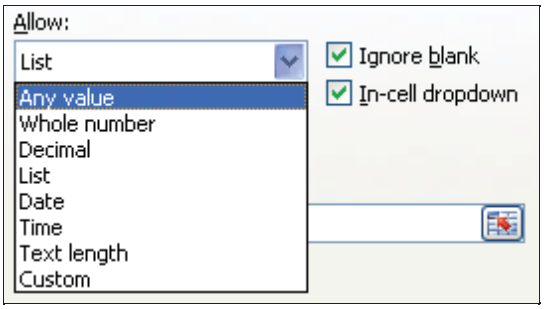


Click OK, and you'll see the A column with a drop down list in cell A1:



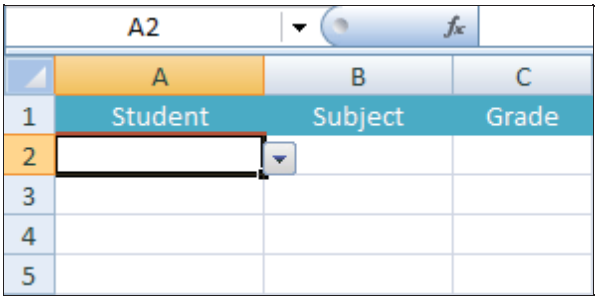
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However, you don't want a drop down list for your A1 column heading. To get rid of it, click inside of cell A1. Click the **Data Validation** item on the **Data Tools** panel again to bring up the dialogue box. From the Allow list, select Any Value:

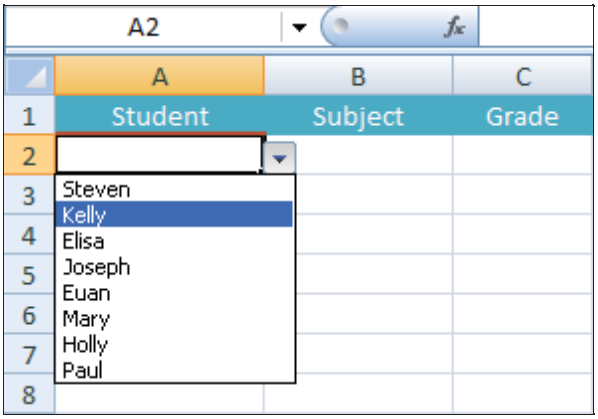


Click OK on the Data Validation dialogue box, and your drop down list in cell A1 will be gone.

The rest of the column will still have drop down lists, though. Try it out. Click inside cell A2, and you'll see a down-pointing arrow:



Click the arrow to see your list:



Select an item on your list to enter that name in the cell. Click any other cell in the A column and you'll see the same list.

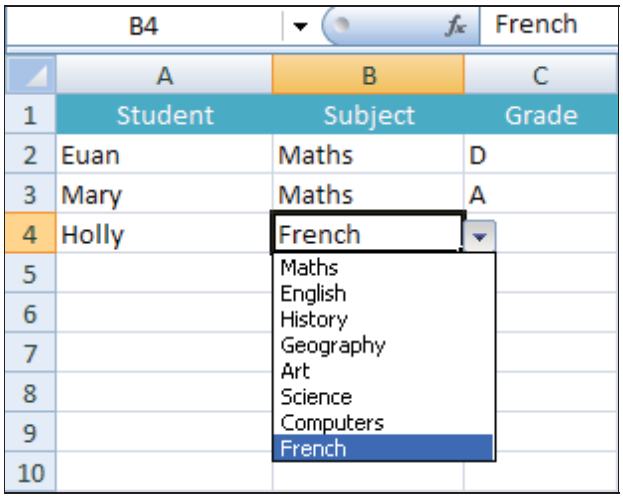
Adding a drop down list to your cell can save you a lot of time. And it means that typing errors won't creep in to your work.

Free Text Mining in Excel
textalytics.com/excel-addin
Enable sentiment & text analysis in Excel with Textalytics add-in

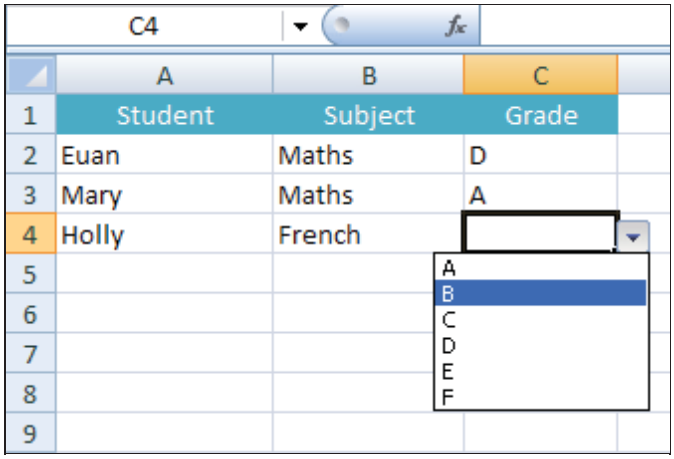
Exercise

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Add drop down list to the B and C columns. The B column should contain lists of Subjects, and the C column a list of Grades. Make sure that the cells B1 and C1 don't contain drop down lists. When you're finished, the Subject column should look like this:



And the Grade column should look like this:



In the next part, you'll see how to add an error message to an Excel spreadsheet.

Add your own Error Messages to Excel 2007 to 2013 -->

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Java for Beginners

A Web Query is when you send a request to a web page and ask for some data to be returned. You'll see how to do that in this section, by importing data into your spreadsheet from a web page on our web site.

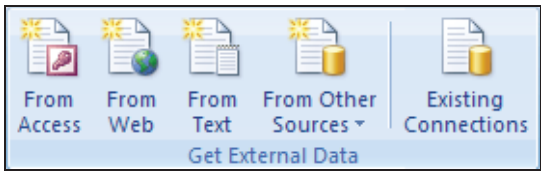
There are many reasons why you would want to do that. If, for example, you're a hard-working sales person out in the field, and a customer wants the latest prices, you could run a web query in Excel and pull the prices from your employer's website.

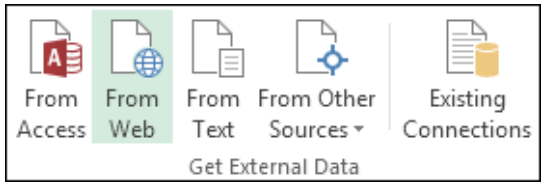
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How to run a Web Query in Excel 2007 to 2013

You'll now learn how to use Web Queries in Excel. For this lesson, you'll need an active internet connection. We're going to connect to a web page, and download a product list straight into a spreadsheet. Off we go!

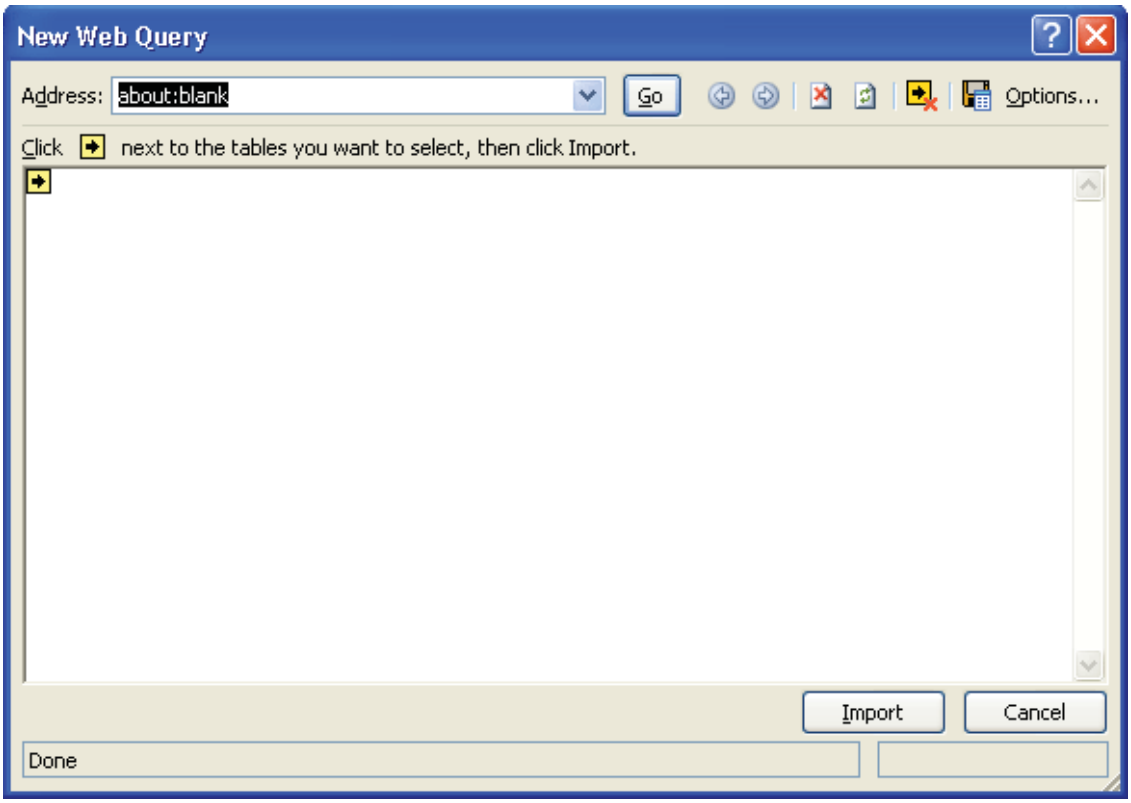
- Open Excel
- Connect to the internet, if you're not already online
- Click inside A1 on your new worksheet
- From the Excel Ribbon, click on **Data**
- From the Data tab, locate the **Get External Data** panel:





From the Get External Data panel, click on **From Web**. You'll then see the following dialogue box appear:

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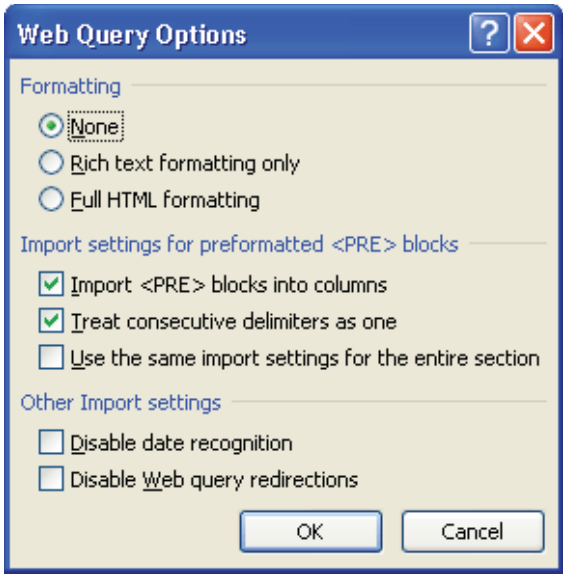


The idea is that you type the address of a web page and then click Go. Excel will then fetch the data for you.

So, in the Address box, where it says about:blank in the image, type the following address:

http://www.homeandlearn.co.uk/ME/webquery1.htm

Before you click Go, click the Options button in the top right of the New Web Query dialogue box. You'll see this dialogue box appear:



For this first web query, we're not going to change any of these settings. But the Formatting section is the one you'll use most. You can import the web page with all its current formatting, use just Rich Text formatting, or have no formatting at all. (Rich Text

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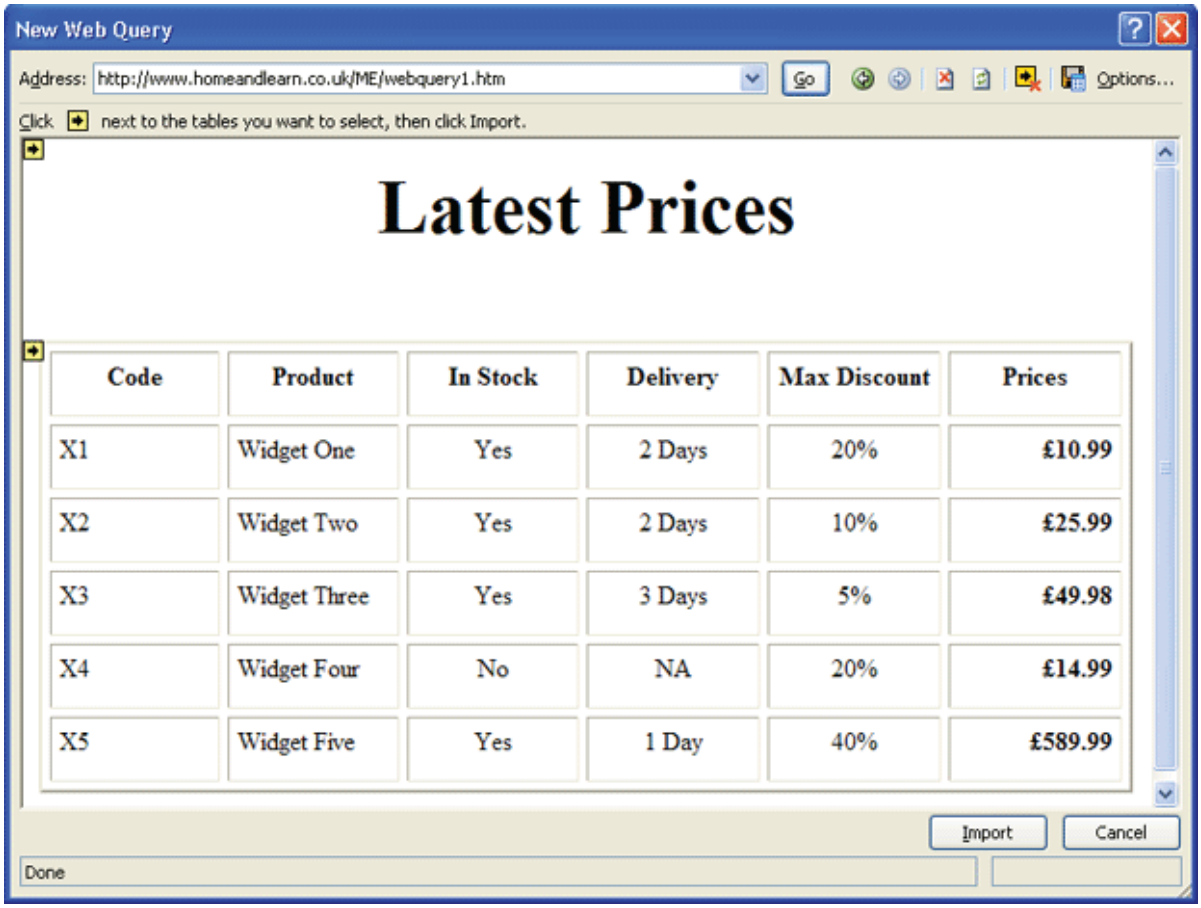
formatting will get you things like bold text, but won't give you any of the fancy stuff on the page.)

Click OK on the Options dialogue box to return to the New Web Query. Now click the Go button.

When you click the Go button, Excel will try to connect to the address you gave it. If it can't get through, you'll see a "Page Cannot be Found" error page:

If that's what you're getting, make sure you are connected to the internet. Check if you've typed the address correctly. Make sure that your firewall is not blocking Excel.

If Excel is successful, you'll see the data appear in the Web Query window:

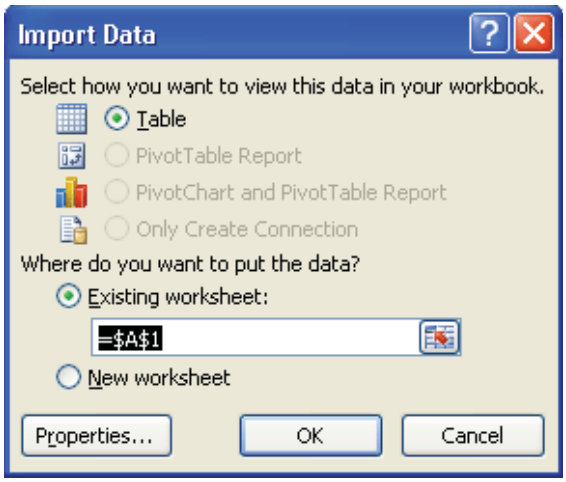


Note the black arrows in the yellow squares. You can select the tables you want to import. Click the first yellow box, and it will turn green and have a tick in it. Like this one:

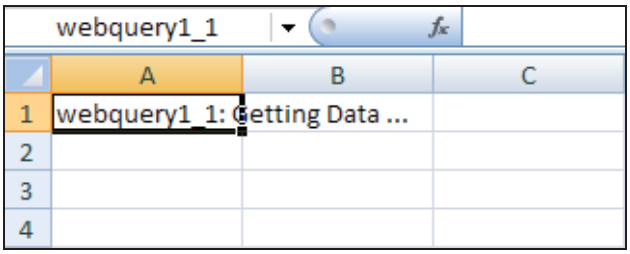


Once you have the data selected, click the Import button at the bottom of the New Web Query window. You'll get yet another dialogue box:

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There's not much to do, here. But if you want to import the data to a different starting cell, or even a new worksheet, select the appropriate option. For this particular import, Excel is only giving us the option to view the data as a Table. Click OK and the import will begin. You should see this in cell A1 on your spreadsheet:



If the import is successful, your spreadsheet should look like ours below:

	A	B	C	D	E	F
1	Latest Prices					
2						
3						
4						
5	Code	Product	In Stock	Delivery	Max Discount	Prices
6	X1	Widget One	Yes	2 Days	20%	£10.99
7	X2	Widget Two	Yes	2 Days	10%	£25.99
8	X3	Widget Three	Yes	3 Days	5%	£49.98
9	X4	Widget Four	No	NA	20%	£14.99
10	X5	Widget Five	Yes	1 Day	40%	£589.99
11						

As you can see, the data from our web page has been imported into Excel! Let's try another one.

Best CRM Tool
ideasincorporated.co.za
Salesforce.com No1 in Gartner Magic Quadrant

Web Query Two

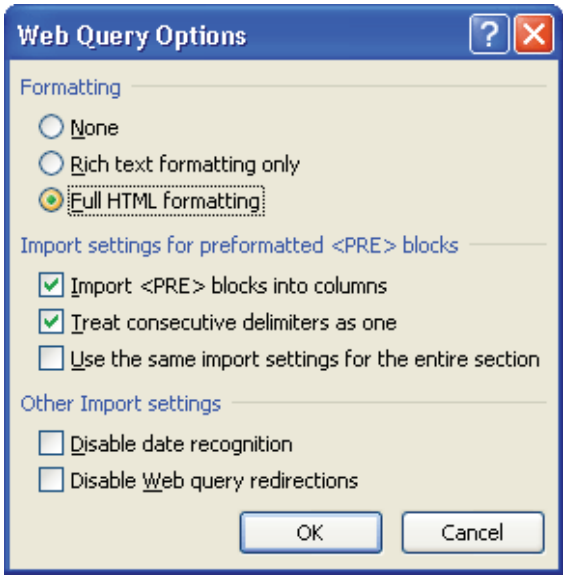
The next web query we'll do will see an import of full HTML formatting. When you're finished, you'll see why this can be a problem.

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- At the bottom of Excel, click on Sheet1
- On the fresh worksheet, click inside cell A1
- Click on the Data menu, then on click From Web on the Get External Data panel
- In the New Web Query Address box, type the following Address (don't click the Go button just yet):

http://www.homeandlearn.co.uk/ME/webquery2.htm

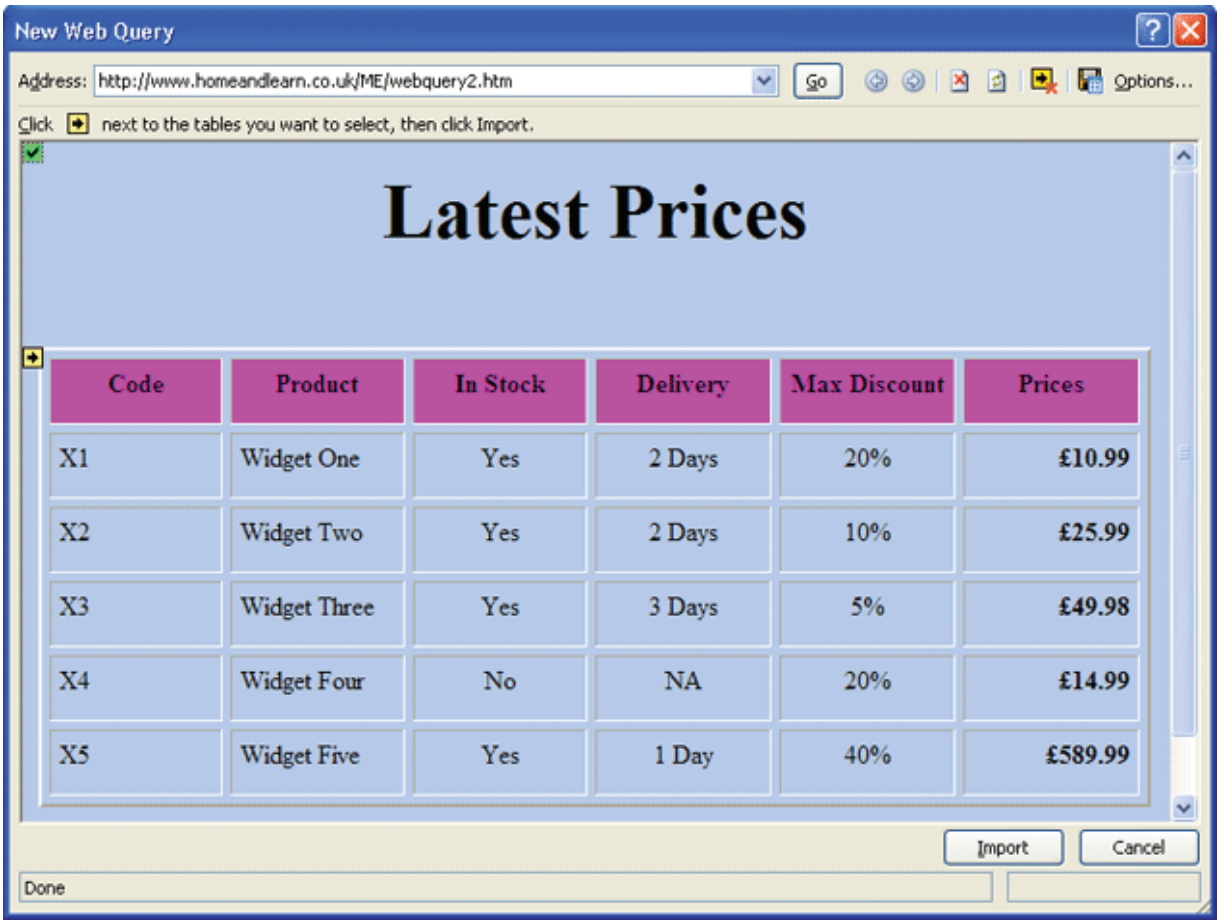
Click the Options button in the top right of the dialogue box:



This time, select Full HTML Formatting, as in the image above. Click OK, then click the Go button.

Excel will bring back your data. Click the yellow box with the arrow in it to select all the data:

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Click the **Import** button at the bottom when your dialogue box looks like the one above.

When you see the Import Data dialogue box, just click OK. The data will then be imported into Excel:

	A	B	C	D	E	F	G
1	st Prices						
2							
3							
4							
5	Code	Product	In Stock	Delivery	Max Discount	Prices	
6	X1	Widget One	Yes	2 Days	20%	£10.99	
7	X2	Widget Two	Yes	2 Days	10%	£25.99	
8	X3	Widget	Yes	3 Days	5%	£49.98	
9	X4	Widget Four	No	NA	20%	£14.99	
10	X5	Widget Five	Yes	1 Day	40%	£589.9	
11	New this week						

The problem with importing full HTML is that some of that fancy formatting you did won't convert very well in Excel. In the image above, our Latest Prices heading has been mangled!

In other words, you may have to spend time re-formatting your spreadsheet.

To get the full heading back, for example, highlight the first row, from A1 to G1. Click on the Home menu, and then locate the Alignment panel. Click Merge and Centre.

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But that's it for Web Queries. They are quite simple to do, and can come in handy if you're out on the road. In the next part, we'll take a look at Hyperlinks in Excel.

Hyperlinks in Excel 2007 to 2013 -->

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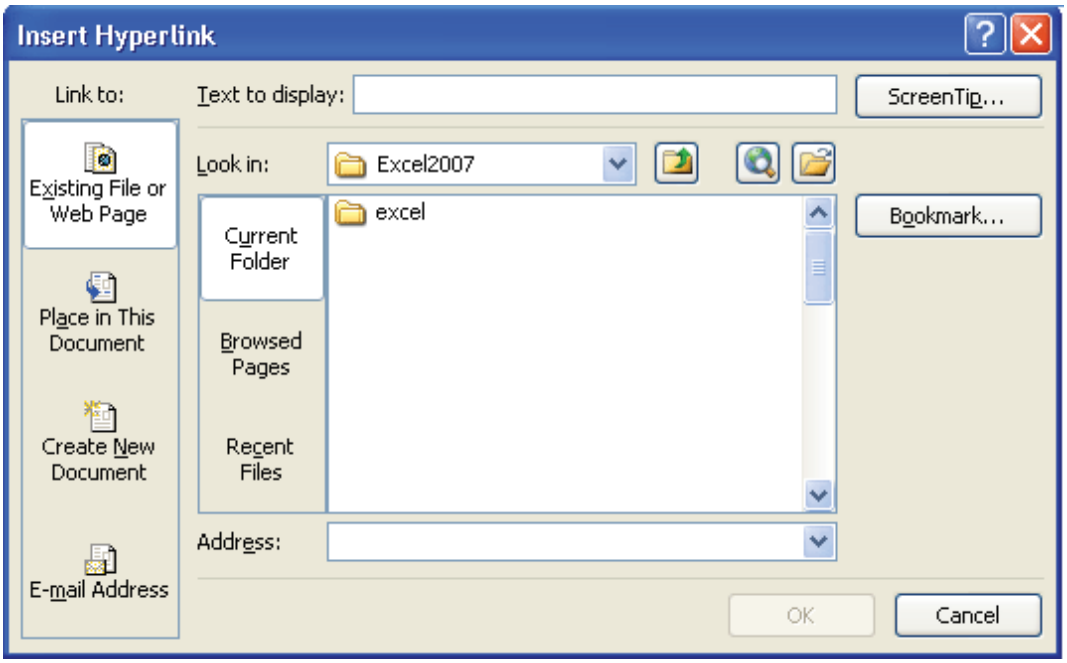
Java for Beginners

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. (If you're using Excel 2013, you only get one worksheet. Add two more by clicking the plus button just to the right of Sheet1 at the bottom of Excel.)
- From the Excel Ribbon, click the **Insert** tab
- From the Insert tab, locate the **Links** panel
- Click on **Hyperlink**:



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

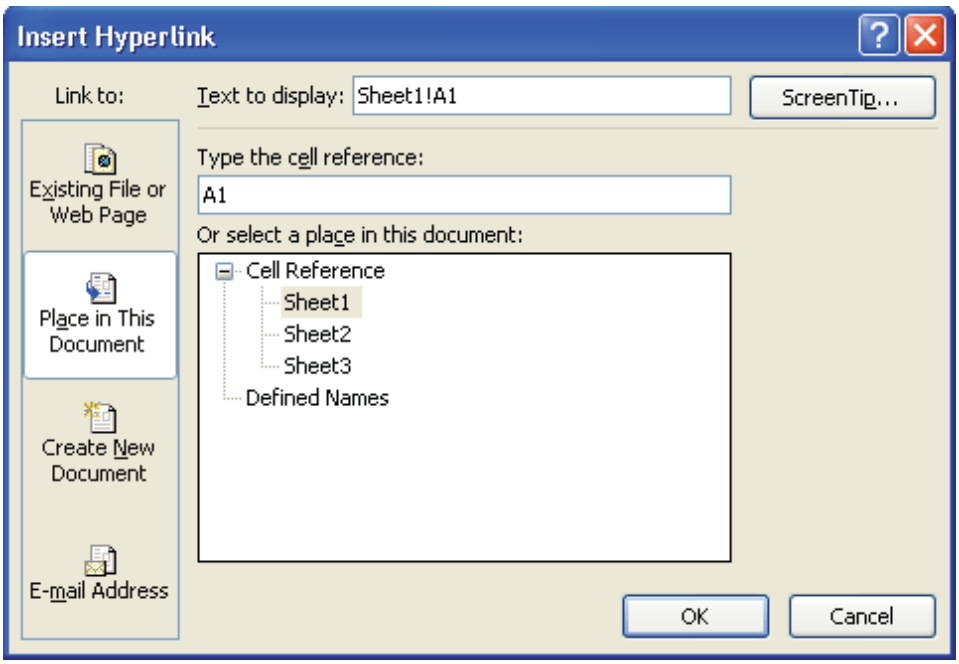


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We're going to create a link to another worksheet in this same spreadsheet. So, under **Link to** on the left, click on "Place in This Document".

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Graduate Diploma Art & Design. University for the Creative Arts UK

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

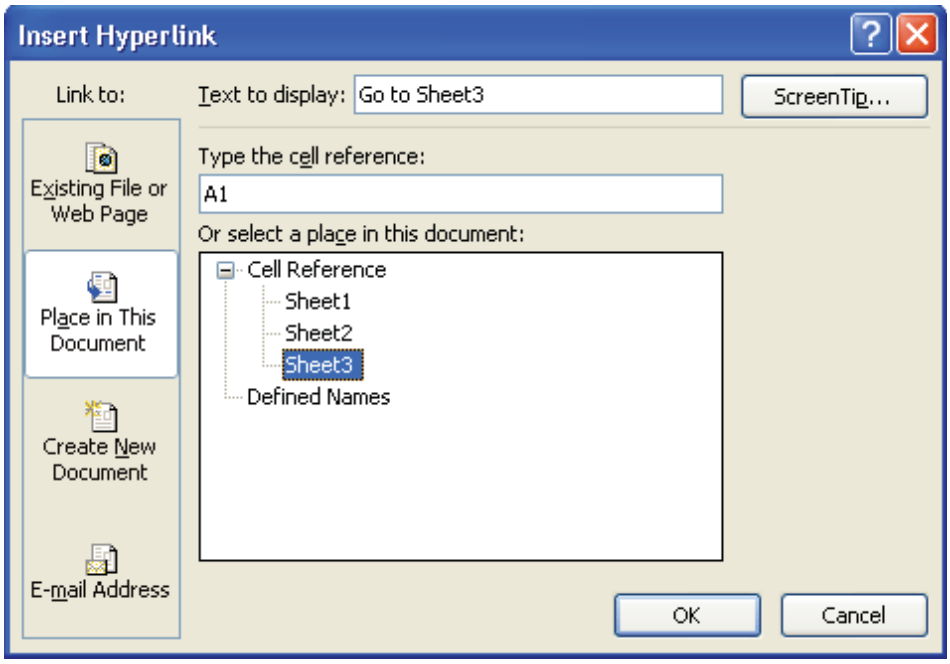


We'll try linking to Sheet3 on our spreadsheet. When the link is clicked on Sheet1, we want to jump to a specific cell on Sheet3.

- 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:

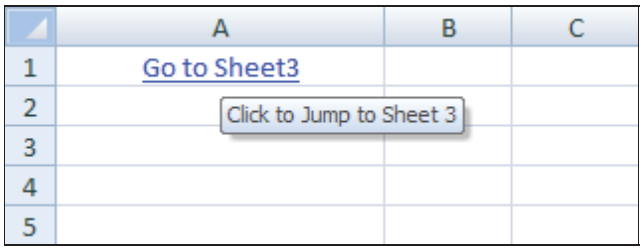
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Click OK when you're done, and you'll see cell A1 on your spreadsheet change:



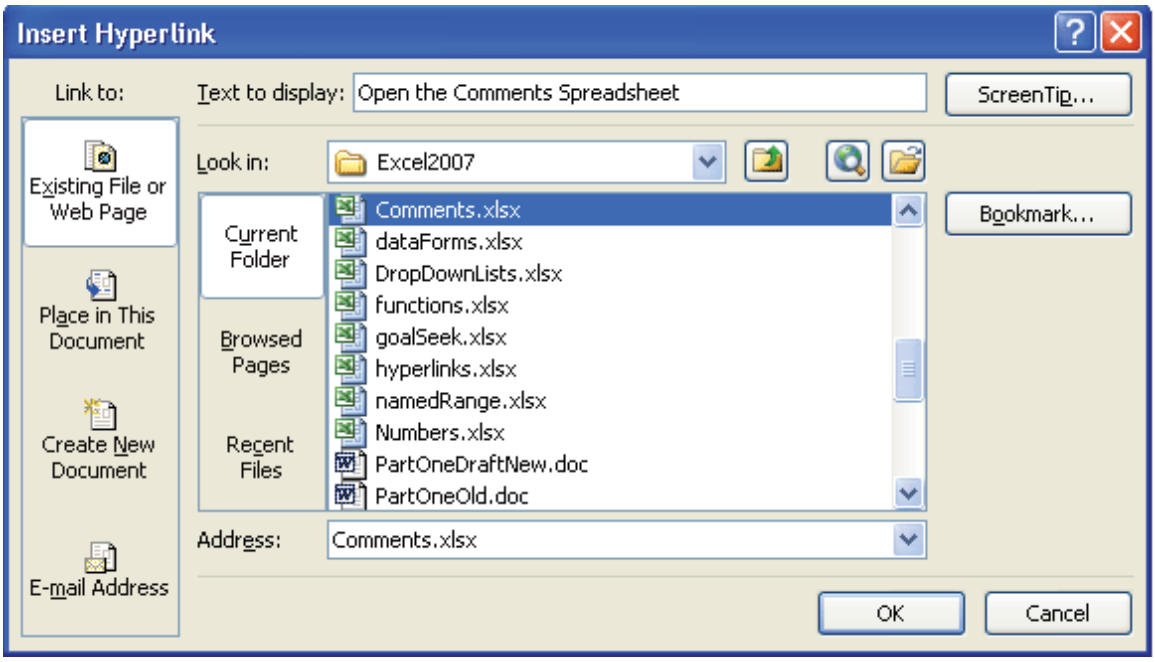
Hold your mouse over the link and you should see your Screen Tip:



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.

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- 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. 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!

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In the next part, we'll take a look at Object Linking and Embedding in Excel.

Object Linking and Embedding in Excel 2007 to 2013 -->

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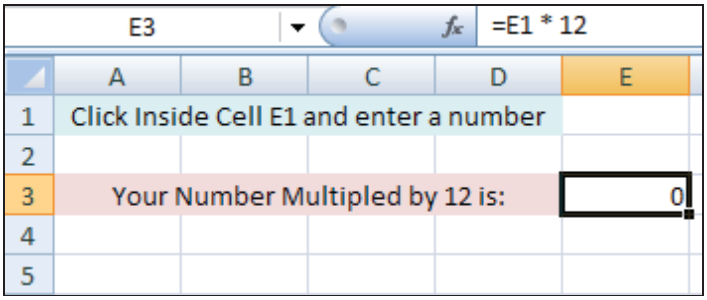
Java for Beginners

Object Linking and Embedding (or OLE for short) is a technique used to insert data from one programme into another. We'll create a simple spreadsheet to illustrate the process, and place it in to Word document. When the Excel spreadsheet is updated, you'll see the Word version update itself as well.

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If you don't want the data to update in Word, for example, it's called Embedding; if you do want the data to update, it's called Linking. We're going to do Linking. For this exercise, you need Word 2007 to Word 2013 as well as Excel 2007 to 2013.

First, create the simple spreadsheet below, and enter the formula shown in cell E3:

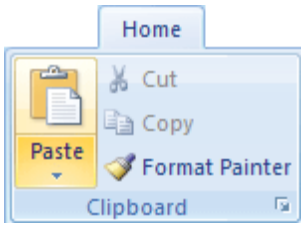


When you enter a number in cell E1, the answer is placed in cell E3 (don't do this yet).

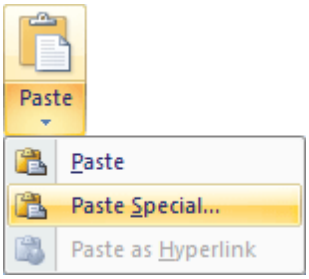
With your spreadsheet created, highlight the cells A1 to E3. Click on the **Home** tab in Excel. On the **Clipboard** panel, click on **Copy**.

Now switch to Word. On the **Home** tab in Word, locate the **Clipboard** panel, and the **Paste** item:

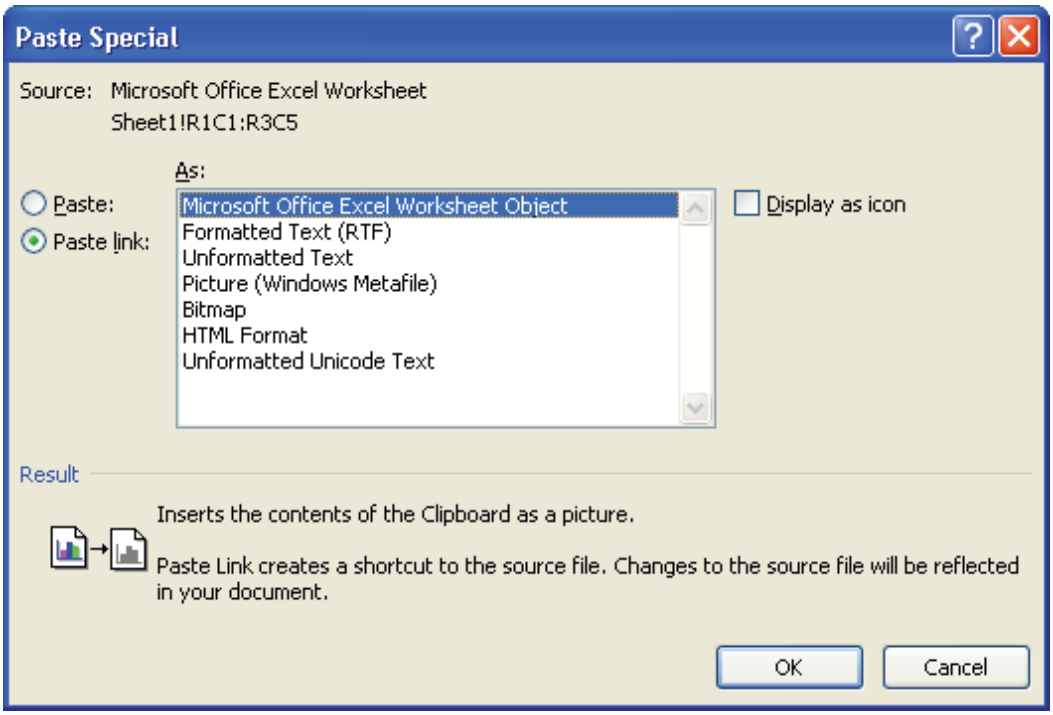
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Click on Paste. From the Paste menu, select **Paste Special**:



When you click on Paste Special, you'll see the following dialogue box appear:

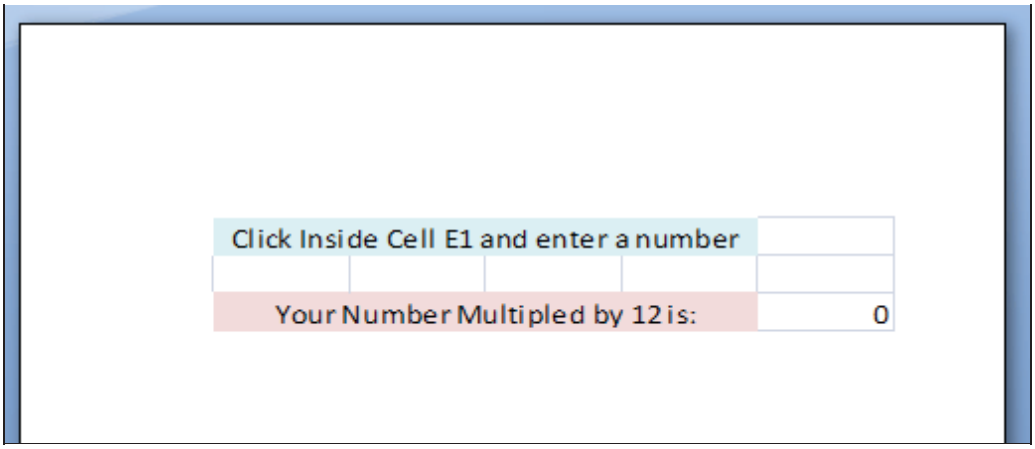


Select Microsoft Office Excel Worksheet Object from the dialogue box. On the left hand side, select Paste Link. Click OK.

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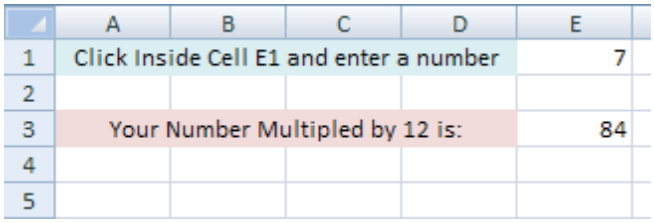
When you click OK, Word will insert the spreadsheet from Excel:

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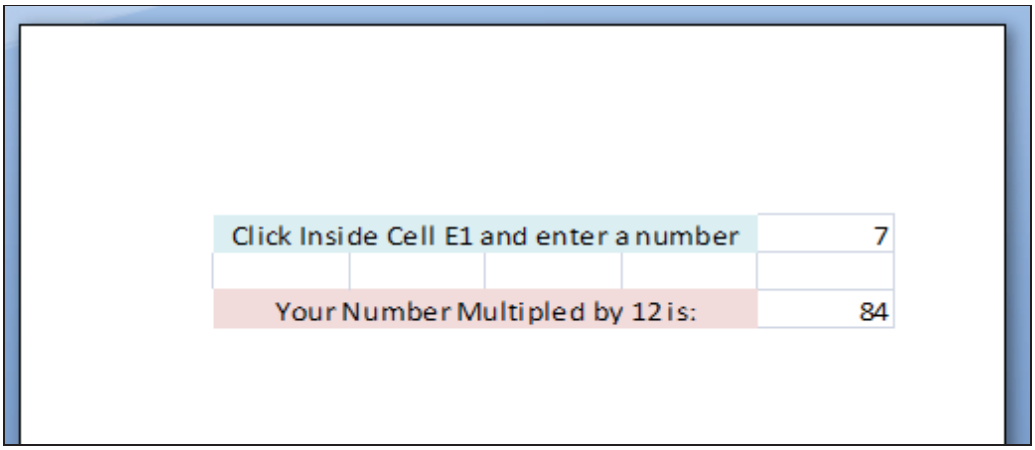


It's even retained the cell formatting!

To check that it really does update in Word, switch back to Excel. Click inside Cell E1 and enter the number 7 (If your cells are still highlighted, just press the enter key on your keyboard). Press Enter, and you should have the same answer as in the image below:



Now switch back to Word, and you should see that it too has the same answer:



Word has successfully linked the data from Excel ! If you don't want the updates, you would choose **Paste** from the Paste Special dialogue box instead of Paste Link.

You can link or embed things like Charts or Pivot Tables into Word, though, and it can come in really useful.

In the next part, you'll see how to spruce up an Excel spreadsheet with drawing objects.

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Insert Drawing Objects -->

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How to add an error message to an Excel Spreadsheet

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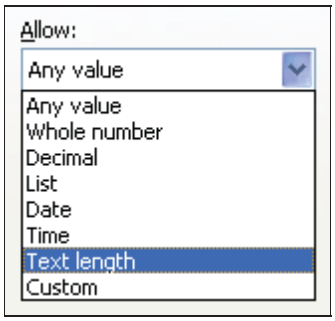
In the previous part, you saw how to add drop down lists to your Excel spreadsheets. In this part, we'll display an error message for our users. If you haven't already done so, you need to do the previous tutorial first.

Data Validation - restricting what data can go in a cell

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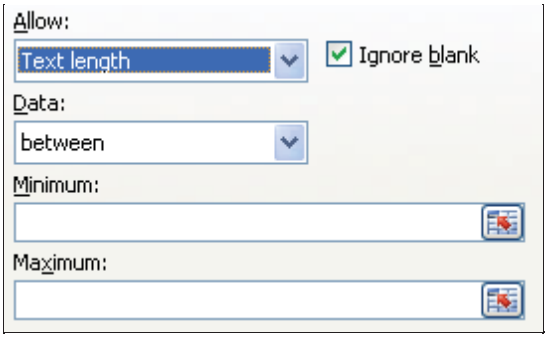
You can also restrict what goes in to a cell on your spreadsheet, and display an error message for your users. We'll do this with our Comments column. If users enter too much text, we'll let them know by displaying a suitable error box. Try the following:

- Highlight the E column on your spreadsheet (the Comments column)
- From the **Data Tools** panel, click **Data Validation** to bring up the dialogue box again
- From the **Allow** list, select Text length:



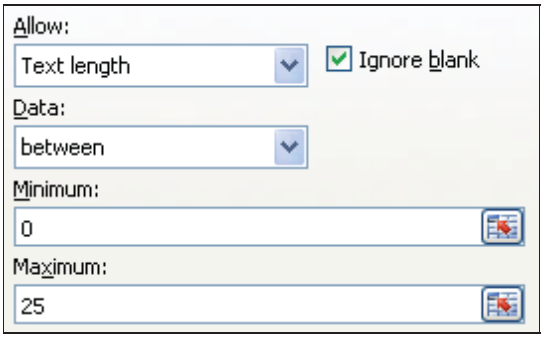
When you select Text Length from the list, you'll see three new areas appear:

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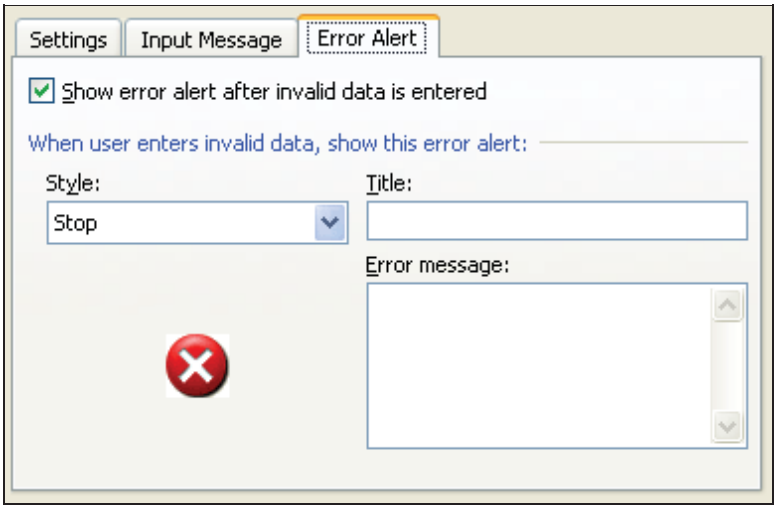


What we're trying to do is to restrict the amount of text a user can input into any one cell on the Comments column. We'll restrict the text to between 0 and 25 characters.

The first of the new areas (Data) is exactly what we want - **Between**. For the minimum textbox, just type a 0 (zero) in there. For the maximum box, type 25. Your dialogue box should then look like this:



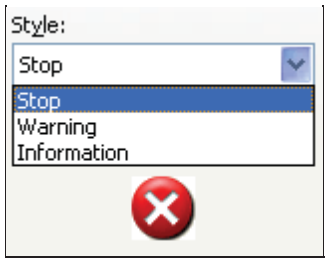
To add an error message, click the **Error Alert** tab at the top of the Data Validation dialogue box:



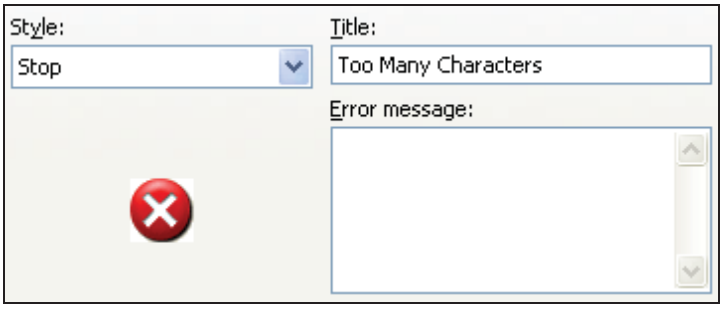
Make sure there is a tick in the box for "Show error alert after invalid data is entered".

You have three different Styles to choose from for your error message. Click the drop down list to see them:

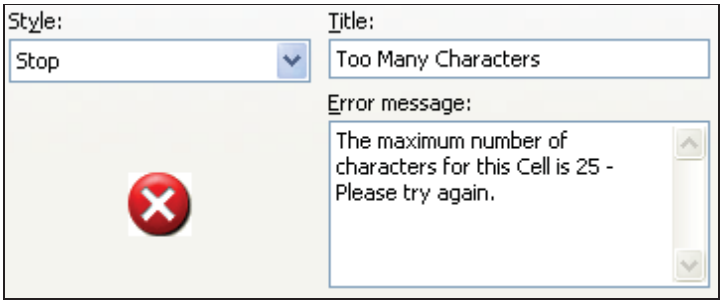
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In the **Title** textbox, type some text for the title of your error message.

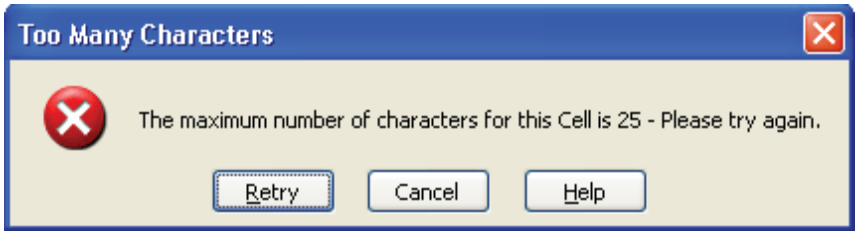


Now click inside the error message field and type some text for the main body of your error message. This will tell the user what he or she did wrong:



Click OK on the Data Validation dialogue box when you're done.

To test out your new error message, click inside any cell in your Comments Column. Type a message longer than 25 characters. Press the enter key on your keyboard and you should see your error message appear:



As you can see, the user is prompted to Retry or Cancel. But our title (Too many characters) is at the top, our Stop symbol is to the left, and our Error message is displaying nicely!

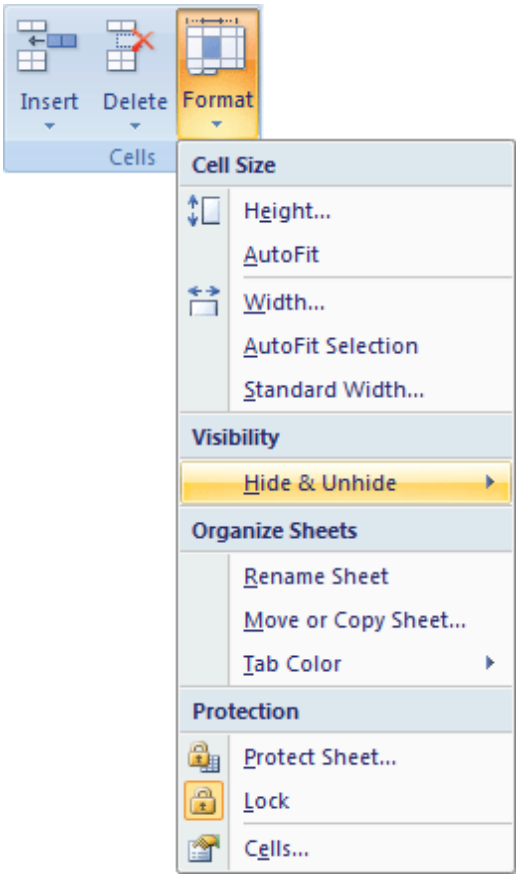
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Hiding Spreadsheet Data in Excel 2007 to 2013

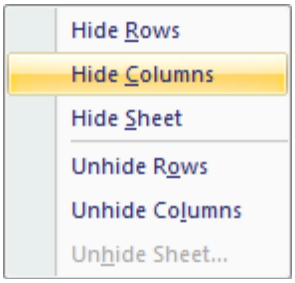
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The data that went in to our lists doesn't need to be on show for all to see. You can hide this text quite easily.

- Highlight the columns with your data in it (F, G and H for us)
- Click on the **Home** tab from the top of Excel
- Locate the **Cells** panel
- On the Cells panel, click on **Format**. You'll see the following menu:

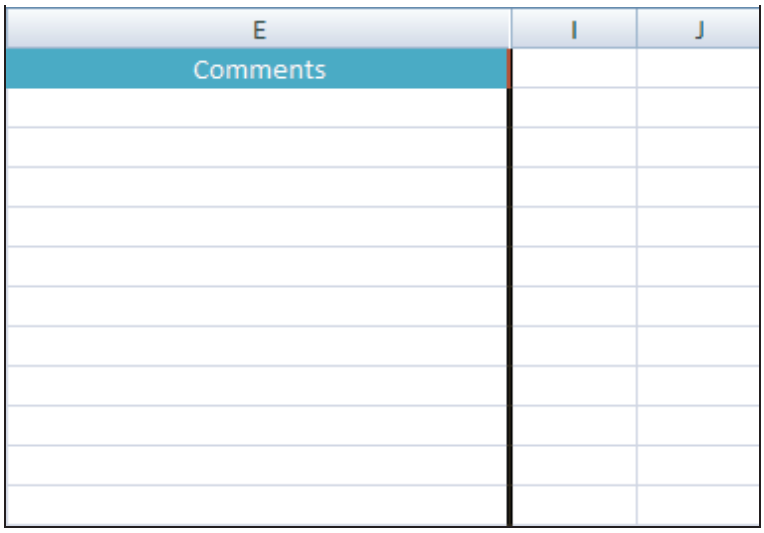


Move your mouse down to **Hide & Unhide** and you'll see a Sub Menu appear:



Click on Hide Columns from the Sub menu. Excel will hide the columns you selected:

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In the spreadsheet above, the columns F to H are no longer visible.

To get them back again, highlight the columns E and I. From the same sub menu, click **Unhide Columns**.

In the next part, we'll explore Web Integration in Excel.

Web Integration in Excel 2007 to 2013 -->

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Java for Beginners

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.

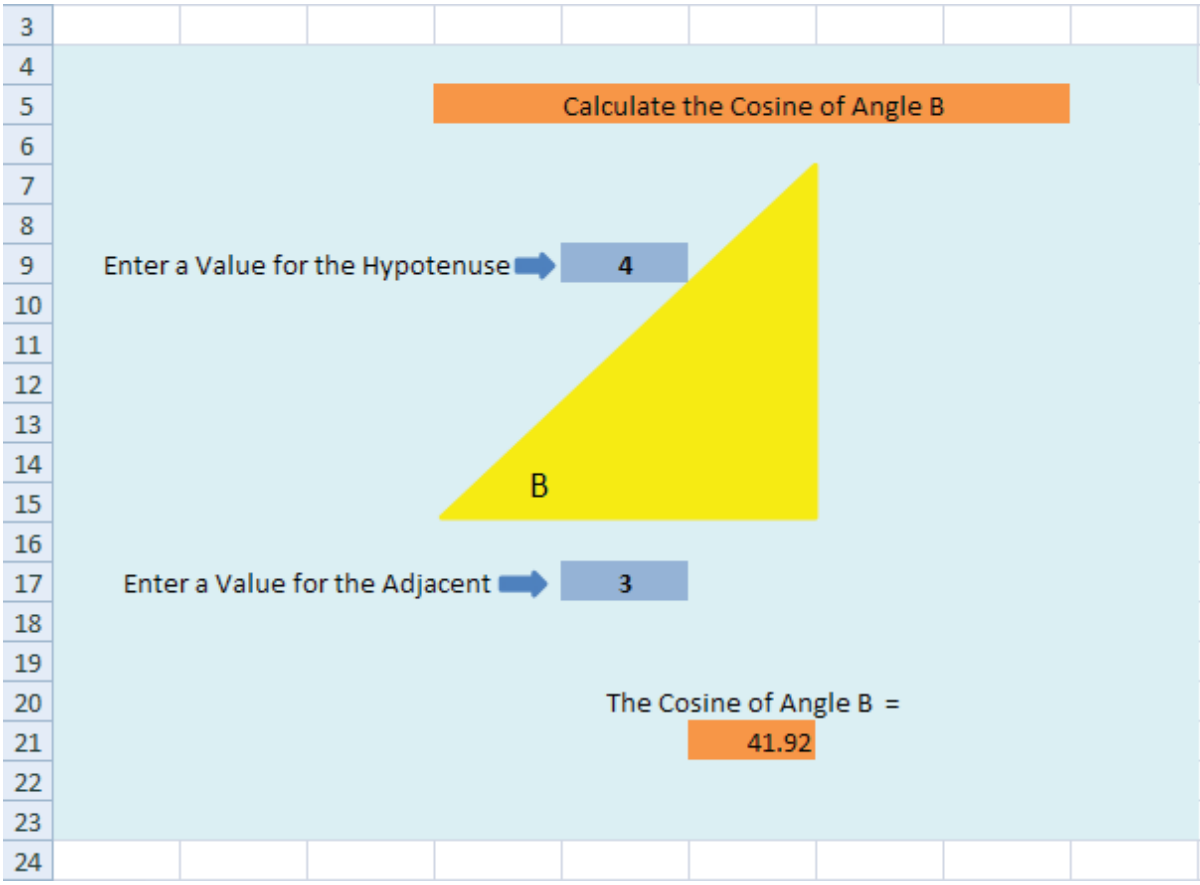
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First, look at the spreadsheet below. Unless you know about Cosines, Adjacent angles, and Hypotenuse, the data below will be a bit bewildering:

	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):

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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.)

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How to Draw a Shape on an Excel Spreadsheet

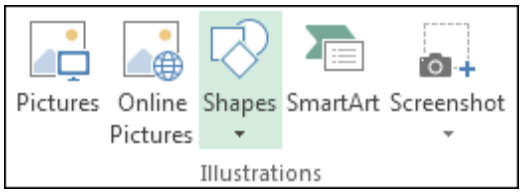
To insert a shape on your spreadsheet, do the following.

- From the Excel Ribbon, click on **Insert**
- Locate the **Shapes** panel:

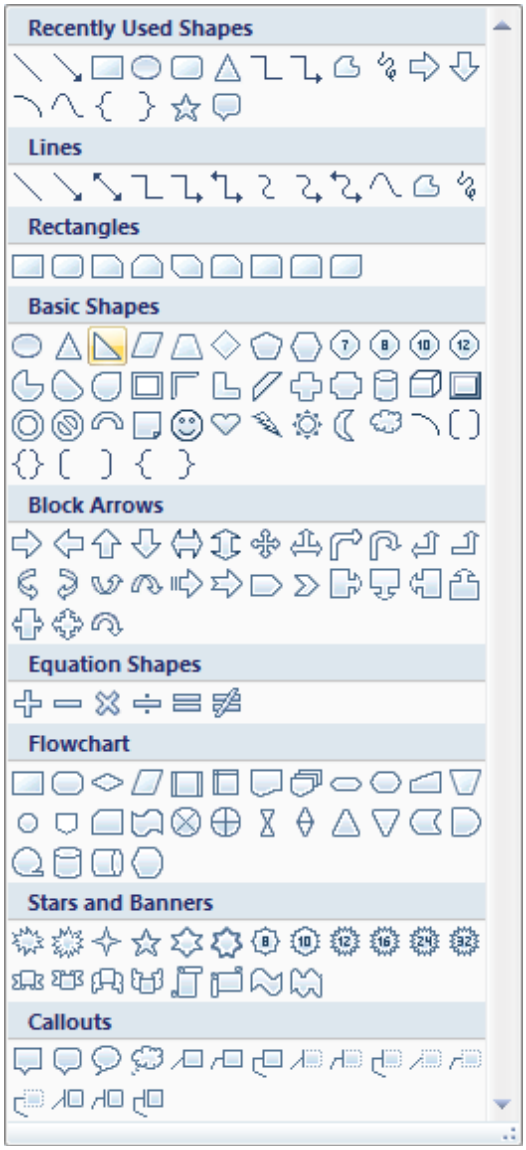


For Excel 2013 users, locate the **Illustrations** panel instead. The Shapes item is on there:

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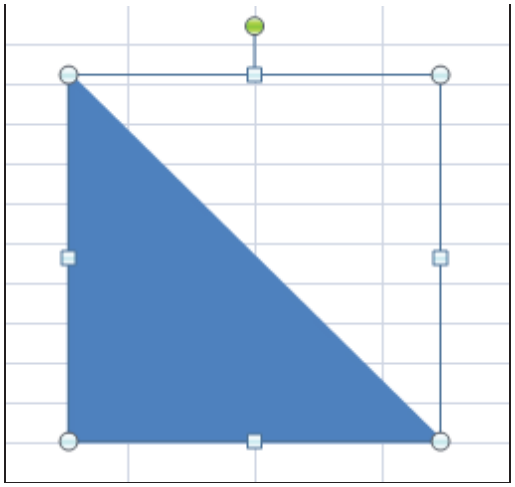


On the **Shapes** panel, click the drop down arrow to see all the available shapes:



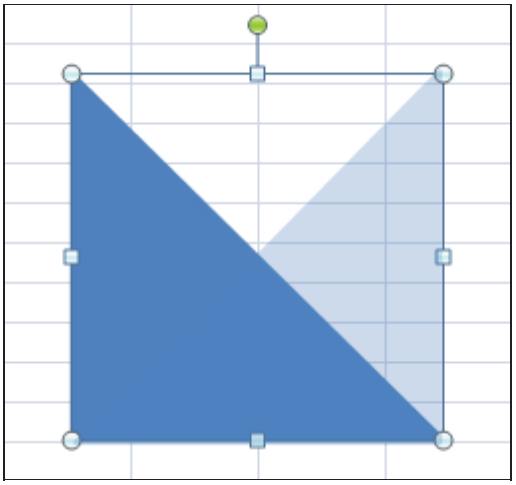
- Under **Basic Shapes**, select the **Right Triangle**
- Hold down your left mouse button on your spreadsheet, and drag to create your shape. Let go when you have a decent sized triangle. You'll see something like this:

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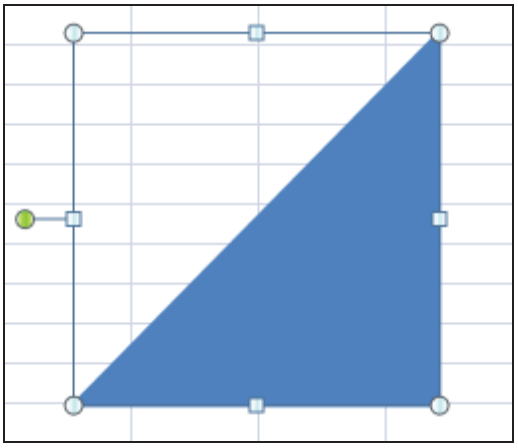


The green circle (white in Excel 2013) allows you to rotate the shape. The other circles (and squares) are sizing handles. Hold your mouse down over one of these and drag to resize your shape, if it's not the size you want it.

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:



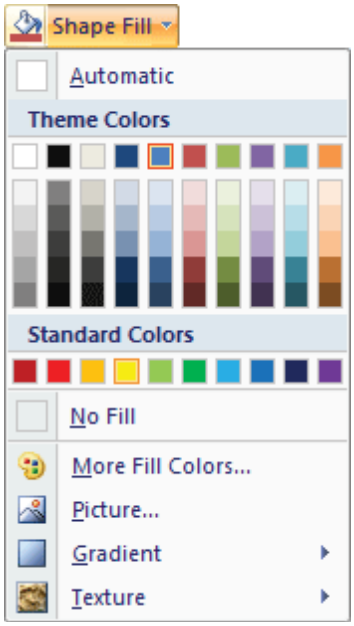
You should see an outline, like the one above. Let go of your left mouse button when it is in position:



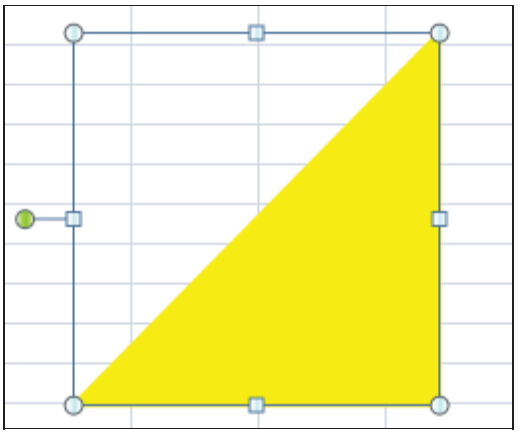
As you can see, the green circle is now on the left hand side.

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



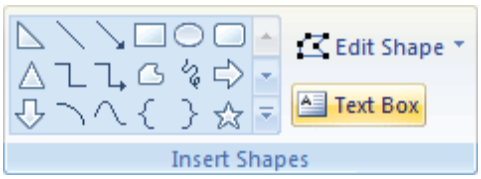
Select a colour for your triangle. You'll also want to select a **Shape Outline**, underneath Shape Fill. Select the same colour as your Fill, and your triangle will look something like this one:



Add a Text Box to an Excel 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:

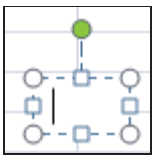
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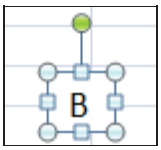
Excel 2013 users have a separate Text panel, on the left hand side. Click the Text Box item:



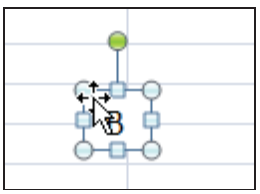
Now move back to your spreadsheet, hold down your left mouse button, and drag out a Text Box. Let go of the left mouse button and you'll have something like this:



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:

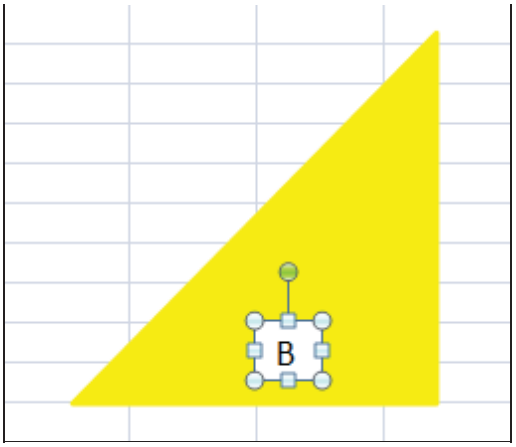


We now need to drag our Text Box onto the shape. Move your mouse over the Text Box until the cursor changes shape to four arrowheads (this can be tricky):

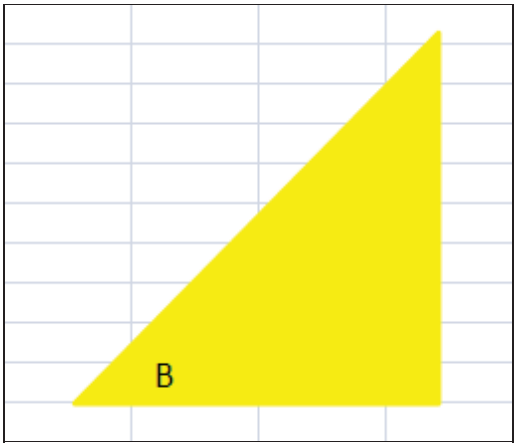


Once your cursor changes shape, hold down the left mouse button and drag your Text Box on to the triangle:

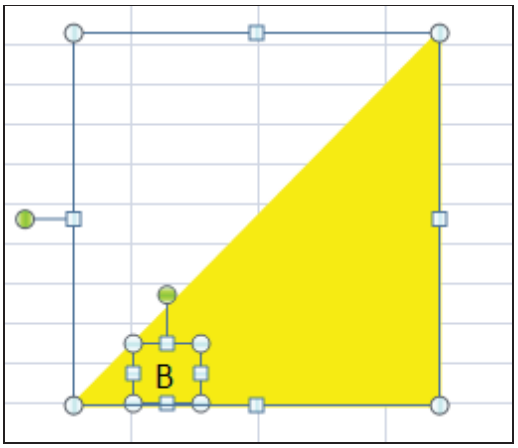
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With the Text Box selected, use the arrow keys on your keyboard to nudge it in to position. Fill the Text Box in the same way as you did for the triangle. To get rid of the text box border, click **Shape Outline** just below **Shape Fill**. Set it to **No Outline**. It will then look like this:

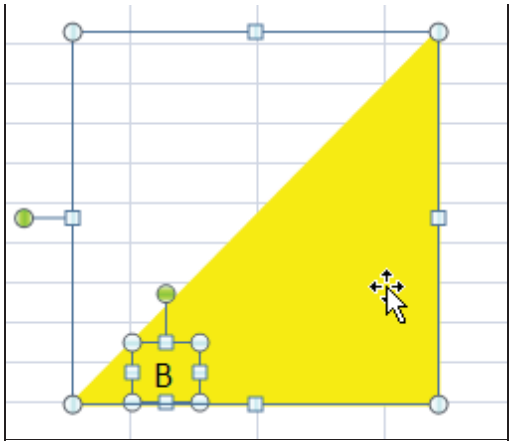


If you need to move your triangle and Text Box, you can select them both at the same time, and drag them as one. Click on your Triangle to select it. Now hold down the CTRL key on your keyboard. With the CTRL key held down, click on your Text Box. Both will now be selected:

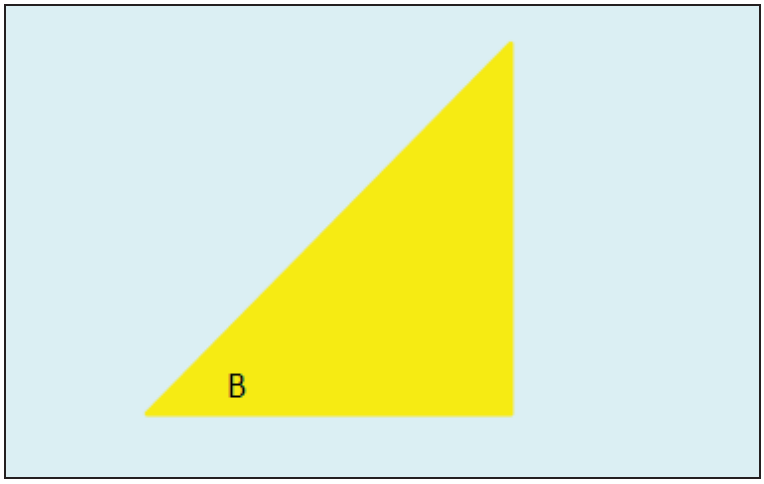


With both the triangle and the Text Box selected, hold your mouse over the selected shapes. When your cursor changes to the four arrowheads, hold down the left button and drag your shapes to a new position:

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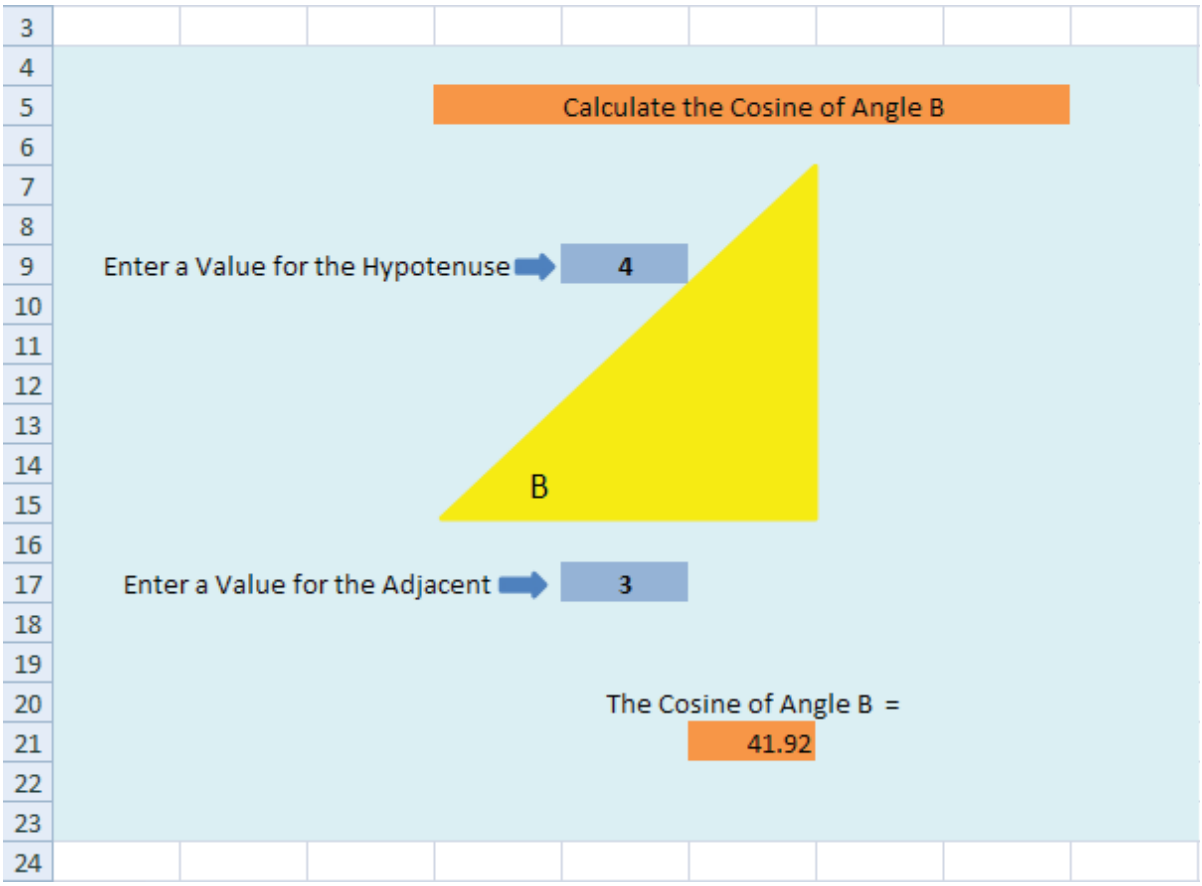


You can finish off the formatting in the normal way. In the image below, we selected all the cells surrounding the shape, and added a background colour from the **Home** menu, **Font** panel.



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:

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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. 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!

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