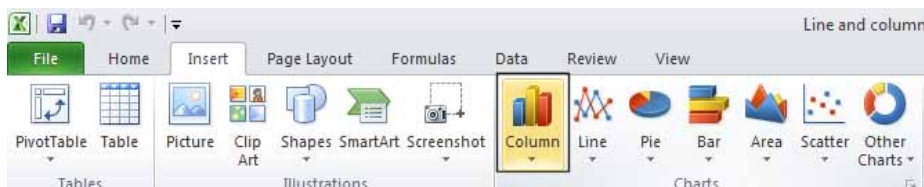


## Creating a combined line and column chart.

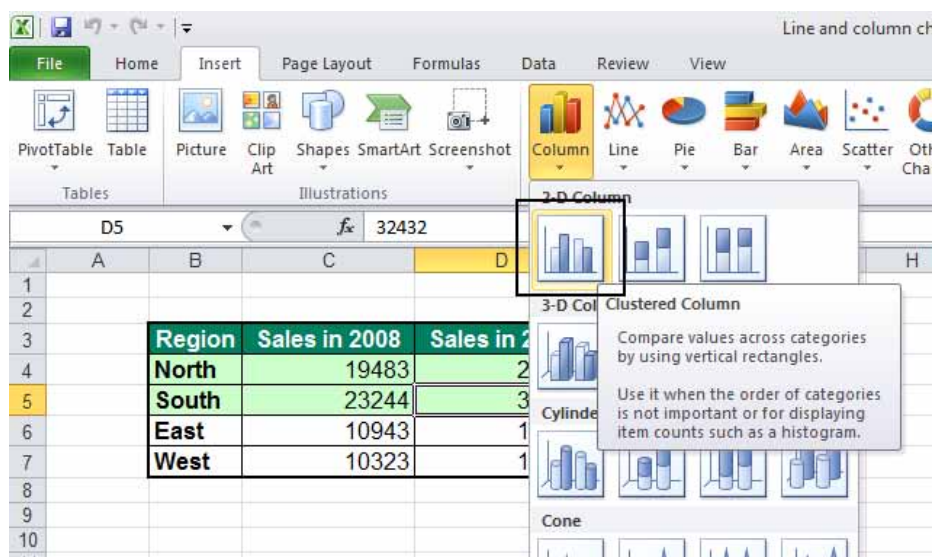
Open a workbook called Line and column chart.

	A	B	C	D
1				
2				
3				
4		Region	Sales in 2008	Sales in 2009
5		North	19483	23232
6		South	23244	32432
7		East	10943	12432
8		West	10323	12654

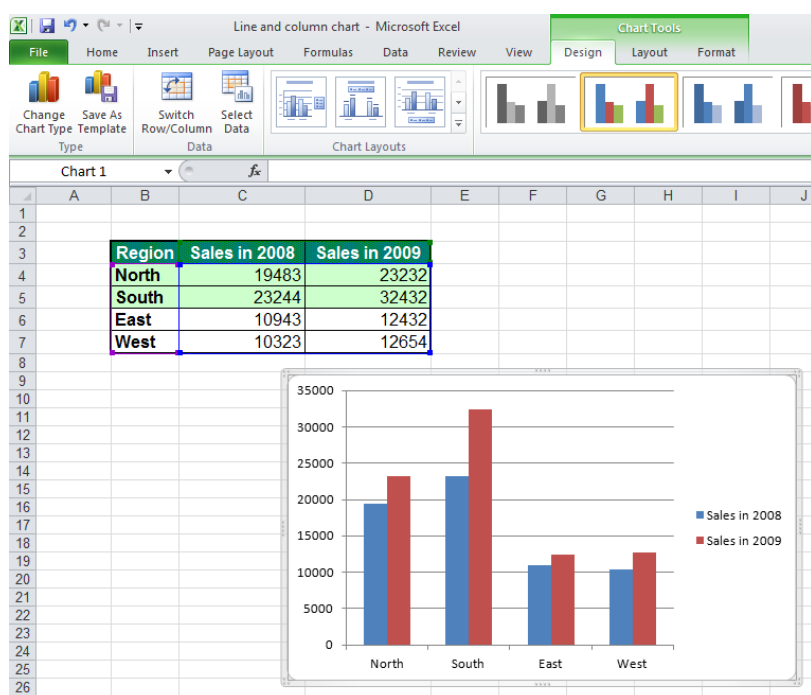
Click within the table of data.  
Click on the **Insert** tab and within the **Charts** group click on the **Column** button.



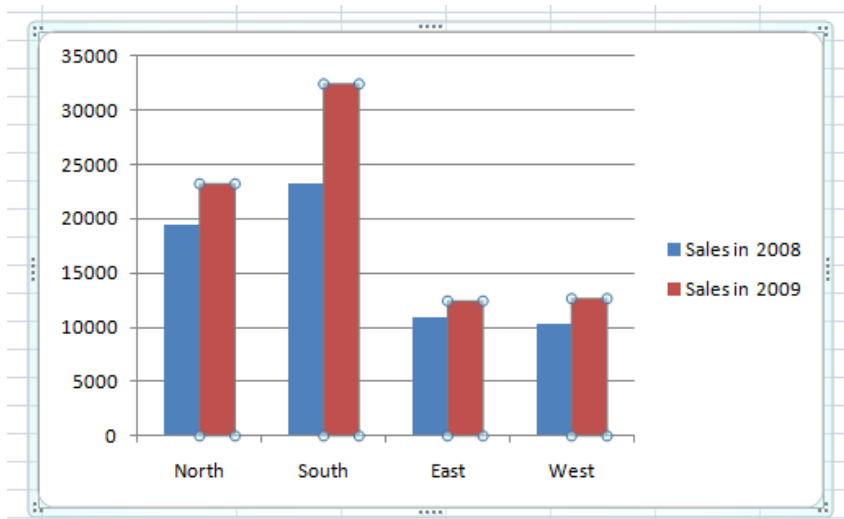
From the drop down list displayed, click on the first 2-D column chart option.



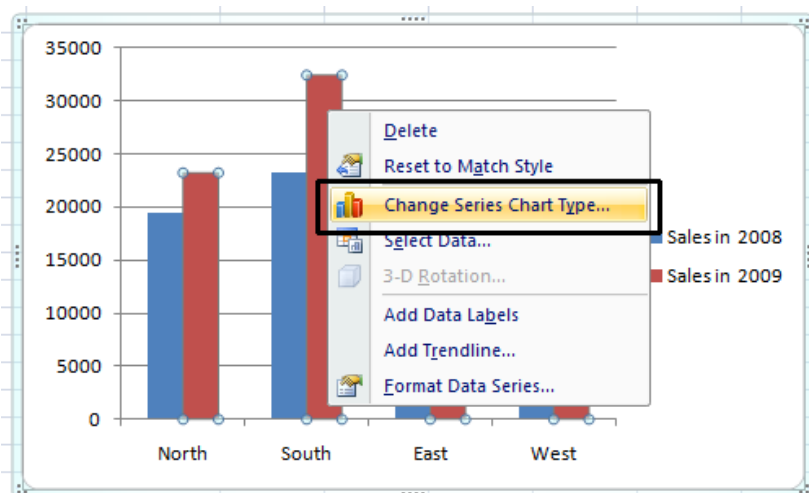
A column chart will be inserted into the worksheet.



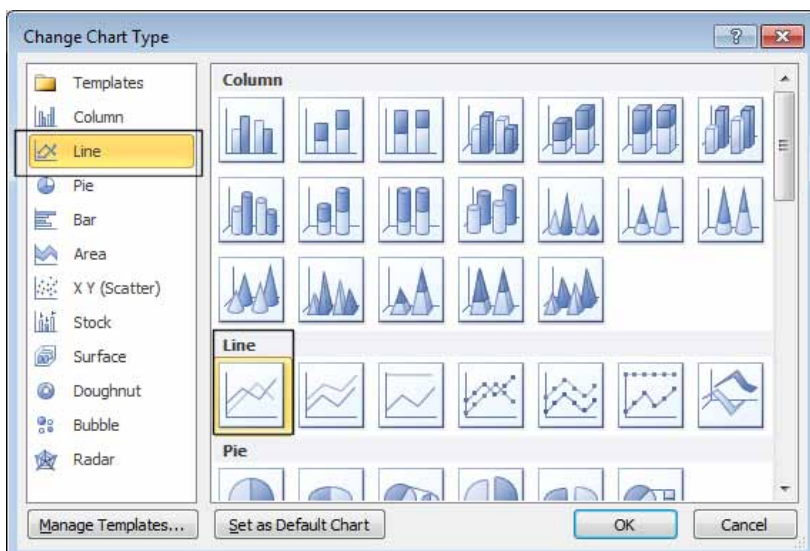
Click on one of the columns within the chart that you wish to convert to a line rather than column.



Right click over one of the selected columns and from the pop-up menu displayed, click on the **Change Series Chart Type** command.



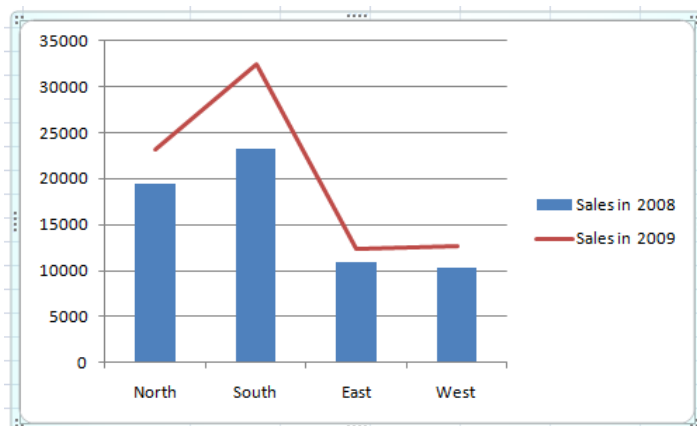
The **Change Chart Type** dialog box will be displayed.



Within the left-hand side of the dialog box click on the **Line** button.

Select the first option within the **Line** formats displayed in the right section of the dialog box.

Click on the **OK** button and you will now see a chart displayed using both columns and lines.



#### NOTICE:

Line chart are used to see a trend. This is just an exercise to change chart types.

Save your changes and close the workbook.

### Adding a secondary axis to a chart.

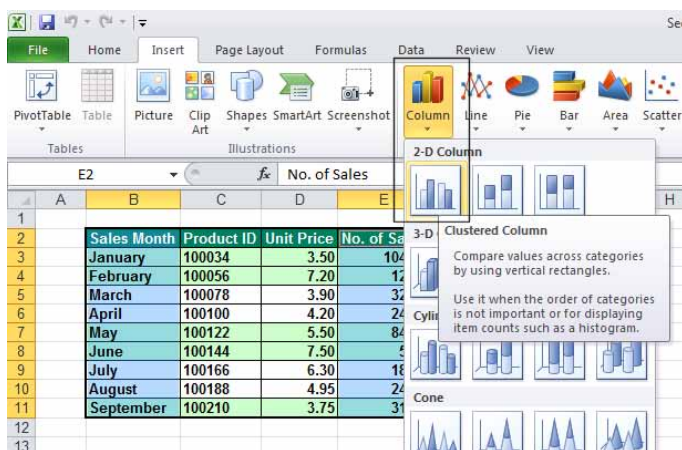
Open a workbook called **Secondary Axis**.

	A	B	C	D	E	F
1						
2		Sales Month	Product ID	Unit Price	No. of Sales	Total Sales Value
3		January	100034	3.50	104.00	364.00
4		February	100056	7.20	12.00	86.40
5		March	100078	3.90	32.00	124.80
6		April	100100	4.20	24.00	100.80
7		May	100122	5.50	84.00	462.00
8		June	100144	7.50	5.00	37.50
9		July	100166	6.30	18.00	113.40
10		August	100188	4.95	24.00	118.80
11		September	100210	3.75	31.00	116.25

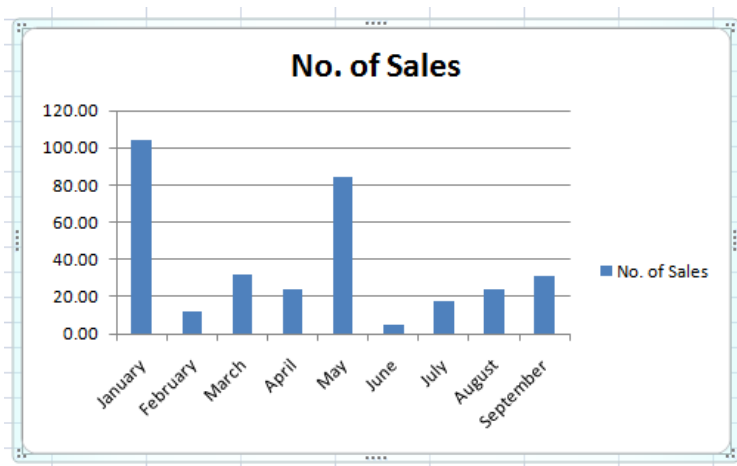
Select the range **B2:B11**. Hold down the **Ctrl** key and then also select the range **E2:E11**. Release the **Ctrl** key. The selected data will look like this.

	A	B	C	D	E	F
1						
2		Sales Month	Product ID	Unit Price	No. of Sales	Total Sales Value
3		January	100034	3.50	104.00	364.00
4		February	100056	7.20	12.00	86.40
5		March	100078	3.90	32.00	124.80
6		April	100100	4.20	24.00	100.80
7		May	100122	5.50	84.00	462.00
8		June	100144	7.50	5.00	37.50
9		July	100166	6.30	18.00	113.40
10		August	100188	4.95	24.00	118.80
11		September	100210	3.75	31.00	116.25

Click on the **Insert** tab and within the **Charts** group click on the **Column** button. From the drop-down displayed select a **2-D Column** chart format.



A column chart will be created within the worksheet.

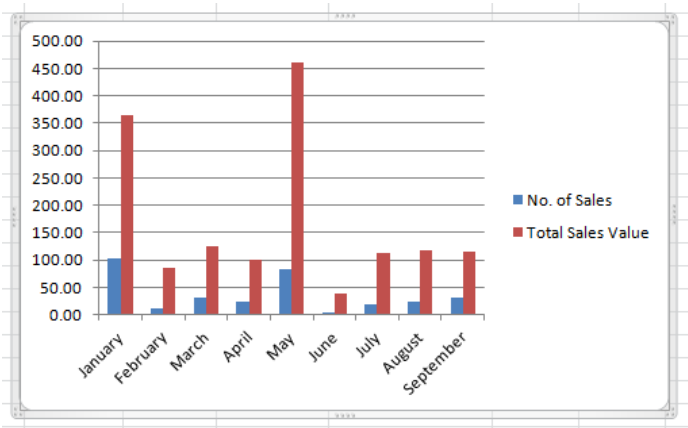


This chart displays information about the number of unit sales per month. We shall now add another data series which will use a secondary axis to display the relevant information. Select the range **F2:F11**.

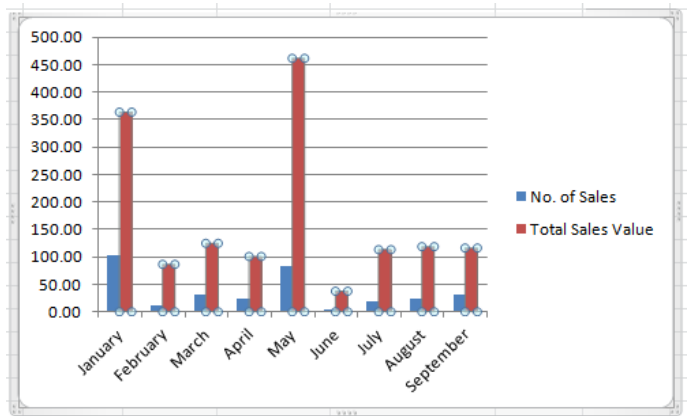
The screenshot shows the Excel ribbon with the 'Home' tab active. The formula bar shows the formula '=Total Sales Value' in cell F2. The worksheet displays the sales data table with an additional column for 'Total Sales Value'.

Sales Month	Product ID	Unit Price	No. of Sales	Total Sales Value
January	100034	3.50	104.00	364.00
February	100056	7.20	12.00	86.40
March	100078	3.90	32.00	124.80
April	100100	4.20	24.00	100.80
May	100122	5.50	84.00	462.00
June	100144	7.50	5.00	37.50
July	100166	6.30	18.00	113.40
August	100188	4.95	24.00	118.80
September	100210	3.75	31.00	116.25

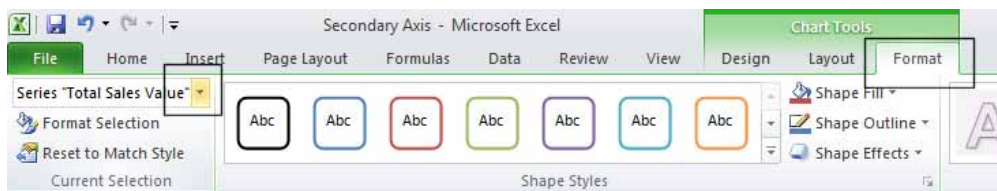
Press **Ctrl+C** to copy the selected data to the clipboard.  
Click once on the chart to select it, press **Ctrl+V** to paste the selected data into the chart. The chart will now look like this.



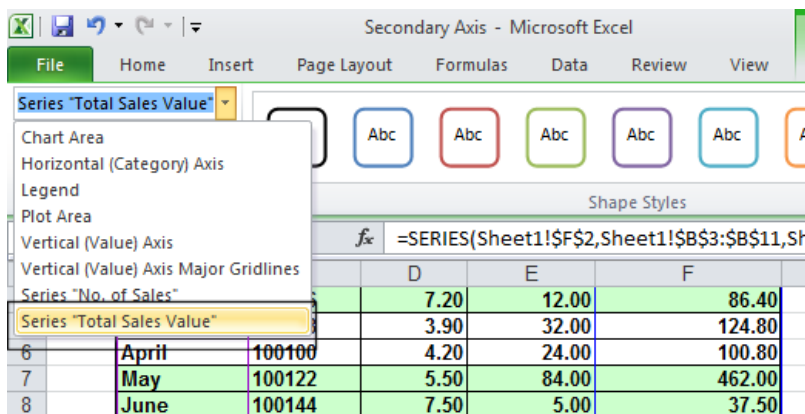
Make sure the chart is selected.  
Within the chart click on one of the columns that you have just inserted.



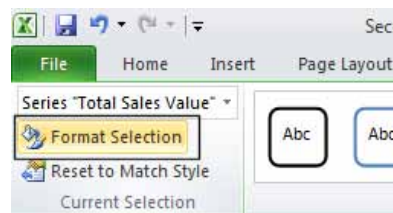
Click on the **Format** tab within the current selection group, click on the **down arrow** displayed at the top of the group.



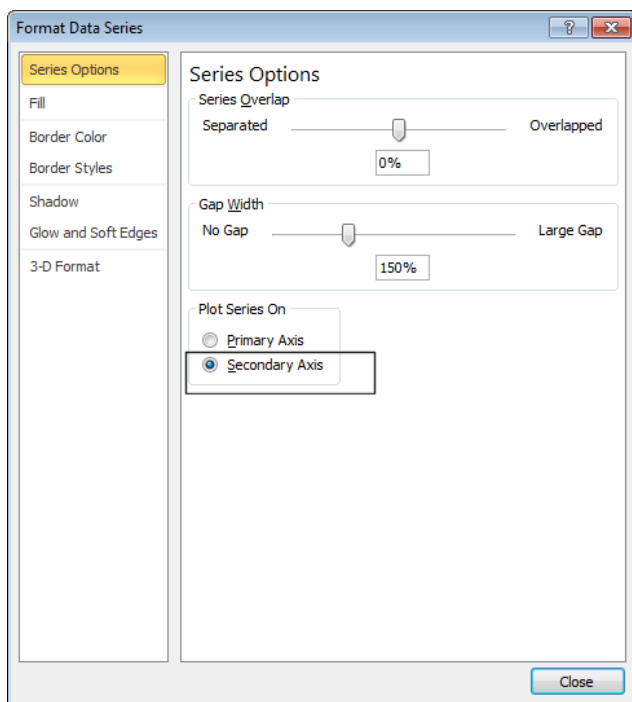
From the drop-down list displayed select **Series 'Total Sales Value'**.



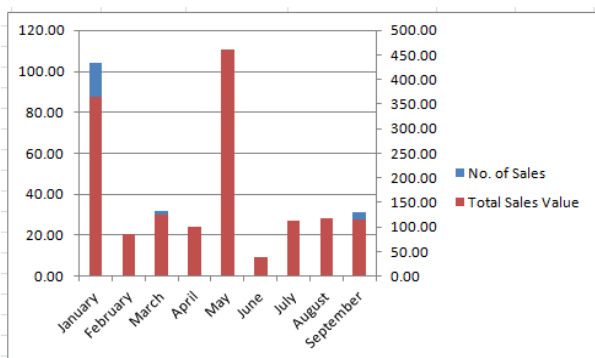
Within the Current Selection group click on Format Selection.



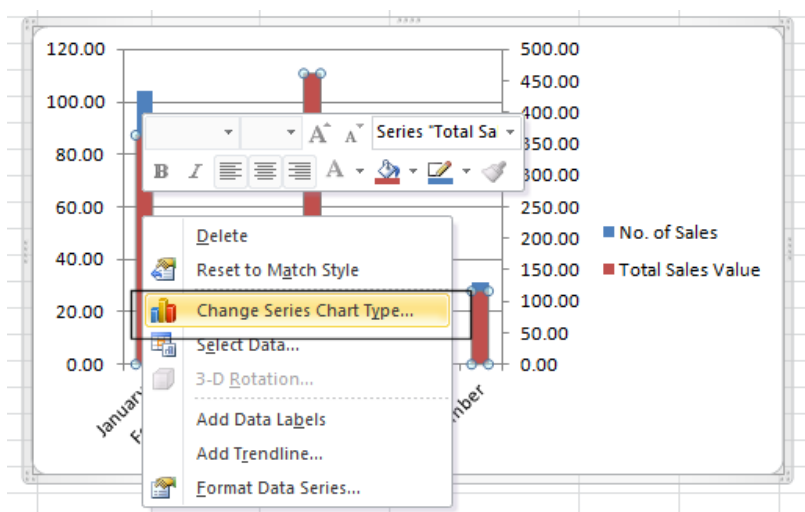
The **Format Data Series** dialog box will be displayed. Click on the **Secondary Axis** button. Click on the Close button.



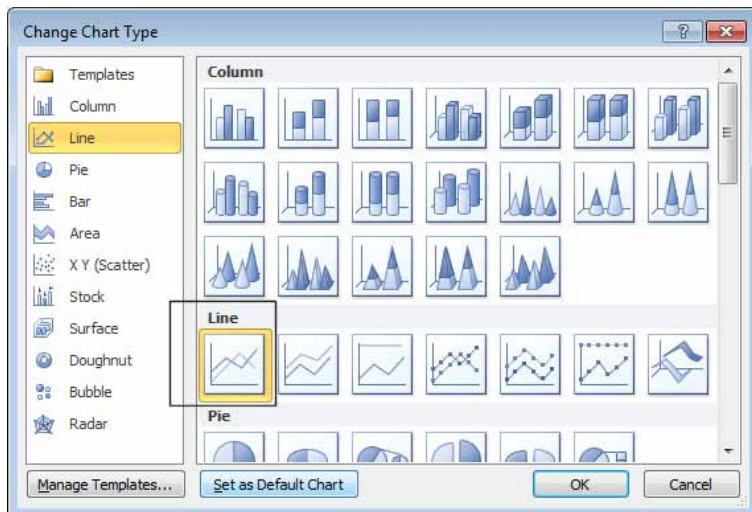
The chart will now look like this.



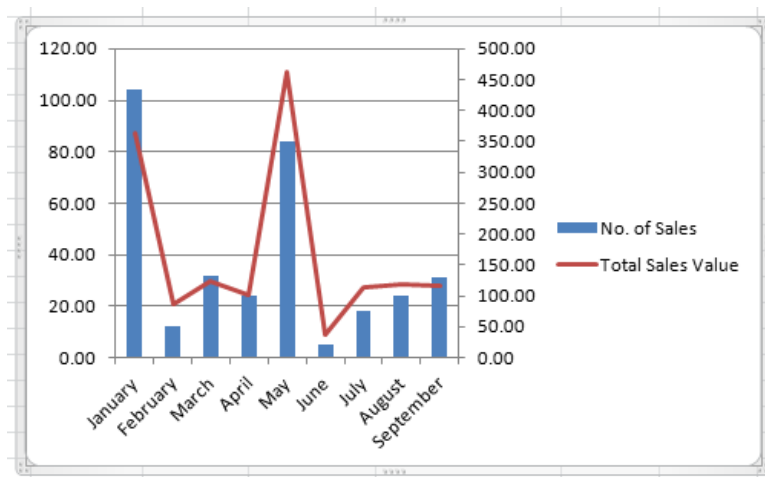
Right click on any part of a column relating to the **Number of Sales**. From the pop-up menu displayed click on the **Change Series Chart Type** command.



The **Change Chart Type** dialog box will be displayed. Select a line chart type.



Click on the **OK** button and the chart will now look like this.

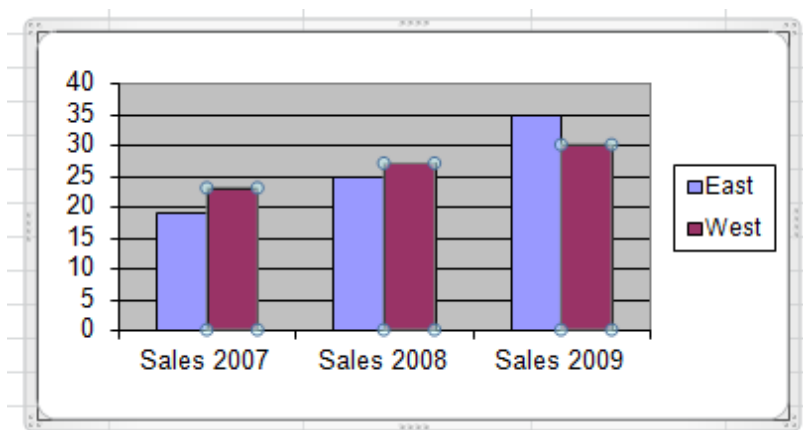


Save your changes and close the workbook.

### Changing the chart type for a particular data series.

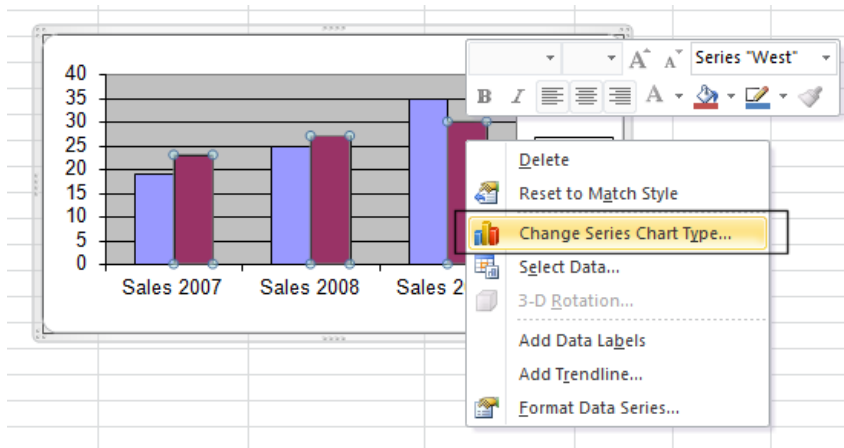
Open a workbook called **Chart Types**.

Click on the second data series within the chart (in the example illustrated we clicked on one of the columns, representing the data for the **West** sales region).



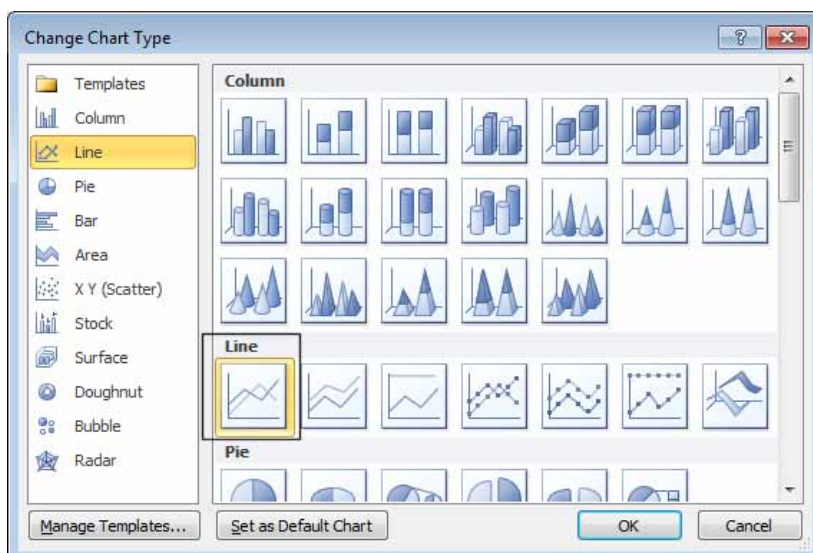


Right click and you will see a pop-up menu displayed.

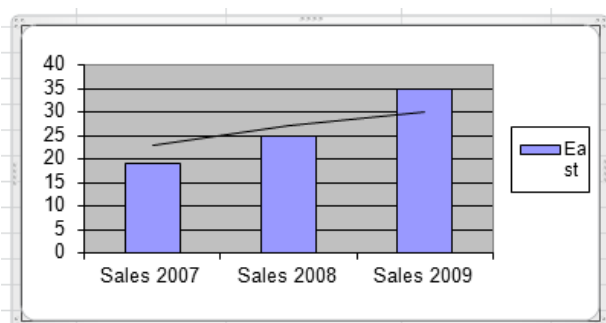


From the pop-up menu displayed, select **Chart Series Chart Type**. This will display the **Change Chart Type** dialog box.

Select the required chart type, and if necessary chart sub-type. In this case, select a **Line** chart.



Click on the **OK** button to change the chart type, as seen below.



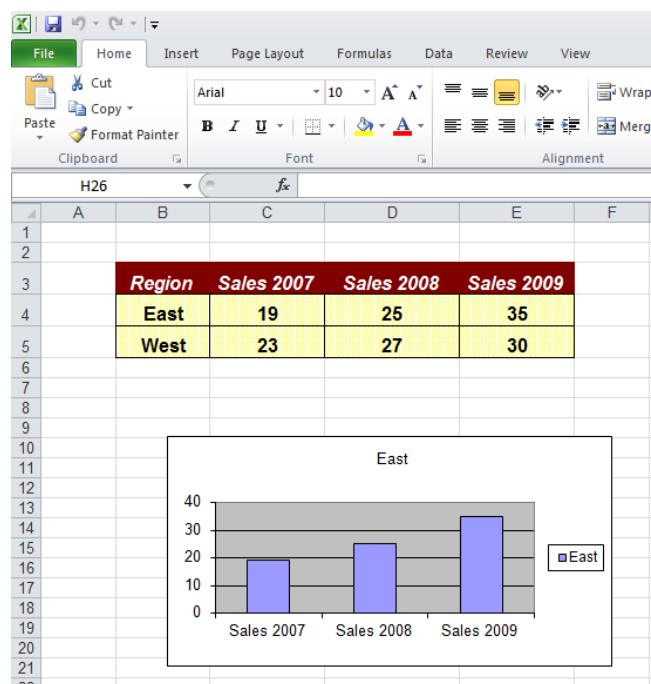
Experiment with applying other chart types.  
Save your changes and close the workbook.



## Adding a data series to a chart.

Open a workbook called **Adding a Data Series**.

This workbook contains a chart that is only displaying information relating to the **East** region.

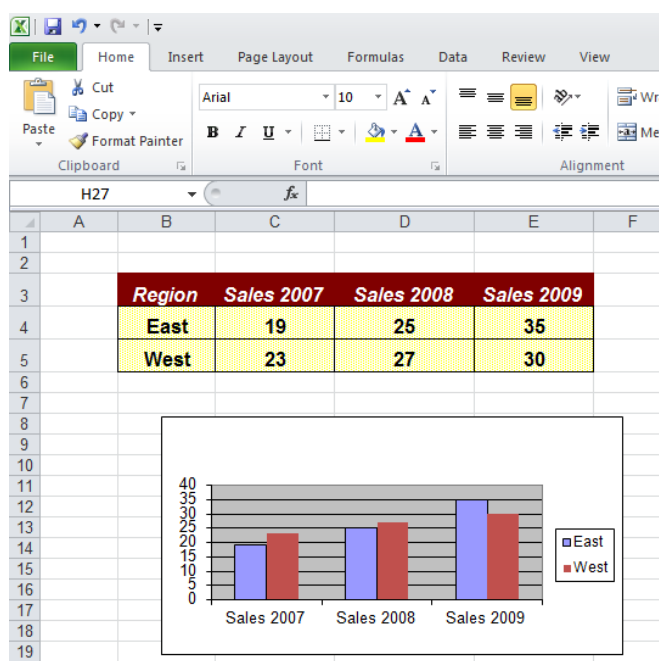


You can select a data range from your worksheet and add this to the chart. To add information related to the **West** region to the chart we need to select the data relating to the **West** region, as illustrated.

Region	Sales 2007	Sales 2008	Sales 2009
East	19	25	35
West	23	27	30

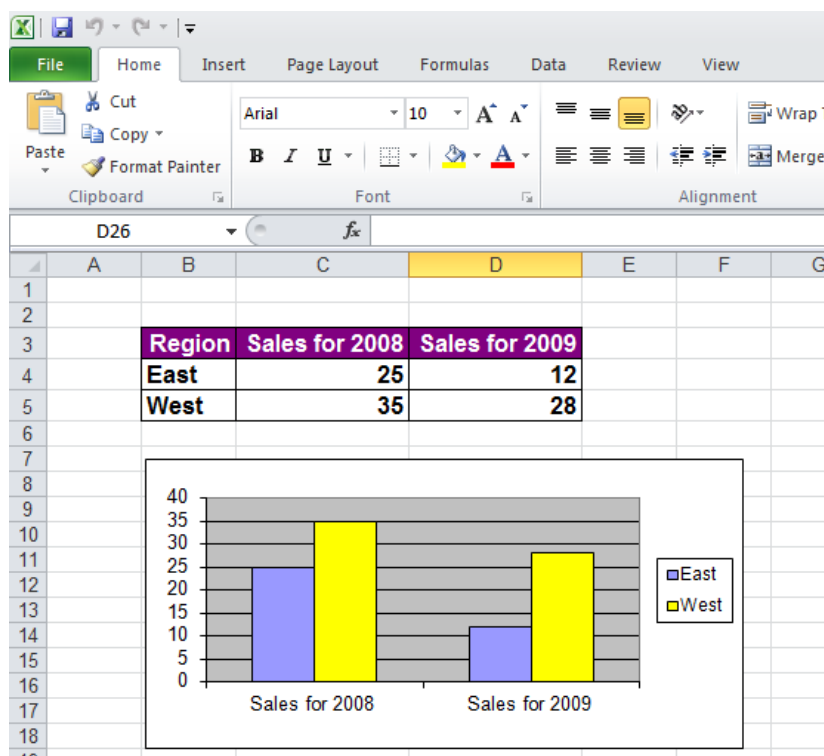
Press **Ctrl+C** to copy the selected data to the Clipboard. Click on the chart to select it and press **Ctrl+V** to paste the data to the chart. The chart will now look like this.

Save your changes and close the workbook.



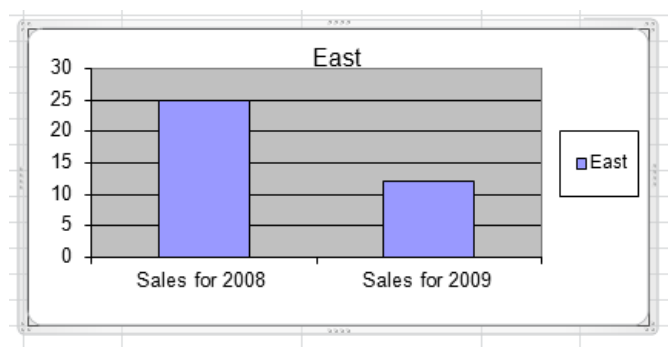
## Removing a data series from a chart.

Open a workbook called **Deleting a Data Series**. This workbook contains a chart.



To delete a data series from the chart, click on one of the columns (representing the data series that you wish to remove). In the example illustrated, we clicked on the sales data for the sales from the **West** region, (i.e. the yellow column).

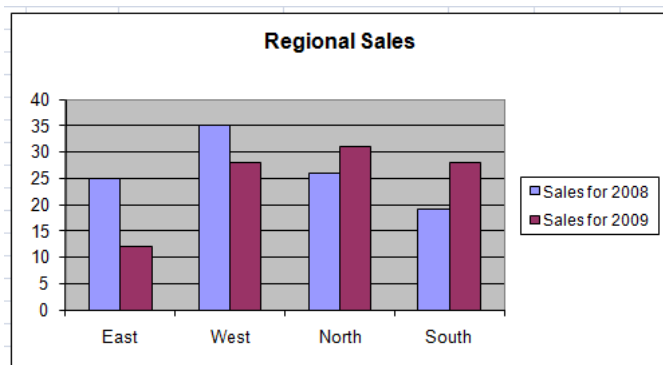
Press the **Del** key. The result will be as seen below.



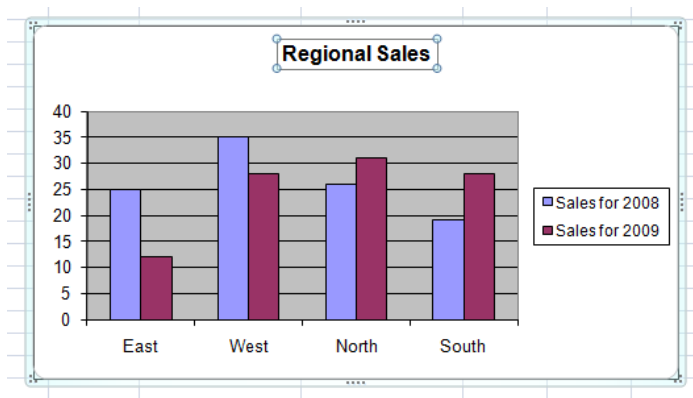
Save your changes and close the workbook.

## Re-positioning chart title.

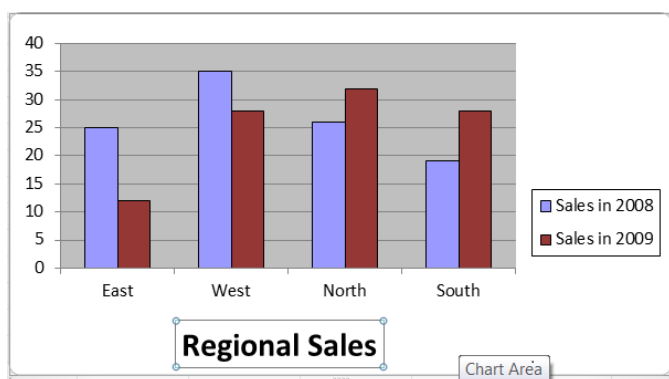
Open a workbook called **Moving Chart Titles**. The chart within the workbook looks like this.



To move the chart title, first click on the chart title to select it, as illustrated.



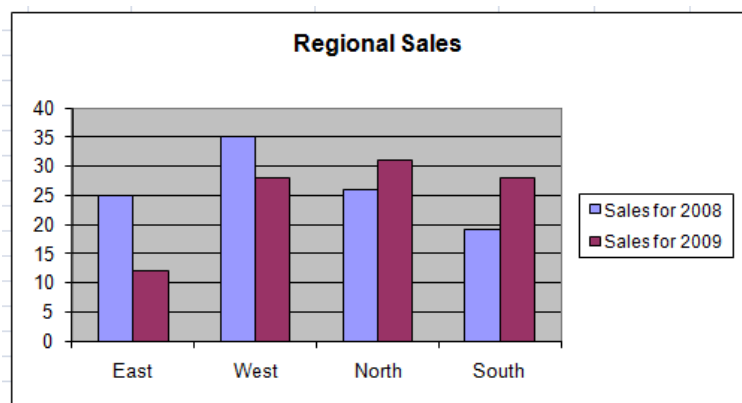
Move the mouse pointer to the edge of the chart title and drag the title to a new location.



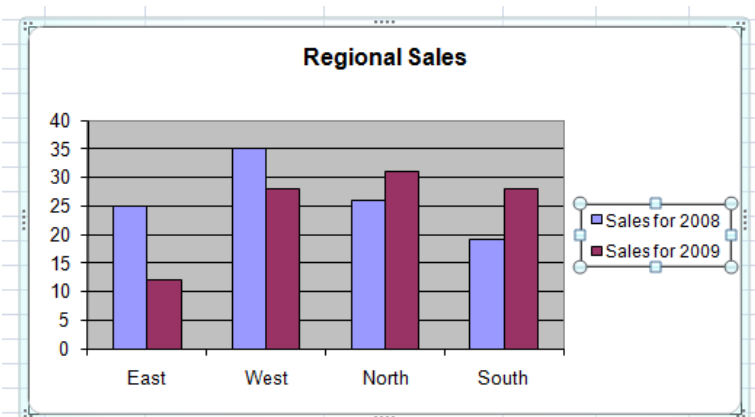
Save your changes and close the workbook.

## Re-positioning the chart legend.

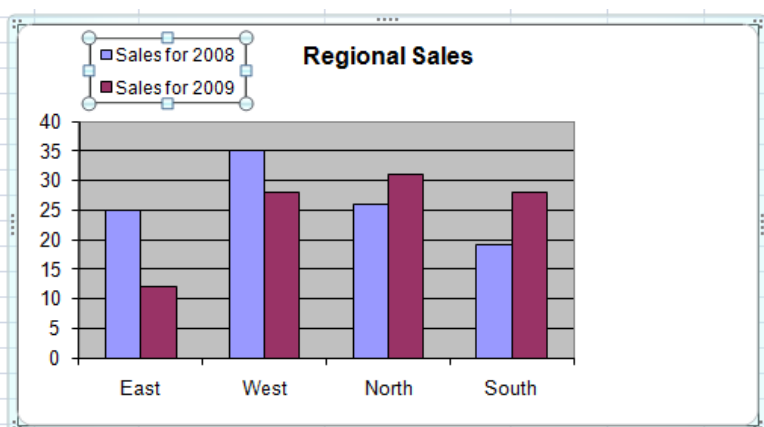
Open a workbook called **Moving Chart Legends**. The chart within the workbook looks like this.



Click on the chart legend to select it, as illustrated.



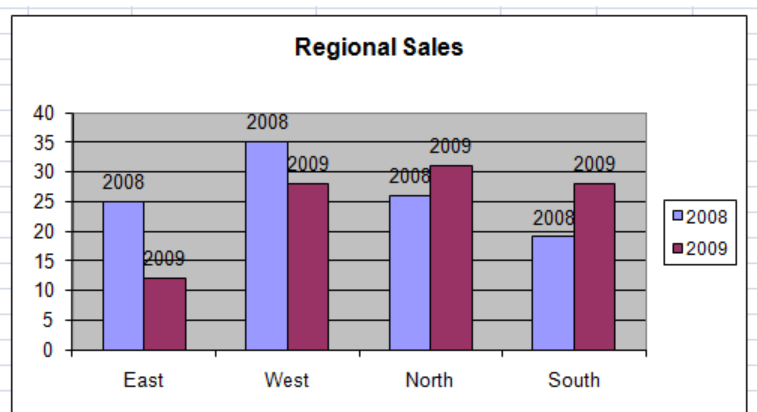
Move the mouse pointer to the edge of the chart legend, and drag the legend to a new location, as in the illustration.



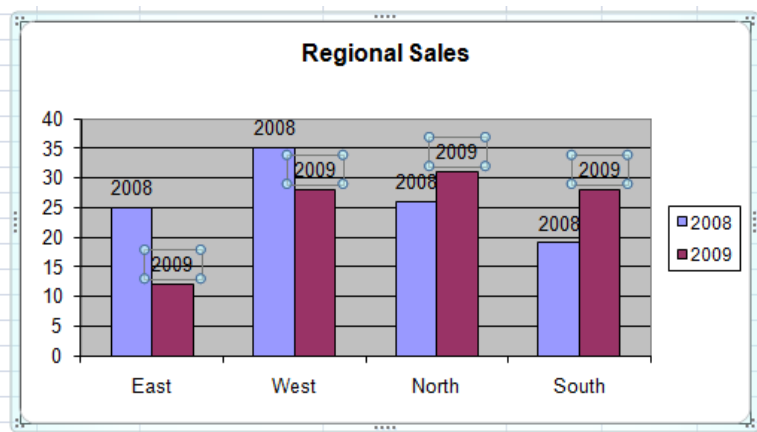
Save your changes and close the workbook.

## Moving and formatting chart data labels.

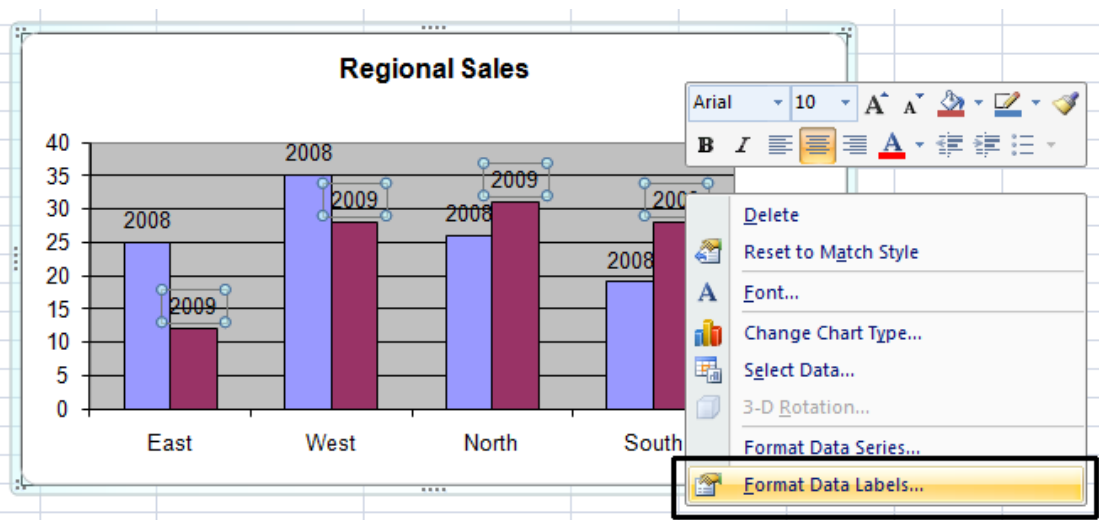
Open a workbook called **Moving Chart Data Labels**. The chart within the workbook looks like this.



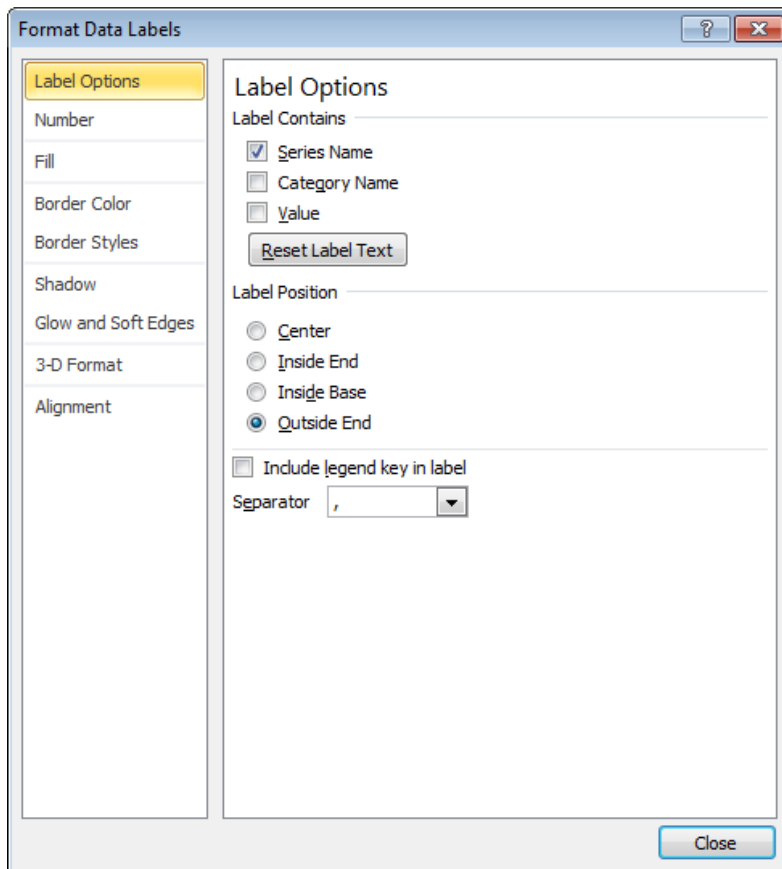
Click on the chart data label, for the **2009** columns, to select them, as illustrated.



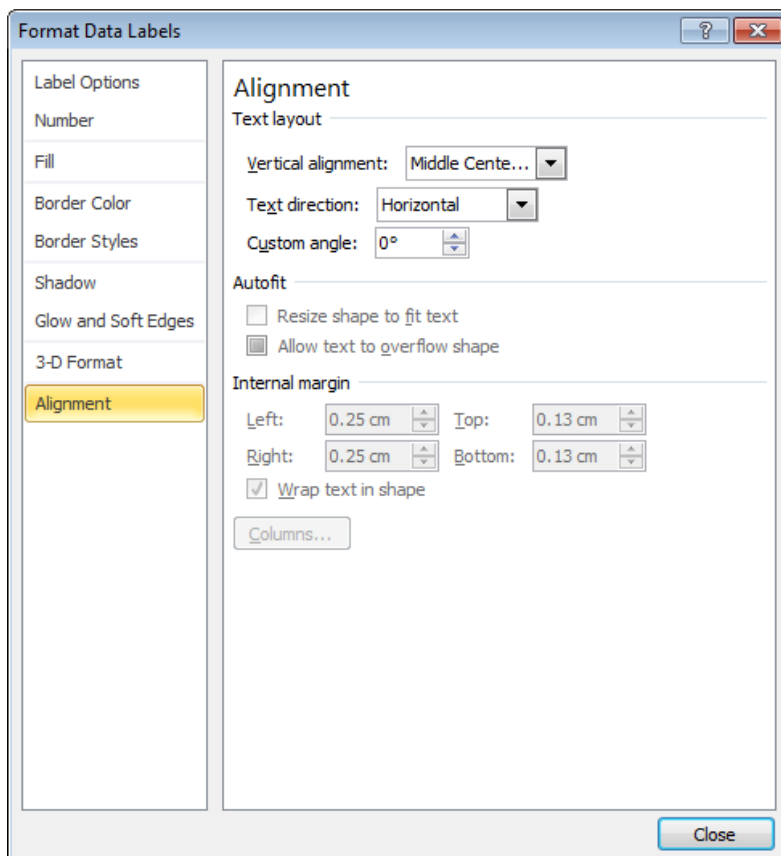
Right click over a selected data label and from the pop-up menu displayed click on the **Format Data Labels** command.



This will display the **Format Data Labels** dialog box.



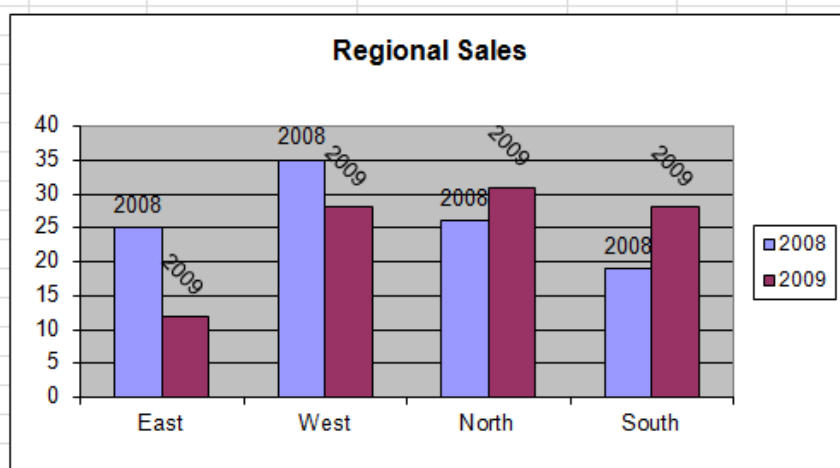
Click on the **Alignment** tab.



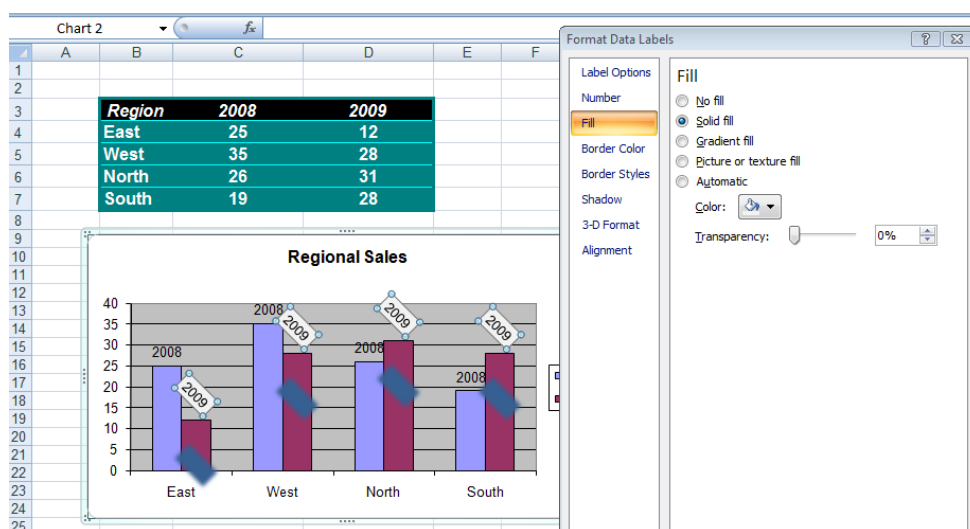
Use the various options available to reposition the data labels within the chart. For instance use the **Custom Angle** section within the dialog box to display the text at **45 degrees**.

The 'Format Data Labels' dialog box is shown with the 'Alignment' tab selected. The 'Text layout' section includes 'Vertical alignment' set to 'Middle Center...', 'Text direction' set to 'Horizontal', and 'Custom angle' set to '45°'. The 'Autofit' section has 'Resize shape to fit text' unchecked and 'Allow text to overflow shape' checked. The 'Internal margin' section shows 'Left' and 'Right' margins at 0.25 cm, and 'Top' and 'Bottom' margins at 0.13 cm. The 'Wrap text in shape' checkbox is checked. A 'Columns...' button is at the bottom.

If you click on the **Close** button the chart will look like this.



Experiment with applying other formatting options. For instance, within the **Format Data Labels** dialog box, you can click on the **Fill** tab and apply fill formatting to the data labels.



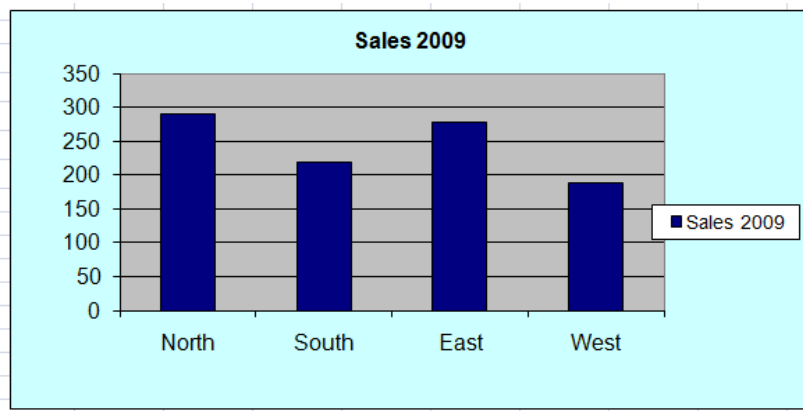
To move a data label, simply select the label and drag it to a new location. Experiment with moving the data labels so that they are displayed half way up the columns, rather than being displayed at the top of each column.

When you have finished experimenting, save your changes and close the workbook.

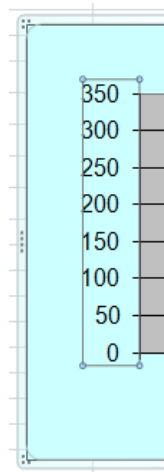


## Modifying chart axis scales.

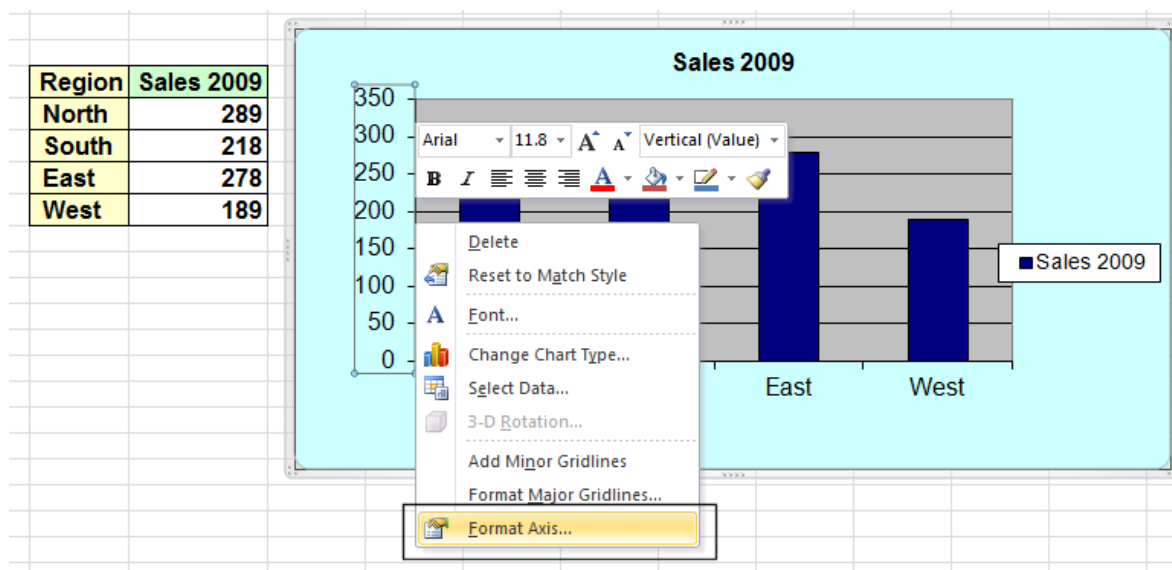
Open a workbook called **Chart axis scale**.



Click once on the vertical axis so that it is selected.



Right click on the selected vertical axis and from the pop-up menu displayed, click on the **Format Axis** command.



The **Format Axis** dialog box will be displayed. You can use this dialog box to set minimum and maximum axis values as well as specifying the major and minor axis scale units.

The **Format Axis** dialog box is shown with the **Axis Options** tab selected. The settings are as follows:

- Minimum:** ☒ Auto ☐ Fixed 0.0
- Maximum:** ☒ Auto ☐ Fixed 350.0
- Major unit:** ☒ Auto ☐ Fixed 50.0
- Minor unit:** ☒ Auto ☐ Fixed 10.0
- ☐ Values in reverse order
- ☐ Logarithmic scale Base: 10
- Display units:** None
- ☐ Show display units label on chart
- Major tick mark type:** Outside
- Minor tick mark type:** None
- Axis labels:** Next to Axis
- Horizontal axis crosses:**
  - ☒ Automatic
  - ☐ Axis value: 0.0
  - ☐ Maximum axis value

A **Close** button is located at the bottom right.

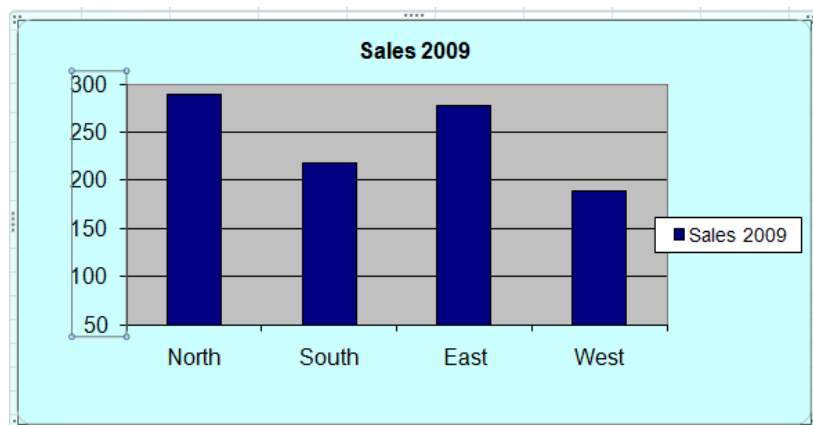
Within the **Minimum** text box, click on the **Fixed** button and enter the number **50**. Within the **Maximum** text box, click on the **Fixed** button and enter the number **300**. The dialog box will look like this.

The **Format Axis** dialog box is shown with the **Axis Options** tab selected. The settings are as follows:

- Minimum:** ☐ Auto ☒ Fixed 50
- Maximum:** ☐ Auto ☒ Fixed 300
- Major unit:** ☒ Auto ☐ Fixed 50.0
- Minor unit:** ☒ Auto ☐ Fixed 10.0
- ☐ Values in reverse order
- ☐ Logarithmic scale Base: 10
- Display units:** None
- ☐ Show display units label on chart
- Major tick mark type:** Outside
- Minor tick mark type:** None
- Axis labels:** Next to Axis
- Horizontal axis crosses:**
  - ☒ Automatic
  - ☐ Axis value: 0.0
  - ☐ Maximum axis value

A **Close** button is located at the bottom right.

Click on the **Close** button and the chart will look like this.



Redisplay the **Format Axis** dialog box.

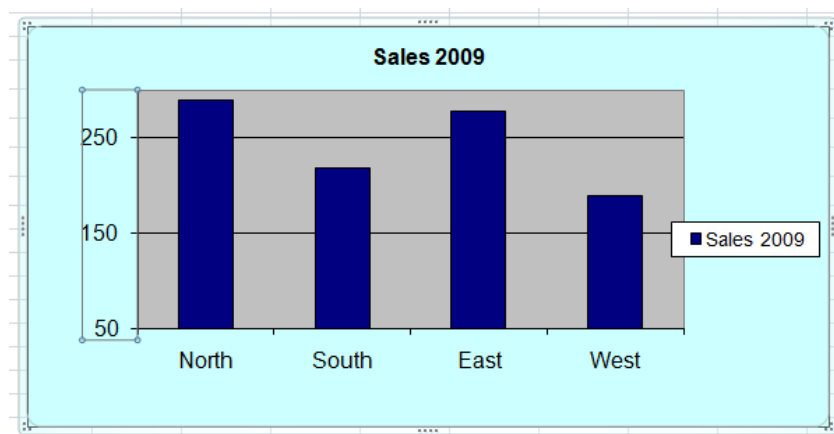
Within the **Major unit** section, click on the **Fixed** button and enter the number **100**.

Within the **Minor unit** section, click on the **Fixed** button and enter the number **50**. The dialog box will look like this.

The "Format Axis" dialog box is shown with the "Axis Options" tab selected. The "Major unit" is set to "Fixed" with a value of 100. The "Minor unit" is set to "Fixed" with a value of 10.0. The "Display units" dropdown is set to "None".

Option	Value
Minimum	50.0
Maximum	300.0
Major unit	100
Minor unit	10.0

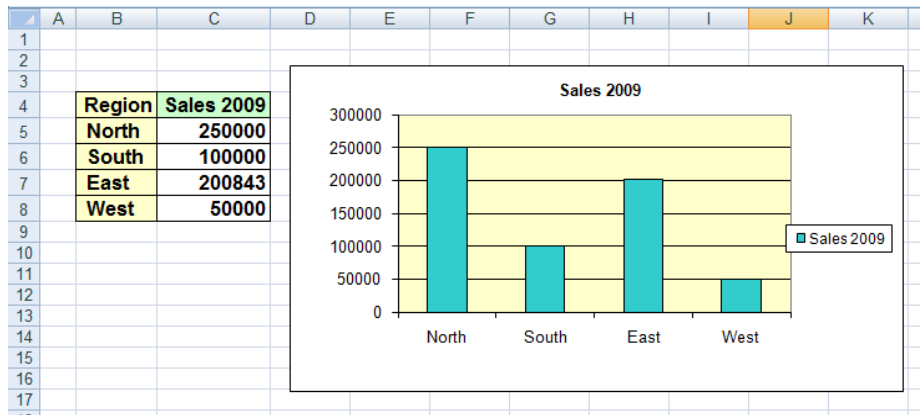
Click on the **Close** button and the chart will look like this.



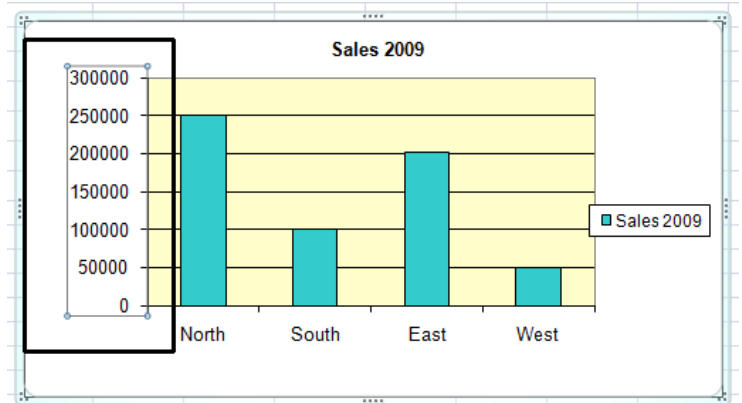
Save your changes and close the workbook.

## Formatting an axis to display using commas.

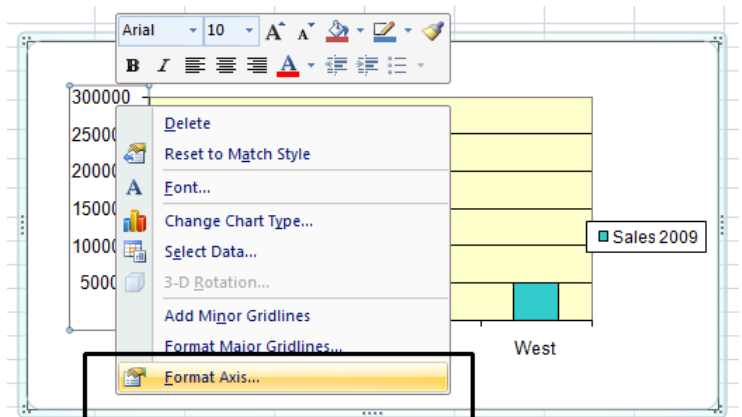
Open a workbook called **Chart axis units**. The chart looks like this. Notice that neither the data in the table, or numbers within the vertical axis, use comma formatting.



Select the vertical axis.



Right click on the vertical axis and from a pop-up menu displayed click on the **Format Axis** command.



The **Format Axis** dialog box will be displayed.

**Format Axis**

**Axis Options**

**Number**

Minimum: ☒ Auto ☐ Fixed 0.0

Maximum: ☒ Auto ☐ Fixed 300000.0

Major unit: ☒ Auto ☐ Fixed 50000.0

Minor unit: ☒ Auto ☐ Fixed 10000.0

☐ Values in reverse order

☐ Logarithmic scale Base: 10

Display units: None

☐ Show display units label on chart

Major tick mark type: Outside

Minor tick mark type: None

Axis labels: Next to Axis

Horizontal axis crosses: ☒ Automatic ☐ Axis value: 0.0 ☐ Maximum axis value

Close

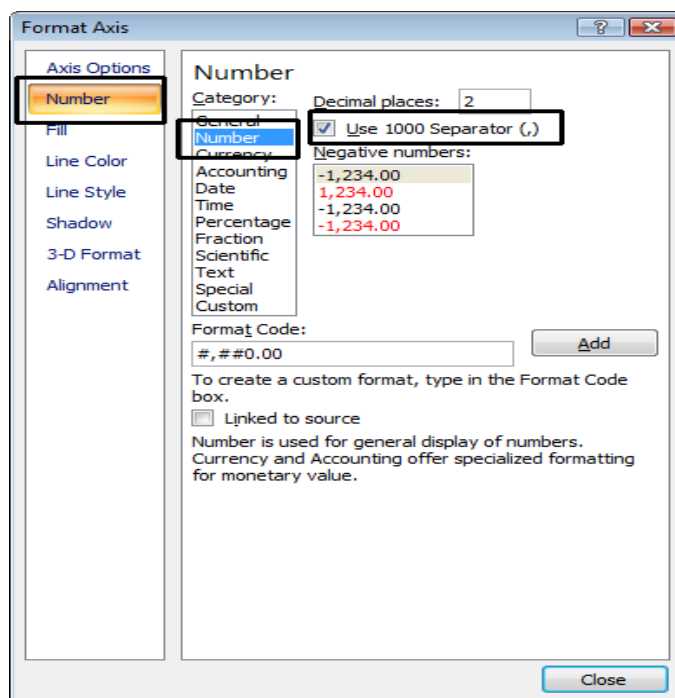
Click on the **Number** button displayed within the left side of the dialog box.

Within the **Category** section, select Number.

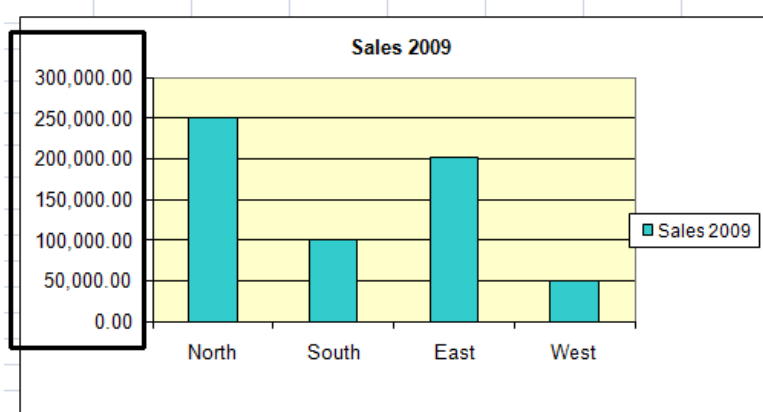
Click on the **Use 1000** separator check box.

Within the **Decimal places** section of the dialog box, enter **2**.

The dialog box will now look like this.



Click on the **Close** button and your chart will look like this.



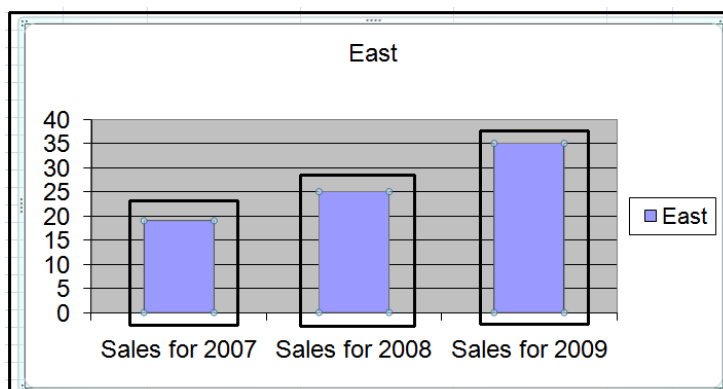
Even though the numbers within the table of data are not comma formatted, the numbers within the vertical axis do use comma formatting. This makes the chart easier to read and understand.

Save your changes and close the workbook.

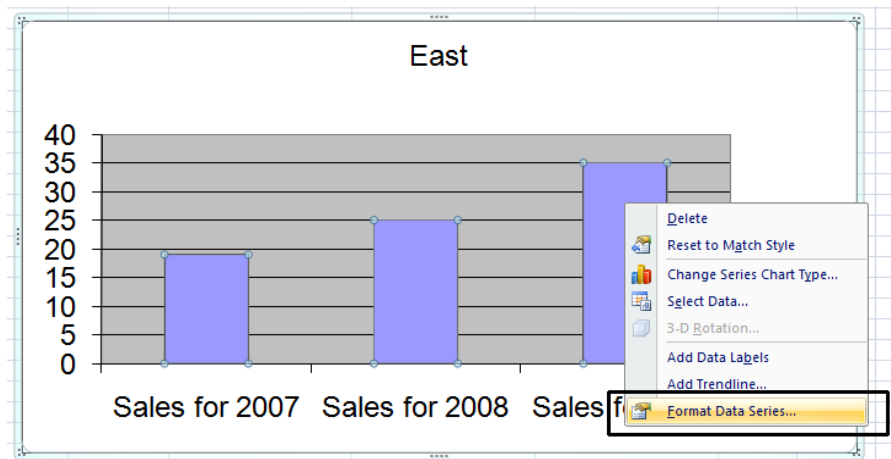
## Inserting images into chart columns.

Open a workbook called Chart Columns with Images.

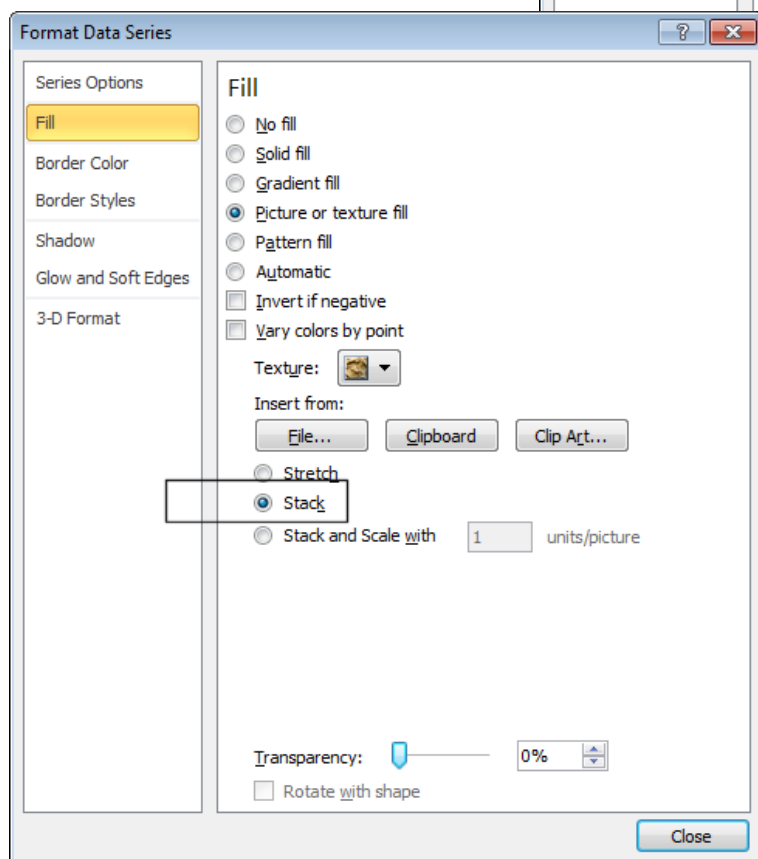
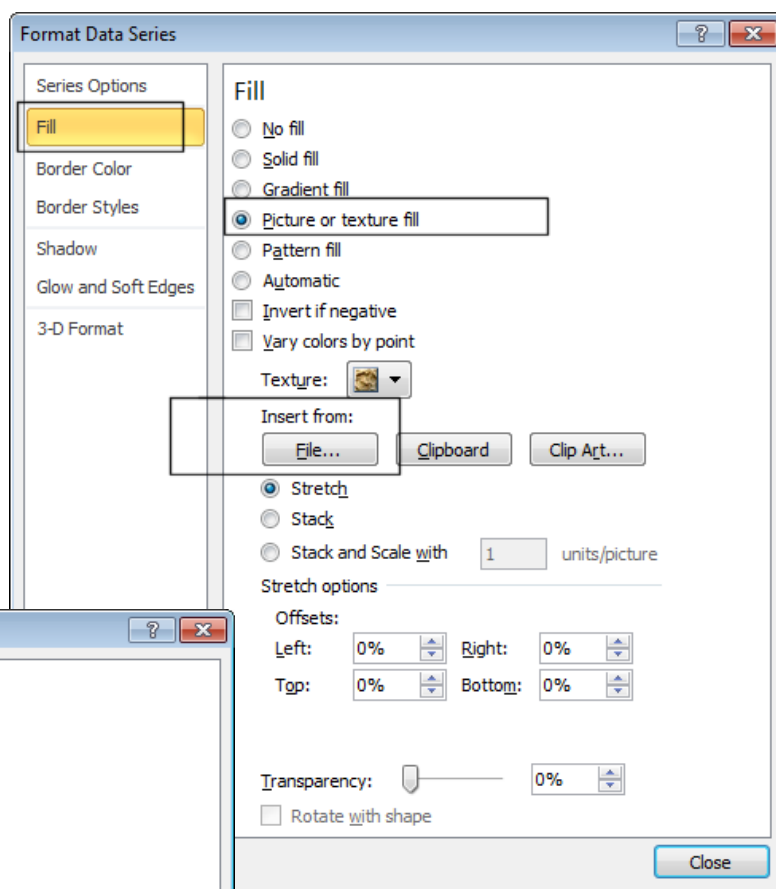
Click on one of the columns within the chart, so that all 3 columns are selected.



Right click over the selected columns and from the pop-up menu displayed click on the **Format Data Series** command.



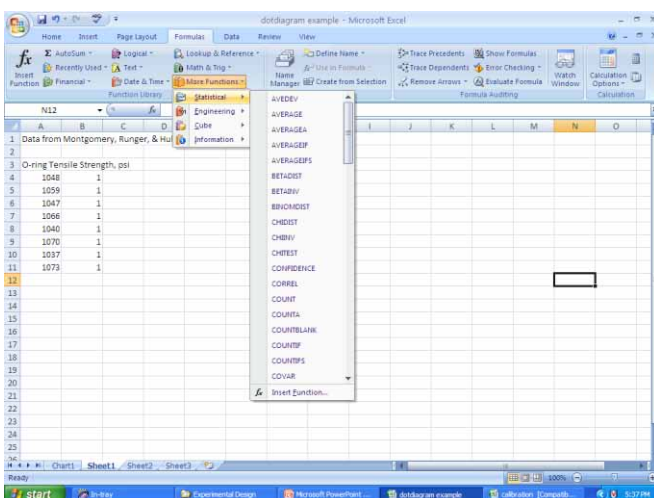
This will display the **Format Data Series** dialog box.  
Click on the **Fill** option.  
Click on the **Picture or texture fill** button.



## Basic Statistics with Excel

- Statistics is the science of collecting, organizing, presenting, analysing, and interpreting numerical data for the purpose of assisting in making a more effective decision.
- Statistical techniques are used extensively by marketing, accounting, quality control, consumers, professional sports people, hospital administrators, educators, politicians, physicians, etc...
- Descriptive Statistics: Methods of organizing, summarizing, and presenting data in an informative way.
- EXAMPLE 1: A Gallup poll found that 49% of the people in a survey knew the name of the first book of the statistical package. The statistic 49 describes the number out of every 100 persons who knew the answer.
- EXAMPLE 2: According to Consumer Reports, Whirlpool washing machine owners reported 9 problems per 100 machines during 1995. The statistic 9 describes the number of problems out of every 100 machines.
- Qualitative or Attribute variable: the characteristic or variable being studied is nonnumeric.
- EXAMPLES: Gender, religious affiliation, type of automobile owned, state of birth, eye Colour.
- Quantitative variable: the variable can be reported numerically.
- EXAMPLE: balance in your checking account, minutes remaining in class, number of children in a family.
- Quantitative variables can be classified as either discrete or continuous.
- Discrete variables: can only assume certain values and there are usually “gaps” between values.
- EXAMPLE: the number of bedrooms in a house. (1,2,3,..., etc...).
- Quantitative Variables can be classified as either discrete or continuous.
- Continuous variables: can assume any value within a specific range.
- EXAMPLE: The time it takes to fly from Toledo to New York.

## How to access Statistical Functions



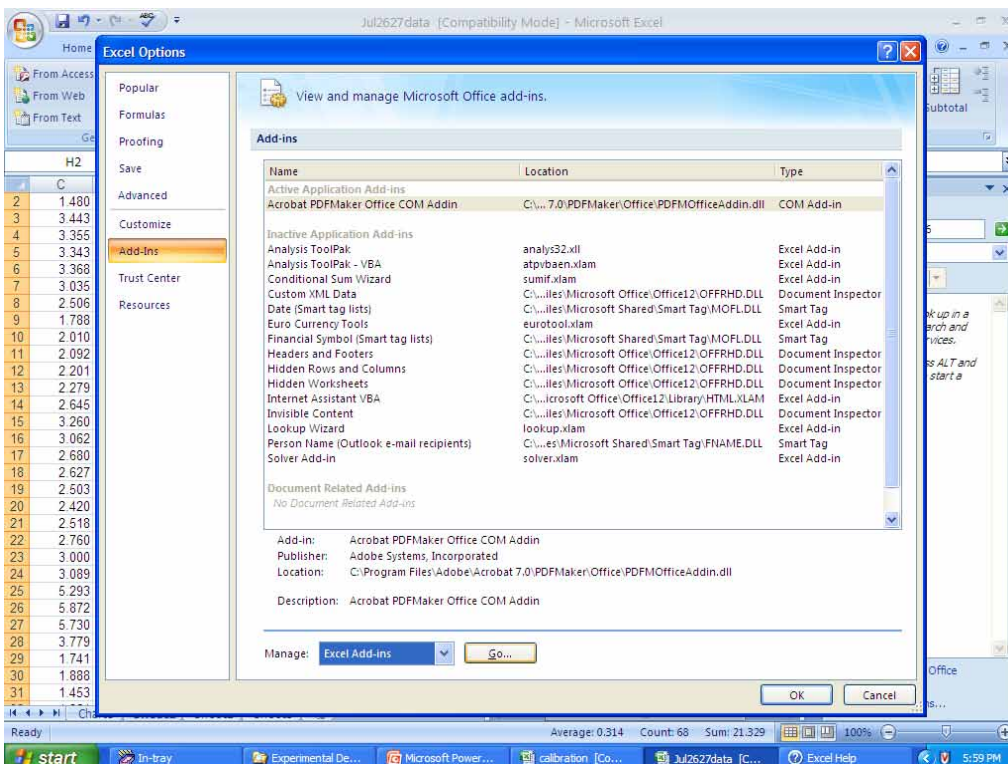
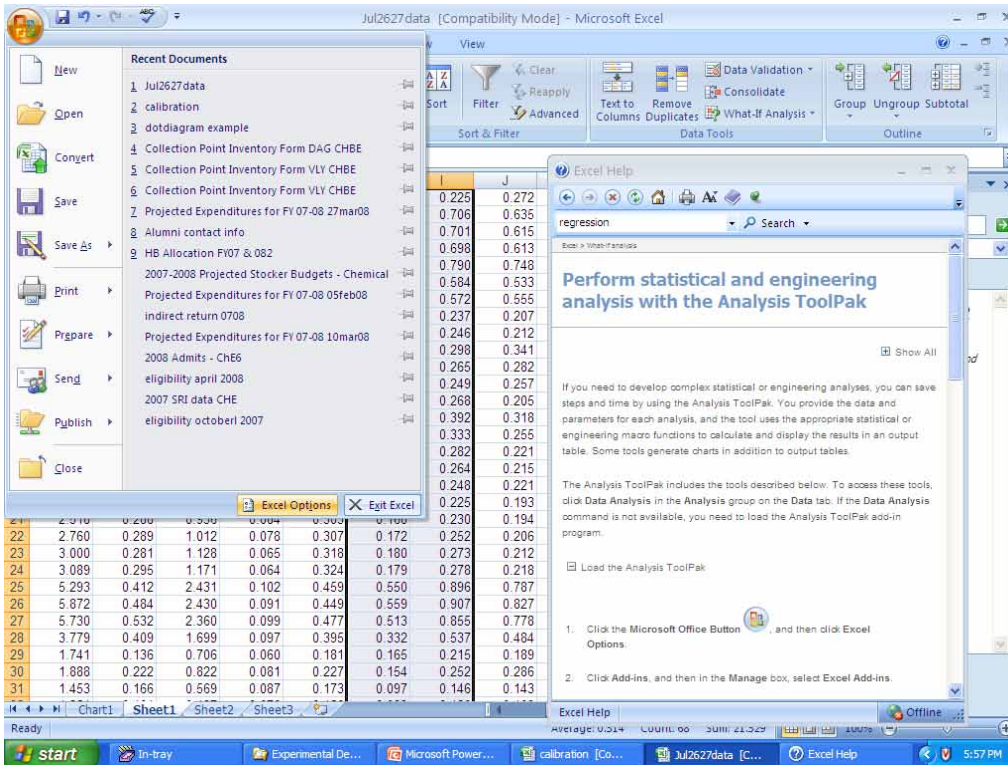


## Getting more statistics power from Excel

To get more statistics power from Excel, you need to add in the **Analysis Tool Pak**

Add in the **Analysis Tool Pak**

Click the Microsoft Office button, then Excel Options.



Click the checkbox for the Analysis Tool Pak, then 'OK'

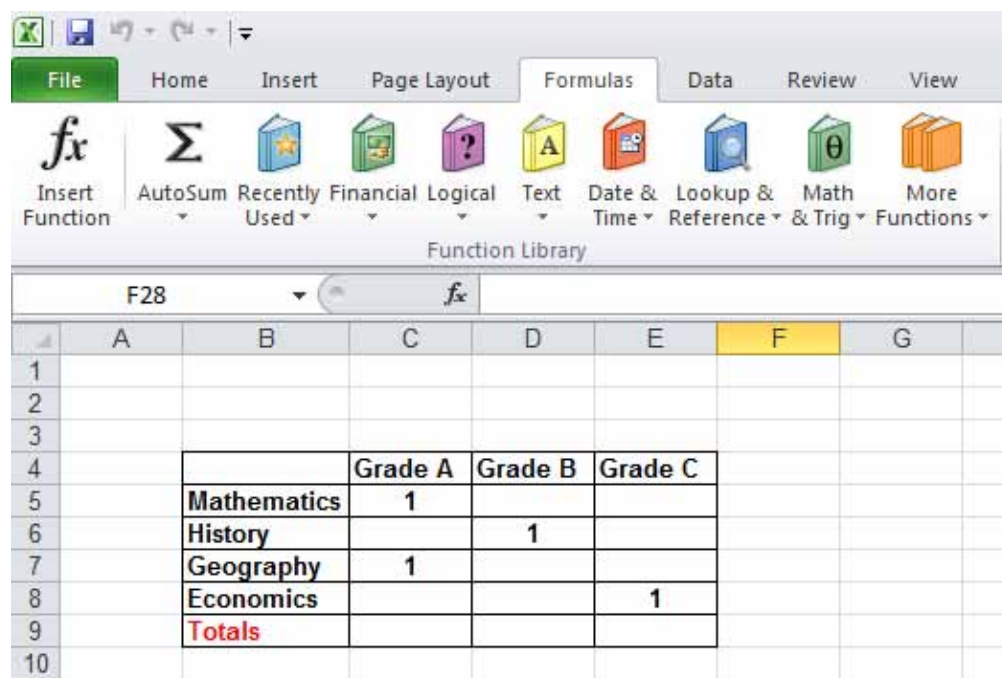
Install it if it isn't installed

When you have added it in, it will appear on the 'Data' page

## Statistical Functions

### COUNT

Open a workbook called **Functions - Count**. This sheet contains examination results and grades.

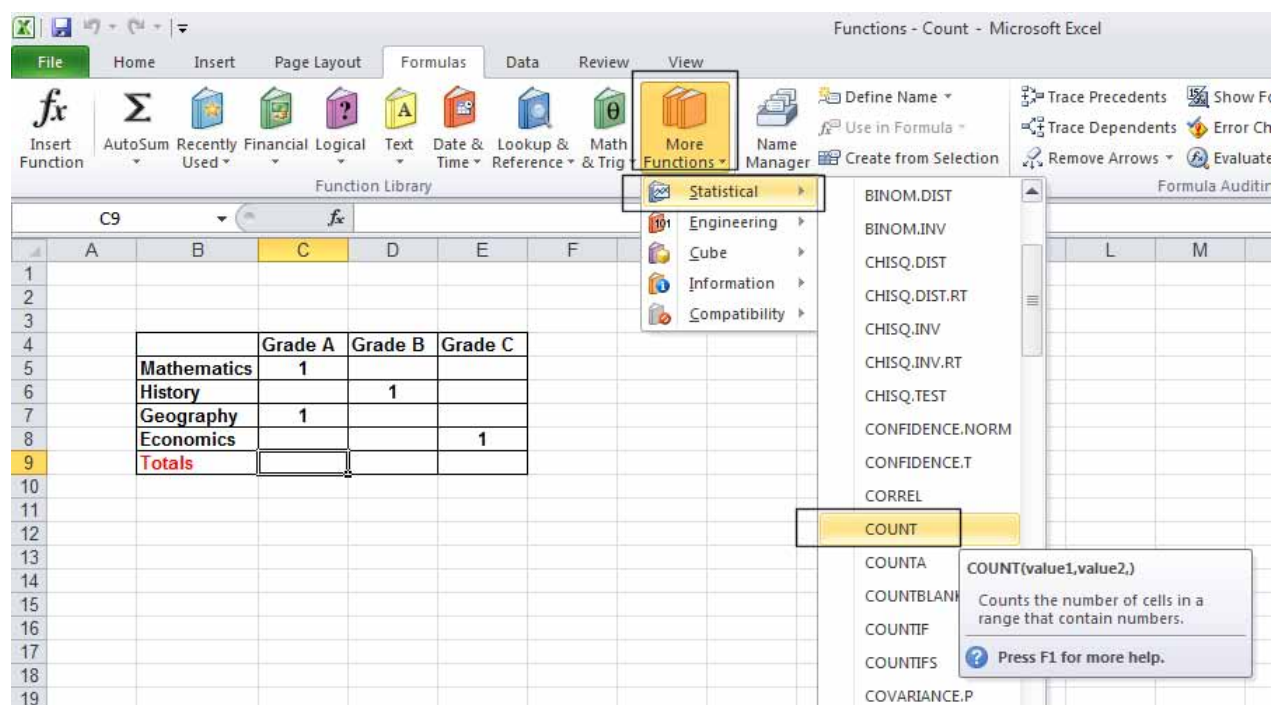


The screenshot shows the Microsoft Excel interface with the 'Formulas' tab selected. The 'Function Library' group is visible, containing buttons for 'Insert Function', 'AutoSum', 'Recently Used', 'Financial', 'Logical', 'Text', 'Date & Time', 'Lookup & Reference', 'Math & Trig', and 'More Functions'. Below the ribbon, a table of examination results is displayed in the worksheet.

	A	B	C	D	E	F	G
1							
2							
3							
4			Grade A	Grade B	Grade C		
5		Mathematics	1				
6		History		1			
7		Geography	1				
8		Economics			1		
9		Totals					
10							

Click on cell C9.

Click on the **Formulas** tab and within the **Function Library** group click on the **More Functions** button. From the drop down list displayed click on **Statistical**. From the submenu displayed click on the **COUNT** function.



The screenshot shows the Microsoft Excel interface with the 'Formulas' tab selected. The 'Function Library' group is visible, and the 'More Functions' button is clicked, opening a dropdown menu. The 'Statistical' category is selected, and the 'COUNT' function is highlighted. The 'COUNT' function is also visible in the 'Formula Auditor' pane on the right.

Functions - Count - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View

Function Library

More Functions

Statistical

Engineering

Cube

Information

Compatibility

BINOM.DIST

BINOM.INV

CHISQ.DIST

CHISQ.DIST.RT

CHISQ.INV

CHISQ.INV.RT

CHISQ.TEST

CONFIDENCE.NORM

CONFIDENCE.T

CORREL

COUNT

COUNTA

COUNTBLANK

COUNTIF

COUNTIFS

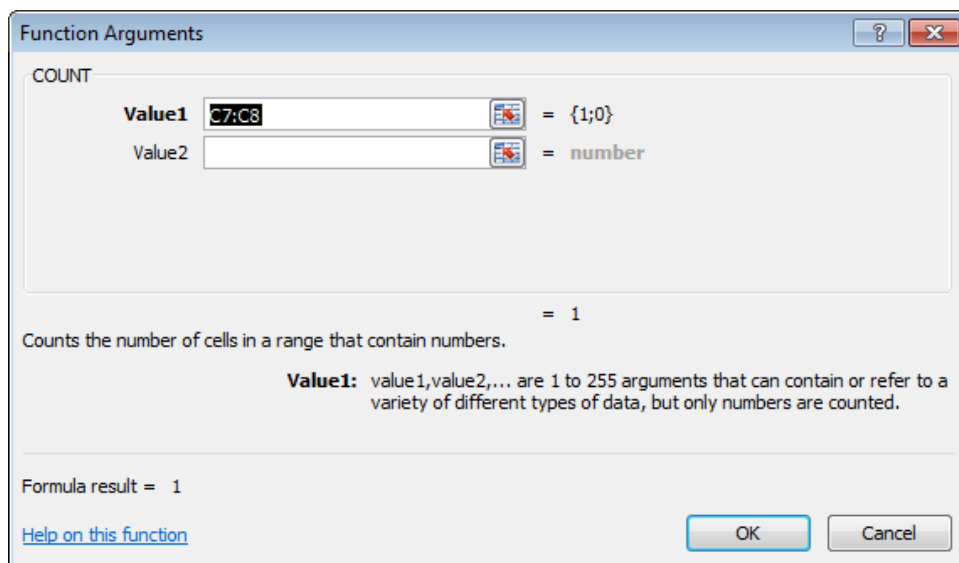
COVARIANCE.P

COUNT(value1,value2)

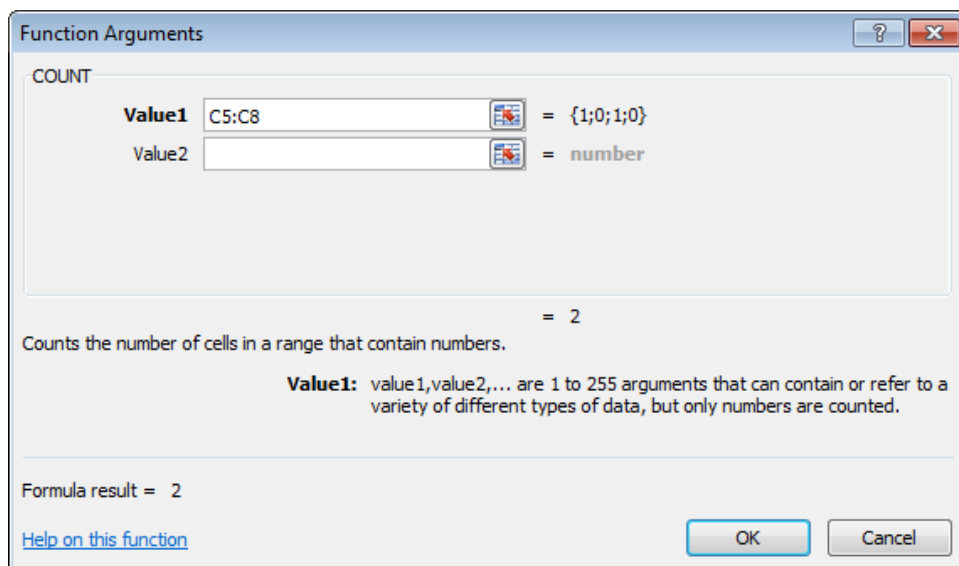
Counts the number of cells in a range that contain numbers.

Press F1 for more help.

The **Function Arguments** dialog box is displayed.



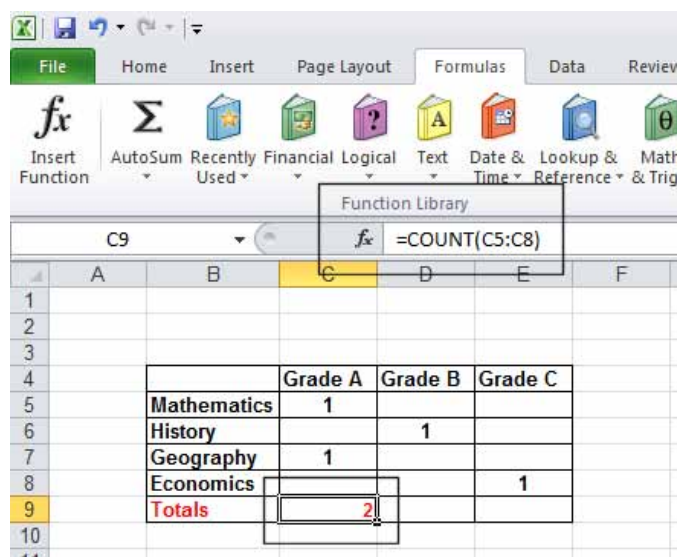
In the **Value1** section of the dialog box, Enter the cell range **C5:C8**.



Click on the **OK** button to insert the function.  
Your worksheet will now look like this.

You can see the function syntax displayed within the **Formula Bar**.

**=COUNT(C5:C8)**



Use the normal drag and drop techniques to copy this function to cells **D9** and **E9**. Your worksheet will now look like this.

	Grade A	Grade B	Grade C
Mathematics	1		
History		1	
Geography	1		
Economics			1
<b>Totals</b>	<b>2</b>	<b>1</b>	<b>1</b>

Save your changes and close the workbook.

## RANK

Open a workbook called **Functions - Rank**. The worksheet contains a table of sales results, including the total number of individual sales and also the total value of sales made, by all ten sales people working for a company.

	A	B	C	D	E	F
1	<b>Monthly Sales Figures</b>					
2						
3		<b>Name</b>	<b>Total number of individual sales made</b>	<b>Total value of sales made</b>	<b>Ranking by total number of sales made</b>	<b>Ranking by total value of sales made</b>
4		Hastert	5	8000		
5		Pelosi	15	6000		
6		Radanovich	15	5000		
7		Arriete	6	5000		
8		Dreifuss	3	1000		
9		Dumas	16	1500		
10		Gravani	20	2000		
11		Wilson	18	3500		
12		Feeney	19	3000		
13		Mach	20	4500		
14						

We want to rank each sales person by total number of sales made and also by the total values of sales made. Click on cell **E4**.

Click on the Formulas tab and within the **Function Library** group click on the **More Functions** button. From the drop down list displayed click on **Statistical**.

You will notice that the **Rank** function is not displayed within the list.

Functions - Rank - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View

fx Insert Function AutoSum Recently Used Financial Logical Text Date & Time Lookup & Reference Math More Functions

Function Library

E4

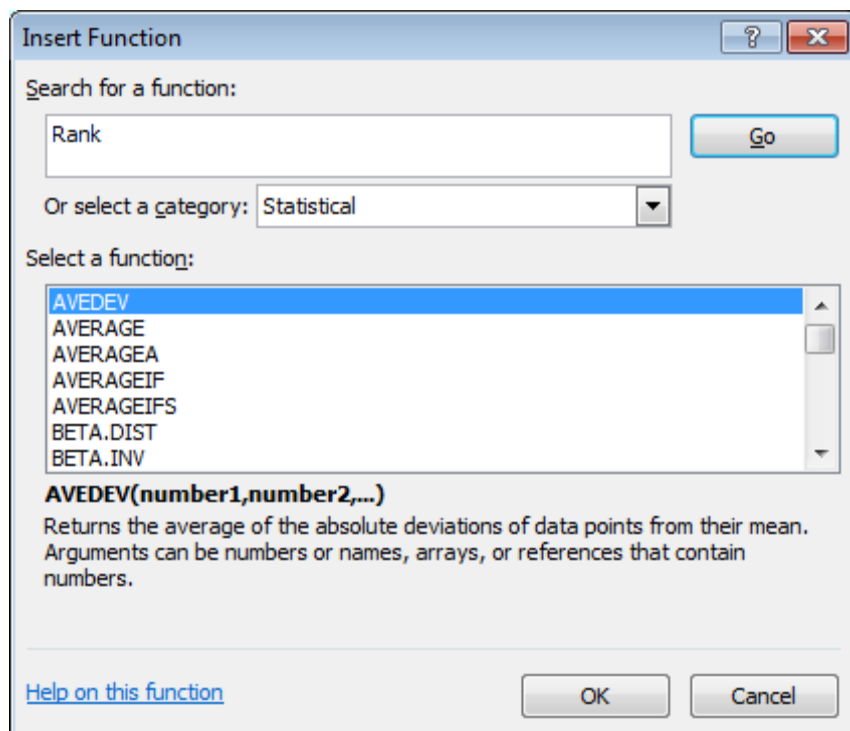
Monthly Sales Figures

	A	B	C	D	E	F
1	<b>Monthly Sales Figures</b>					
2						
3		<b>Name</b>	<b>Total number of individual sales made</b>	<b>Total value of sales made</b>	<b>Ranking by total number of sales made</b>	<b>Ranking by total value of sales made</b>
4		Hastert	5	8000		
5		Pelosi	15	6000		
6		Radanovich	15	5000		
7		Arriete	6	5000		

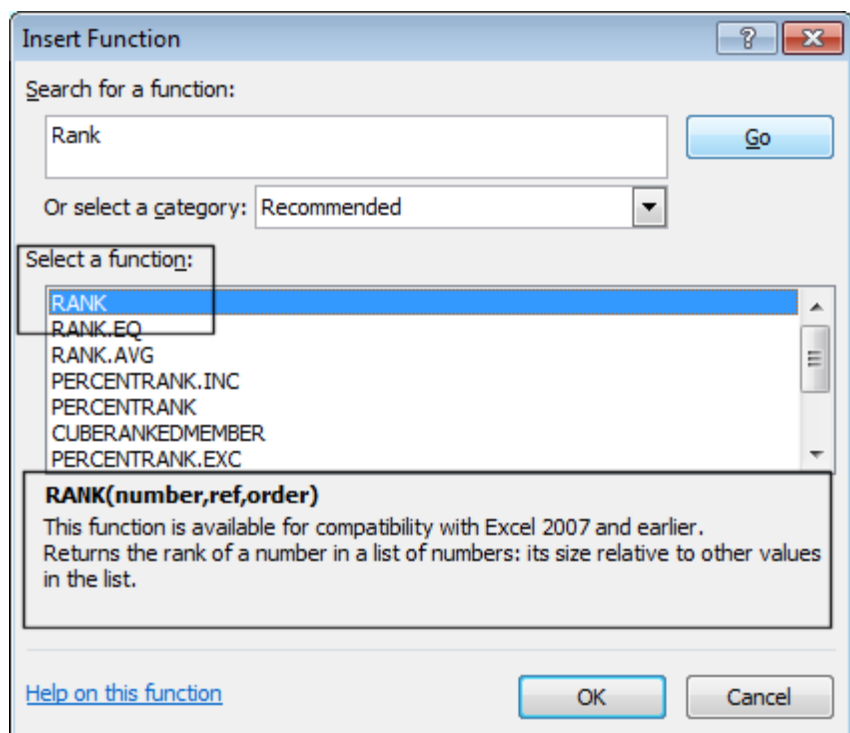
Statistical

- PERCENTRANK.INC
- PERMUT
- POISSON.DIST
- PROB
- QUARTILE.EXC
- QUARTILE.INC
- RANK.AVG
- RANK.EQ
- RSQ
- SKEW
- SLOPE

Click on the **Insert Function** button and type the word **Rank** into the search box.



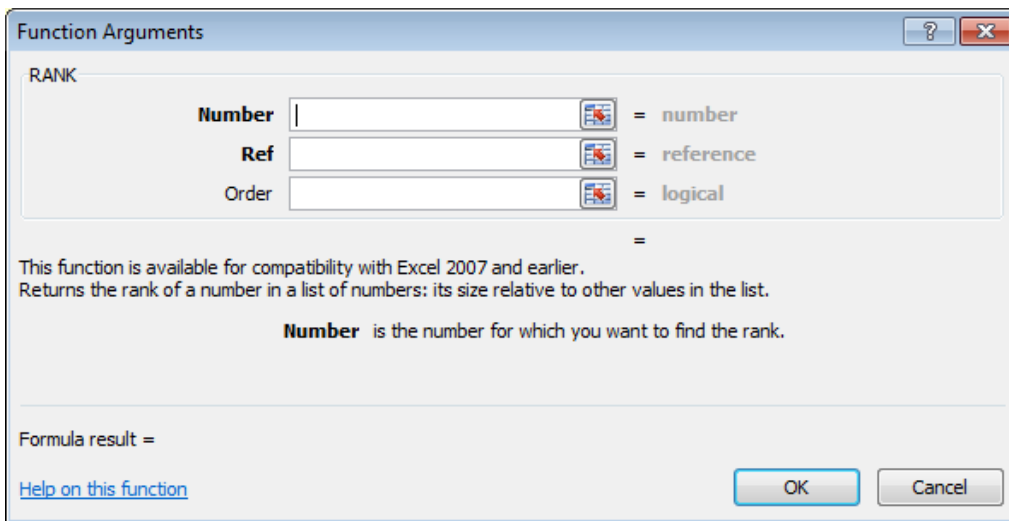
Click on the **Go** button (not the **OK** button) and you will see the following dialog box.





Read the information displayed at the bottom of the dialog box.

With the **Rank** function selected, click on the **OK** button. The **Function Arguments** dialog box will be displayed.



The dialog box is titled "Function Arguments" and contains the following fields and text:

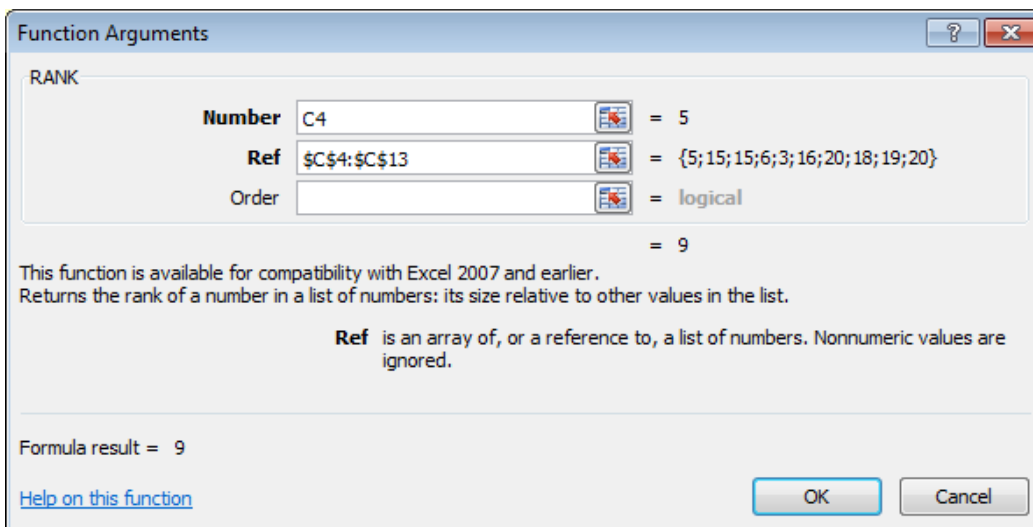
- Number**: A text box with a selection icon, followed by "= number".
- Ref**: A text box with a selection icon, followed by "= reference".
- Order**: A text box with a selection icon, followed by "= logical".
- A line of text: "This function is available for compatibility with Excel 2007 and earlier. Returns the rank of a number in a list of numbers: its size relative to other values in the list."
- A line of text: "**Number** is the number for which you want to find the rank."
- A line of text: "Formula result ="
- A link: [Help on this function](#)
- Buttons: **OK** and **Cancel**.

Enter the following data.

In the **Number** section we specify the item to rank, in this case **C4**.

In the **Ref** section we specify the range from which to compare the ranking value, in this case: **\$C\$4:\$C\$13**.

Your dialog box will look like this.

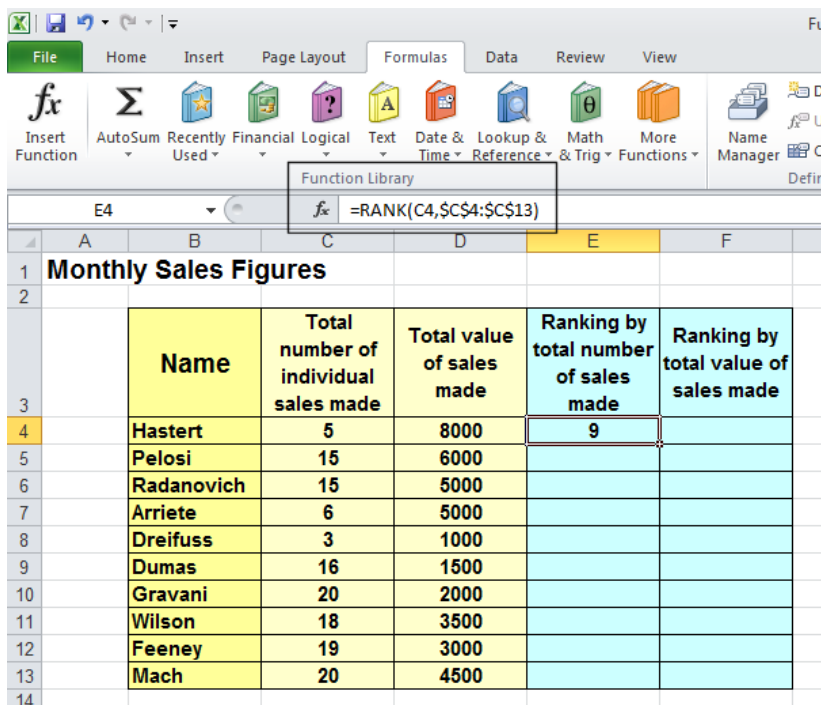


The dialog box is titled "Function Arguments" and contains the following fields and text:

- Number**: A text box containing "C4", followed by "= 5".
- Ref**: A text box containing "\$C\$4:\$C\$13", followed by "= {5; 15; 15; 6; 3; 16; 20; 18; 19; 20}"
- Order**: A text box with a selection icon, followed by "= logical".
- A line of text: "This function is available for compatibility with Excel 2007 and earlier. Returns the rank of a number in a list of numbers: its size relative to other values in the list."
- A line of text: "**Ref** is an array of, or a reference to, a list of numbers. Nonnumeric values are ignored."
- A line of text: "Formula result = 9"
- A link: [Help on this function](#)
- Buttons: **OK** and **Cancel**.

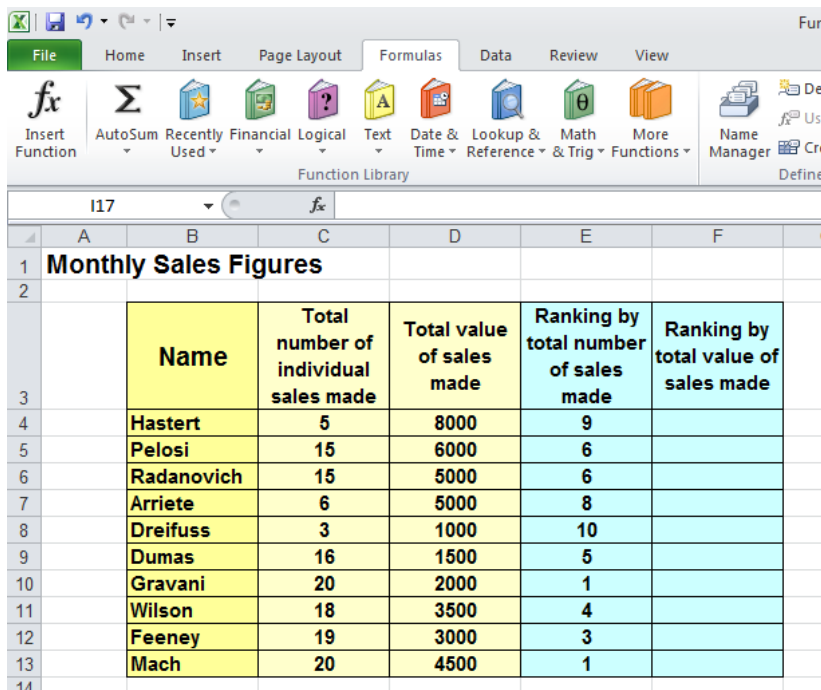
**TIP:** Within the **Order** section, if we do not enter a value, or if we enter a **0**, then the rank will be sorted in descending order. If we wanted to sort in ascending order, you would enter any number other than **0**. In this example we will not enter a value, so the ranking will use the default descending order.

Click on the **OK** button. You will see the following. This means that **Hastert**, ranked in position **9**, compared to the other sales people, in terms of the total number of sales made.



	A	B	C	D	E	F
1	<b>Monthly Sales Figures</b>					
2						
3		<b>Name</b>	<b>Total number of individual sales made</b>	<b>Total value of sales made</b>	<b>Ranking by total number of sales made</b>	<b>Ranking by total value of sales made</b>
4		Hastert	5	8000	9	
5		Pelosi	15	6000		
6		Radanovich	15	5000		
7		Arriete	6	5000		
8		Dreifuss	3	1000		
9		Dumas	16	1500		
10		Gravani	20	2000		
11		Wilson	18	3500		
12		Feeney	19	3000		
13		Mach	20	4500		

Drag the contents of cell **E4** to fill the range **E4:E13**. Your data will now look like this. If you look closely you will see that **Gravani** and **Mach** are in joint place. This explains the fact that there is no sales person listed in second place. After the two joint-first position, the next best ranking is **Feeney** in rank position **3**.



	A	B	C	D	E	F
1	<b>Monthly Sales Figures</b>					
2						
3		<b>Name</b>	<b>Total number of individual sales made</b>	<b>Total value of sales made</b>	<b>Ranking by total number of sales made</b>	<b>Ranking by total value of sales made</b>
4		Hastert	5	8000	9	
5		Pelosi	15	6000	6	
6		Radanovich	15	5000	6	
7		Arriete	6	5000	8	
8		Dreifuss	3	1000	10	
9		Dumas	16	1500	5	
10		Gravani	20	2000	1	
11		Wilson	18	3500	4	
12		Feeney	19	3000	3	
13		Mach	20	4500	1	



We will now see how the sales people rank in terms of total sales. Some sales people are very good at selling a lot of low value items, while other sales people specialise in making fewer, but higher value sales.

Click on the cell **F4**.

Re-display the **Function Arguments** dialog box for the **Rank** function and enter the following data.

Number: **D4**

Ref: **\$D\$4:\$D\$13**

Function Arguments

RANK

Number: D4 = 8000

Ref: \$D\$4:\$D\$13 = {8000;6000;5000;5000;1000;1500;2000}

Order: = logical

= 1

This function is available for compatibility with Excel 2007 and earlier.  
Returns the rank of a number in a list of numbers: its size relative to other values in the list.

Ref is an array of, or a reference to, a list of numbers. Nonnumeric values are ignored.

Formula result = 1

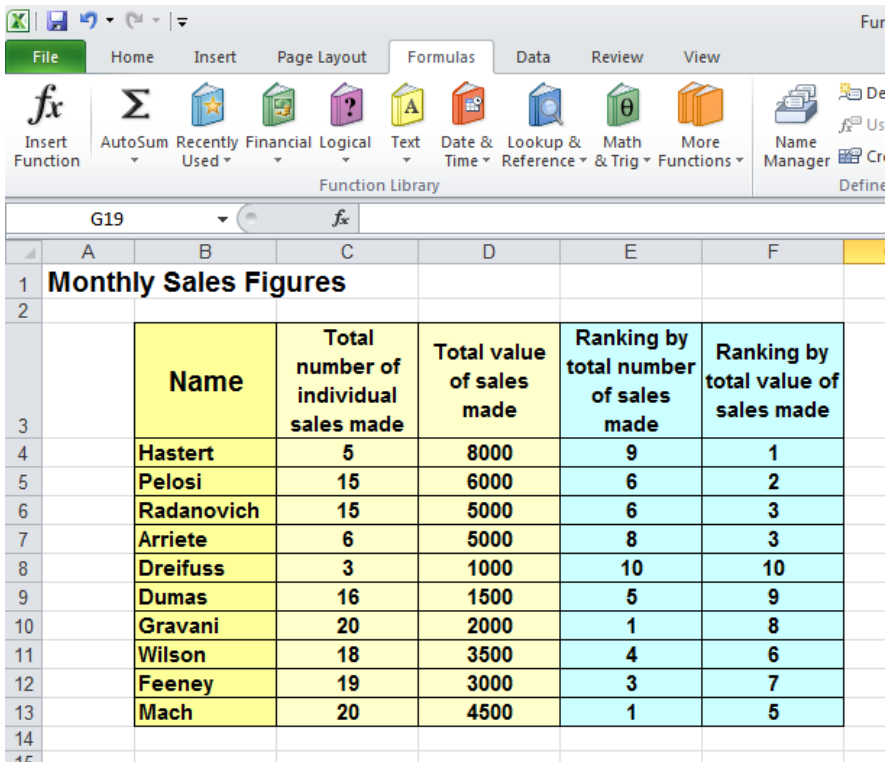
[Help on this function](#)

OK Cancel

Click on the **OK** button. Your data will look like this.

	A	B	C	D	E	F
1	<b>Monthly Sales Figures</b>					
2						
3		<b>Name</b>	<b>Total number of individual sales made</b>	<b>Total value of sales made</b>	<b>Ranking by total number of sales made</b>	<b>Ranking by total value of sales made</b>
4		Hastert	5	8000	9	1
5		Pelosi	15	6000	6	
6		Radanovich	15	5000	6	
7		Arriete	6	5000	8	
8		Dreifuss	3	1000	10	
9		Dumas	16	1500	5	
10		Gravani	20	2000	1	
11		Wilson	18	3500	4	
12		Feeney	19	3000	3	
13		Mach	20	4500	1	

Extend the contents of cell **F4** to fill the range **F4:F13**. Your data will now look like this.



The screenshot shows the Microsoft Excel interface with the 'Formulas' ribbon selected. The 'Function Library' group is visible, containing icons for Insert Function, AutoSum, Recently Used, Financial, Logical, Text, Date & Time, Lookup & Reference, Math & Trig, and More Functions. The 'Name Manager' button is also present. The active cell is G19. Below the ribbon, a table titled 'Monthly Sales Figures' is displayed, starting from row 3. The table has six columns: Name, Total number of individual sales made, Total value of sales made, Ranking by total number of sales made, and Ranking by total value of sales made. The data is as follows:

	Name	Total number of individual sales made	Total value of sales made	Ranking by total number of sales made	Ranking by total value of sales made
3	Hastert	5	8000	9	1
4	Pelosi	15	6000	6	2
5	Radanovich	15	5000	6	3
6	Arriete	6	5000	8	3
7	Dreifuss	3	1000	10	10
8	Dumas	16	1500	5	9
9	Gravani	20	2000	1	8
10	Wilson	18	3500	4	6
11	Feeney	19	3000	3	7
12	Mach	20	4500	1	5

As you can see **Hastert**, despite not making very many individual sales, actually is in the top ranked position when it comes to the total value of the sales made. You will notice that there are 2 sales people with the number **three** ranking, which is why there is no sales person listed in the number four ranking spot.

Save your changes and close the workbook.

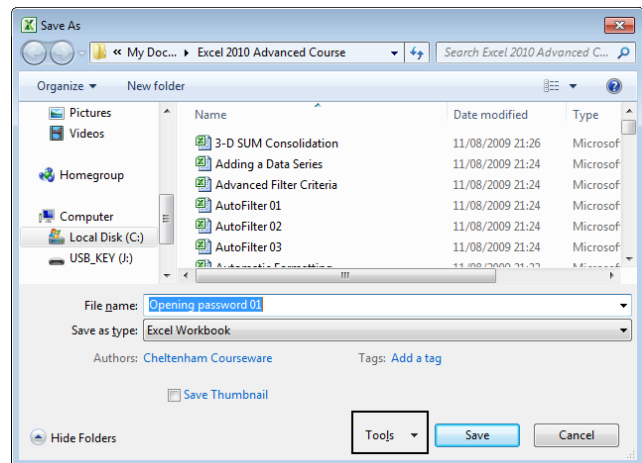
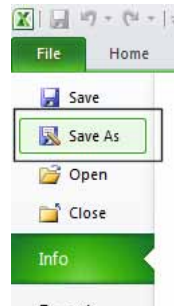
## Passwords & Security Issues

### Adding password protection to a workbook.

Open a workbook called Opening password 01. We wish to add a password to prevent unauthorised access to this file.

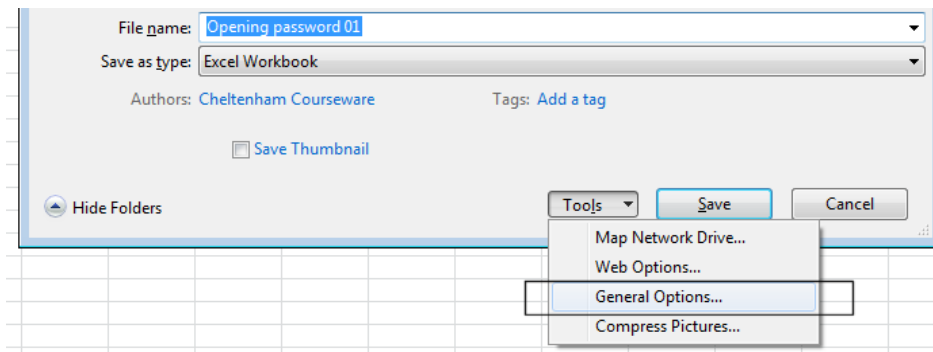
	A	B	C
1			
2			
3		The password to our secret Swiss bank account is:	
4		109XP8HkGDS	
5			
6			
7			

Click on the File tab and select the Save As command.

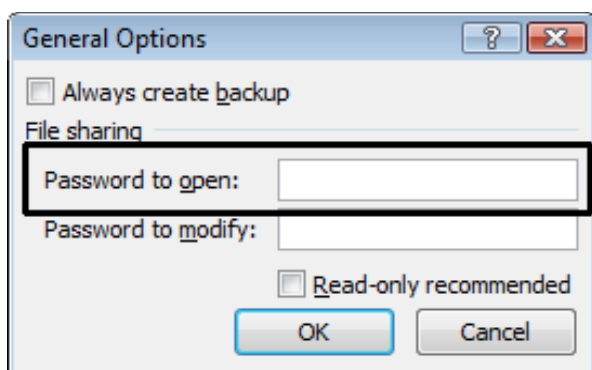


- This will display the Save As dialog box.

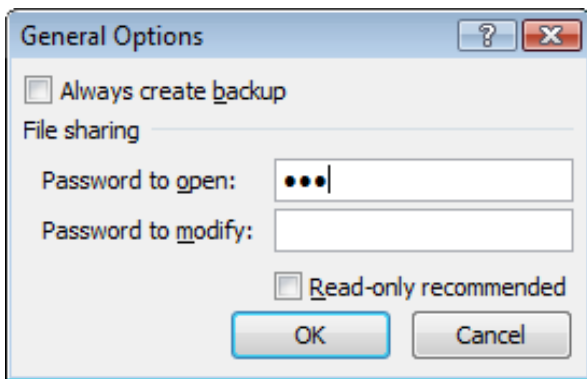
Click on the Tools link, and from the drop down list displayed select the General Options command.



This will display the General Options dialog box.



Enter a password (in this case cct) into the Password to open text box. In future, you will be required to enter this password in order to open the file.



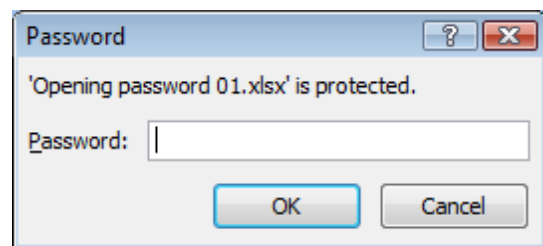
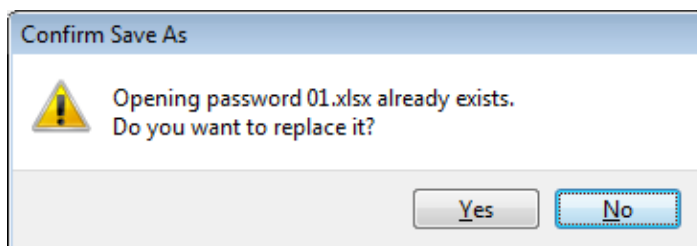
Click on the OK button. You will be asked to re-type the password.



Re-enter the password, and click on the OK button to close the Confirm Password dialog box. You will be returned to the Save As dialog box. Click on the Save button. You will be asked if you wish to overwrite the original file. Click on the Yes button

Close the workbook.

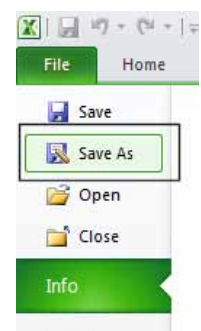
Re-open the workbook. You will see a dialog box, into which you must enter the correct password, i.e. 'cct'. Do this and the workbook should open.



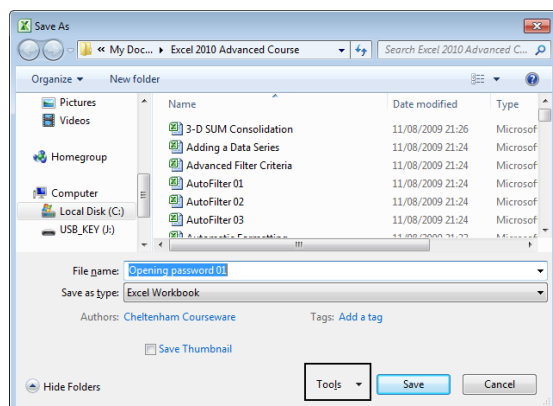
## Adding 'modify' password protection to a workbook.

Open a workbook called Modification password 01.

We wish to save this file so that when opened it will display a dialog box, explaining that you should normally open this worksheet as a read-only file, i.e. one where modifications may be made, but where you cannot overwrite the original file. Any changes would have to be saved in a file with a different name.

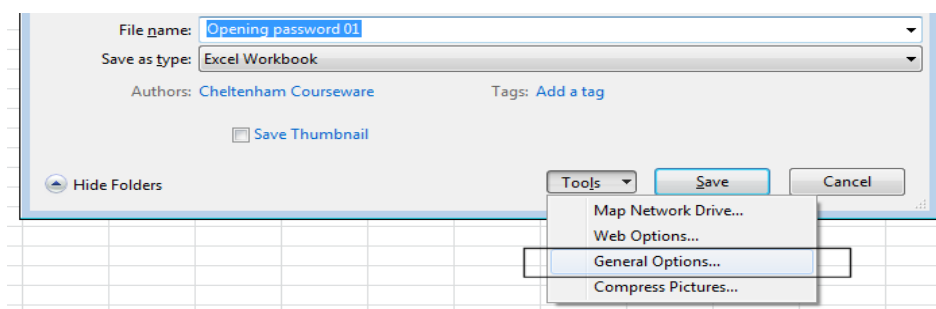


Click on the File tab and select the Save As command.

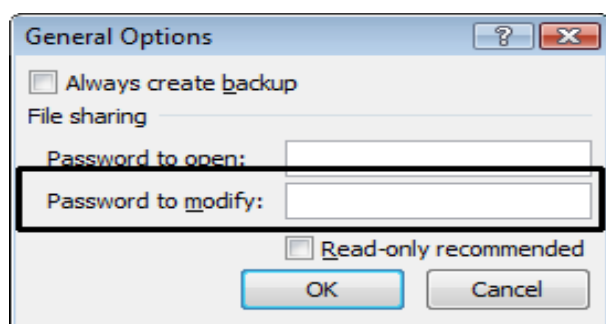


This will display the Save As dialog box.

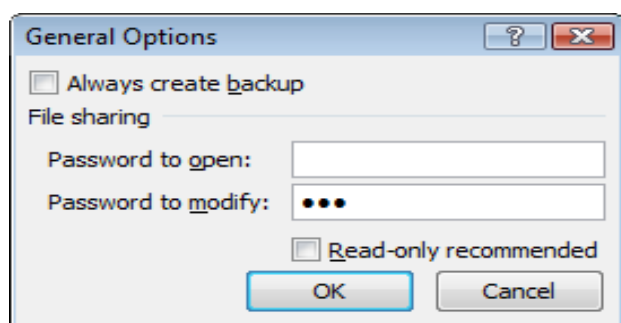
Click on the Tools link, and from the drop down list displayed select the General Options command.



This will display the General Options dialog box.



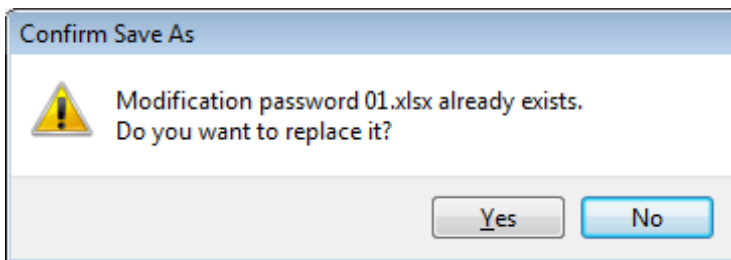
Enter a password (in this case cct) into the Password to Modify text box. In future, you will be required to enter this password in order to open and modify the file.



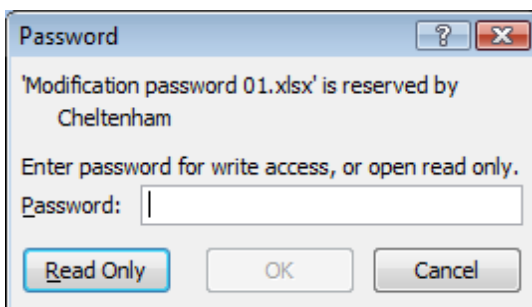
Click on the OK button. You will be asked to re-type the password.



Re-enter the password, and click on the OK button to close the Confirm Password dialog box. You will be returned to the Save As dialog box. Click on the Save button. You will be asked if you wish to overwrite the original file. Click on the Yes button



Close the workbook.  
Re-open the workbook. You will see a dialog box displayed.



If you enter the correct password, you can open and edit the document. If you do not supply the correct password, you can only open and view the document.

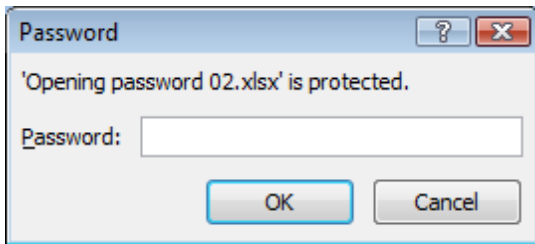
**NOTE:** Without the password you can still open and edit the document, but you must save the workbook using a different filename. You will not be allowed to overwrite the original version of the document.

Close your workbook.

## Removing an password from a workbook.

Open a workbook called Opening password 02.

This workbook has been protected with a password that prevents opening the workbook, unless you enter the correct password. You will see a Password dialog box displayed.

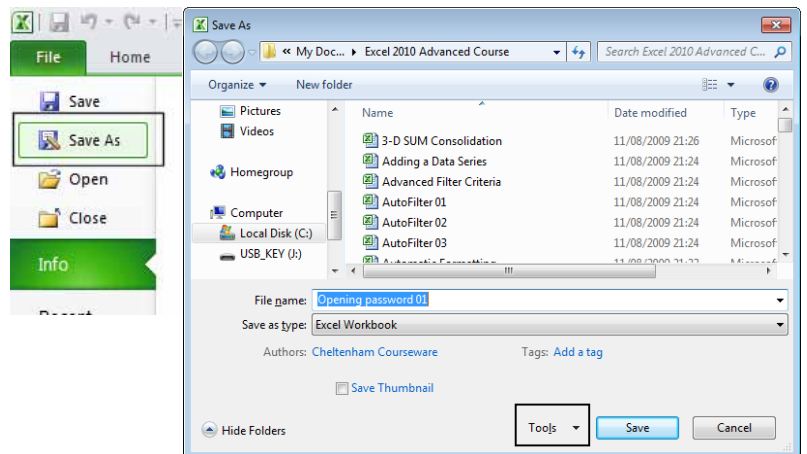


Enter the password (in lower case) which is. cct

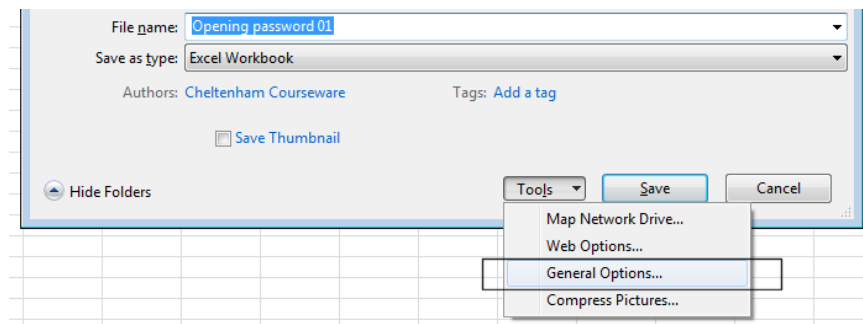
and then click on the OK button to open the file.

Click on the File tab and select the Save As command.

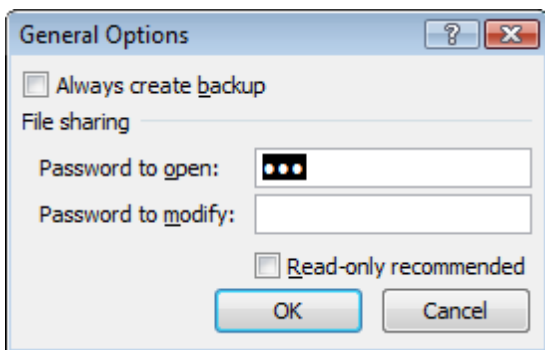
This will display the Save As dialog box.



Click on the Tools link, and from the drop down list displayed select the General Options command.



This will display the General Options dialog box.



Delete the password and then click on the OK button.

Save and close the workbook.

Reopen the workbook and you will see that the password has been removed.

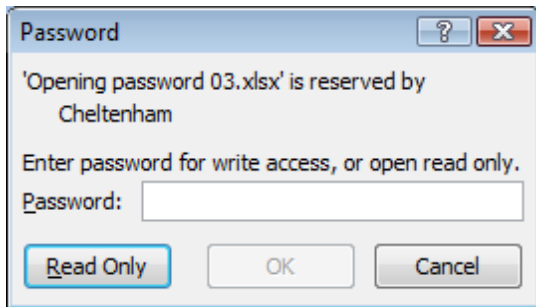
Close the workbook.



## Removing a 'modify' password from a workbook.

Open a workbook called Opening password 03.

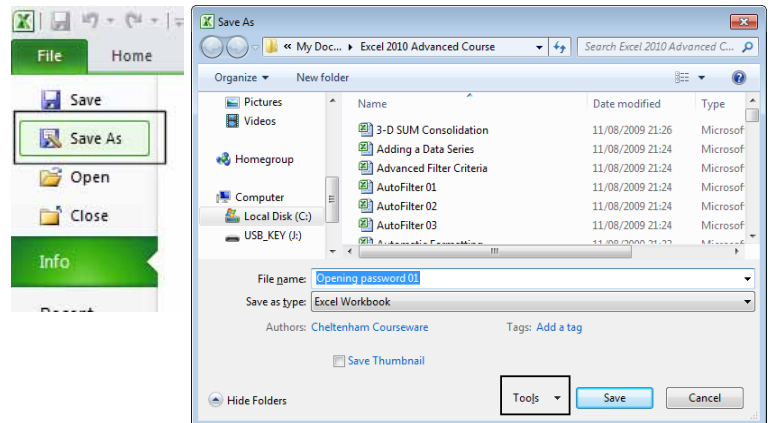
This workbook has been protected with a 'modify' password. You will see a Password dialog box displayed.



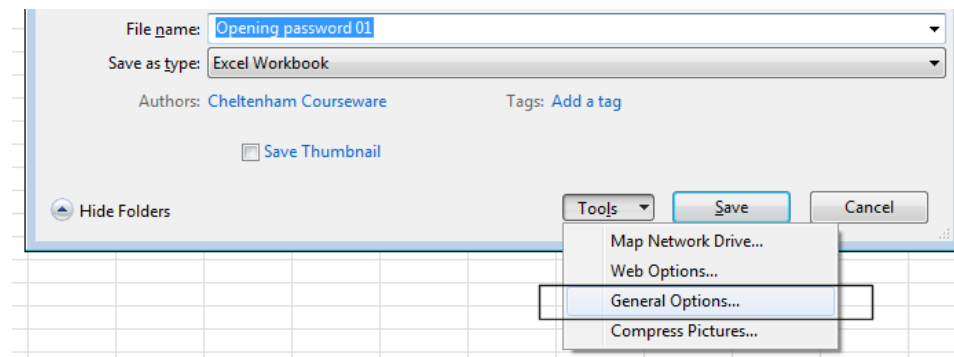
Enter the password (in lower case) which is cct and then click on the OK button to open the file.

Click on the File tab and select the Save As command.

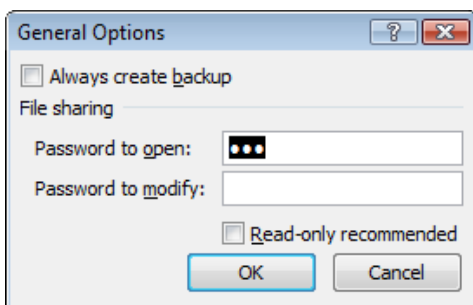
This will display the Save As dialog box.



Click on the Tools link, and from the drop down list displayed select the General Options command.



This will display the General Options dialog box.



Delete the password and then click on the OK button.

Save and close the workbook.

Reopen the workbook and you will see that the password has been removed.

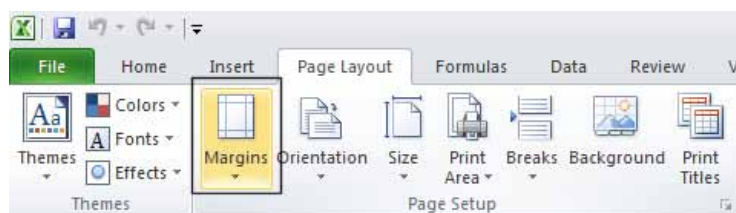
Close the workbook.

## Setup & Printing Issues

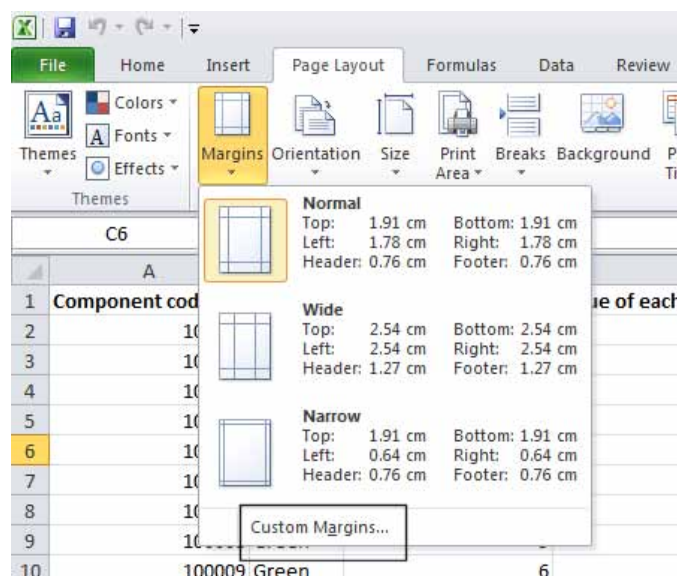
### Worksheet margins

Open a workbook called **Print setup**.

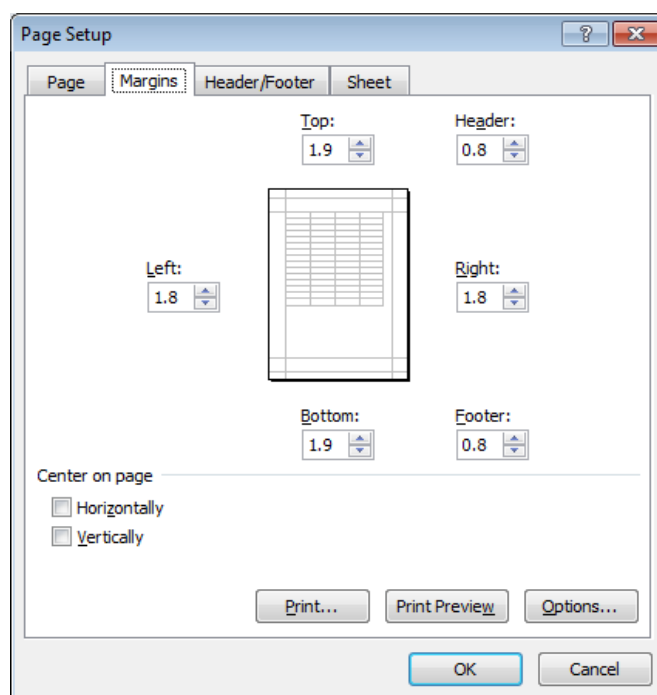
Click on the **Page Layout** tab, and from within the **Page Setup** group, click on the **Margins** icon.



This will display a drop down from which you can select **Normal**, **Wide** or **Narrow**.



Clicking on the **Custom Margins** command displays the **Margins** tab within the **Page Setup** dialog box. You can use this dialog box to set custom top, bottom, left and right margins.



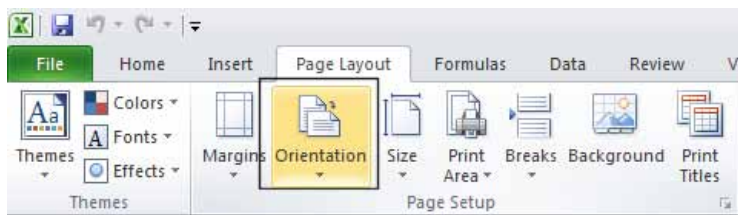
**TIP:** You can also use this dialog box to set Header and Footer values, as well as options to centre the table on the page vertically and/or horizontally.

Experiment with setting margins.

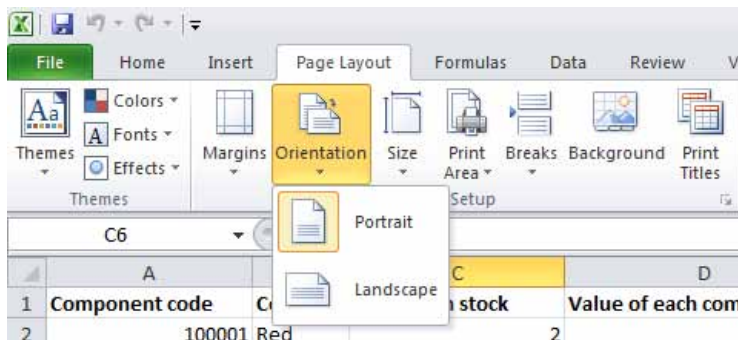
**TIP:** Be sure not to make the margin size too small or you may have problems printing the worksheet.

## Worksheet orientation

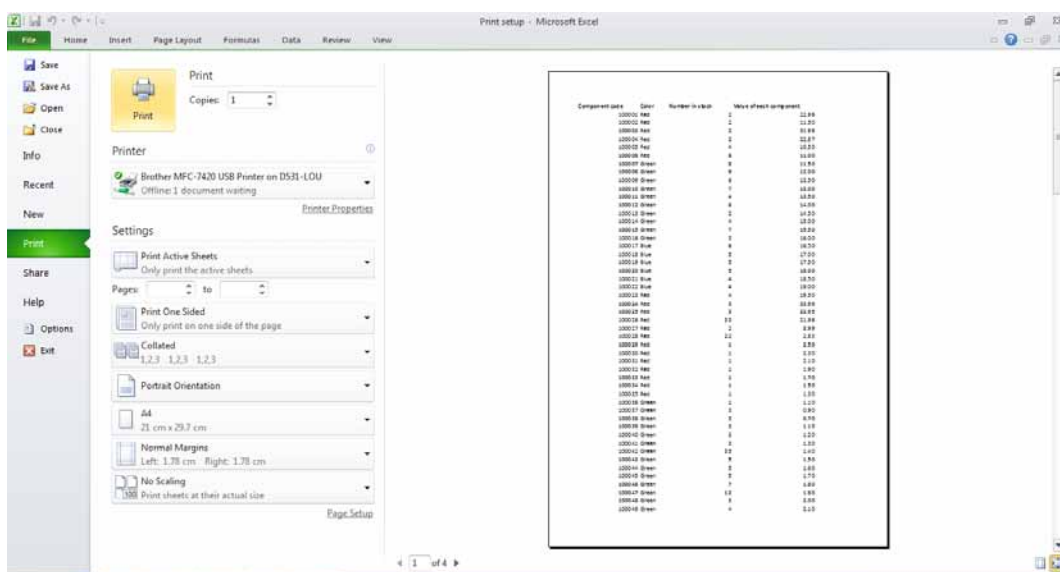
Click on the **Page Layout** tab, and from within the **Page Setup** group, click on the **Orientation** icon.



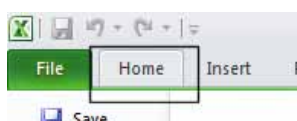
You can select either **Portrait** or **Landscape** orientation, as illustrated.



Try setting the orientation to **Landscape**. To see the effect in **Print Preview** mode, press the **Ctrl+F2** keyboard shortcut.

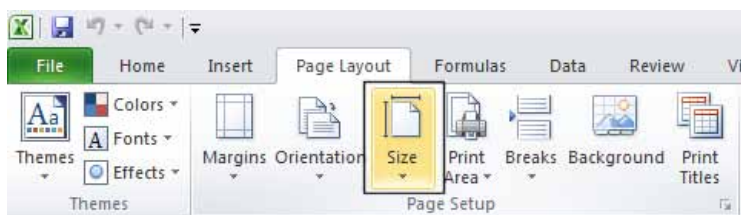


To return to the normal view, click on the **Home** tab.

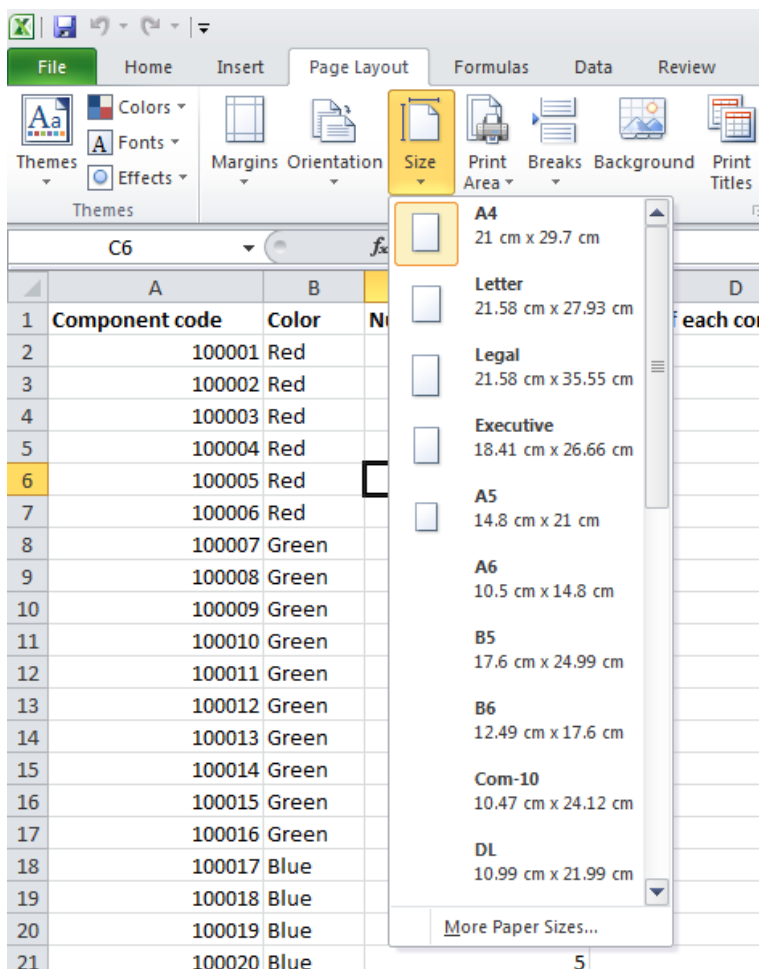


## Worksheet page size

Click on the **Page Layout** tab, and from within the **Page Setup** group, click on the **Size** icon.

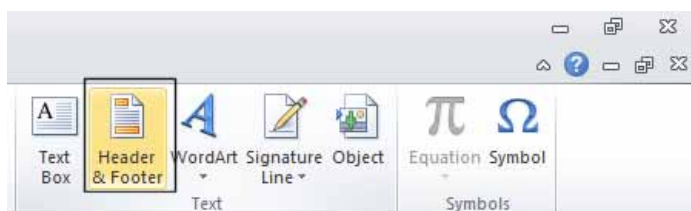


You can select the required page size from the drop down options displayed, as illustrated.

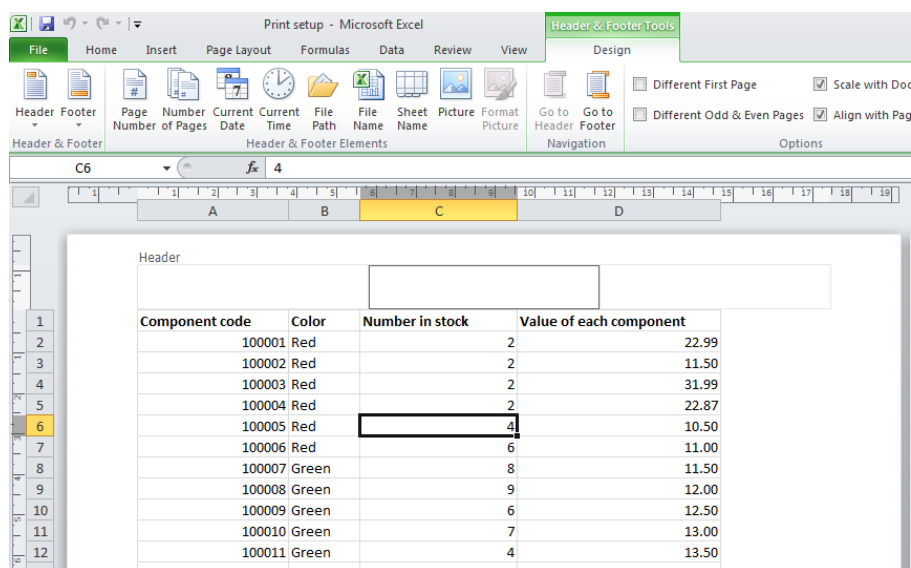


## Headers and footers

Click on the **Insert** tab and from within the **Text** group, click on the **Header & Footer** icon.

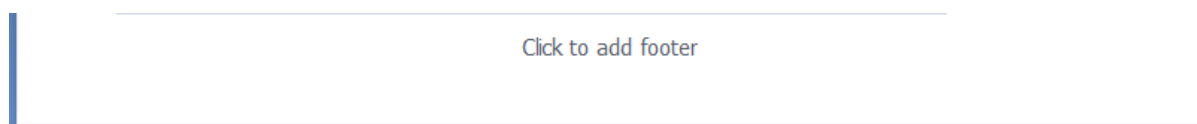


You will see the Header area displayed at the top of the worksheet, as illustrated.

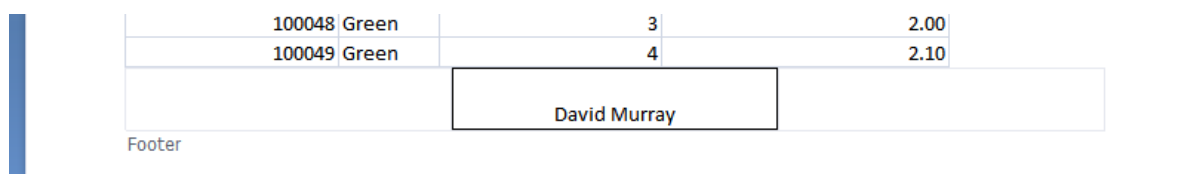


Type in the text for your header, such as **Stock Levels for January**.

If you scroll down the page you will see the message 'Click to add footer' displayed at the bottom of the worksheet.



Click within the footer area and type in your name. As example is illustrated below.



To modify a header or footer at any time just click over an existing header or footer and edit as required.

## Header and footer fields

When you are inserting or editing a footer or header, you will notice that you see the **Header and Footer Tools** Ribbon. Within this Ribbon is the **Header & Footer Elements** group, as illustrated below.



You can use the icons in this section to insert an Excel field, such as the Page Number. The great thing about fields is that they automatically update when required. For instance if you insert a **Page Number** field, then as you add more pages, the page number displayed on each page will increment.

Another very useful field is the **File Name** field. This displays the file name of the document in your header or footer, when you print, and is very useful when you have printed out a copy of a worksheet and then several months later are trying to remember the file name you used to save the worksheet as.

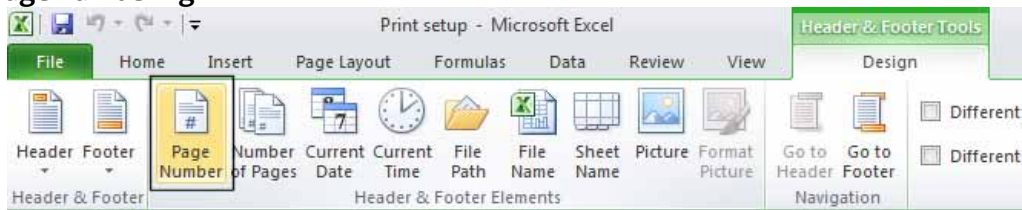


**NOTE:** When you insert a field, such as the **File Name** field, you may see the field code rather than the actual file name. When you print the worksheet however, this code is replaced by the actual file name.

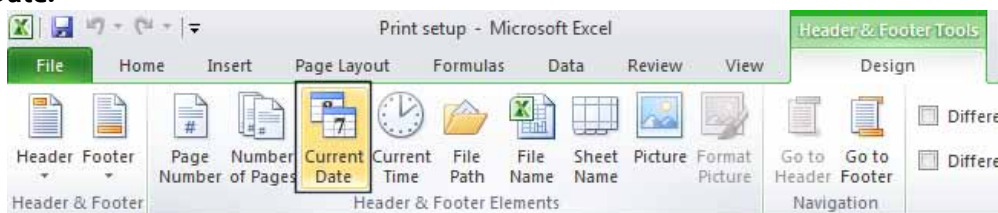
The **File Path** will display the file name and also the path to the folder in which the file is stored. Experiment with inserting different fields into your header or footer.

Make sure that you have experimented with all of the following field types:

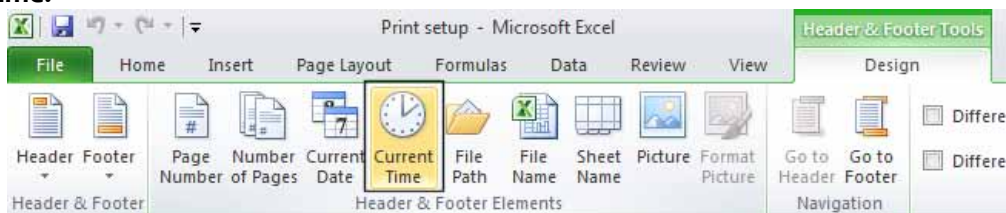
#### Page numbering:



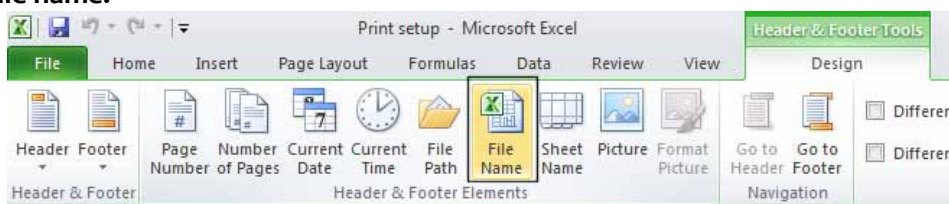
#### Date:



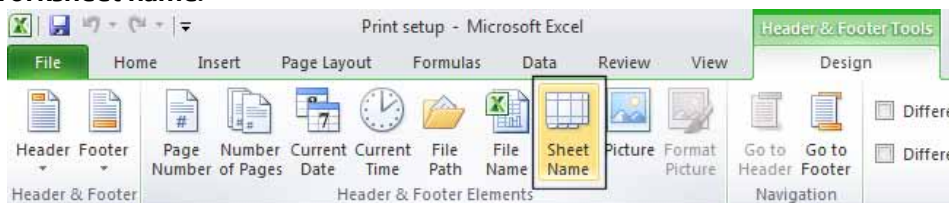
#### Time:



#### File name:



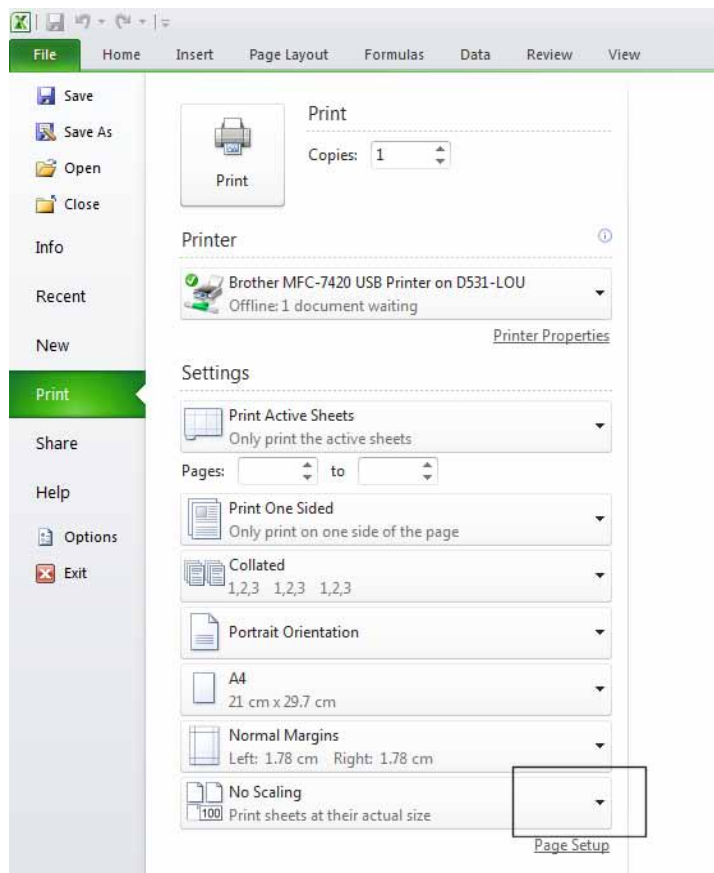
#### Worksheet name:



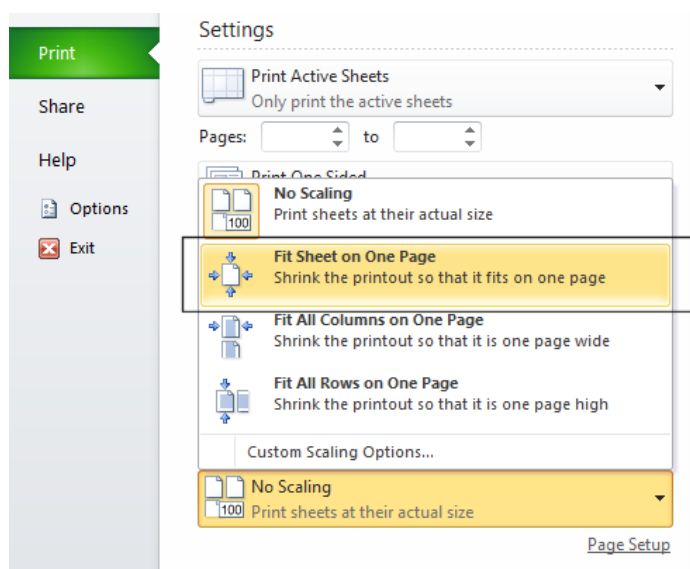
**NOTE:** To remove a header or footer field, select the field and press the Del key.

## Scaling your worksheet to fit a page(s)

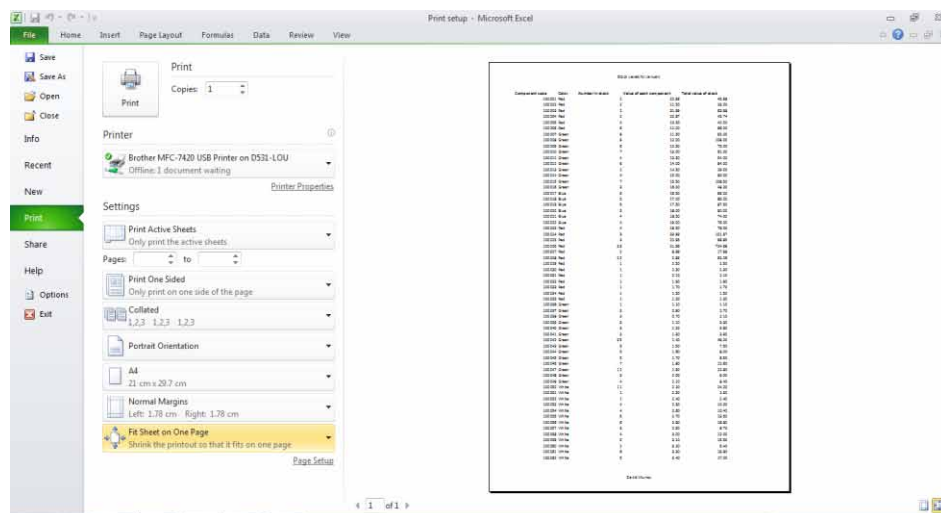
Click on the **File Tab** and then click on the **arrow** next to the **Print side** tab. Click on the **down arrow** next to the **Scaling** section.



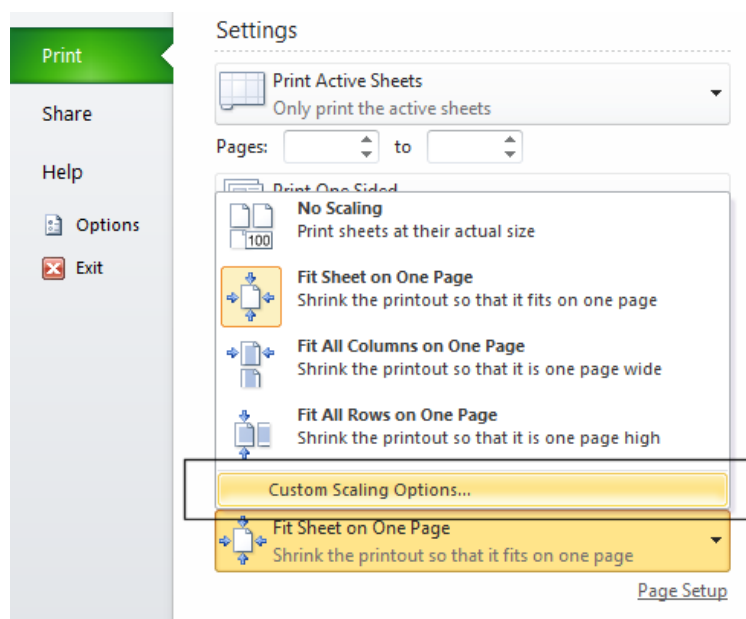
The list displayed allows you to select print scaling options, such as **Fit Sheet on One Page**.



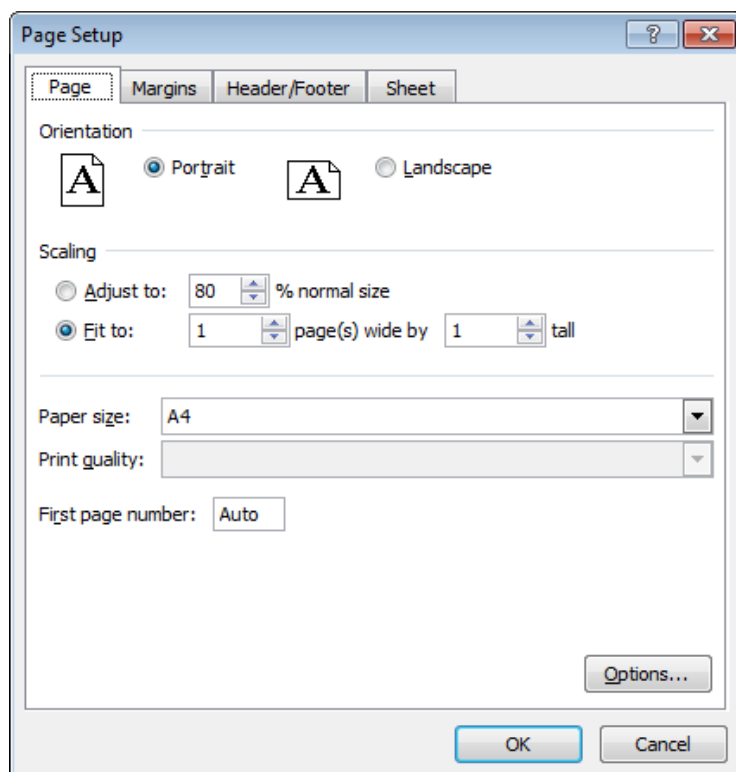
You can see that when this option is selected the sheet does, as expected, fit onto one page.



You can also customise how many pages you would want the data to fit on. To do this click on the **Custom Scaling Options** button.



This will display the **Page Setup** dialog box, which you can use to customise scaling of the printing.



Save your changes and close the workbook.



**THE END OF THE TRAINING**

**TO BE CONTINUED IN YOUR ROUTINE WORK.**

