Level 6 Spreadsheet 6N4089

Section 5 – Charts and Pivot Tables

Contents

RMN

1. CHARTS

WHAT IS A GRAPH OR CHART?

They are a visual method of comparing and interpreting data. They are used because a chart or graph is much easier to read and interpret than the spreadsheet data.

2. CREATE A RANGE OF DIFFERENT 2D AND 3D CHART TYPES, E.G. BAR, COLUMN, PIE, LINE, AREA, EITHER EMBEDDED OR ON A SEPARATE SHEET

CREATE A CHART

To create a chart, type the information for the chart into a spreadsheet. It is much easier to organise a chart if the information is typed into the spreadsheet vertically as shown.

Then go to the **Insert** menu to the **Chart** group and select the **Chart Style** required. In this example a clustered column has been selected. This will automatically create the chart type which has been selected.
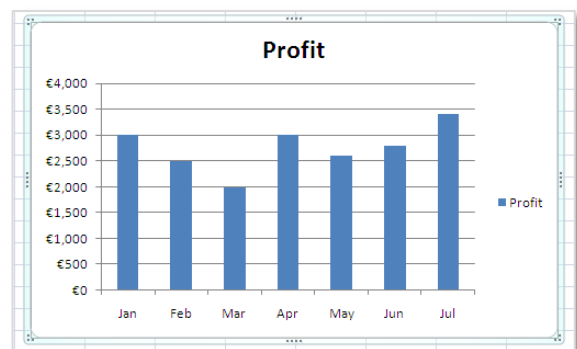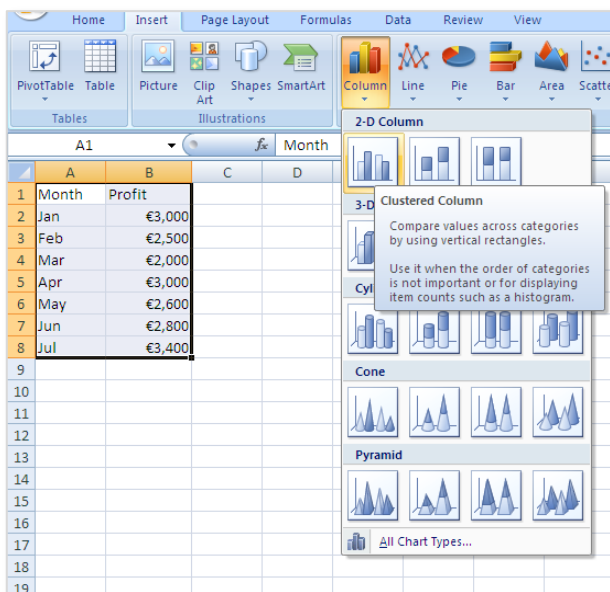
Note: No blank rows and no blank columns in the highlighted area. The highlighted area should only contain the numbers that create the chart together with one row of headings and one column of headings.

When the chart is selected three additional menus are available on the ribbon at the top of the Excel application.
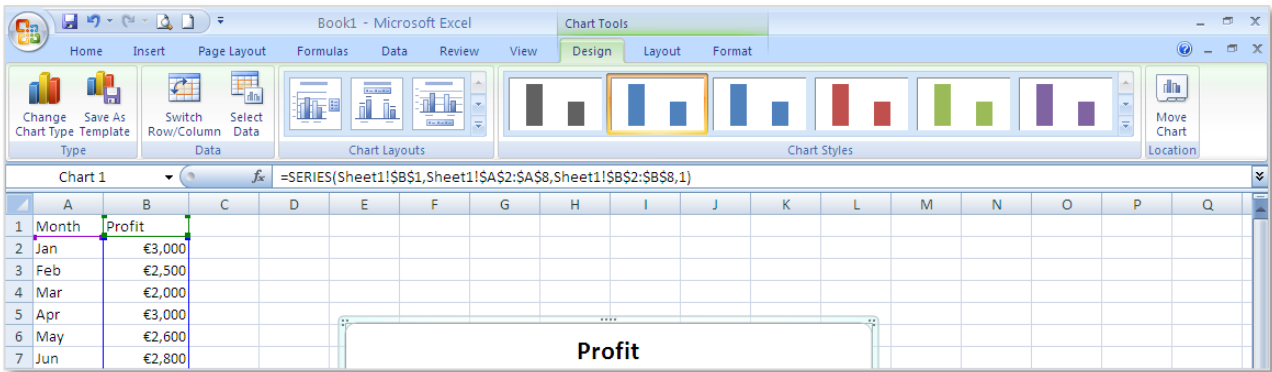
EMBEDDED OR ON A SEPARATE SHEET

EMBEDDED

An embedded chart is a chart which is based or sitting on the same worksheet as the data it was created from, as with the example above.

ON SEPARATE SHEET

To create a chart as a separate sheet click on the chart go to the **Design** tab to the **Location** group and select **Move Chart** option in the top right corner. This will open the **Move Chart** dialogue box. Select the **New Sheet** option and name the sheet in the **New sheet:** text box, then click on **Ok**. This will create the table on a new separate sheet.
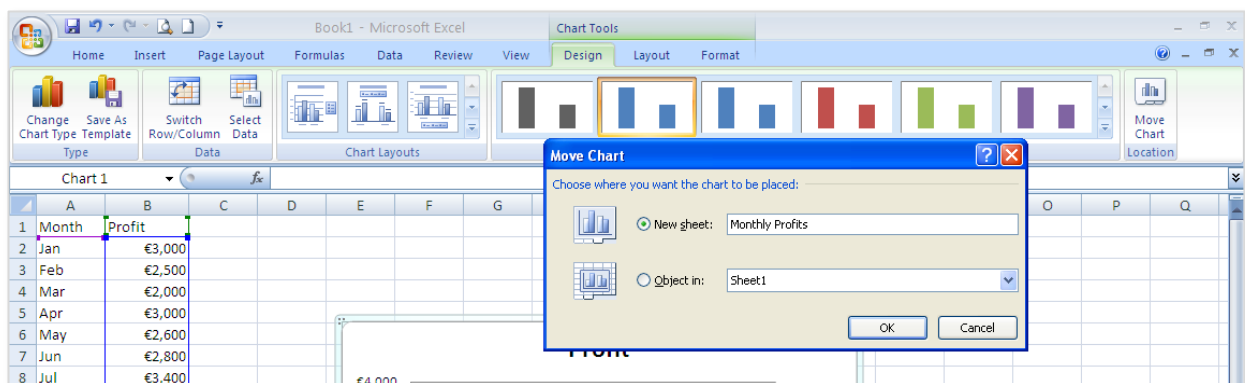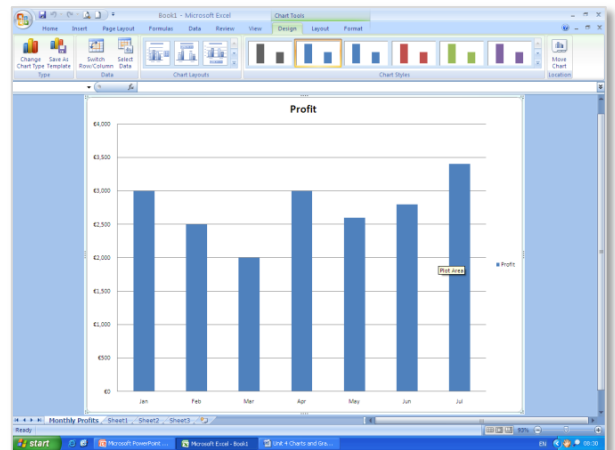
CREATE A RANGE OF DIFFERENT 2D AND 3D CHART TYPES, E.G. BAR, COLUMN, PIE, LINE, AREA
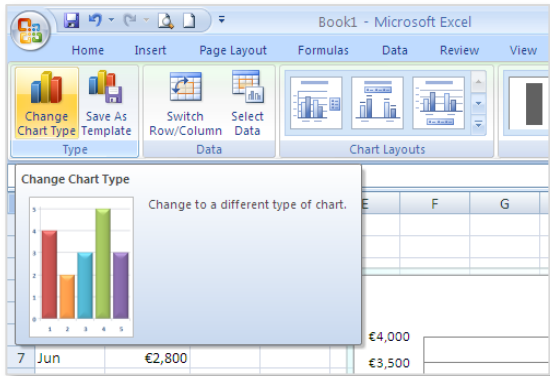
To create a range of different chart types select the chart type from the **Insert** tab on the **Chart** group. Any chart can easily be changed in the **Design** tab after the chart has been created, to do this click on the chart to select it and click on the **Change Chart Type** command button.
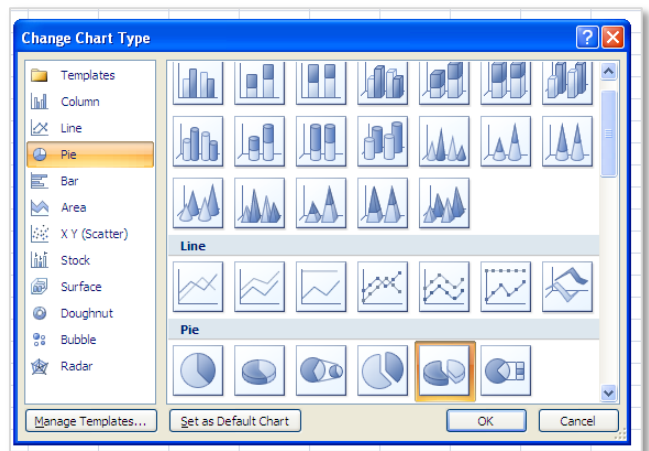
This will allow the chart to be changed to any type required, the options available are as follows: Column, Line, Pie, Bar, Area, Stock, Doughnut, Surface, Bubble and Radar. Within these options the charts can be stacked, clustered and 3D.

To change the chart type click on the new style and click on **Ok**.

CHANGE A CHART LAYOUT

To change the layout of the objects within a chart click on the **Design** tab and **Chart Layouts** group, review the options available and then choose the layout which is most appropriate. In addition to this features of a chart can be moved by clicking and dragging them.
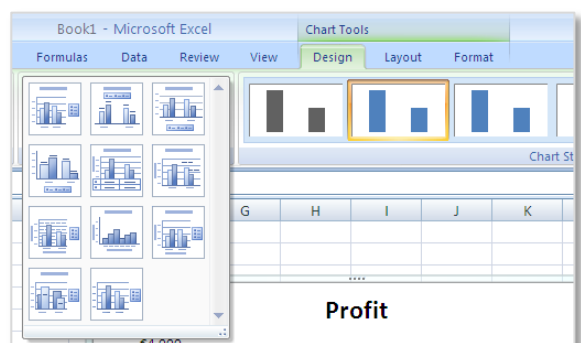
CHANGE A CHART STYLE

Chart styles can also be selected from the **Design** tab in the **Chart Styles** group, this drop down menu has a variety of styles.
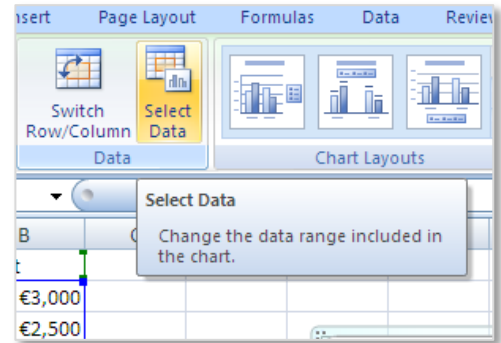
3. MODIFYING CHARTS AS FOLLOWS:

DATA SELECTED

To add additional data to a chart type the extra information into the spreadsheet as shown.

Click on the chart to select it and go to the **Design** tab to the **Select Data** command.

This will open the **Select Data Source** dialogue box which enables the user to select a new source for the data. To change the data source click on the button to the right of the **Chart Data Range** and highlight the new data range.
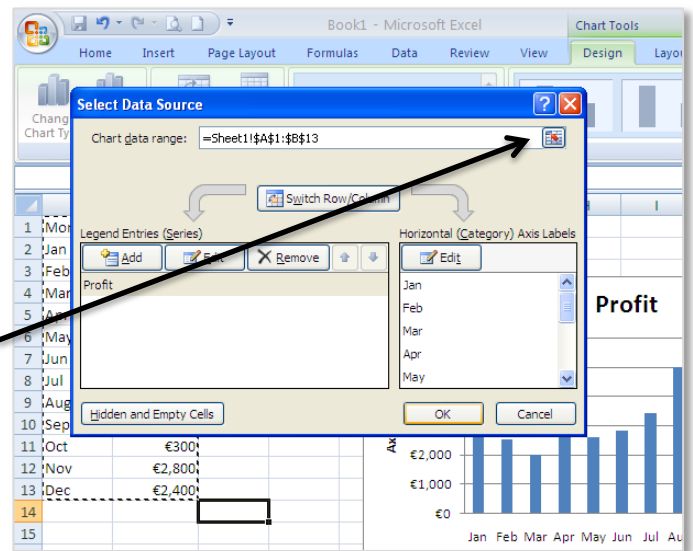
When the new data range has been selected click on the data range button to return to the chart, the chart will be automatically updated.
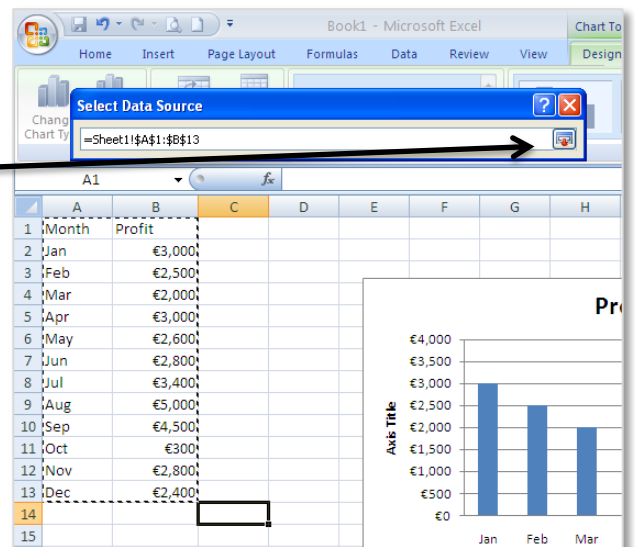
SIZE

To change the size of a chart click on the bottom right corner of the chart and using the movement tool drag out or in to the required size.

COLOUR

To change the **Colour** of any part or shape within the chart go to the **Format** tab. To change the **text** style click on the text and choose and option from the **WordArt Styles** box.
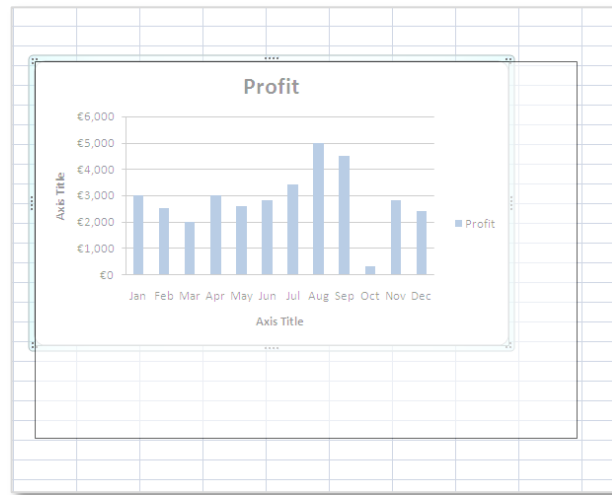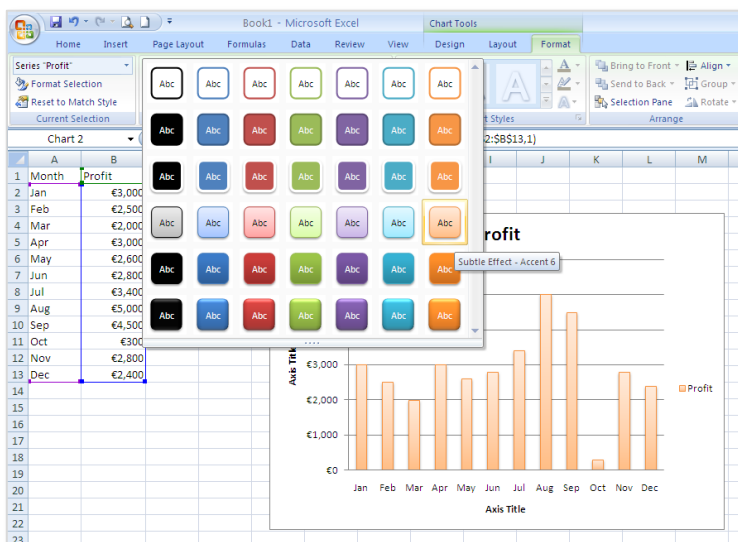

To change the colour of the bars or shapes click on the shape and use the **Shape Styles** box to change the style of the shape.

Shapes and **Text** can be formatted by their Fill, Outline and Effects

Note: To individually change one bar to a different colour click on the bar, which will select all of the bars, wait for two seconds and click on the bar a second time. This will individually select the bar and allow it to be changed to a different colour than the other bars, this would be useful to highlight one set of data on a chart.

AXIS TITLES, CHART TITLES, LEGENDS, DATA LABELS AND DATA TABLES

A variety of different labels can be applied to **Charts** via the **Layout** toolbar and the **Labels** group, to use these click into the chart area and the toolbar becomes available. To turn an option on or off (add or delete), choose the relative button and select the required action. In this example the **Axis Title Below** the chart has been turned on.
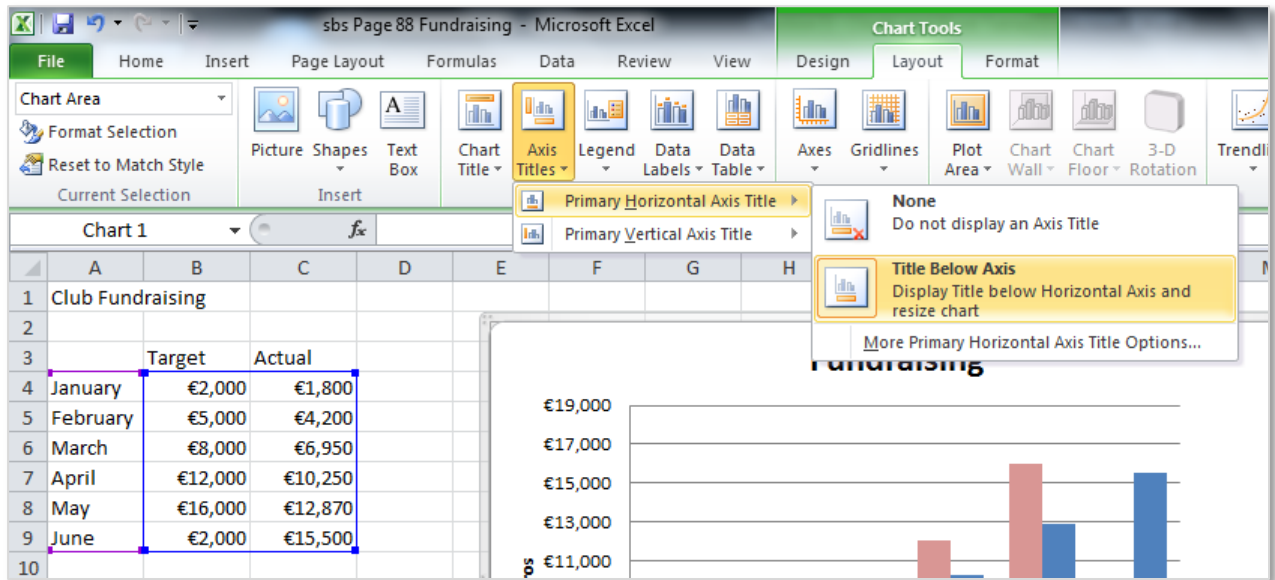

Experiment with the various different labels available on this menu, add a **chart title**, add and remove a **legend**, turn on **data labels** and show the **data table**.

FORMAT FONTS AND FORMAT CHART AREAS

To change the **font** or **format** of any text or area in the chart, select the text area on the chart which needs to be changed; the name of the selected area is shown on the **Format** toolbar in the **Current Selection** group (note that from the dropdown option any area inside the chart area can be selected). The font can then be changed from the **Font** group on the **Home** menu as normal.

Additionally, on the **Format** menu from the **Shape Styles** and **WordArt Styles** groups a variety of different pre-set formatting can be applied to the text and areas. **Shape** or **text fills**, **outlines** or **effects** can also be added (images or colour) to enhance the design of the chart.
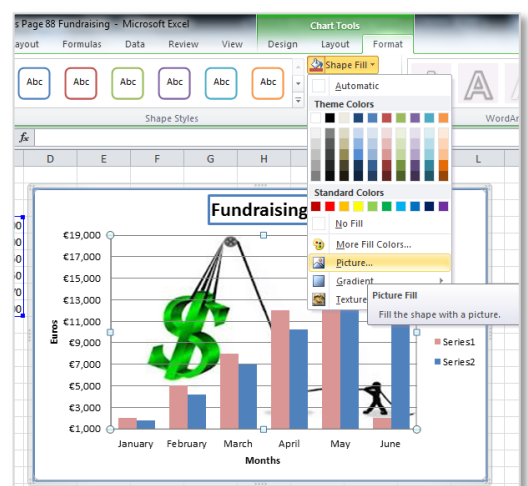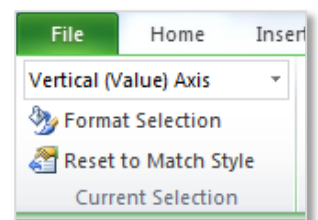
Experiment with some of the options available under these groups.

ADD/DELETE ITEMS

Sometimes it will be necessary to add objects to a chart to emphasis a particular detail for example, in the following chart comparing different shop sales, the **m** to represent million has been added. Also and the **rounded boxes** grouping each of the city locations have been added and the text boxes to show the names of the cities.
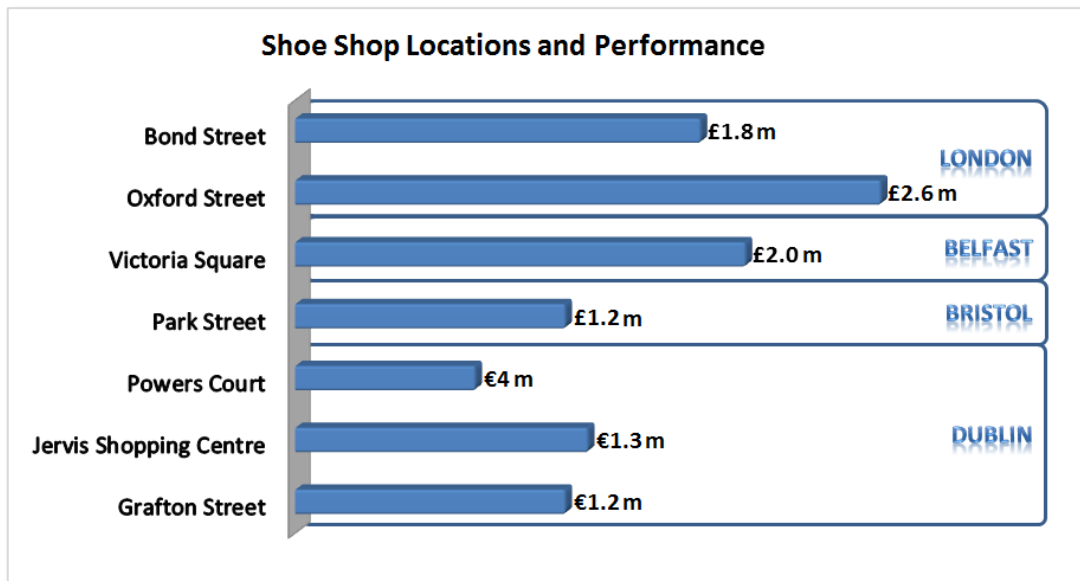
To add the shapes holding each city as shown above, add the **shape** format required from the **Insert** group on the **Layout** toolbar. For the box showing the city location a rounded box has been added with no fill (to allow a see through effect), a blue border and blue word art formatting. When the shape is complete, align it behind or in front of the chart in the required location. In the chart above, the shape has been sent to the back of the chart.
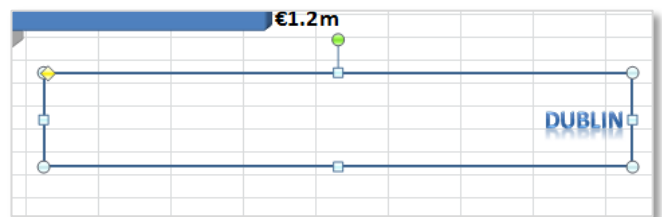

For the **m** a text box has been added with no shape fill and the font has been set to Calibri size 16 to match the size of the font used for the figures. This has been positioned next to the sales figure.
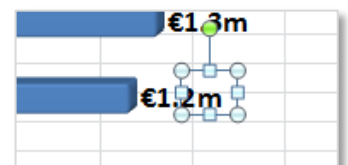
GROUPING

Before moving the chart and the added objects to a new location – such as a presentation or a word document it would be important to group the objects to prevent them moving individually. To do this, select each of the shapes by clicking on them and then holding the **shift** key. When the correct shapes are selected right click on the border of one of the shapes and choose **Group** from the shortcut menu.
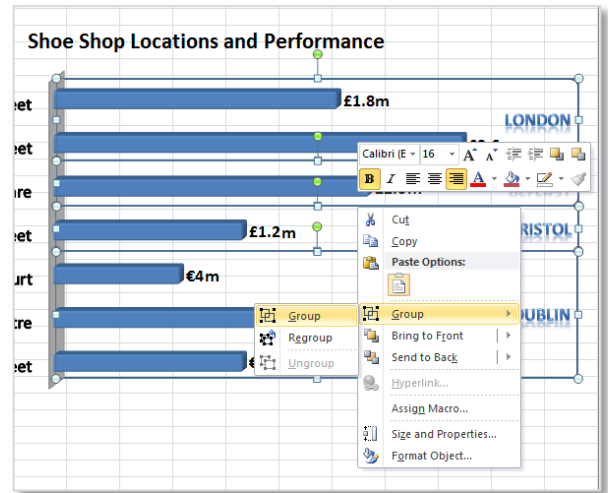
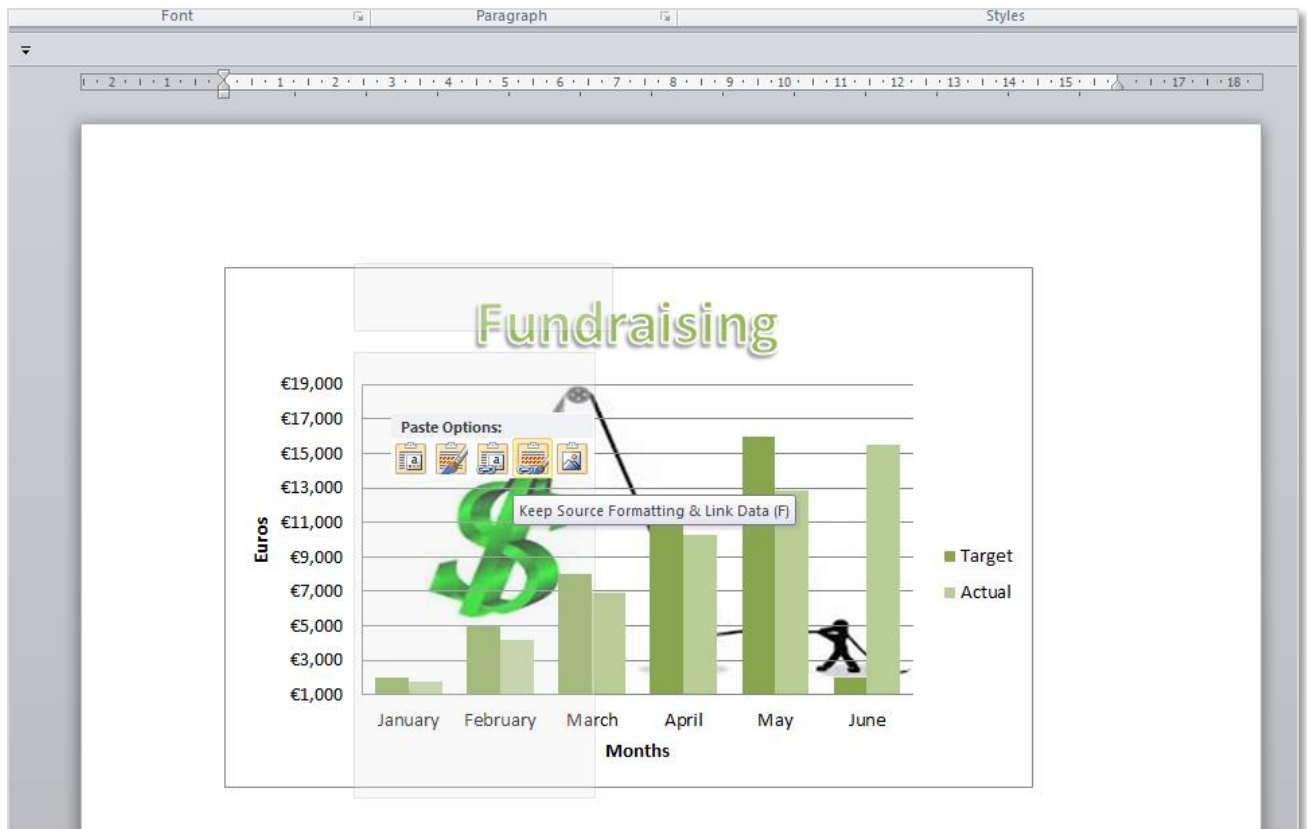## 4. ADDING A CHART TO A WORD DOCUMENT OR PRESENTATION

To add a completed chart to a word document or a presentation, right click on the chart area select copy and go to the word document and paste. When pasting the chart there will be a variety of different pasting options **it is important to paste using the correct option** or detail will be lost from the chart. To access these options click on the **(Ctrl) wizard** in the bottom corner of the chart which will show the **Paste Options**, to view each of the paste options hover over them with the mouse and the chart will change according to the option selected.
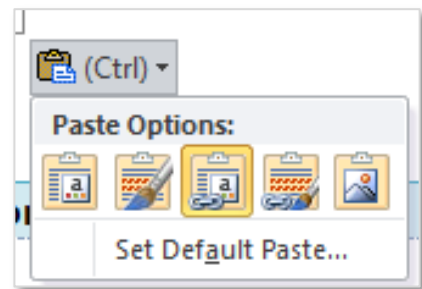
PASTE OPTIONS EXPLAINED

Logo	Name	Explanation
	Use Destination Theme & Embed Workbook	This option pastes the chart and formats it by using the destinations documents theme. The chart is embedded into the document and updates are not made from the source file.
	Keep Source Formatting & Embed Workbook	This option preserves the look of the chart from the Excel document. The chart is embedded into the document and updates are not made from the source file.
	Use Destination Theme & Link Data	To paste the chart and format it by using the document theme that is applied to the Word document. A link to the source file is maintained and the chart is updated with any changes that are made to the source file.
	Link & Keep Source Formatting & Link Data	This option preserves the look of the original chart from Excel, and it maintains a link to the source file and updates the pasted chart with any changes that are made to the source file.
	Picture	This option pastes the chart as a static picture, which cannot be edited again.

In the chart that follows the **Keep Source Formatting & Link Data** option has been chosen. This is very useful, if the excel document and the word document are both open at the same time and the excel document data figures are updated, the link will automatically update the chart in the word document.

When charts have been pasted into a word document or presentation the chart can still be further edited if required if the data remains linked.

Note: There are a variety of different paste options for charts into a word document or presentation – choose the option that is most suitable for the documents needs.

If the chart needs to be resized in the word document or presentation pasting the chart as an image will create a bitmap which can be changed to any size without the loss of formatting.

NOTES:

5. ADDITIONAL CHART TYPES

TRENDLINE

To start a **Trendline** at the axis point 0,0 the following settings are applied. Ensure your data selection starts at 0 (as shown below). Create a **line** chart. Click into the chart, go to the **Format** tab and in the group **Current Selection** ensure the **Horizontal (Category) Axis** is selected. Click on the **Format Selection** command button to open the **Format Axis** dialogue box. In the **Format Axis** dialogue box ensure the **Position Axis** is set to **On tick marks**.
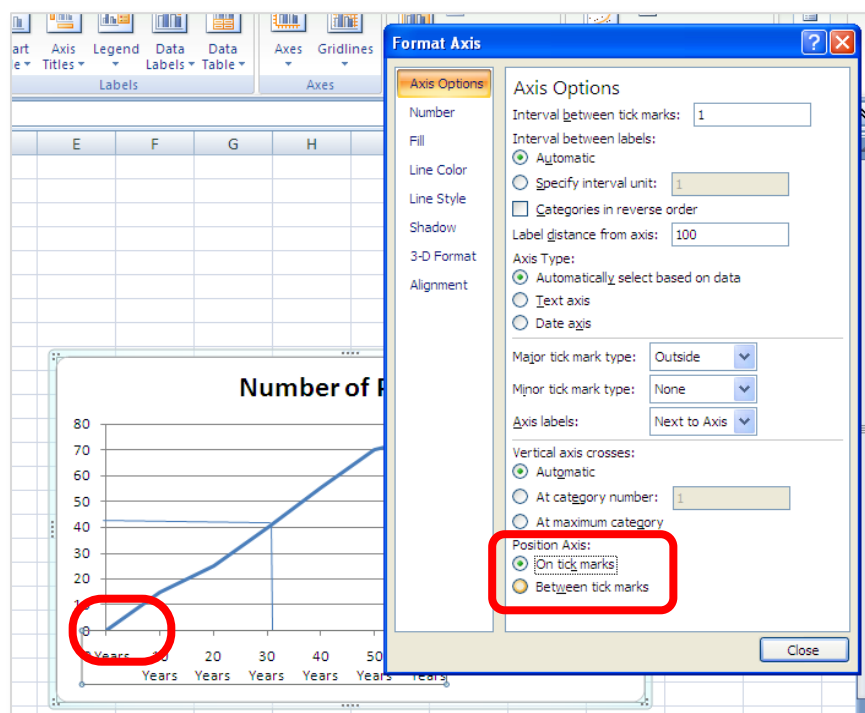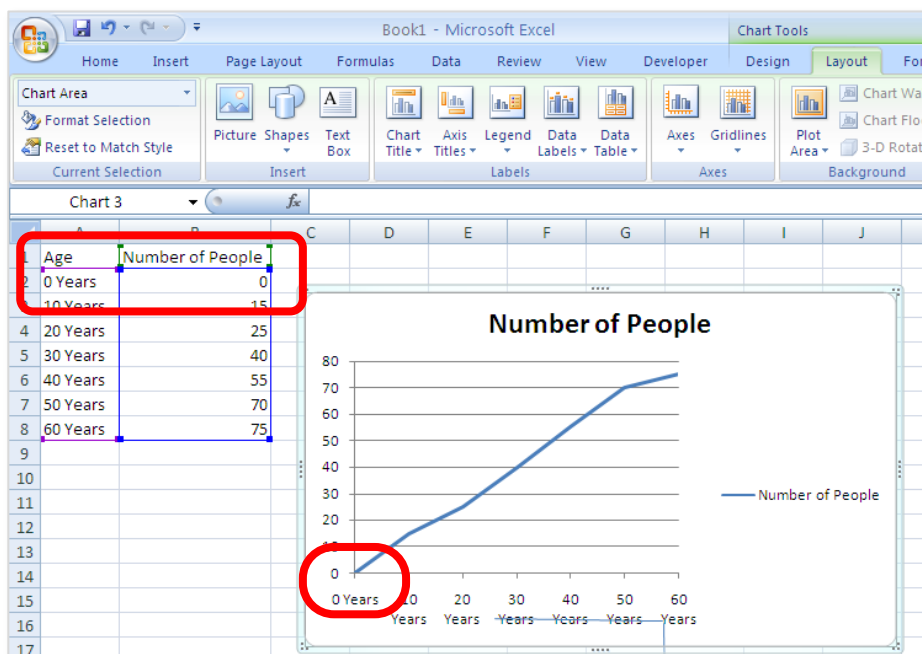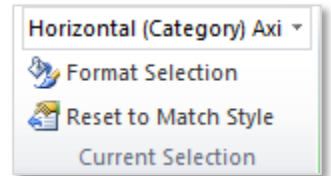
GANTT CHART

The **Gantt Chart** shows the timeline for the completion of a dissertation project. On the left **Horizontal Value axis** the project titles are shown and on the **Vertical Value axis** the dates are shown.
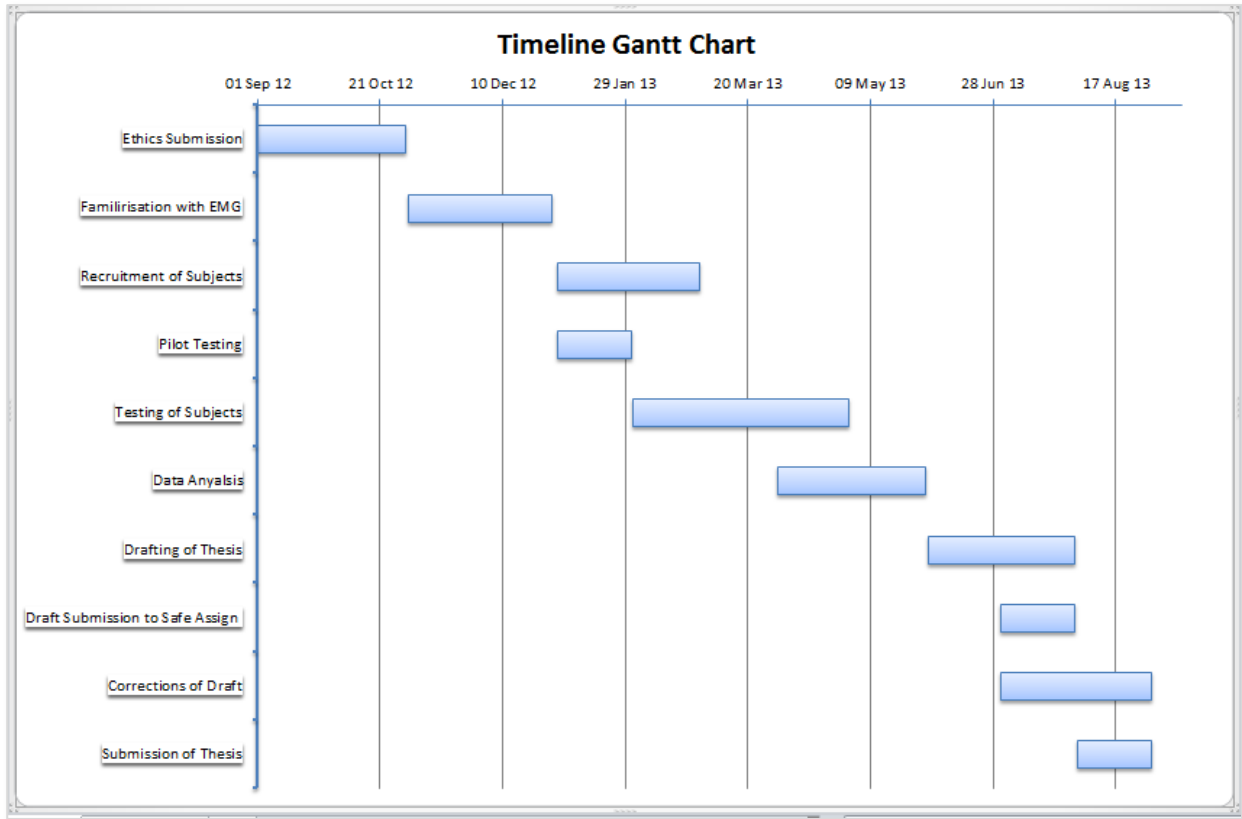

This **gantt chart** can be created using a stacked bar chart and the difference between two dates as shown in the data and formula here.

	Start Date	Completed		End Date	
22					
23	**Start Date**	**Completed**		**End Date**	
24 Ethics Submission	01 Sep 12	60		31/10/2012	
25 Familirisation with EMG	01 Nov 12	59		30/12/2012	
26 Recruitment of Subjects	01 Jan 13	58		28/02/2013	
27 Pilot Testing	01 Jan 13	30		31/01/2013	
28 Testing of Subjects	01 Feb 13	88		30/04/2013	
29 Data Anyalsis	01 Apr 13	60		31/05/2013	
30 Drafting of Thesis	01 Jun 13	60		31/07/2013	
31 Draft Submission to Safe Assign	01 Jul 13	30		31/07/2013	
32 Corrections of Draft	01 Jul 13	61		31/08/2013	
33 Submission of Thesis	01 Aug 13	30		31/08/2013	
34					

C24 f_x =E24-B24

The chart type used is a **Stacked Bar Chart** in the example the **Data Selection** requires cells A23:C33 which includes the *Titles, Start Date* and *Completed*.

This will create a stacked bar chart with the **Vertical Category Axis** upside down. To change this click on the project area headings to select the **Vertical Category Axis**, go to the **Format** tab to the **Current Selection** group and select the **Format Selection** command button.
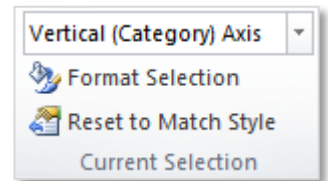
In the **Format Axis** dialogue box select the **Axis Option** menu and choose **Categories in reverse order** to flip the headings.
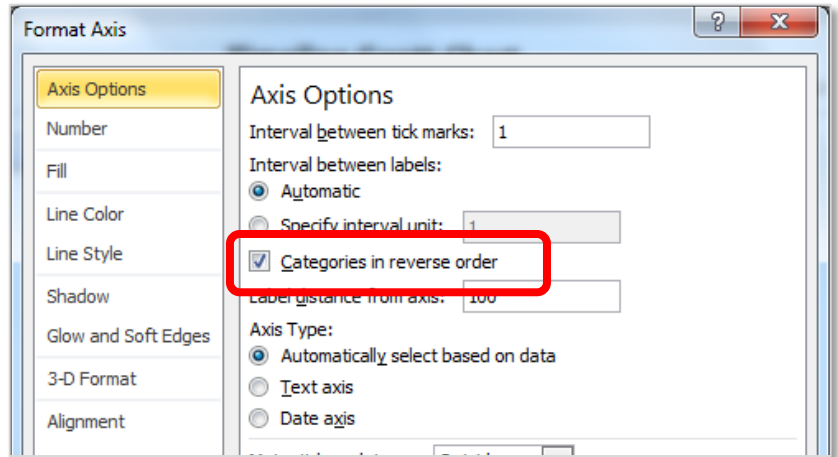

To bring the dates back to start at the 12th of September 2012 the **Minimum** and **Maximum** dates for the **Horizontal Value Axis** need to be amended. To do this select the **Horizontal Value Axis** (dates in the chart) then go to the **Format** tab to the **Current Selection** group and select the **Format Selection** command button.
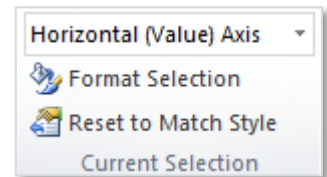
In the **Format Axis** dialogue box select the **Axis Option** menu and set the **Minimum** and **Maximum** values to **Fixed** and to the values shown.

The figures 41153 and 41530 represent the dates 1st Sept 2012 and the 31st Aug 2013 as actual numbers.
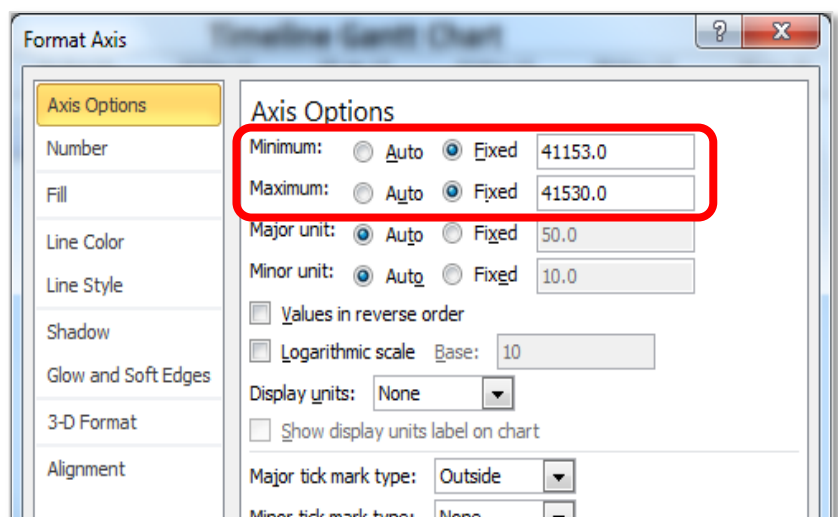
Finally formatting is applied to complete the Gantt chart, the first bar of the stacked bar chart is formatted to appear invisible. To do this select the first bar and set its **Format** to have **No Fill** and **No Outline**. A chart heading has been added, the legend has been turned off and the remaining bar has been formatted to an appropriate colour and style.
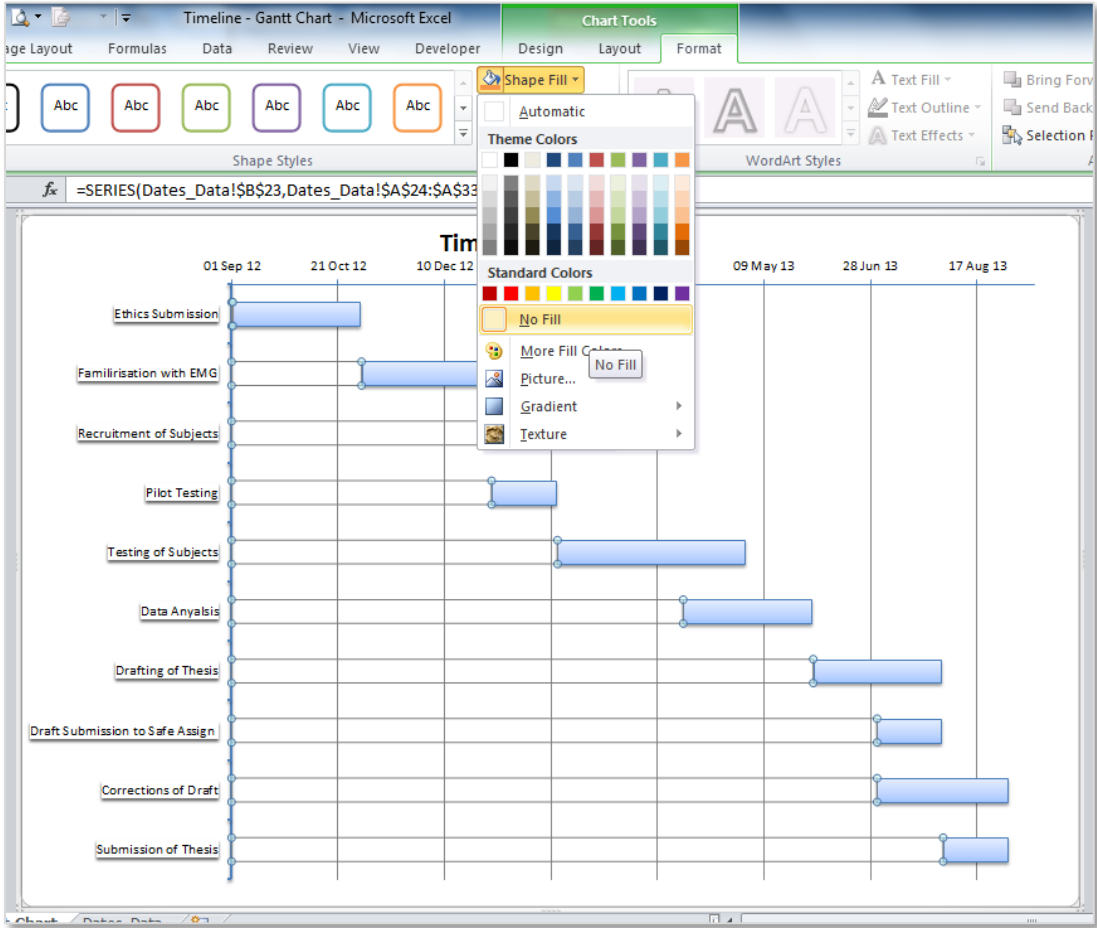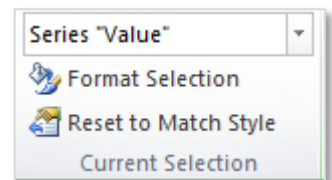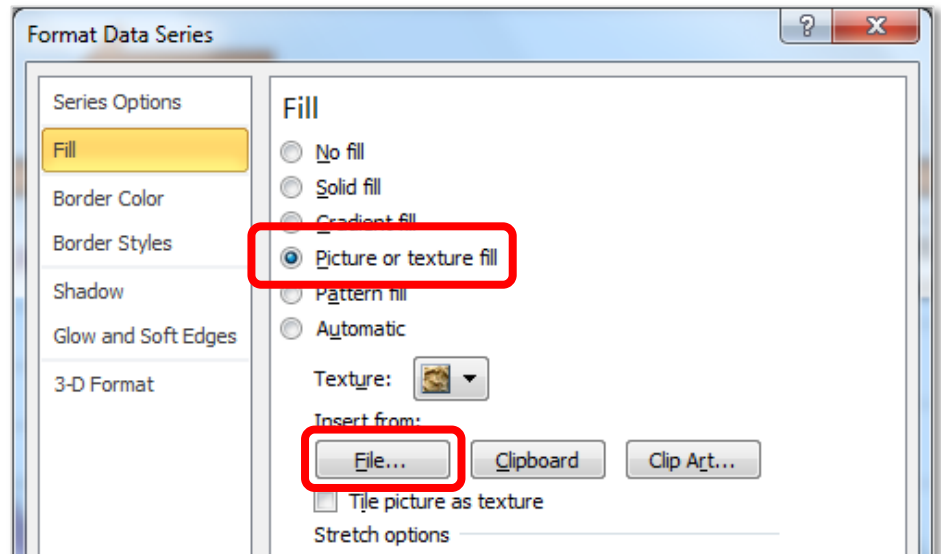

NOTES:

CHART AREA

The following chart is a **Chart Area** with the area changed to an image of €500 note.
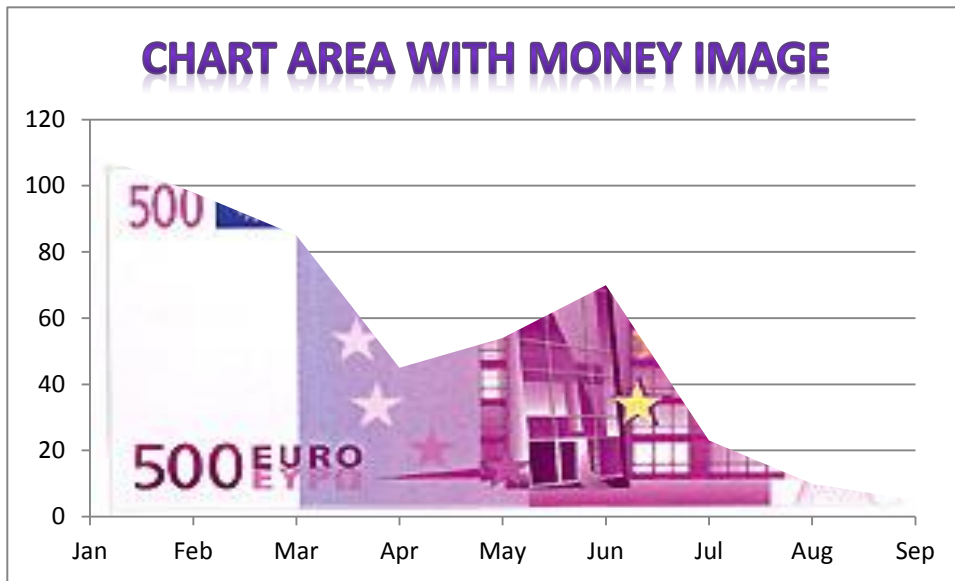
To achieve this style the chart type **Area** was selected. The **Series Value** or the chart area was clicked on. On the **Format** tab in the **Current Selection** group the **Format Selection** command button was selected.

In the **Format Data Series** dialogue box the **Fill** option was selected and a **Picture** from **File** was used as the image of the €500 note.

Additional Example:

CHART WITH A LOWER NEGATIVE LINE

The following example shows a chart with a **lower negative line**.

Using the concepts learned in these notes experiment with a **Sacked Cylinder Chart** to see if you can achieve similar results. Write notes on how you created the chart below.

NOTES:

6. INSERT GRAPHICS FROM:

Clipart, images, pictures, shapes or text can be inserted or copied into Excel from a variety of different sources. These include downloading from a clip art Web site, copying from a folder on the PC. Graphics can also be used as backgrounds to cells and workbooks.

CLIP ART

To add a **Clip Art** to a spreadsheet go to the **Insert** tab to the **Illustrations** group and click on the **Clip Art** command button.
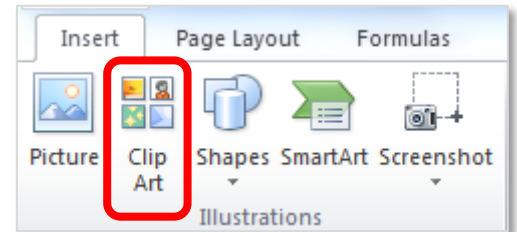
This opens the **Clip Art** panel on the right of the software. To find the type of clip art required enter a descriptive word in the **Search for:** text box and press **Go**, in this example *euro* was searched. Note that the **Include Office.com content** option is selected, this allows the software to search through images online.

Use the scroll bar to look through the images when the required image is found click on the blue down arrow to the right of the image and select **Insert**.
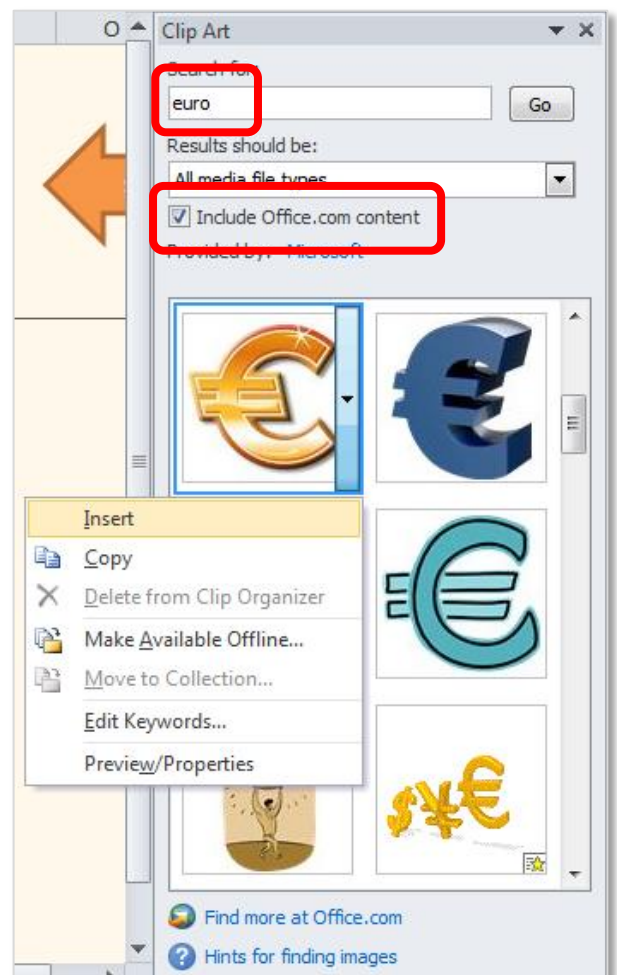
The image will be inserted into the worksheet and can be formatted as normal from the **Picture Tools Format** menu which appears when the image is selected.

STORED PICTURE

To add a **Picture** stored on a PC or hard drive to a spreadsheet, go to the **Insert** tab to the **Illustrations** group and click on the **Picture** command button.
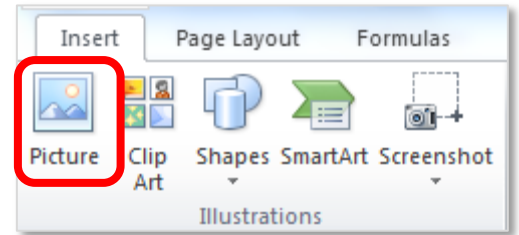
This will open the **Insert Picture** dialogue box. Browse to the location of the required image and select **Ok**, the image will be inserted into the worksheet and can be formatted as normal from the **Picture Tools Format** menu which appears when the image is selected.
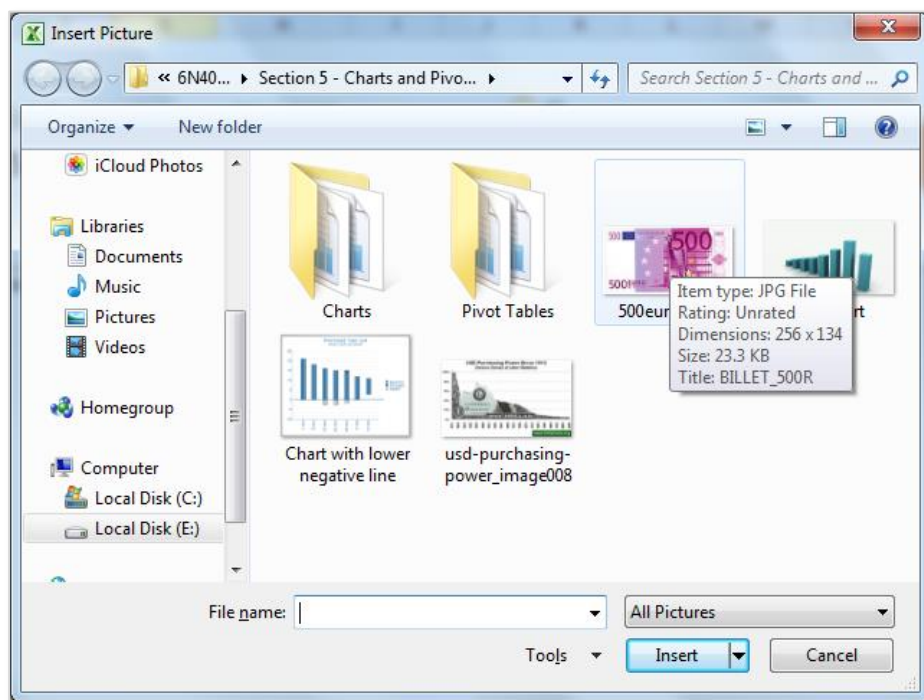
FROM A SCANNED IMAGE

Scanned Images should be scanned into the computer using a scanner and some software. An example of one type of software that can be used is **Windows Fax and Scan**. After the image has been scanned into the computer and saved to a hard drive they can be added using the technique outlined above in **Store Picture**.

AUTO SHAPE

Auto Shapes are added to spreadsheets for a variety of reasons: to highlight data in a chart, to group data visually or as buttons for macros.

To add auto shapes go to the **Insert** tab to the **Illustrations** group and click on the **Shapes** drop down button. Choose the required shape from the list and the cursor changes to a cross hair symbol. Click and hold the mouse to drag the shape to the required size. The shape can then be formatted as required from the **Drawing Tools format** menu.
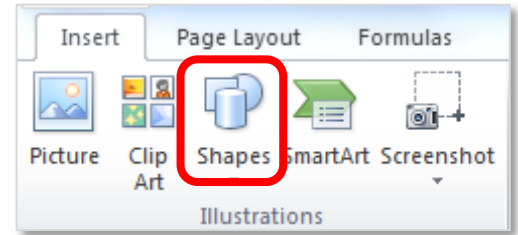
Note that shapes can be resized, rotated and changed using the symbols available around the edges of the shape as shown here.
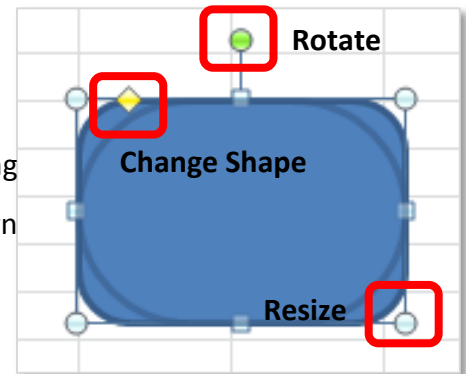
WORDART

WordArt is added to Excel by going to the **Insert** tab to the **Text** group and selecting the **WordArt** drop down menu. From the menu select the required colour and style.
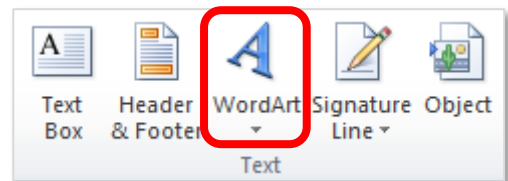
The required text should be typed into the WordArt text box, the formatting of the WordArt can be edited from the **Drawing Tools Format** tab which appears when the Word Art is selected. WordArt can be resized as required.

NOTES:

7. PIVOT TABLES
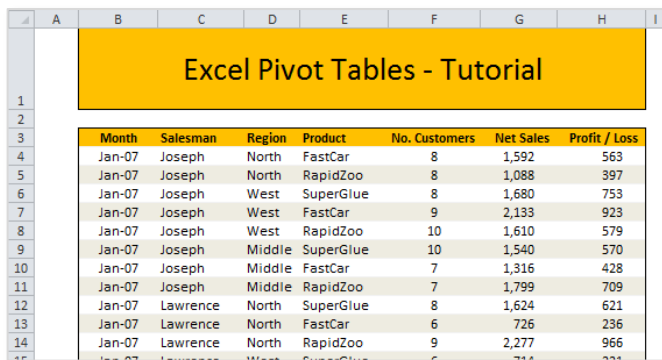
WHAT IS A PIVOT TABLE?

A pivot table is a method of arranging, analysing and exploring data. In the most basic terms a data table can be presented in a meaningful summary of the data, enabling the reader to see the 'big picture'. Pivot tables are usually applied to long lists of data to help make them *meaningful*.
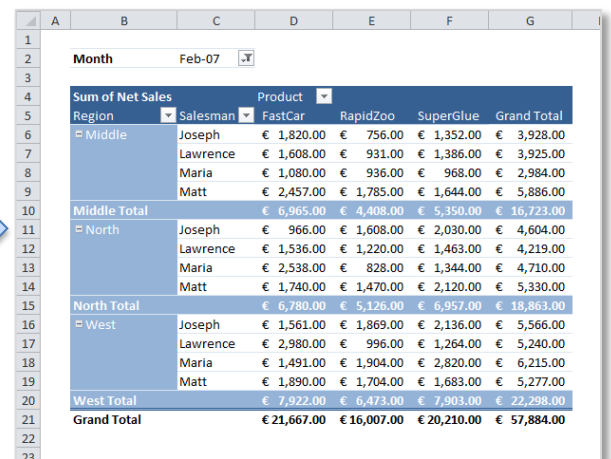
Pivot tables can be used to answer questions like:

- What are the total sales in each sales region?
- Which products are selling the most over time?
- Who is the highest performing sales person?

What are the total sales for an area in a certain month?
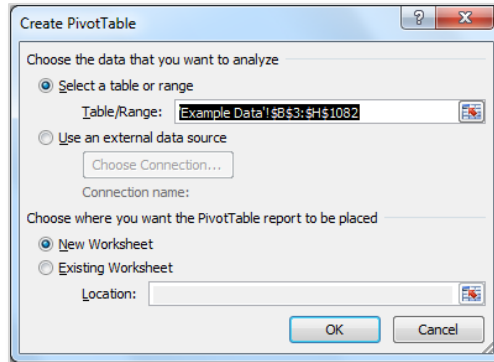

CREATE A PIVOT TABLE/REPORT

To create a pivot table first start with the data.

Note: It is important to have the data *organised and neat* as this counts, for example have headings on each of the columns, no empty rows and ensure the columns contain similar items for example text, number or dates. *Remove any subtotals* as these will be calculated by the pivot table. Also if more data is to be added later, *name the range* to allow the data source to be updated without having to specify a new date range reference later.

Step 1 Create the data and select the data (if the data will have more added to it later name the range).

Step 2 Go to the **Insert** ribbon and choose **pivot Table**.

Step 3 Choose the target location of the Pivot table, choose a new worksheet and select ok.

Step 4 Use the wizard to make the report. To do this drag and drop fields into the pivot table grid area.
  o The report is divided into header and body sections.
  o Drag and drop fields between these areas.
  o The body of the report contains three parts – rows, columns and cells (any field can be used in any area).

For this data table example choose the following criteria:

Review this pivot table/report and ensure you understand the data that is displayed. What can you learn from the data in a pivot report which you could not previously see?

Step 5   Format the pivot table by clicking on the table and choosing the Design ribbon and applying a pre-set design from the PivotTable Styles group and apply the Accounting cell format to all figures.
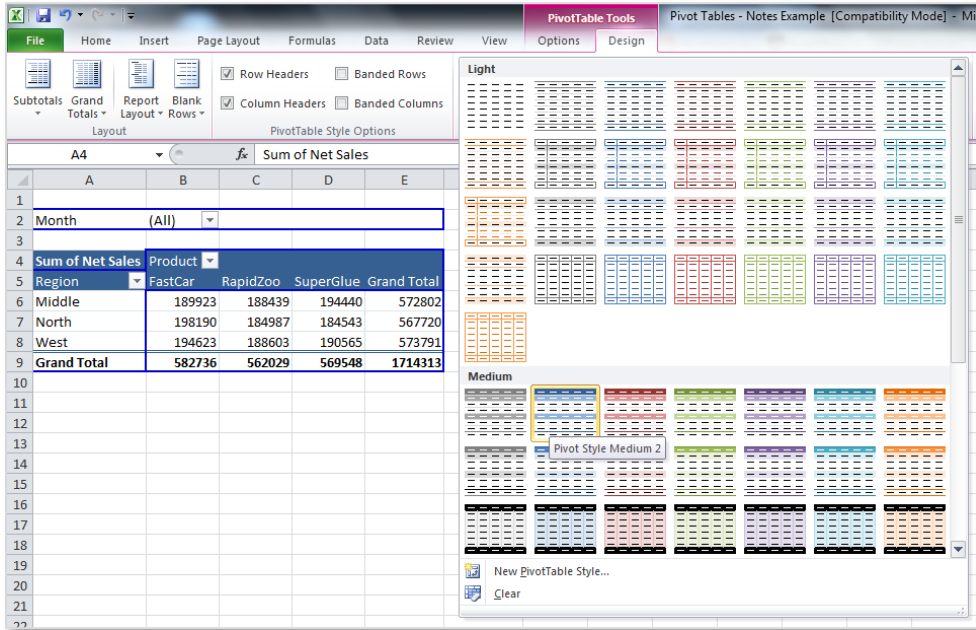
NOTES:

EDIT A PIVOT TABLE

To edit a pivot report to make it more informative, additional fields can be added simply by dragging and dropping, for example the sales in each region could be broken down further to show each salespersons sales according to each area.

To do this, add the Salesman field to the **Row Labels area** by dragging it down this should transform the pivot table as follows:

Review the pivot table/report once more. What has changed in the pivot table and what questions can now be answered which were not obvious before?

NOTES:

FILTER A PIVOT TABLE

Filters for the pivot table can be easily added by dragging them into the **Report Filter**. In the example shown **All** months are being shown, to display one particular month select the required month from the drop down list. Multiple months can be shown by selecting the **Select Multiple Items** tick box.

Experiment with the **Report Filter** options. Remove Month and add Salesman, choose Joseph as the salesman for the report. This should result in a report as follows:

What further reports can be generated using the filter?

These notes have been compiled by Rynagh McNally for students of Monaghan Institute.

GROUPING AND SORTING IN PIVOT TABLES

GROUPING

Grouping can be used in pivot tables to organise data by week, month or by quarter and more. Use the data to create a new pivot table which looks at the number of customers in a particular quarter over two years.

Step 1 Create a pivot table which has the **Column Label** as the Salesperson and the **Row Label** as Month, have the **Values** as the Sum of No. of Customers.

Step 2 Under the Month column right click and select **Group**.

Step 3 From the **Grouping** dialogue box select the required option to group the data by Seconds, Minutes, Hours, Days, Months, Quarters or Years.   For this example select Quarters (remember that this data is showing two quarters across the years 2007 & 2008.

Step 4 Practice applying formatting to the pivot table.

The completed pivot table should look like this with each salespersons sales grouped by each quarter.

Sum of No. Customers	Salesman				
Month	Joseph	Lawrence	Maria	Matt	Grand Total
Qtr1	645	646	661	635	2587
Qtr2	651	652	652	659	2614
Qtr3	443	408	425	420	1696
Qtr4	432	443	428	440	1743
Grand Total	2171	2149	2166	2154	8640

Practise grouping the table by the different options and by multiple groups.   Remember if grouping by days – enter 7 as the number of days to apply a week.

SORTING

To sort a pivot table simply click into the table in the column the table is to be sorted by, this can be by a figure or by text. Click on the **Options** ribbon and in the **Sort & Filter** group click on **Sort** which will allow sorting from A to Z, Z to A, Smallest to Largest or Largest to Smallest. Click on **OK** and the data will be sorted.

## 8. ADDITIONAL PIVOT TABLE CONCEPTS

SUMMARIZE VALUES BY

It is possible to change the formula in pivot tables, right click on a cell with a formula and select the **Summarize Values By** option.

These notes have been compiled by Rynagh McNally for students of Monaghan Institute.
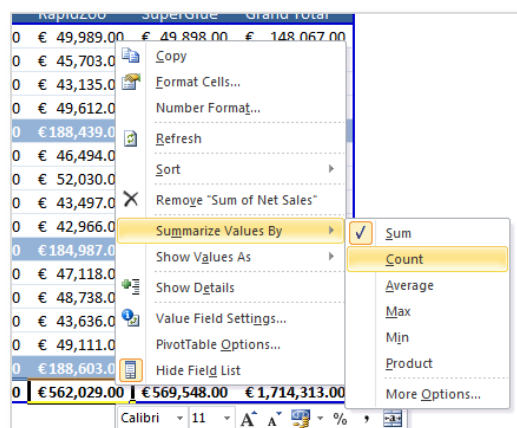
CONDITIONAL FORMATTING

Conditional formatting can be easily applid to pivot tables, ensure the appropriate data is selected (using the ctrl key when selecting multiple areas of data) and click on **Condidtional Formatting** button.
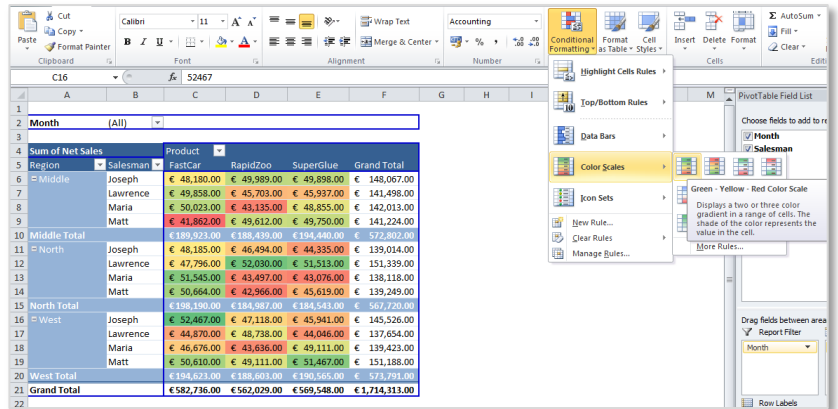
UPDATE DATA

If the original data in the pivot table has been updated, right click on the pivot table and select **Refresh** to update the table. In addition **Refresh** can be selected from the **Options** ribbon.
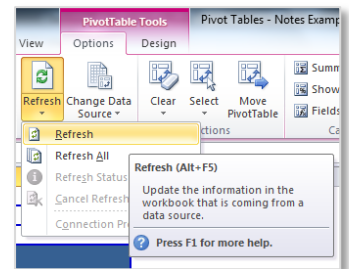
DRILL DOWN DATA

For further information or to **Drill Down** on a particular area just double click on it. Excel will produce a table of details on another worksheet automatically, producing the data that corresponds to a particular pivot report value.

CREATE A PIVOT CHART

To create a chart from the pivot table click on the table and select the **PivotChart** button from the **Options** menu and follow the wizard. After the chart has been created it can easily be edited with the interactive drop down options on the chart area.

NOTE: When clicked into a pivot table two additional toolbars are created **Options** and **Designs,** there are additional features on both of these toolbars, try to become familiar with as many of these as possible.

9. REFERENCES

WEBSITES:

Insert Graphics – for more information visit Microsoft Office.

Pivot Tables - for more information visit Chandoo.org.

Pivot Tables – for more information visit Microsoft Office.

NOTES: