

Section 7

Formatting Worksheets

By the end of this Section you should be able to:

Change Column Widths
Hide and Display Rows and Columns

Exercise 49 - Changing Column Widths


Guidelines:

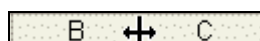
Column widths are changed to accommodate the contents of the cells within the columns. A column width is measured using the average number of digits in the standard font, the default is **8.43** and the number of pixels **64**.

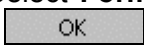
Actions:

1. Open the workbook **Formatting Section**, created earlier.
2. In cell **C3** enter the heading **Page No**.
3. In column **C**, enter the page numbers as below:

	A	B	C	D
1	Formatting Section			
2				
3	Exercise	Title	Page No	
4	39	General Fo	59	
5	40	Format Ce	60	
6	41	Format Nu	61	
7	42	Date and T	63	
8	43	Alignment	64	
9	44	Wrap text	65	
10	45	Merge Cell	66	
11	46	Text Orien	68	
12	47	Borders	69	
13	48	Revision	70	

4. The adding of page numbers has truncated most of the titles in column **B**. Move the pointer to the border between column **B** and column **C** in the column **Title Bar**. The pointer should change shape to a double arrow, , the **Adjust Cursor**.



5. Click the mouse button and, with the button still pressed, drag the column border to the right. Drag the column width to **18.00** or **131** pixels. Release the mouse button.
6. An alternative way to change a column width is to use the menus. Click on any cell in column **C**. Select **Format | Column | Width**. Enter a column width of **3**, then click on .
7. Move the mouse pointer to the border between column **C** and column **D** in the column **Title Bar**. Double click the mouse. The width of column **C** is automatically adjusted to the widest entry in the column. This is the easiest way of changing the widths of individual columns.
8. Save the workbook as **Formatting Section2** and close it.

Exercise 50 - Hiding Rows and Columns

Guidelines:

Rows and/or **Columns** of sensitive data can be hidden. For example, in a spreadsheet used for accounts you may want to hide a column containing salary details. Any calculations contained on the sheet are unaffected by hiding.



Actions:

1. Open the workbook **Payroll**.
2. Highlight column **K**, which is a **Spare** column for any new staff. Select **Format | Column | Hide**. Column **K** has now been hidden.

	A	J	L	M	N	O
1	<i>Payroll</i>	Harris	Nichols	Chapman	Total	
2	Hourly Rate	£2.00	£1.50	£1.50	£43.25	

3. To re-display column **K**, highlight a range in column **J** to column **L**, e.g. **J1:L1** and select **Format | Column | Unhide**.
4. A row can be hidden in a similar way, but another method is to use the shortcut menu. Right click on the row heading **2** and select **Hide**.
5. To re-display row **2**, select rows **1** to **3**, right click and select **Unhide**.
6. Columns/Rows may also be hidden by dragging their borders until the column width or the row height is zero. Using this method to hide column **M**, place the mouse pointer on the column divider between **N** and **M**. Drag the adjust cursor to the left, carefully, till the column width is **0.00**.

*Note: Dragging further left hides multiple columns. If this happens, use **Undo** to restore the columns and try again.*

7. The mouse can also be used to unhide columns or rows. There are two adjust cursors. The normal column adjust cursor is on the left or for a row is above. To the right of a hidden column or below a hidden row the adjust cursor changes to  or . Dragging this cursor redisplay the hidden data. Unhide column **M** making it **10.00** units wide.
8. Close the workbook without saving.

Exercise 51 - Revision

1. Open the workbook **Savings**.
2. Enter various amounts for **Extra** income across row **3** between **100** and **200**.
3. **Right** align the labels in the range **B1:N1**.
4. Replace **Rent** with **Mortgage** in cell **A5**. Your **Mortgage** is **565** per month add this to row **5**.
5. Two items of expenditure have been omitted: **Electricity** and **Gas**. Highlight rows **9** and **10** and **Insert** two rows and add the labels.
6. Drag the formula from **N8** down to **N9** and **N10**.
7. **Leisure** and **Holidays** are similar. **Delete** row **6**.
8. Widen column **A** to **90 pixels**. Edit the label in **A3** to **Extra Income** and **Income** in **A4** to **Total Income**.
9. Reduce columns **B** through to **M** to **60 pixels** wide.
10. Add numbers to the **Expenses** block, rows **6** to **13**.
11. In cell **B15** enter the formula to calculate the savings for January, **Total Income - Expenses**.
12. In cell **C15** the **Savings** are going to accumulate, enter the formula **=B15+C4-C14**
13. Copy the formula across the row using the **Fill Handle** to cell **M15**. In cell **N15** the formula is simply **=M15**, the previous cell.
14. **Print Preview** the worksheet. There are two pages.
15. Change the paper **Orientation** to **Landscape** and then print one copy of the worksheet.
16. Save the workbook as **Savings2** and close the workbook.

Section 8

Creating Charts

By the end of this Section you should be able to:

Understand the Different Chart Types

Choose an Appropriate Data Source


Use Different Chart Types

Exercise 52 - Chart Wizard


Guidelines:

The most common way to create a chart is to use the **Chart Wizard**. It consists of four steps as follows:

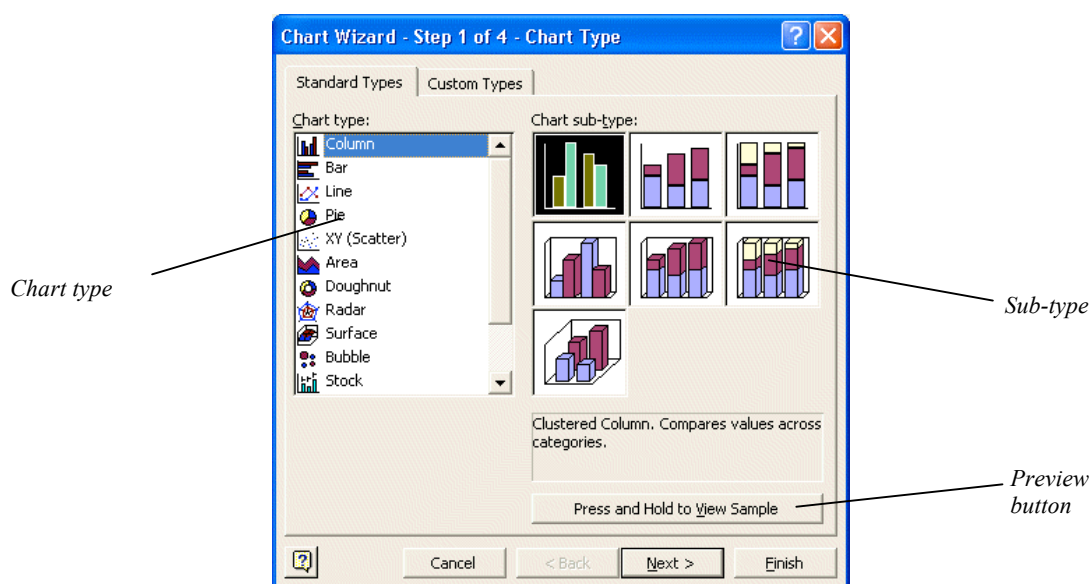
- Select the chart type and sub type.
- Select the data range on the worksheet to be charted. In practice, it is often better to select the data before starting the Wizard so that this step will appear already completed.
- Select the chart options: Titles, Legends, Labels, etc.
- Chart location: **As a new sheet** or **As object** in an existing sheet.

The **Chart Wizard** is started by either clicking the **Chart Wizard** button,  or by selecting **Insert | Chart**.

Actions:

1. Open the workbook **Teamdata**.
2. Highlight the cell range **A3:B11** and click the **Chart Wizard** button, . The **Chart Wizard** appears, allowing the type of chart to be selected, and previewed if necessary.

*Note: The actual data needed appears in the cells **B4:B11**, the range **A3:B11** is chosen so the titles and axis labels are added automatically.*



3. Leave the **Chart Wizard** open for the next exercise.

Exercise 53 - Chart Types

Guidelines:

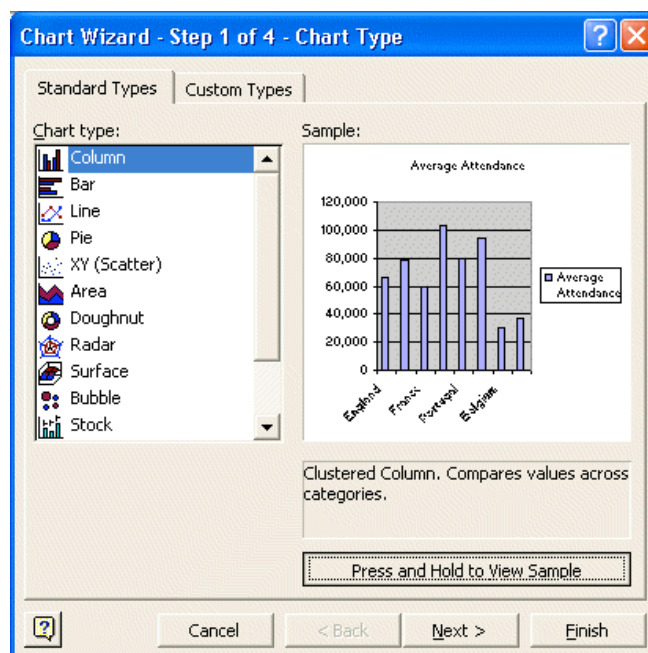
There are different charts available to display different types of information. The most popular and common chart types include:

Column	Shaded vertical columns, compares values across categories
Bar	Shaded horizontal bars, compares values across categories
Line	Points connected by a line, displays a trend over time or categories
Line-Column	A chart with one series shown as columns and one as a line.
Pie	Data as slices of circular pie, displays the contribution of each value to a total
XY Scatter	Unconnected points, usually used when both the X and Y axis are measured values with uneven intervals, e.g. scientific data.

There are also variations of these charts available, i.e. 3-D charts.


Actions:

1. With the workbook **Teamdata** open and **Chart Wizard** displayed from the previous exercise, note that **Column** is the default **Chart type**.
2. Press and hold down the button, Press and Hold to View Sample. This displays what the chart will look like, (this is only available if the data has been selected before starting the **Chart Wizard**, as in this case).



continued over

Exercise 53 - Continued

3. All chart types are supported with **Chart sub-types**, these are different forms of the same type of chart (some sub types may not be appropriate for this data). To view the different **Column** types, select each **sub-type** in turn and hold down the **Press and Hold to View Sample** button.
4. Repeat this to view each of the sub types for the **Bar, Line, Pie and XY Scatter** chart types.
5. Click the **Cancel** button, , to close the **Chart Wizard**. All the steps within the **Chart Wizard** are completed in the next exercise to create an actual chart.
6. Close the workbook without saving.

Exercise 54 - Column Charts

Guidelines:

Column Charts represent category data as vertically shaded columns and are the most commonly used charts.

Actions:

1. Open the file **cinedata.csv**.
2. Save this file as a **Microsoft Excel Workbook** using the **xls** format, keeping the same name.
3. Make sure all of the data is visible by widening the columns if necessary.
4. Highlight the range **A3:B10** to begin charting the audience figures in Newcastle.

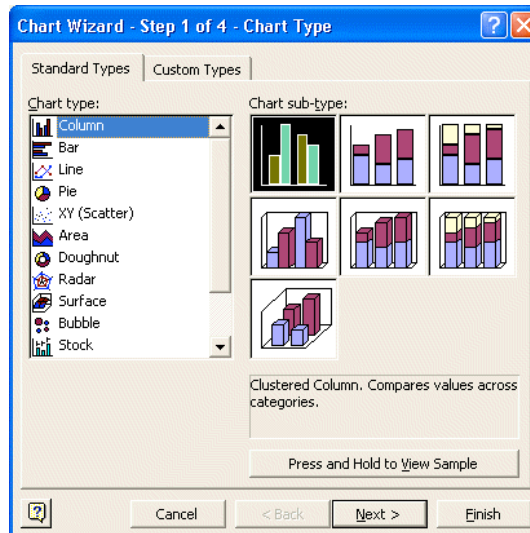
	A	B	C	D	E	F	G	H	I
1	Cinema Audiences								
2									
3	Audiences Newcastle	Birmingham	Glasgow	Total					
4	Monday	500	600	575	1675				
5	Tuesday	800	625	1750	3175				
6	Wednesday	750	750	800	2300				
7	Thursday	2000	675	850	3525				
8	Friday	3000	2750	3100	8850				
9	Saturday	3125	3300	3325	9750				
10	Sunday	525	2000	300	2825				
11	Totals	10700	10700	10700	32100				
12									
13									
14	Audiences Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Totals	
15	Newcastle	500	800	750	2000	3000	3125	525	10700
16	Birmingham	600	625	750	675	2750	3300	2000	10700
17	Glasgow	575	1750	800	850	3100	3325	300	10700
18	Total	1675	3175	2300	3525	8850	9750	2825	32100
19									


continued over

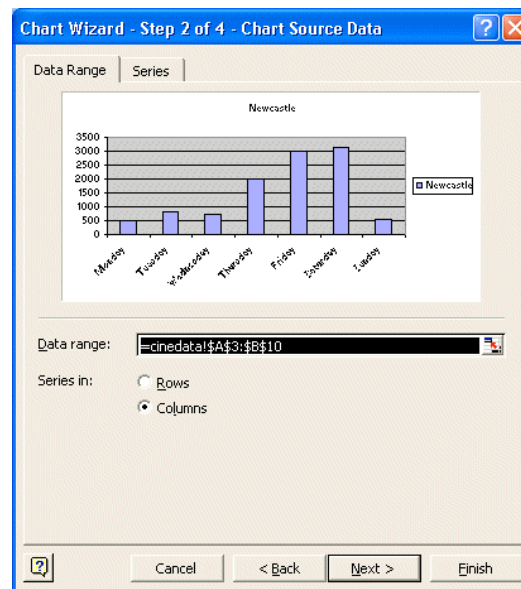
Exercise 54 - Continued

*Note: Selecting the titles in row 3 and column A will later automatically add the Chart Title and Legend as **Newcastle** and the days as the X axis labels.*

- Click the **Chart Wizard** button, , on the **Standard Toolbar**, or select **Insert | Chart**. The **Chart Wizard** automatically starts.



- Step 1** allows the user to select the type of chart to be produced. Click on the **Next** button, , to select the default, a **Column Chart**.

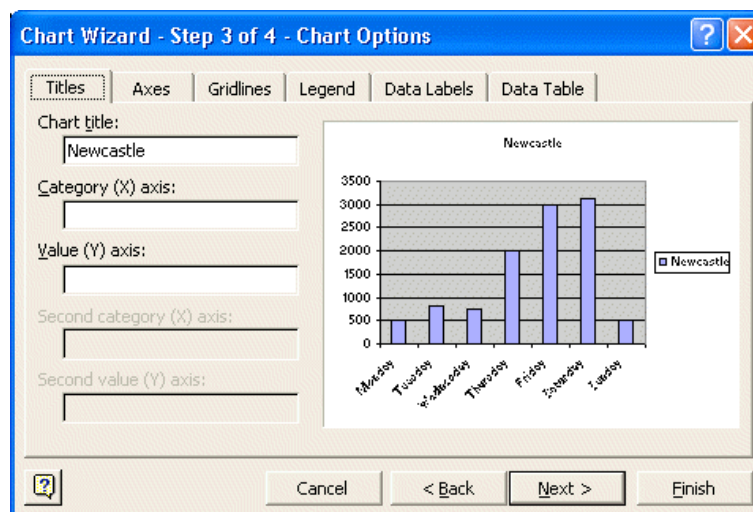


- Step 2** allows the user to select the **Data Range**. As the range of data was selected prior to starting the **Wizard**, this screen already contains the necessary range values. Click **Next** to accept the range and display the **Chart Options** screen.

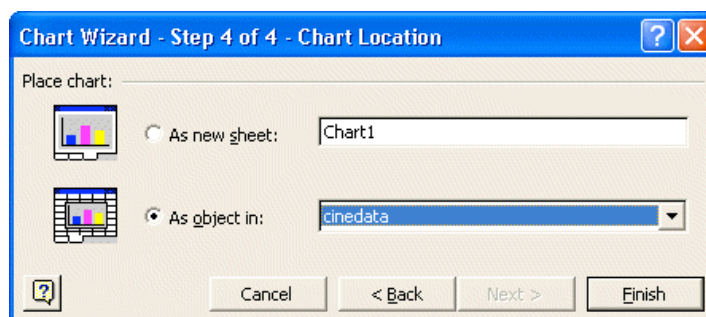
continued over


Exercise 54 - Continued

8. Make sure the **Titles** tab is selected to see that the **Chart title** has automatically been entered, as it was selected with the data range.



9. Enter **Day** in the **Category (X) axis** box and **Number of People** in the **Value (Y) axis** box so that the axes will be correctly labelled.
10. Click **Next** to display the last dialog box that allows the user to select the location of the chart.



11. Select the **As new sheet** option with the default name **Chart1**.
12. Click the **Finish** button, . This will display the chart on a new sheet.

Note: A chart can be displayed on a new sheet or on the same sheet as the data on which it is based. The saving process is the same whichever option is chosen.

13. View the chart, then click on the **cinedata** sheet tab to display the source data and then click on cell **A1** to deselect the range and make cell **A1** active.
14. Save the workbook as **cinedata2** by deleting the text **.xls**, if displayed and typing **2**.
15. Close the workbook.

Exercise 55 - Bar Charts


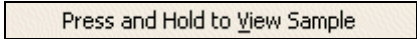

Guidelines:

Bar charts are similar to **Column charts** except that the data is displayed as horizontal bars. The two axes are changed round with the category axis vertical and the value axis horizontal.



Actions:


1. Start a new workbook and create the worksheet as shown below.

	A	B	C
1	WORLD POPULATION (Millions)		
2			
3	Region	Population	
4	Asia	495	
5	Africa	448	
6	North America	265	
7	South America	289	
8	Europe	642	
9	CIS	278	
10	WORLD	2417	
11			

2. Widen column **A** by positioning the mouse pointer between the column **A** and **B** headings until it changes to a , then click and drag the pointer to the right until the column is wide enough to display all of the text.
3. Click back on the worksheet, on an empty cell, away from the data.
4. Click the **Chart Wizard** button, without selecting any data first.
5. Select the **Bar** as the **Chart type** option, leave the **Chart sub-type** as the default option, **Clustered Bar**.
6. Press and hold down the button,  This display is blank as no source data was pre-selected. Click **Next**.
7. To select the data to be used, to the right of the **Data range** box, click the **Collapse** button,  and then highlight the data to be used, i.e. **A3:B9**.


	A	B	C	D	E	F	G	H	I
1	WORLD POPULATION (Millions)								
2									
3	Region	Population							
4	Asia	495							
5	Africa	448							
6	North America	265							
7	South America	289							
8	Europe	642							
9	CIS	278							
10	WORLD	2417							
11									

Chart Wizard - Step 2 of 4 - Chart Source Data - Data r...  

=Sheet1!\$A\$3:\$B\$9 

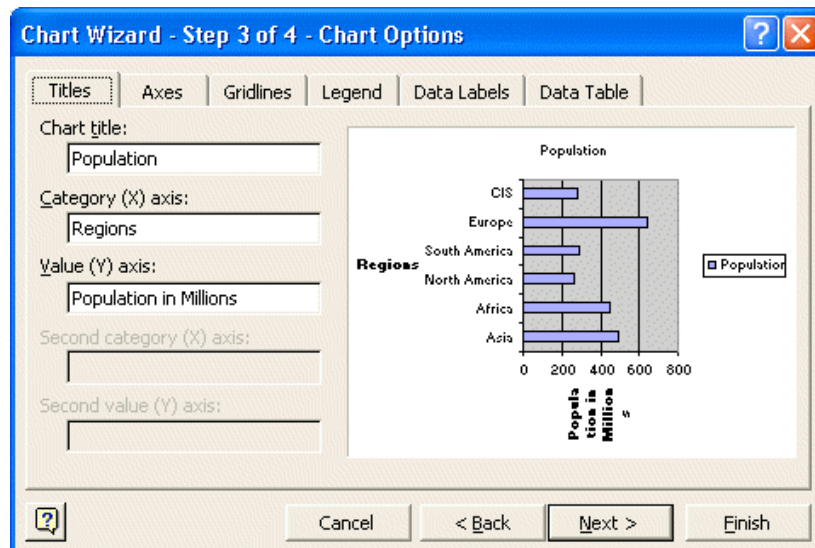
continued over

Exercise 55 - Continued

8. Click the **Expand** button, , or press <Enter> to return to the dialog box.

*Note: Alternatively, with the dialog box displayed, click on cell **A3** and drag to cell **B9** and the dialog box will be collapsed automatically until the mouse button is released.*

9. Click **Next** now the data has been selected.
10. Ensure that the **Chart title** is **Population**.
11. The **Value (X) axis** is **Regions**.
12. The **Value (Y) axis** is **Population in Millions**.





13. Click **Next** and choose the **As new sheet** option, name the sheet, **Population Bar Chart**, and then click **Finish**.
14. Save the workbook as **Population**.
15. Close the workbook.

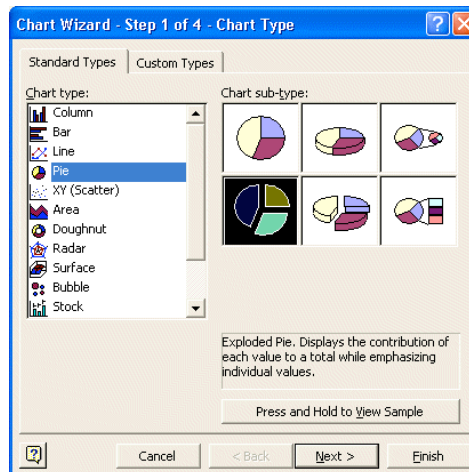
Exercise 56 - Pie Charts


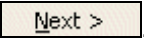
Guidelines:

A pie chart shows data as slices of pie. The size of each piece of pie represents the value of the data on which it is based, as a fraction of the total. When all pieces are added together, they show the sum of the original data, as a complete circle (pie).

Actions:

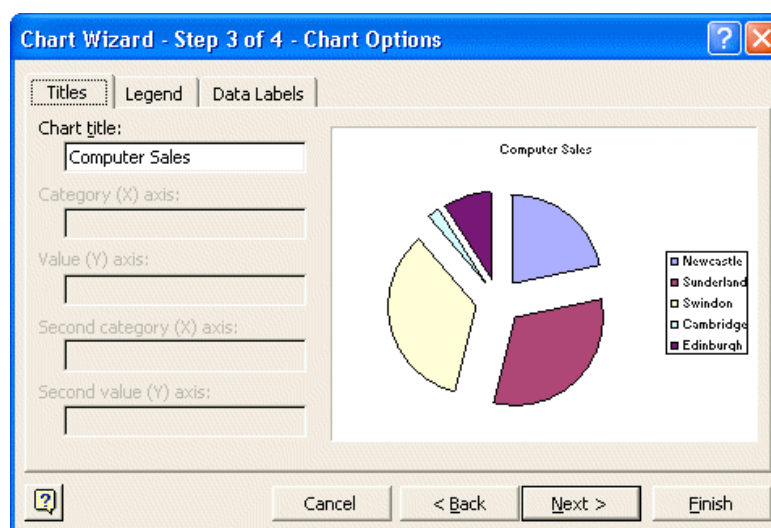
1. Open the workbook **compdata.csv**.
2. Save the file as a **Microsoft Excel Workbook (xls file)** using the same name.
3. Make sure all of the data can be seen, widening the columns if necessary.
4. Highlight the data in the cells **A1:B6** (totals are rarely included in charts) and click on the **Chart Wizard** button, .
5. From the **Chart type** list, select the option,  Pie .
6. From the **Chart sub-type** area, choose the first option from the second row, **Exploded Pie**. An exploded pie chart can be used to emphasise a particular piece of data (see step 15).



7. Click .
8. The dialog box now showing displays the **Chart Source Data**, the data to be used has already been selected, click .
9. The third dialog box allows the **Chart Options** to be changed, the **Chart title, Computer Sales** should be entered automatically.

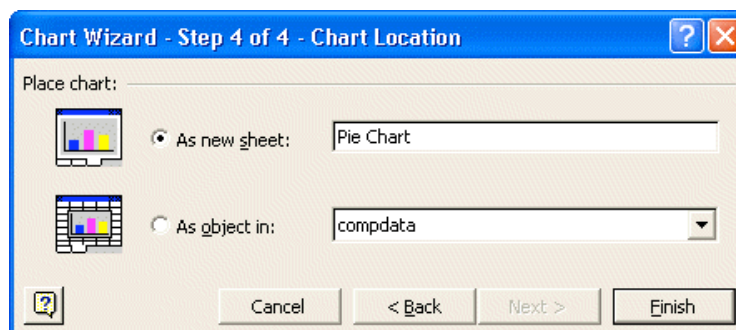
continued over

Exercise 56 - Continued



Note: Legends and the Data Labels can also be changed, these are covered in later exercises.

10. Click .
11. The final step allows you to select the location of the pie chart. Select the **As new sheet** option and type the new name, **Pie Chart**.



12. Click .
13. Which town has the lowest computer sales (the smallest slice of pie)?

Note: The answer is listed in the Answer Section at the end of the guide.




14. Click once on this 'slice of pie' to select all of the slices, then click again to highlight this slice only.
15. Click and drag the smallest slice outwards, so it stands out from the rest of the chart.
16. Save the workbook as **compdata2** and close it.

Exercise 57 - Line Charts

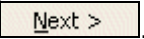
Guidelines:

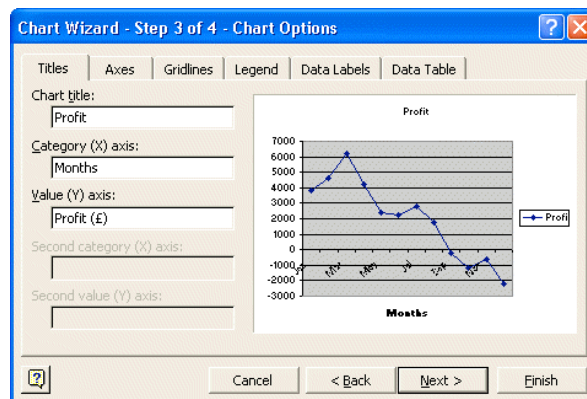
A line chart is used to show trends in data at equal intervals.



Actions:

1. Open the workbook **Cashflow**.
2. Highlight the data in the cells **A1:M1** (the months, used for the labels), hold down <Ctrl> and highlight the range **A11:M11** (the profit of the company from January to December). Release the mouse button and then release <Ctrl>.
3. Click the **Chart Wizard** button, .
4. Select the option  **Line** from **Chart type** and click .

*Note: The default sub-type for a line chart is sub-type 4, **Line with markers**.*

5. The dialog box now displays the **Chart Source Data**. As the data has already been selected, click .
6. The third dialog box allows the **Chart Options** to be modified. Leave the **Chart title** as **Profit**.
7. Enter the **Category (X) axis** as **Months** and the **Value (Y) axis** as **Profit (£)**.




8. The tabs located at the top of the dialog box are covered later, click .
9. At the final step, click **As new sheet** and click .
10. Which month has the highest profit (the answer is listed in the **Answer Section** at the end of the guide)?
11. Save the workbook as **Cashflow2** and close it.

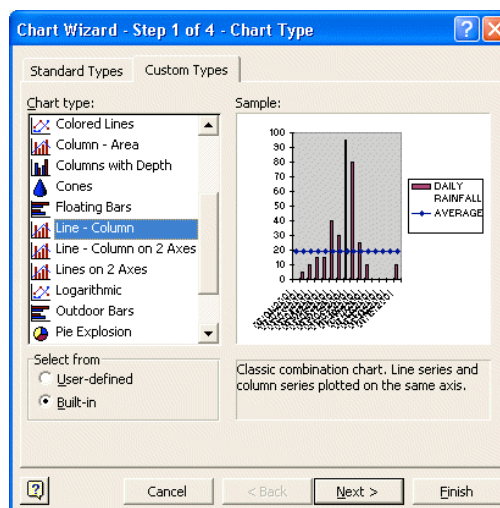
Exercise 58 - Line - Column Charts

Guidelines:

More than one data set can be represented on one chart to show a comparison of information. This type of chart displays one data set as columns and another set as a line. For two sets of related data (sharing the same axis) the type is a **Line - Column**. This type of chart can also be used to represent two sets of unrelated data, e.g. rainfall as columns and temperature as a line but the type is then **Line - Column on 2 Axes**.

Actions:

1. Open **Rainfall.xls**. This spreadsheet shows the daily rainfall in July for the cities of London and Bombay, and it shows the average daily rainfall for these cities in this month.
2. To plot a chart of London's daily rainfall against London's average rainfall, highlight cells **A4:B19** (labels to be used and London's daily rainfall), hold down **<Ctrl>** and select **D4:D19** (London's average rainfall).
3. Once the required data range is selected, click the **Chart Wizard** button, .
4. Click the **Custom Types** tab to view other types of chart available.
5. Click on the **Line - Column** option to see the **Sample** of the chart.






6. Click **Next**, as the data range has already been selected, click **Next** again.
7. Enter **Rainfall in London July 2001** in the **Chart title** box. Enter **Date** as the **Category (X) axis** and **Rainfall (mm)** as the **Value (Y) axis**.
8. Click **Next** and choose **As new sheet**, and name the sheet, **Line - Column**.
9. Save the workbook as **Rainfall2** and close it.

Exercise 59 - XY (Scatter) Charts

Guidelines:

It can be difficult to see any sort of relationship between two variables, x and y. A **Scatter Chart** can be used in these cases to try and establish a relationship between the two. Scatter charts can also be useful to identify trends from plotted data.

Actions:

1. Open the workbook **Scatter**. This spreadsheet shows the amount of rainfall taken in a random sample.
2. Click on the **Chart Wizard** button, , without selecting any data first.
3. Select the **XY (Scatter)** option and click **Next**.
4. To select the data to be used, click the **Collapse** button, , and highlight the data to be used, i.e. **A1:B21**.
5. Click the **Expand** button, , to return to the dialog box.

*Note: Alternatively, with the dialog box displayed, click on cell **A1** and drag to cell **B21** and the dialog box will be collapsed automatically until the mouse button is released.*

6. Click **Next** now the data has been selected.
7. The **Chart title** is **Precipitation Measurements**.
8. The **Value (X) axis** is **Sample**.
9. The **Value (Y) axis** is **Rainfall (mm)**.
10. Click **Next** and choose the **As new sheet** option, name the sheet, **Scatter Chart** and then click **Finish**.
11. Save the workbook as **Scatter2** (the completed chart is listed in the **Answer Section** at the end of the guide).
12. Close the workbook.

Exercise 60 - Revision

1. What is used to create a chart in **Excel**?
2. How is this feature started?
3. Would you select the source data before or after starting to create a chart? Why?
4. Name the three most commonly used types of chart.
5. Name the other chart types.
6. Which chart is best at showing trends?
7. Which chart displays data that appears to be totally random?
8. If you were given the weekly sales figures for a company, what type of chart would you create to best demonstrate the data?
9. What type of chart would you create to represent the data obtained from a scientific experiment with two variables?
10. What type of chart would you create to represent the breakdown of costs involved with producing a particular product?
11. A **Bar Chart** and a **Column Chart** are similar, but what is the difference?

*Note: The answers are listed in the **Answer Section** at the end of the guide.*

Section 9

Setting Chart Parameters

By the end of this Section you should be able to:

Add and Format Titles

Add Data Labels

Add and Remove Legends

Change Intervals and Limits on Axis

Insert Text Boxes

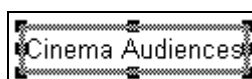
Exercise 61 - Titles

Guidelines:

Chart and **Axis Titles** are used to show the measurements used and help show what the chart represents. Once a chart has been produced, the titles can be modified and formatted as required.

Actions:

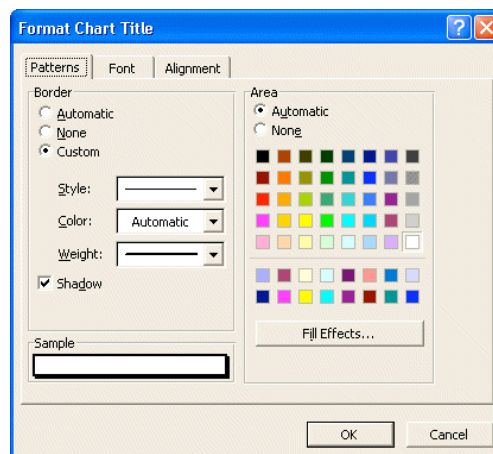
1. Open the file **cinedata2.xls** (created in **Exercise 54**).
2. Click on the **Chart1** tab at the bottom of the screen to see the first chart created.
3. The title of the chart is to be changed, click once on the **Newcastle** title. Type **Cinema Audiences** and press **<Enter>**.

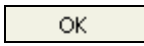


*Note: Another method to edit the chart is to select the chart and select **Chart | Chart Options**. The **Chart Options** dialog box appears and can be edited as required.*

4. To add a sub-title to this chart, with the title selected, click again to position the cursor within the title.
5. Move to the end of the text and press **<Enter>** to start a new line.
6. Type **2001** and click away from the title to confirm the changes.
7. In addition, titles can be formatted. Double click on the title, the **Format Chart Title** dialog box is displayed.

*Note: Alternatively, right click on the title and choose **Format Chart Title** or select **Format | Selected Chart Title** from the menu.*



8. Under **Border**, select **Custom**, click on **Weight** and select a bolder line from the drop down list and check the **Shadow** box.
9. Click  to apply these changes. Click away from the title to see the effect.
10. The **Category (X) axis** is not necessary, so is to be deleted, Click on **Day** once to select it and press **<Delete>**.
11. Save the workbook using the same name and leave it open.

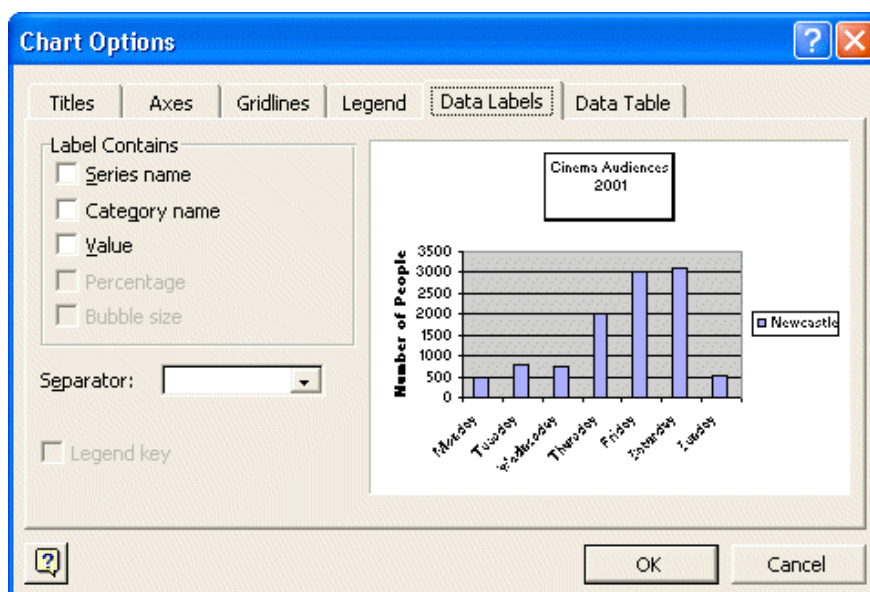
Exercise 62 - Data Labels

Guidelines:

Data labels are the actual values of the individual data points. When added to a chart they make it easier to interpret.

Actions:

1. The workbook **cinedata2** should still be open, if not, open it.
2. Click on the **Chart1** sheet to display the first chart created.
3. Select **Chart | Chart Options** from the **Menu Bar**, the **Chart Options** dialog box is displayed.
4. Select the **Data Labels** tab.

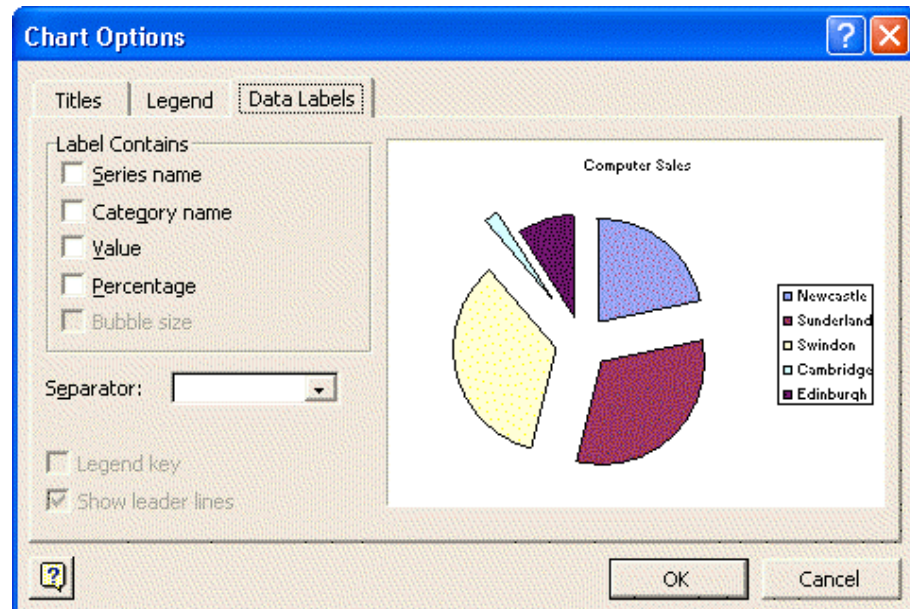


5. There are three available options, **Series Name**, **Category Name** and **Value**. Select each option in turn and note the preview.
6. Select **Value** and click .
7. The dialog box closes and the chart is displayed with the **Data labels** displayed at the top of each column.
8. Save the workbook using the same name and close it.
9. Open the workbook **compdata2** which includes a **Pie Chart** (created and saved in **Exercise 56**). The data labels on a **Pie Chart** include different options.

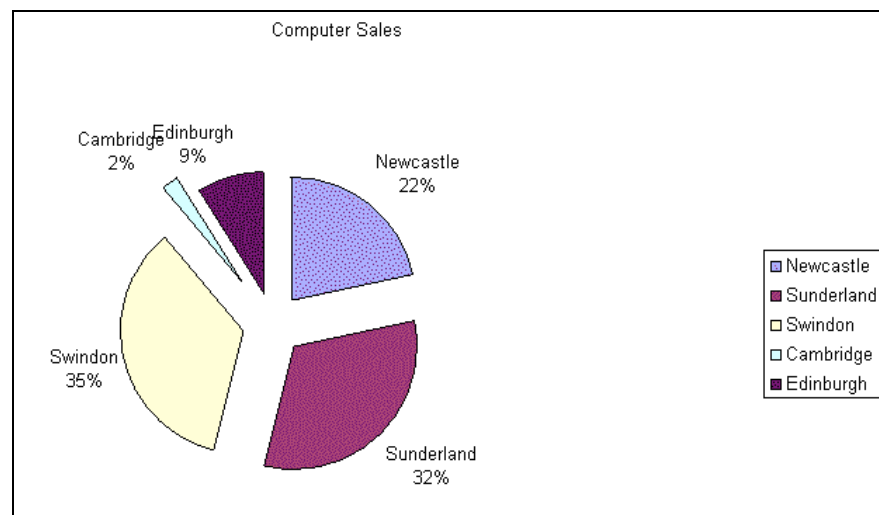
continued over

Exercise 62 - Continued

10. Click on the **Pie Chart** sheet to make it active.
11. Select **Chart | Chart Options** as before and select the **Data Labels** tab.



12. The **Pie Chart** is fairly plain. Select each of the **Data label** options to preview the results.
13. Select the **Category name** and **Percentage** options and click **OK**.



14. Save the workbook using the same name and then close it.

Exercise 63 - Legends

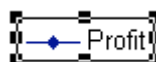
Guidelines:

A legend is a box that identifies the patterns or colours assigned to the data series or categories in a chart. It is primarily used to show the identity of data series when more than one set of data is being displayed.

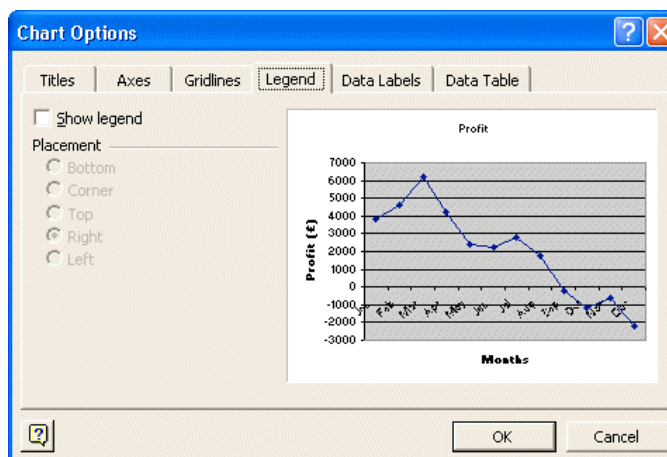
Note: To create a Legend when selecting the data, highlight the titles of the data being displayed. These will automatically be shown as the Legend.

Actions:

1. Open the workbook **Cashflow2** (created in **Exercise 57**) and click on the **Chart1** sheet tab to view the chart.
2. The legend can easily be removed from the chart, as it is not needed. Click once on the legend to select it.



3. Press **<Delete>**.
4. To add a legend to the chart again, with the chart active, select **Chart | Chart Options** to display the **Chart Options** dialog box.
5. Click the **Legend** tab.



6. Click **Show legend**, then choose to position the legend at the **Bottom**.
7. Click **OK**. The dialog box closes and the chart is displayed with a legend. If the **Chart** toolbar obscures the legend, remove the toolbar.
8. Click on the legend to select it, hold the mouse button down and drag the legend to the top right corner.
9. Close the workbook without saving any changes.

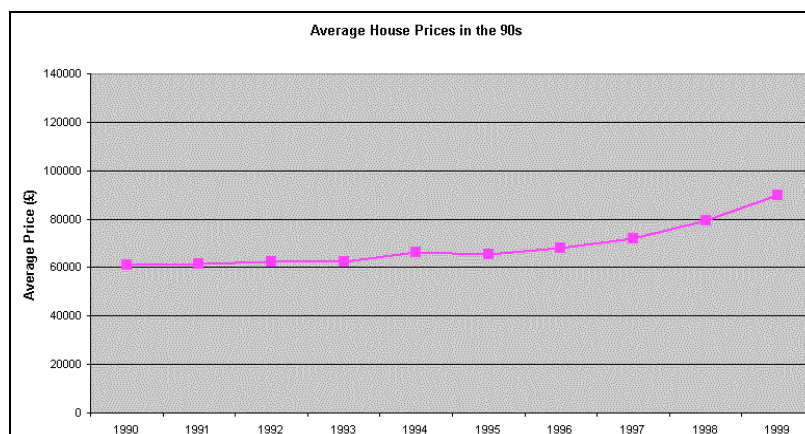
Exercise 64 - Set Limits and Intervals on Axes

Guidelines:

When displaying charts, they appear easier to understand and look more presentable if the value axis uses an appropriate scale. This may involve changing the lower value of the axis, normally the **Minimum** is set to **0**. The **Maximum** can also be changed, if necessary.

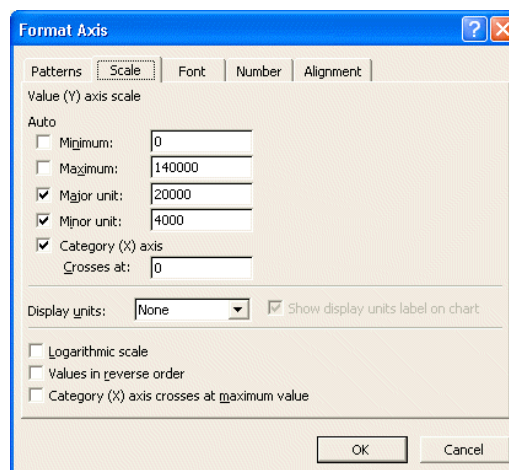
Actions:

1. Open the workbook **Houses** and display the **Houses** sheet.
2. As can be seen below, the values on the chart are all large numbers and the axis has no values between 0 to 60,000 or over 100,000. Therefore the axis can be edited to change the range of values it displays.



*Note: The **Interval** on the **Value (Y) Axis** (vertical axis) is **20000** - each value shown increases by 20000.*

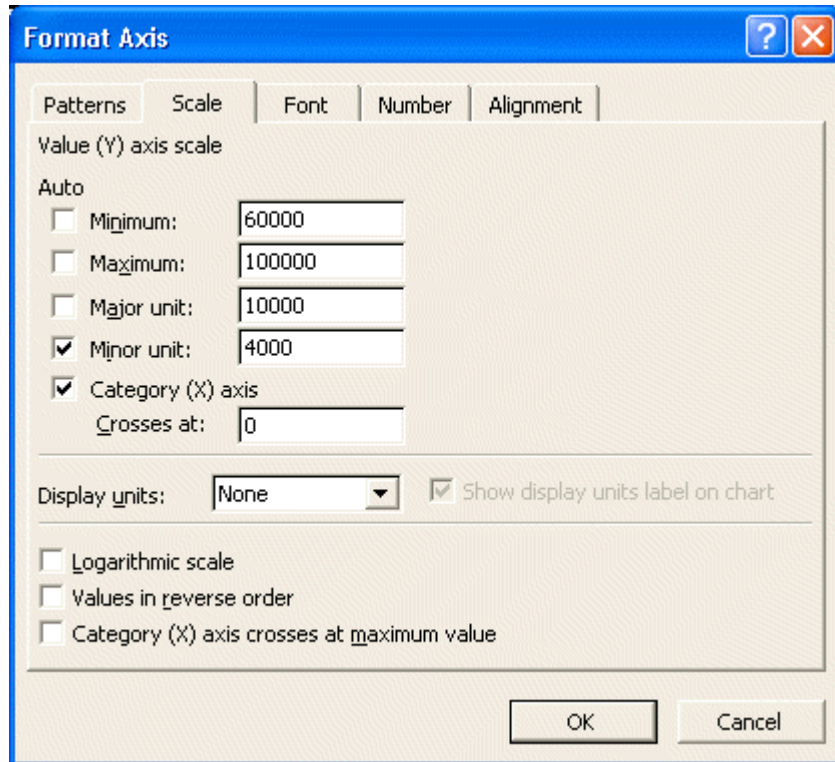
3. Double click anywhere on the **Average Price (£)** axis to display the **Format Axis** dialog box and click the **Scale** tab.

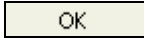


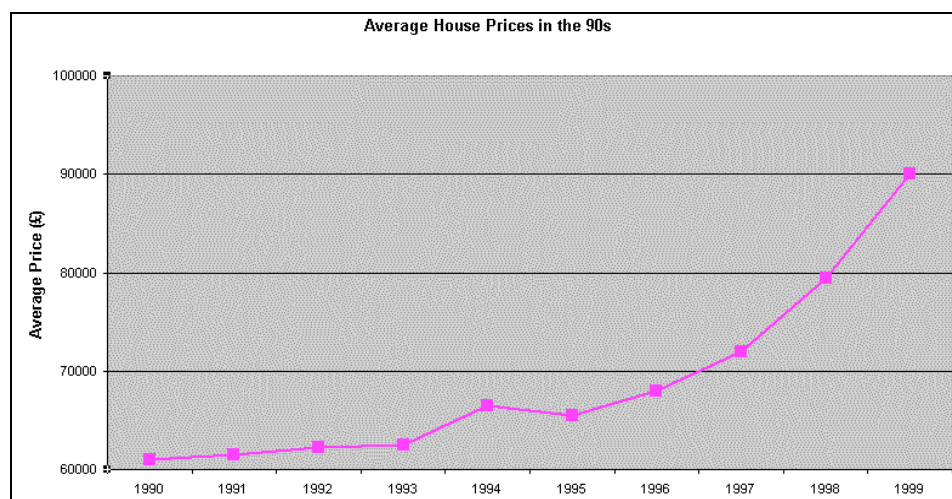
continued over

Exercise 64 - Continued

- Both the minimum and maximum limits can be changed in this dialog box. Enter **60000** as the **Minimum**, **100000** as the **Maximum** and the **Major unit** (the axis interval) to **10000**.



- Click . The dialog box closes and the chart appears with a more suitable scale.




- Save the workbook as **Houses2** and close it.

Exercise 65 - Text Boxes


Guidelines:

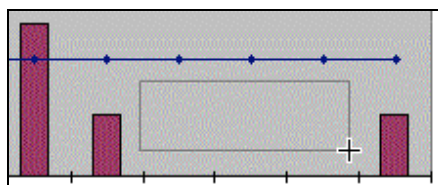
A **Text Box** is a way of adding unattached supporting text to describe part of a chart. Text boxes can be placed anywhere on a chart and be of any size.

Actions:

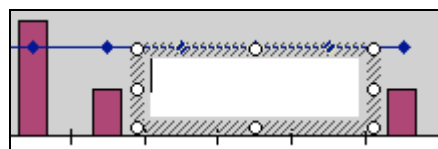
1. Open the workbook **Rainfall2** (created in **Exercise 58**).
2. Click the **Line - Column** tab to display the chart created earlier.
3. Text boxes are to be added to show which area is below, and which area is above average rainfall. The **Drawing Toolbar** must be displayed, either click the **Drawing** button, , or select **View | Toolbars | Drawing** if it is not visible.




4. Click the **Text Box** button, , on the **Drawing** toolbar.
5. Click and drag a small box on the chart below the average line as shown below.



6. When the mouse is released, the text box appears.



7. Type **Below Average** in the box and click away from the box to complete the entry.
8. Create another text box above the line containing the text **Above Average**.
9. To make the border of the text box visible, click on one of the text boxes and click on the **Line Color** button, , to add a border.
10. Save the workbook using the same name.
11. Close the workbook.

Exercise 66 - Revision

1. Open the workbook **Teamdata**.
2. Create a **Bar Chart** of the data range **A3:B11**, with the **Category (X) axis** title as **Country**, the **Value (Y) axis** title as **Attendance** and place on a new sheet called **Bar Chart**.
3. Change the main title to **Average Football** with **Attendance** as a sub title. Add a border, a shadow effect, embolden the text and change the font size to **16pt**.
4. Change the lower limit on the **Value (Y) axis** to **20000**.
5. Remove the **Legend**.
6. Display the values on the bars.
7. Create a **Text Box** away from the bars in the top right of the **Plot Area** with the text **Home Games Only**. Increase the font size to **12pt** and add a border.
8. Save the file as a workbook named **Football** (the completed chart is listed in the **Answer Section** at the end of the guide).
9. Close the workbook.

Exercise 67 - Revision

1. Open the workbook **Company Sales** and display the **Sales Chart**.
2. Change the minimum value to **2500** on the **Y axis**.
3. Change the chart title to **Product Sales**. Format the chart title appropriately to make it stand out.
4. Add a **Text Box** to the top right of the plot area with the text **These sales are pathetic!**. Format the text appropriately.
5. Add a **Legend** to the right of the chart.
6. Save the workbook as **Company Sales2** (the completed chart is listed in the **Answer Section** at the end of the guide).
7. Close the workbook.

Section 10

Formatting Charts

By the end of this Section you should be able to:

Apply Numeric Formatting on Axes

Apply Fill Colour to the Data Series

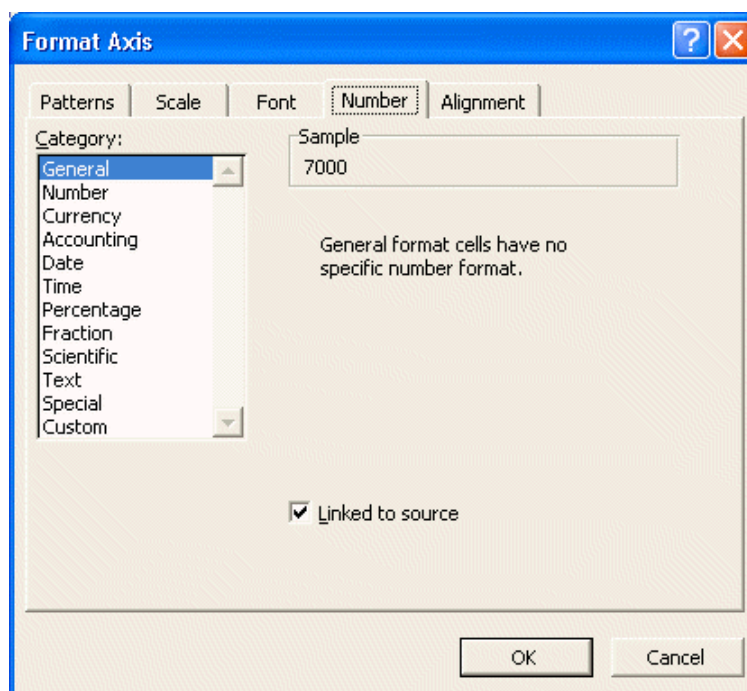
Exercise 68 - Numbers on Axes

Guidelines:

The numbers on the **Value (Y) axis** can be formatted as required, i.e. as numbers, numbers with decimal places, dates or percentages in exactly the same way as all numbers in *Excel*. The orientation of the labels can be rotated at any angle. Rotated ninety degrees to make the labels easier to read is the most common.

Actions:

1. Open the workbook **Cashflow2**, saved in **Exercise 57**.
2. Delete the (£) text from the axis title as the numbers are to be formatted as currency.
3. Double click on the **Value (Y) axis** to display the **Format Axis** dialog box.
4. Click the **Number** tab.

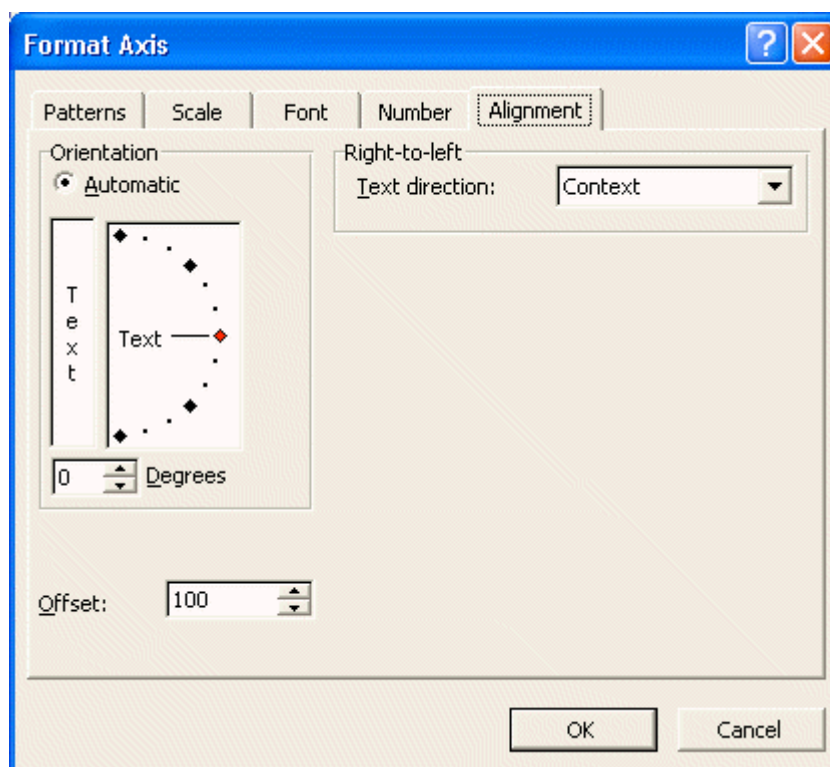


5. Select **Currency** from the list and choose the second or fourth option from the **Negative numbers** section, so all negative numbers appear **red**, with, or without a minus sign.
6. Leave the **Decimal places** as **2** and click **OK** to apply the changes.

continued over

Exercise 68 - Continued

7. Save the workbook using the same name and close it.
8. Open the **Rainfall2** workbook (saved in **Exercise 58**) and look at the **Line - Column** chart.
9. To make the dates easier to read, double click on any date to display the **Format Axis** dialog box.
10. Click the **Alignment** tab.



11. Click on the red diamond and drag it, so that the line follows, to the top of the semi-circle. This aligns the text at **90°**.
12. Click **OK** to see the effect.
13. Double click any date again and select the **Number** tab.
14. Choose **Date** from the **Category** list and then the **dd-mmm-yy** style option from the **Type** list.
15. Click **OK** to see the date change formats.
16. Save the workbook using the same name and close it.

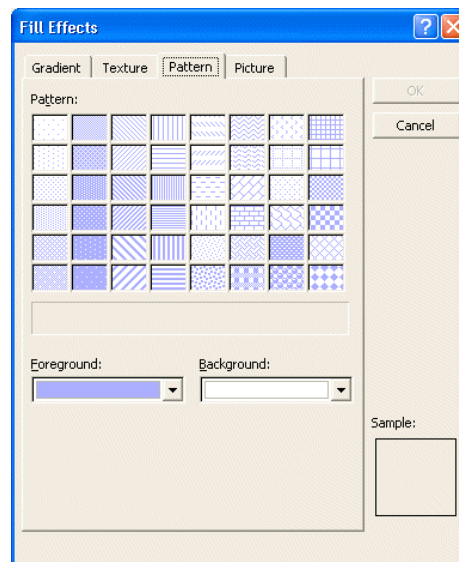
Exercise 69 - Data Series Colour

Guidelines:

With a bar, column or pie chart, the data series can be filled with any colour or any pattern. Different patterns (various types of shading) are used when a colour printer is not available or to display comparative data series.

Actions:

1. Open the workbook **Hydrogen** and display the chart on the **Hydrogen** sheet tab.
2. To change all of the columns to a different colour, double click on any column to display the **Format Data Series** dialog box.
3. Choose a light colour making sure that the columns stand out from the **Plot Area**. Click **OK** to see the changes.
4. Save the workbook as **Hydrogen2** and close it.
5. Open the workbook **cinedata2** (saved in **Exercise 54**) and display **Chart1**.
6. Double click on any of the **Newcastle** columns, click the **Fill Effects** button and then click the **Pattern** tab.



7. Make sure the **Foreground** and **Background** colours are **black** and **white**, choose the vertical lines option, click **OK**, then **OK** again to apply the pattern. The finished chart can be seen within **Answers** on page 145.
8. Save the workbook using the same name and close it.

Exercise 70 - Revision

1. Open the workbook **Cashflow2** (this workbook includes a line chart and was developed and saved from **Cashflow** in **Exercise 57**).
2. Display the **Chart1** sheet tab, if not displayed.
3. Apply the following formatting:

Chart title	font size 18, bold
Legend	font size 12
Axis titles	font size 12
4. Format the data series line to be dotted.
5. Save the workbook as **Cashflow3** and then close it.

Exercise 71 - Revision

1. Open the workbook **cinedata.csv**.
2. Create a column chart on a new sheet to display the audiences in **Glasgow**. Add the chart title **Glasgow Audiences** and suitable axes titles.
3. A colour printer is not available, change the colour of the columns to a shaded pattern.
4. Format the chart title text to be size **18pt**.
5. To the chart title box, add a light grey background with a border and a shadow effect.
6. Remove the legend.

*Note: The completed chart is listed in the **Answer Section** at the back of the guide.*

7. Save the file as a workbook, named **Audiences**.
8. Close the workbook.

Section 11

Printing Charts

By the end of this Section you should be able to:

Print Charts
Change Chart Orientation


Exercise 72 - Printing Charts

Guidelines:

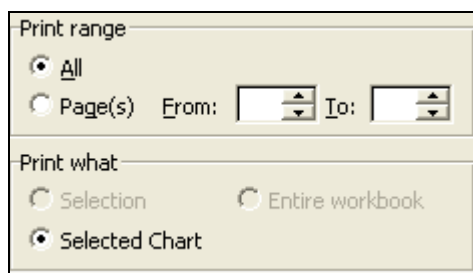
The **Print** command controls what is printed, how it is printed and number of copies, etc.

Actions:

1. Open the workbook **Cinemadata** and display the **Chart1** sheet.
2. This a chart created on a separate sheet. To print a chart created in this way, select **File | Print** to display the **Print** dialog box.
3. Click **OK** to print with the default settings, i.e. one copy of the active worksheet.

Note: Clicking the **Print** button, , prints a single copy of the chart, using the default settings.

4. Display the **Cinema Data** sheet. This sheet contains the data and an embedded chart (a chart created on the same sheet as the data). This chart shows the audiences for **Birmingham**.
5. To print the data and the chart, click on any cell in the sheet and print using the **Print** command or the **Print** button.
6. To print an embedded chart without the data, click on the chart to make it active and then select **File | Print**.



7. Under **Print what** the **Selected Chart** option is displayed, automatically. Click **OK** to print the chart on a full sheet. As this option is selected by default the **Print** button can be used to achieve the same effect.
8. Compare the quality of the two printouts. A chart created on its own sheet is of a higher quality.
9. Leave the workbook open for the next exercise.

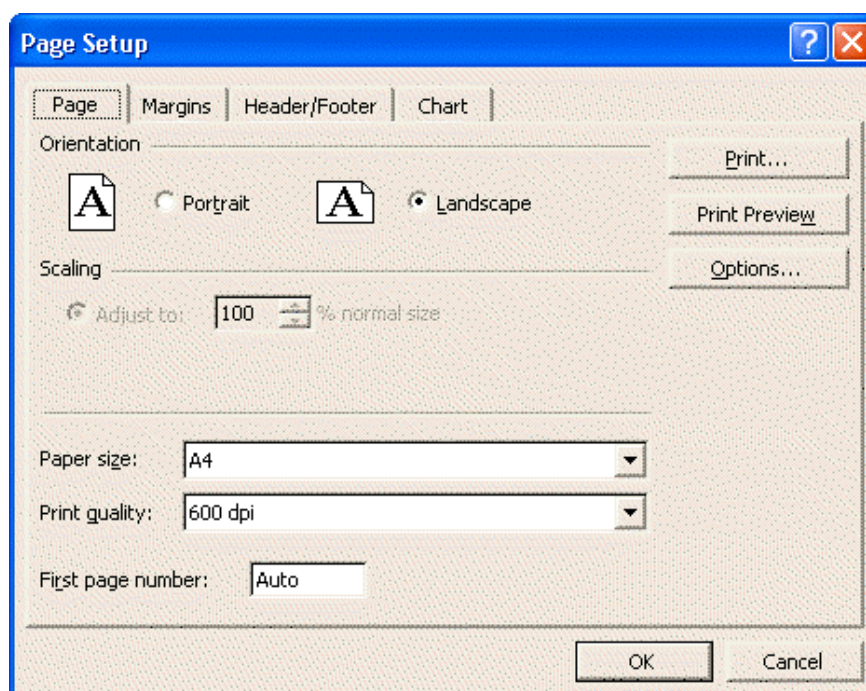
Exercise 73 - Chart Orientation

Guidelines:

Orientation is the way the chart is placed on the paper, either **Landscape** (the default) - horizontal or **Portrait** - vertical. The **Orientation** is changed in the **Page Setup** dialog box.

Actions:

1. The workbook **Cinemadata** should still be open from the previous exercise, if not, open it.
2. Click the **Chart2** tab to view the column chart.
3. Select **File | Page Setup** to display the **Page Setup** dialog box.



Page Setup with Page tab displayed.

4. The **Page Setup** dialog box has four option tabs, for changing the **Page**, **Margins**, **Header/Footer** and **Chart** options.
5. Click on the **Page** tab, if it is not selected and select the **Portrait** option. This turns the paper vertically. Click **OK**. The display now shows how the spreadsheet would appear when printed.

Note: The size of the titles and legend will change automatically when the orientation is changed.

6. Print a portrait copy of the chart.
7. Close the workbook without saving.

Exercise 74 - Revision

1. Open the workbook **compdata2** (created in **Exercise 56**).
2. Display the **Pie Chart** sheet tab, if not displayed.
3. Change the orientation of the chart to **portrait**, as it is required for a report already printed in that format.
4. Add a centred footer **Created by** followed by your name.
5. Print a copy of the **Pie Chart**.
6. Close the workbook without saving the changes.

Exercise 75 - Revision

1. Open the workbook **Population** (created from data in **Exercise 55**).
2. Check that orientation of the chart is landscape.
3. Add a footer with the date in the left section (either type in the date or use the code button for the date) and your name in the right section.
4. Print two copies of the chart using a single action.
5. Close the workbook without saving.

Section 12

Cell Referencing

By the end of this Section you should be able to:

- Use Relative Addressing
- Use Absolute Addressing
- Use Mixed Cell Referencing


Exercise 76 - Relative Addressing

Guidelines:

As a formula is copied across a range of cells, the formulas change automatically. The calculation is performed on cells in the positions relative to those copied, e.g. **B2+B3** becomes **C2+C3** then **D2+D3**, as the formula is copied from column to column.

The formulas can be copied to any cells in any position on a worksheet.

Actions:

1. Start a new workbook.
2. In cell **B2** enter **7** and in **B3** enter **8**. In cell **B4** create a formula **=B2+B3** to add the two numbers.
3. Click on cell **B4** and click the **Copy** button, . Move to cell **D8** and press **<Enter>** to paste the copy. The result **0** is displayed.
4. The formula is copied and adds the cells relative to the formula, i.e. the two cells directly above. Enter **5** and **3** into cells **D6** and **D7**.

	A	B	C	D	E
1					
2		7			
3		8			
4		15			
5					
6				5	
7				3	
8				8	
9					

5. All formulas copied have been relative whether using copy or the **Fill Handle**.
6. Click on cell **B4** and drag its **Fill Handle** across three columns. The results are displayed as **0**.
7. Examine the formulas in cells **C4**, **D4** and **E4**.
8. Enter numbers into the two cells above the three formulas to test and see if they work.
9. Close the workbook without saving.

Exercise 77 - Absolute Addressing

Guidelines:

Sometimes, the user may wish to use a fixed cell address in a formula and refer to the same cell when the formula is copied. To stop the formula changing automatically, cell references included in it can be fixed.

To fix a cell as **Absolute**, the \$ symbol must be added to the cell references. The \$ symbol is typed in as the cell reference is written, or the function key <F4> may be used after entering a cell reference to change the reference to absolute. Repeated use of the <F4> key changes to mixed addressing, e.g. B15 (relative), \$B\$15 (absolute), B\$15 (mixed, fixed row), \$B15 (mixed, fixed column). Mixed addressing is rarely used. Cells may be defined as having absolute columns, rows or, more commonly, both.

Absolute addressing is used to reference fixed costs like standing orders, tax rates, VAT rate, etc.

Actions:

1. Open the workbook **VAT**.
2. Make **B15** the active cell and enter the new **VAT Rate** of **17.5%** (enter as **0.175** or **17.5%**).
3. Move into cell **C6** and enter the formula for the **VAT** (**Price** multiplied by the **VAT Rate**).
4. Drag this formula across into **D6** and **E6**. The resulting **VAT** is **zero**. Check the formulas in **D6** and **E6** to find the problem. It has been caused by relative addressing. The **VAT Rate** is fixed and the formulas have automatically changed to reference cells that are empty, e.g. the cells **C15** and **D15**.

*Note: If pointing and clicking on cell **B15**, pressing the **Function** key <F4> automatically changes the reference to an absolute address.*

5. In cell **C6**, enter the formula **=C5*\$B\$15**. The \$ symbols fix this cell as absolute.
6. Copy the formula across the next two columns. View the contents of **D6** to see if the formula still uses **B15** for the **VAT Rate**.
7. Complete the **Total Price** row by adding the **Price** and **VAT**.
8. Save the workbook as **VAT2** and close it.

Exercise 78 - Mixed Referencing

Guidelines:

Mixed Referencing is a cross between **Absolute** and **Relative**. One part of the reference is fixed with a \$ symbol and the other part is not, e.g. **\$A15** (column **A** fixed) or **A\$15** (row **15** fixed).

Actions:

1. Start a new workbook.
2. Create the following spreadsheet.

	A	B	C	D	E	F	G
1							
2		10%	20%	30%	40%	50%	
3	5						
4	10						
5	15						
6	20						
7	25						
8							

3. In cell **B3** enter the formula **=A3*B2**, to calculate **10%** of **5**.
4. Use the **Fill Handle** to drag the formula across to **F3**.
5. With the range still highlighted, drag the **Fill Handle** down to row **7** to fill the rest of the range.

	A	B	C	D	E	F	G
1							
2		10%	20%	30%	40%	50%	
3	5	0.5	0.1	0.03	0.012	0.006	
4	10	5	0.5	0.015	0.00018	1.08E-06	
5	15	75	37.5	0.5625	0.000101	1.09E-10	
6	20	1500	56250	31640.63	3.203613	3.5E-10	
7	25	37500	2.11E+09	6.67E+13	2.14E+14	74902.76	
8							
9							

6. Double click on cell **D5** to check the formula and which cells it uses. The formula is **=C5*D4** because of **Relative Addressing**.
7. The formula should be **=A5*D2**. Highlight and delete the range **B3:F7**.
8. Try and use **Absolute Referencing** to overcome this problem. In cell **B3** type the formula **=\$A\$3*\$B\$2**.
9. Drag this formula across to column **F** and then down to row **7**.

continued over

Exercise 78 - Continued

- Double click on cell **D5** to check the formulas and which cells it uses. The formula is **=A\$3*B\$2**, so all of the formulas are now the same, which is not correct.

	A	B	C	D	E	F	G
1							
2		10%	20%	30%	40%	50%	
3	5	0.5	0.5	0.5	0.5	0.5	
4	10	0.5	0.5	0.5	0.5	0.5	
5	15	0.5	0.5	=A\$3*B\$2		0.5	
6	20	0.5	0.5	0.5	0.5	0.5	
7	25	0.5	0.5	0.5	0.5	0.5	
8							

- Mixed Referencing** can be used to fix the column as **A** and row as **2**, allowing the other reference to change, to calculate the formulas.
- Highlight, then delete the range **B3:F7** again and move back to cell **B3**.
- Type the formula **=A3*B\$2**, this fixes column **A** and row **2** because the **dollar** signs are before these values in the formula.
- Drag this new formula across to **F3** and then down to row **7**.

	A	B	C	D	E	F	G
1							
2		10%	20%	30%	40%	50%	
3	5	0.5	1	1.5	2	2.5	
4	10	1	2	3	4	5	
5	15	1.5	3	4.5	6	7.5	
6	20	2	4	6	8	10	
7	25	2.5	5	7.5	10	12.5	
8							
9							

- Double click in cell **D5** and check that the formula is **=A5*D\$2**.

	A	B	C	D	E	F	G
1							
2		10%	20%	30%	40%	50%	
3	5	0.5	1	1.5	2	2.5	
4	10	1	2	3	4	5	
5	15	1.5	3	=A5*D\$2	6	7.5	
6	20	2	4	6	8	10	
7	25	2.5	5	7.5	10	12.5	
8							

- Save the workbook as **Mixed**.
- Close the workbook.

Exercise 79 - Revision

*Note: The answers for this exercise are listed in the **Answer Section** at the end of the guide.*

1. Open the workbook **Company**. The overheads in row **9** have been entered into each cell. Changing the overheads means each cell has to be changed.
2. To set up an absolute reference, in cell **A17** type **Overheads** and in cell **B17** enter **4980**.
3. In **B9** type = and point to cell **B17**, press <F4> and then <Enter>.
4. Use the **Fill Handle** to drag the formula across the row to cell **M9**.
5. To change the **Overheads** for the entire row, just change **B17**. Enter **4850** in **B17**.
6. Using **Print Preview** and **Page Setup** alter the settings to fit the worksheet on one piece of paper, centred.
7. Print a copy of the worksheet.
8. Close the workbook without saving.
9. Start a new workbook.
10. Create the worksheet as below, formatting these titles to **Bold** and changing the font size to **12**.

	A	B	C	D	E	F	G
1	Number Square						
2							
3		1	2	3	4	5	
4	1						
5	2						
6	3						
7	4						
8	5						
9							

11. In cell **B4** enter a formula which will multiply cells **A4** and **B3**. What is this formula?
12. Change each of the cell references in the formula to be a mixed cell reference. What is the formula now?
13. Copy the formula across to column **F** and then down to row **8**.
14. What is the formula is cell **E7**?
15. Save the workbook as **Number Square** and then close it.

Section 13

Functions

By the end of this Section you should be able to:

Understand Functions

Use Insert Function

Use SUM, MAX and MIN

Use COUNT, COUNTA and AVERAGE

Use SUMIF and COUNTIF

Use IF

Exercise 80 - Functions

Guidelines:

Functions are specialised formulas that make calculations easier. There are various types, some examples include:

Statistical	AVERAGE, COUNT, MAX, MIN, STDEV, VAR
Financial	NPV, FV, PMT, RATE, IRR
Logical	IF, TRUE, FALSE
Math & Trig	MOD, SIN, LOG, SQRT
Text	LEFT, RIGHT, MID, LEN
Date & Time	DATE, NOW, TIME
Lookup & Reference	HLOOKUP, VLOOKUP, CHOOSE

These standard functions provide accurate calculations - there is no risk of errors appearing in the formulas. Because of this, it is better to use the functions available than to try and type formulas manually.

All functions, like formulas, are preceded by an = sign.

=SUM(N12:N16) adds the values in the range **N12:N16** and is equivalent to the formula **=N12+N13+N14+N15+N16**. The bigger the range the more effective the function. Extending a formula to add 5000 numbers in a column is just as easy as adding 3 numbers.

Actions:

1. On a blank worksheet, enter a column of **10** numbers, starting in **B3**.
2. To add the numbers in cell **B13**, type **=Sum(B3:B12)**.
3. Delete **B13** and repeat the function by typing **=Sum(** and then select the range by clicking and dragging **B3:B12**. Finish the formula by typing **) <Enter>**.

Note: A different method for entering functions is introduced in the next exercise.


4. Leave this workbook open for the next exercise.

Exercise 81 - Insert Function

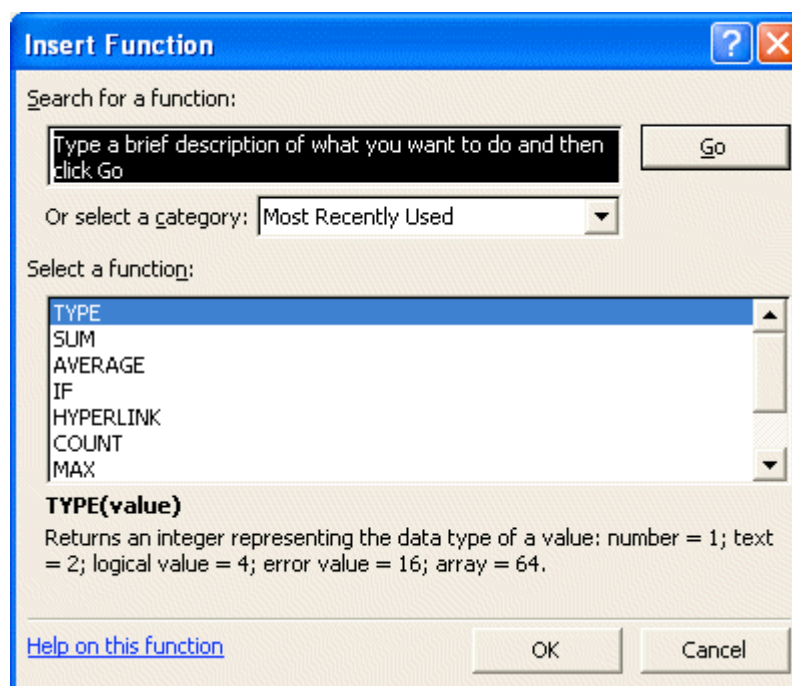
Guidelines:

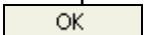
The **Insert Function** is a wizard that helps in the entering of functions.

Actions:

1. Using the workbook created in the last exercise.
2. Click on cell **B13** and delete the contents.
3. Click the **Insert Function** button, , to display the **Insert Function** dialog box.

Note: If the Office Assistant offers help, click No.

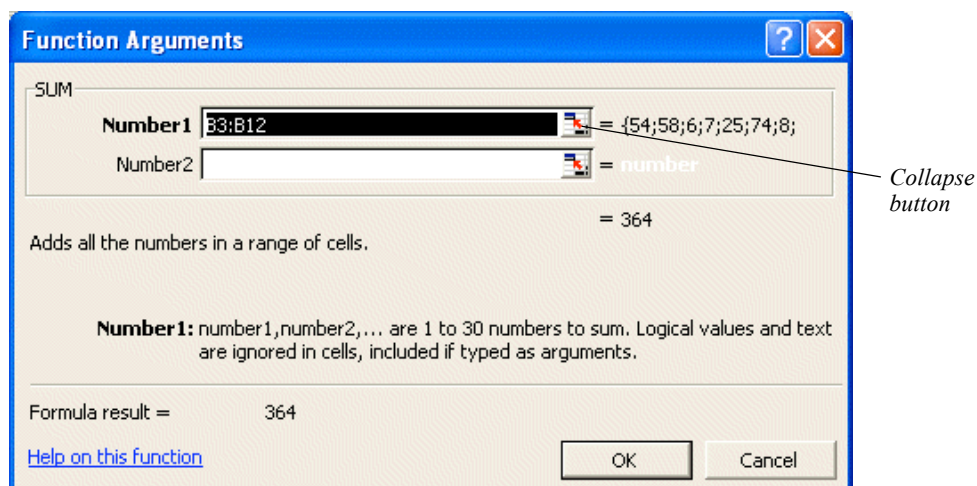



4. Functions can be found using the **Search for a function** box or by selecting a category and then using the **Select a function** box. From the **Or select a category** box select each category in turn to see all available functions - there are well over **200** altogether.
5. Select the category **Math & Trig** from the **Or select a category** drop down list.
6. Scroll down **Select a function** and click on **SUM**.
7. An explanation of the function is given towards the bottom of the box. Click .

continued over


Exercise 81 - Continued

- The **SUM** box is displayed, prompting for a range to be accepted or selected.



- The box can be moved around by clicking and dragging on any grey area. Move the box to the right of the screen.
- To the right of every entry box is a **Collapse** button, , that hides most of the box. Click the **Collapse** button of box **Number1**.
- Click and drag the range **B3:B12** (this is just for practise as the original range was correct).




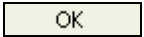

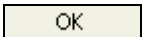
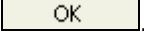
- Click the **Expand** button,  (the opposite to **Collapse**).
- Click . The function is entered into the worksheet and the result is displayed. All **Functions** can be entered using this method.
- Close the worksheet without saving.

Exercise 82 - Count, CountA and Average

Guidelines:

Count is a **Function** that counts numeric cells. **CountA** counts the numeric cells as well as cells containing text. **Average** finds the average of a range.

Actions:

1. Open the worksheet **Numbers**.
2. How many numbers would you say were in this list of numbers on the left of the screen? To find out move to cell **A102** and type **Count**.
3. In cell **B102**, click the **Insert Function** button, .
4. Select **Count** from **Most Recently Used, All** or **Statistical**.
5. Click .
6. Type the range **B1:B100** and click **OK**. This displays **99**, the amount of numbers in the range (1 number is missing from the range).
7. Scroll up see why there are only 99 numbers in 100 rows. Fill in the missing row with **23**.
8. Scroll back down to the bottom of the list to see that the count function has been automatically updated and now reads **100**.
9. In cell **A103** type **Average**. In cell **B103**, click the **Insert Function** button, .
10. Select **Average** from **Most Recently Used, All** or **Statistical**.
11. Click .
12. Type the range **B1:B100** and click . This displays **50**, the average number of the specified range

*Note: When **Average** or **Count** are used, cells which are blank are ignored, however cells containing zeros are included in the calculations.*

13. Move back to the top of the worksheet and in cell **D11** type **Count** and in **D12** type **CountA**.
14. In **E11** count the number of numeric cells in the range **E1:E9**.
15. In **E12** use the **Insert Function** button to count all the cells containing anything in the range **E1:E9** using the **CountA** function.
16. Leave the workbook open for the next exercise.


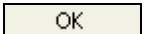
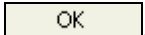
Exercise 83 - Maximum and Minimum

Guidelines:

MAX finds and displays the largest number in the selected range

MIN finds and displays the smallest number in the selected range

Actions:

1. The workbook **Numbers** should still be open. If not, open it.
2. In **A104**, enter the text **Max**.
3. With the active cell as **B104**, click the **Insert Function** button, .
4. Select **Max** from **Most Recently Used**, **All** or **Statistical**.
5. Click .
6. Type the range **B1:B100** and click . This gives the maximum value present in the specified range: **123**.
7. In cell **A105** enter **Min** and in cell **B105** enter the function **=MIN(B1:B100)**. This gives the smallest value: **1**.
8. Change the contents of cell **B100** to **201**. All the functions except **Count** change.
9. Save the workbook as **Numbers2** and close it.

Exercise 84 - IF

Guidelines:


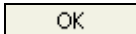
The logical function **IF** compares the contents of a cell and, if a logical test is met, performs one action; if not, it performs another.

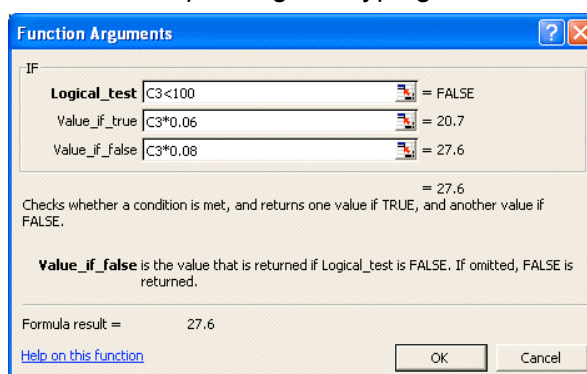
=IF(Logical_test,Value_if_true,Value_if_false)

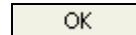
For instance, if the value in cell **A1** is greater than 10 then multiply it by 3, if not, multiply it by 2. This is expressed as: **=IF(A1>10,A1*3,A1*2)**

The **IF** function is sometimes described as **IF THEN ELSE**. **IF** the condition is true **THEN** do this **ELSE** do that.

Actions:

1. On a blank worksheet, enter the label **Interest Calculation** in **B1**.
2. Enter the label **Balance** in cell **B3** and **Interest** in cell **B4**.
3. Enter any number in **C3** for your bank balance.
4. The interest on your money depends on whether the balance is over or under £100. Click in cell **C4**, click the **Insert Function** button, . Select **IF** from the **Logical** category.
5. Click  and enter the following parts of the test as in the dialog box below, with a mixture of pointing and typing.




6. Click  to complete the function. The function looks at the contents of cell **C3** and if less than **100**, calculates the interest at **6%** otherwise it calculates it at **8%**.
7. The result of the function, the interest, depends on the balance. Move to **C3** and enter **100**. The interest is **£8**, the higher rate. Enter **50** and the interest is **£3**. Experiment, change the balance and see the interest change.
8. Close the workbook without saving.

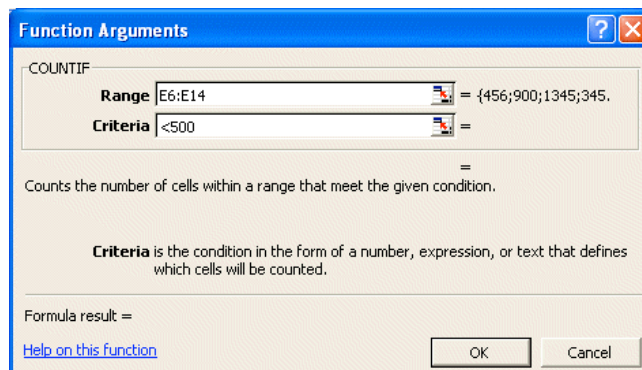
Exercise 85 - CountIF and SumIF

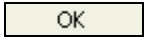

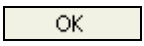
Guidelines:

Countif counts numeric items that match a set condition. **Sumif** only sums values within a range that match a set condition, e.g. to sum the outstanding amounts of clients that owe more than £100.

Actions:

1. Open the workbook **Invoice List**.
2. In cell **D16** enter the label **Invoices under £500** and widen column **D** to fit the text.
3. To count the number of outstanding invoices which are less than £500, in cell **E16**, click the **Insert Function** button, .
4. Select the category **Statistical** and the function **Countif**. Click **OK**.
5. Select the range **E6:E14**.
6. Set the criteria in the **Criteria** box as **<500**.



7. Click . The displayed result is **4**. Check the **Formula Bar** for the formula (the speech marks are added automatically). The cells that match the condition are counted. These cells can also be summed using **Sumif**.
8. In cell **D17**, enter the label **Small invoices total**.
9. In cell **E17** click the **Insert Function** button, . Select the **Math & Trig** category and the function **Sumif**. Click **OK**.
10. Select the range **E6:E14** again and set the **Criteria** box to **<500**.
11. Click  to insert the function. The result should be **1454.5**.
12. Close the workbook without saving.

Exercise 86 - Revision

*Note: The answers for this exercise are listed in the **Answer Section** at the end of the guide.*

- The following data represents sales figures for a group of salespersons. Construct the worksheet and add the data as shown.

	A	B	C	D
1	Analysis of Sales Figures			
2				
3	Salesperson	Sales	Average +/-	
4	Smith	13000		
5	Brown	8965		
6	Bloggs	21050		
7	White	17800		
8	Green			
9	Chapman	6700		
10	Hall	18900		
11				
12	Total			
13	Average Sales			
14	No of Salespersons			
15	Lowest Sales			
16	Highest Sales			
17				

- Enter the formulas for **Total** and **Average** sales in **B12** and **B13**, using the range **B4:B10**.
- The number of salespersons is calculated using the **COUNT** function (remember to count the sales figures, not the names).
- Calculate the highest and lowest sales using the **MAX** and **MIN** functions.
- The **Average +/-** column is calculated by subtracting the average sales from the individual's sales (remember Absolute and Relative addressing when copying formulas).
- It is very important to decide whether to enter a zero in cell **B8** or to leave it blank. Add **0** to **B8**. The answers are different.

Note: This is the part of statistics that can be manipulated one way or another depending on what the results are to convey.

- Print a copy of the worksheet.
- Save the workbook as **Sales Analysis** and close it.

Section 14

Names

By the end of this Section you should be able to:

- Use Names
- Create Names from Ranges
- Paste and Apply Names
- Use Names in Formulas
- Use Names with Go To

Exercise 87 - Using Names

Guidelines:

Names can be used to represent the contents of a cell or a range of cells to make referencing them easier.

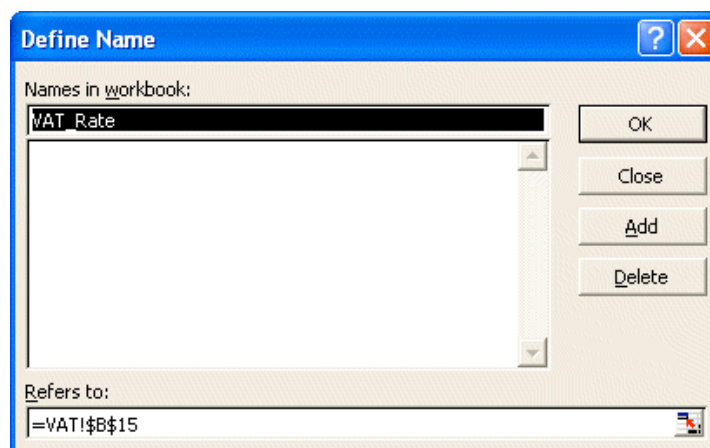
Formulas use cell addresses, e.g. **F37**; these have to be traced back to see what they represent. For example, a formula might be **=D34-D67**, where **D34** represents **Income** and **D67** represents **Expenditure**. Using **Names** the same formula would be:

= Income - Expenditure

Making it easier for anyone viewing the formula to understand what it is.

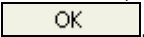
Actions:

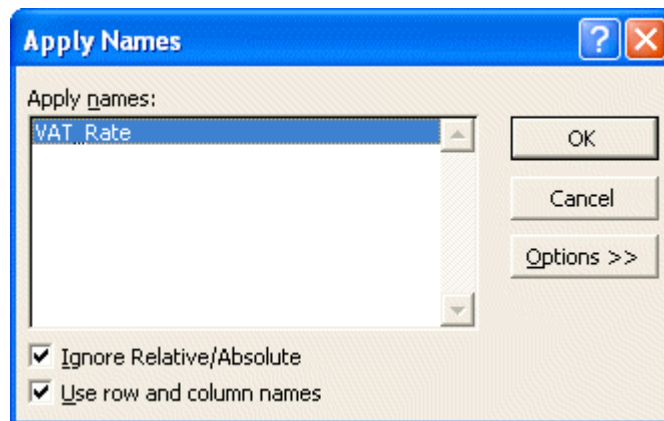
1. Open the workbook **VAT**.
2. In **C6** enter the formula to calculate the **VAT**. Remember, this will have to use **Absolute Addressing**. The formula is **=C5*\$B\$15**.
3. Copy this formula across the row into **D6** and **E6**.
4. Complete the **Total Price** row, adding the **Price** to the **VAT**.
5. Click on cell **B15**, the **VAT Rate**. Enter the new rate of **17.5%** (enter **0.175**).
6. The use of **Names** would make the formulas in this worksheet easier to understand. Click on cell **B15** and select **Insert | Name | Define**.

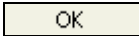


continued over

Exercise 87 - Continued

- The **Define Name** dialog box shows all the **Names in workbook** (the **VAT_Rate**), and where the name **Refers to** (Vat!\$B\$15). **VAT_Rate** is a suitable name, so click on **Add** to add this name to the worksheet, then click .
- Note that the **Cell Reference Area** now contains the name of the cell, **VAT_Rate** (above the column **A** heading). Move to cell **C6**. The cell contents still reference **\$B\$15**. The cell has been named but not used anywhere yet.
- Select **Insert | Name | Apply**. There is a list of available names, in this case just **VAT_Rate**.



- Click  to apply this name to the worksheet.
- Note that the reference for **C6** now says **C5*VAT_Rate**. The other **VAT** cells are similar.
- Save the workbook as **VAT3** and close it.

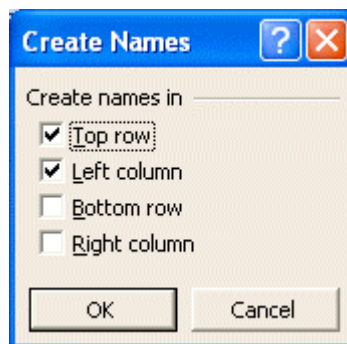
Exercise 88 - Create, Paste and Apply Names

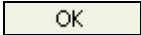
Guidelines:

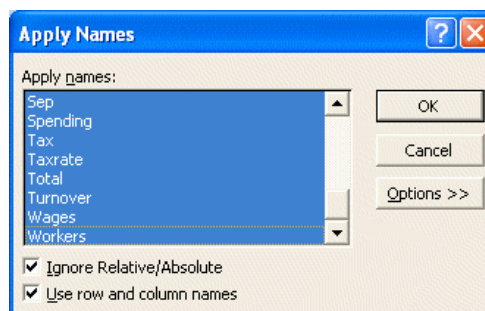
It is possible to create names from row and column titles and then **Paste** or **Apply** the names throughout the worksheet.

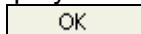
Actions:

1. Open the workbook **Budget**.
2. Highlight the whole sheet, i.e. **A1:N14**.
3. To create **Names** from the labels, select **Insert | Name | Create**.
4. In the **Create Names** dialog box, ensure that **Top row** and **Left column** are selected.



5. Click .
6. With the data still highlighted select **Insert | Name | Apply**.



7. The names from the row and column titles are displayed. At this stage names can be deselected by clicking on them. Click  to apply all the names.
8. Browse around the worksheet, examining the cell contents. A worksheet containing names is far easier to read and understand than one with cell references.
9. Save the workbook as **Budget2** and close it.

Exercise 89 - Using Names in Formulas

Guidelines:

Instead of having to type the cell name into a formula, it can be pasted.

Actions:

1. Open the workbook **VAT3** (created as part of **Exercise 87**).
2. Insert a column between **March** and **Total** by highlighting column **F** and selecting **Insert | Columns**. In **F4** enter **April** and in **F5** type **5050** and press <Enter>.
3. In **F6** type **=F5*** and then select **Insert | Name | Paste**.
4. Click on **VAT_Rate**, then **OK**. The name is pasted into the formula. Press <Enter> to complete the formula.
5. Add in the **Total Price** for April.
6. Check the formulas in the **Total** column to make sure that they include the new figures, column **F**, edit if necessary.
7. Leave the workbook open for the next exercise.

Exercise 90 - Using Go To with Names

Guidelines:

The **Go To** command can not only be used to move quickly to a cell by typing its reference, but also to move to any named cell or range.

Actions:

1. The workbook **VAT3** should be open from the previous exercise, if not open it.
2. Select **Edit | Go To**.

Note: Alternatively the key press <Ctrl G> or the function key <F5> can be used.

3. The names on the sheet are listed, in this case only **VAT_Rate**. Click on **VAT_Rate** and then .
4. The cell containing the **VAT_Rate**, i.e. **B15**, is now the active cell.
5. Close the workbook without saving.
6. Open the workbook **Budget2** (saved in **Exercise 88**).
7. Press <F5>, the **Go To** key. There is now a long list of all the named ranges in this sheet. Select **Materials** then **OK**. The range containing the **Materials** figures will be highlighted. Use the horizontal scroll bar to view the whole range if necessary.
8. Select **Edit | Go To**, choose **May** and click . The figures for **May** are now highlighted.
9. Close the workbook without saving.

Exercise 91 - Revision

*Note: The answers for this exercise are listed in the **Answer Section** at the end of the guide.*

1. Open the workbook **Retail**.
2. Create names for the whole worksheet, i.e. **A1:N14**. Apply these names.
3. Move to cell **P3** and type **=Sales Feb** to find the sales figure for **February**.
4. What is the sales figure for February?
5. Similarly, find the amount of **Spending** in **April (Apr)**, what is the amount?
6. **Go To** the **Sales** figures and make them bold.
7. Close the workbook without saving.

Section 15

Linking

By the end of this Section you should be able to:

Create a Link

Link Ranges

Link Open Workbooks

Link Unopened Workbooks

Update Linked Workbooks

Exercise 92 - Linking

Guidelines:

A document link is a formula reference to a cell in another document. The reference is **live**, which means that if referenced sheets are open, the changes are automatically updated, just as they would be if all the data was in the same sheet. The sheet that contains the link is called the **container** document. The documents from where the data comes are known as **source** documents.

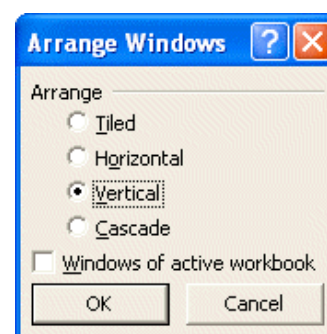
Links can be used to consolidate several related worksheets into one. For example, information from several sources can be gathered together into one worksheet to show the overall company results from all the divisions. To create links, the source application must support **DDE** (Dynamic Data Exchange) or **OLE** (Object Linking and Embedding).

Linking data has a number of advantages:

- To share information
- To simplify a complex problem by breaking it down into several separate workbooks
- To divide work among several people
- To build models normally too large for memory
- To add flexibility to workbooks

Actions:

1. Close any open workbooks and start a new one.
2. In **A1** enter **Source Document**, in cell **B3** enter a number and save the workbook as **Source**.
3. Start a new workbook and in cell **A1** enter **Container Document**. Save it as **Container**.
4. To display the two worksheets side by side select **Window | Arrange**.
5. Select the **Vertical** option and click .
6. Make **D5** active (point and click) in **Container**.
7. Create a link by typing = and clicking twice on cell **B3** in **Source**. Press **<Enter>** to complete the formula, which should read **=[source.xls]Sheet1!\$B\$3**.
8. In **Source**, change the number in cell **B3**. Cell **D5** changes automatically because of the link.
9. Leave the two workbooks open for the next exercise.



Exercise 93 - Creating Links

Guidelines:

The difference between a worksheet link and a normal cell is that a link reference includes the source workbook and sheet name followed by a ! e.g. **=[budget.xls]Sheet1!C10**. The file specification can include up to 4 parts: drive, path, file name and extension, e.g. **=[C:\EXCEL\DATA\budget.xls]Sheet1!B7**.

To create a **Link**, copy a selection from the source document and paste into the destination document worksheet using **Edit | Paste Special** and select the **Paste Link** option.

Actions:

1. The workbooks **Source** and **Container** should still be open from the previous exercise. If not, open them.
2. Enter a list of 5 numbers starting in **B3** in **Source** down the column. Use the **AutoSum** button to total them in **B8**.
3. In cell **D5** in **Container**, type in the label **Total** to overwrite the link from the previous exercise.
4. Make **D6** the active cell in **Container**. Type = to start a formula and then point and click twice on **B8** in the other worksheet. Press **<Enter>** to complete the formula. The link is then created and should be **=[Source.xls]Sheet1!\$B\$8**.

*Note: An alternative method of linking is to use **Edit | Copy** at the source and then on the container sheet use **Edit | Paste Special** and the **Paste Link** button.*

5. Copy the contents in cell **B5** in **Source**. Make the workbook **Container** active, click on cell **D8** and create a link with **Edit | Paste Special**.



6. Click the **Paste Link** button. Press **<Esc>** to remove the marquee.
7. A link has now been created between **B5** in **Source** and **D8** in **Container**. Change the number in **B5**. The numbers in cells **D6** and **D8** in **Container**, and that in **B8** in **Source** change automatically.
8. Leave the two workbooks open for the next exercise.


Exercise 94 - Linking a Range

Guidelines:

Ranges of cells from one worksheet can be linked to another using the **Paste Special** command.

Functions such as **=SUM([sales.xls]Sheet1!D1:D50)** can also be used when linking.

Actions:

1. The workbooks **Source** and **Container** should still be open from the previous exercise. If not, open them.
2. In cell **A6** in **Container**, enter the label **Linked Range**. Point and select the range **B3:B7** in **Source**. Select **Edit | Copy**.
3. Select **A7** in **Container** and select **Edit | Paste Special** and click the **Paste Link** button, . Press **<Esc>** to cancel the marquee (the dotted line around the original range).
4. The range has been linked as individual cells such as **=[Source.xls]Sheet1!B6**.

Note: The range may be different to that above as each cell's value is different.

5. Clear the formula from **B8** in **Source** and the link in cell **D6** in **Container**.
6. Make **D6** the active cell in **Container**. Type **=SUM(** and then select the range **B3:B7** in **Source**. Close the bracket **)** and press **<Enter>** to finish the formula.
7. The figures in **Source** are now totalled in cell **D6** in worksheet **Container** and not in **Source**.
8. Save the current positions of the two workbooks, save the **Source** workbook first.

Note: Always save the source documents before saving the destination worksheet linked to them. This ensures that the document names in external references are current.

9. Close the **Container** workbook.
10. Leave the **Source** workbook open for the next exercise and maximise it.

Exercise 95 - Updating Linked Workbooks

Guidelines:

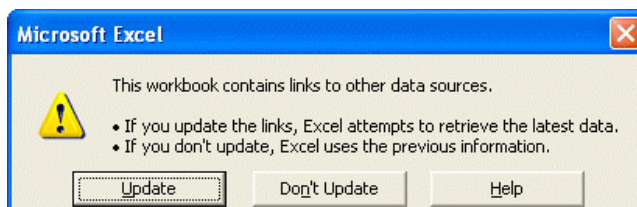
Links can be maintained to documents that are not open, as long as the container document has access to the source document/s (within the same system, network or disk). If the source documents are not open, the linked references include the drive and pathname, e.g.

[C:\Excel\Data\tax.xls]Sheet1!\$A\$1

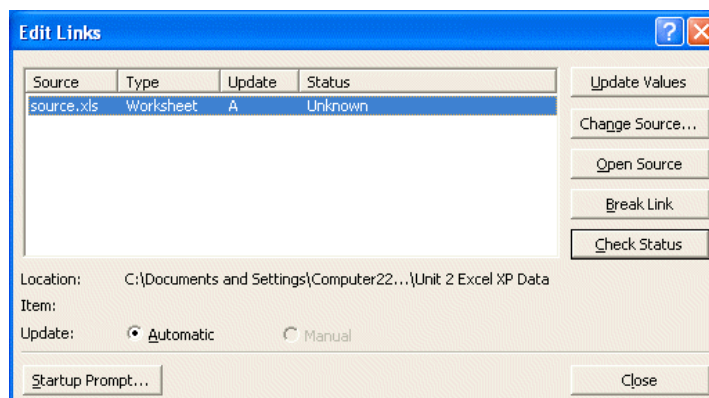
whereas, if open, the reference would be =[tax.xls]Sheet1!\$A\$1.

Actions:

1. The workbook **Source** should still be open, if not, open it.
2. Change any of the five numbers in column **B**.
3. The information is now different, remember the change. Save and close **Source**.
4. Open **Container**. A message is displayed which includes **If you update the links**



5. Click the **Update** button. The links are updated and the new numbers are displayed.
6. To list the supporting documents select **Edit | Links**, to display the **Edit Links** dialog box.



continued over

Exercise 95 - Continued

7. Click to open **Source**.
8. Re-display the **Container** workbook.
9. Save and close the **Container** Workbook.
10. Change the first number in column **B** in **Source** to **1000**. Save and close the **Source** workbook.
11. Open the container document **Container**. Click **Don't Update** to keep the existing information.
12. Links can be updated at any time after the document has been opened. Select **Edit | Links**, move the dialog box to see the numbers and click **Update Values**. Click **Close** to return to the worksheet.
13. Save and close the **Container** workbook.

Exercise 96 - Revision

1. Make sure that there are no workbooks open, even a blank workbook. Open the workbooks **Hotel98**, **Hotel99**, and **Hotel2000**.
2. The occupancy figures for single rooms are to be compared over the three year period. Open **Hotel Library**.
3. The single room bookings are all stored in **B7:M7** of the 3 source workbooks. The ranges to copy have all been named **singles**. Create the necessary links to **Hotel Library**.
4. Make the **Hotel Library** workbook active and maximise the window. Enter the formulas to calculate % occupancy in the rows **10** to **12**, assume a **300** room per month capacity (rooms/300).
5. Format the range **B10:M12** as percentages to two decimal places.
6. In column **N**, total the rows **6** to **8** and also average rows **10** to **12**.
7. Use **Page Setup** and **Print Preview** to set the worksheet to print on one piece of paper, landscape. Print a copy of the worksheet.
8. Save the workbook as **Hotel Occupancy**.
9. Close all the open workbooks without saving.

Section 16

Filtering and Sorting

By the end of this Section you should be able to:

Use AutoFilter on a List

Sort Data

Sort a List

Exercise 97 - Creating a List

Guidelines:

Enter the **Column** names (**Fields**) as labels across a row. The data is entered directly below them, following these rules:

- The area to be used must be rectangular, although it may contain blanks.
- Use the same type of data in each column.
- Do not separate the labels from the data with a blank or decorative row.
- Do not duplicate column names and to avoid confusion they should be different from any range names.
- Enter all the list information across each row.

Actions:

1. In a new workbook, enter the list information as shown in the rows and columns below:

	A	B	C	D	E
1					
2					
3	Item	Classification	Price	Sold Today?	
4	Whole milk	Dairy	0.89	Yes	
5	Butter	Dairy	0.95	Yes	
6	Basmati Rice	Provisions	1.39	Yes	
7	Cauliflower	Fruit and veg	0.25	Yes	
8	Pizza	Frozen	2.99	Yes	
9	Country ham	Delicatessen	0.75	No	
10	Gorgonzola	Delicatessen	1.75	No	
11	Semi-skimmed milk	Dairy	0.89	Yes	
12	Guinness	Wines and Spirits	4.95	No	
13	Weetabix (24)	Provisions	1.26	No	
14	Crisps (6)	Provisions	0.99	Yes	
15	Coffee	Provisions	2.45	Yes	
16	Bananas	Fruit and veg	1.29	Yes	
17	Beaujolais	Wines and Spirits	3.25	Yes	
18	Yogurt	Dairy	1.25	No	
19					

2. Save the workbook as **Corner shop**.
3. Close the workbook.

Exercise 98 - Filtering Lists

Guidelines:

Filtering is a quick way to find records in a list that match search criteria. Only the rows that match are displayed. The rows that do not match are hidden.

There are two ways to filter a list: the **AutoFilter** (for a simple filter) and the **Advanced Filter** (for more complex filtering). When a list is filtered, the worksheet is placed in **Filter Mode**.

	A	B	C	D
1				
2				
3				
4				
5				
6	Surname	Initial	Department	Days Absent
7	Chapman	I	(All)	17
8	Waldram	B	(Top 10...)	2
9	Parke	N	(Custom...)	1
10	Myers	A	Administration	0
11	Westgarth	S	Advertising	0
12	Smith	F	Catering	0
13	Smith	John	Computer Services	1
14	Gardner	P	Finance	4
15	Leigh	C	Personnel	0
16	Collins	P	Production	0
17	Waterman	D	Trainee	3
18	McMillan	R	Training	5
19	Wright	B	Transport Pool	7
20	Chesterton	I	Computer Services	1
21	Smith	James	Transport Pool	4
22	Borland	J	Training	0
			Production	2
			Administration	0

A worksheet in Filter Mode

In **Filter Mode**, the labels at the top of the list contain drop down arrows. If one of these arrows is clicked, a list of all items in the column is revealed. The filter to be applied can then be selected from the list.

The default view is to show all rows (**All**), until an alternative selection is made from the list. Other options include:

(Top 10...), to show rows that fall within upper or lower limits specified by the user, e.g. top 20% of sales.

(Custom), where two criteria can be applied and data can be compared.

In the example above, all members of staff in the **Training** department can be displayed by selecting **Training** from the drop down list for **Department**.

Exercise 99 - AutoFilter

Guidelines:

AutoFilter produces a subset of a list with the click of a button. This places the worksheet in **Filter Mode**. Click on any of the arrows to display a drop down list of unique items in that column. Click on any item and the matching records (rows) will be displayed with the other rows hidden.

AutoFilter always selects from the whole list. **AutoFilter** can be applied to selected columns in a list by selecting them before entering **Filter Mode**.

Actions:

1. Open the workbook **Sick** and enter **Filter Mode** by clicking on a cell in the list and then selecting **Data | Filter | AutoFilter**.
2. Using the **Surname** drop down list, scroll down the list and select **Smith**. Only the Smiths are displayed.

5				
6	Surname	Initial	Department	Absent
12	Smith	F	Finance	1
13	Smith	John	Production	4
21	Smith	James	Production	2
29	Smith	C	Training	4
30				

Note: A filtered list can be printed.

3. To redisplay the full list using the **Surname** drop down list, select **(All)** at the top of the list.
4. Exit **Filter Mode** by selecting **Data | Filter | AutoFilter** again.
5. Open the workbook **Survey**.
6. Enter **Filter Mode**.
7. To display all the males from Sunderland who have replied, select **M** from **Sex**, **Sunderland** from **Town** and **1** from **Reply**.

Note: The drop down arrows are displayed in blue if active.

8. To redisplay the whole list, instead of selecting **All** from the three lists, select **Data | Filter | Show All**.
9. Exit **Filter Mode**.
10. Close the workbook **Survey** without saving and leave the workbook **Sick** open.

Exercise 100 - Custom AutoFilter

Guidelines:

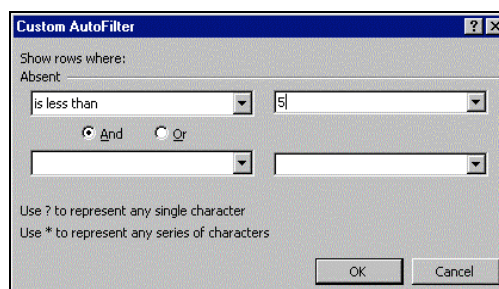
Custom AutoFilter allows more complicated details than a simple information match. Two items within the same column can be searched for using any of the 12 options (equals, is less than, etc.).

Actions:

1. The workbook **Sick** should still be open. If not, open it.
2. Using the workbook **Sick**, place the active cell inside the list and enter filter mode using **Data | Filter | AutoFilter**.
3. Click on **Absent** and select (**Custom...**) from the drop down list to display the **Custom AutoFilter** dialog box.

*Note: Simple searches can be carried out using one set of criteria. More complicated filters can be carried out using either **And** or **Or** to then add another set of criteria.*

4. To display all the employees who have had less than five days absence, select **is less than** in the **Absent** box and enter 5 in the **Information** box.



5. Click **OK**.
6. To restore the list, click on the **Absent** field drop down list and select **All**.
7. Display all the employees in either the **Administration** or **Computer Services** departments using **Custom AutoFilter** within the **Department** field, using **equals** and the **Or** option. Click **OK** to complete the filter.

6	Surname	Initial	Department	Absent
8	Waldram	B	Computer Services	2
10	Myers	A	Computer Services	0
15	Leigh	C	Administration	3
16	Collins	P	Administration	5
17	Waterman	D	Computer Services	7
22	Borland	J	Administration	0
25	Wood	R	Administration	3
26	Wilson	D	Administration	34
30				



8. Exit **Filter Mode** by selecting **Data | Filter | AutoFilter** again.
9. Close the workbook without saving.

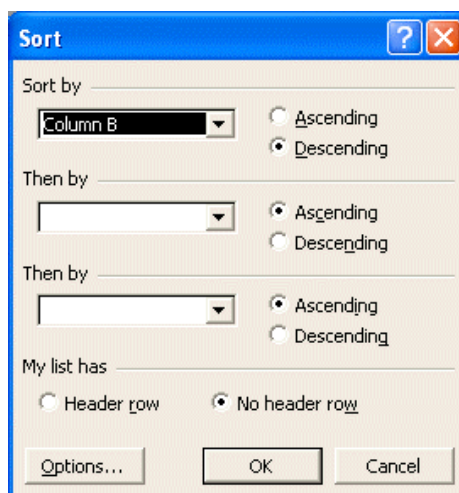
Exercise 101 - Sorting

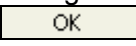
Guidelines:

When sorting, the rows are arranged in a specific order. The column used to sort is called the **Sort Key**. There can be up to 3 sort keys.

Actions:

1. Start a new workbook.
2. Enter a column of 8 names (surnames or first names) starting in cell **B3**.
3. Sort the names into ascending alphabetic order by placing the cursor into an occupied cell in column **B** and click the **Sort Ascending** button, .
4. With the active cursor still in column **B** click the **Sort Descending** button, .
5. Add ages (in years) in column **C** adjacent to the names.
6. To sort the ages list in ascending order, place the cursor into an occupied cell in the list and select **Data | Sort**.



7. In the first **Sort by** box select **Column C** from the drop down list and change the sort to **Ascending**. The data has **No header row**. Click  to perform the sort.
8. Close the workbook without saving.

*Note: Columns can be sorted by selecting the **Options** button within **Sort** and choosing the **Sort Left to Right** option.*

Exercise 102 - Sorting a List

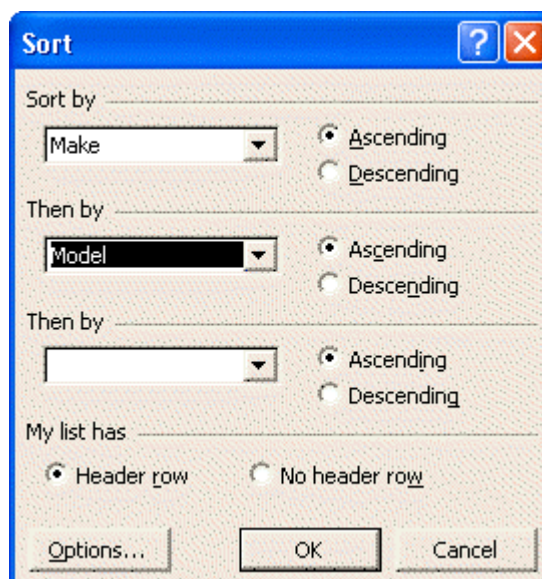
Guidelines:

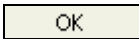
In a list, the records (rows) are arranged in a specific order. The fields (column headings) are used to sort the records. To sort a list, the method is the same as for an ordinary sort.

The **Sort Ascending**  and **Sort Descending**  buttons can be used to sort the list automatically.

Actions:

1. Open the workbook **Cars**.
2. Sort the list into ascending order by **Make** and perform a secondary sort by **Model**, by moving the active cell into the column under **Make** and selecting **Data | Sort**.
3. The list is defined as having a header row with **Make** in the **Sort by** box. Select **Model** in the **Then by** box. Leave **Ascending** selected.



4. Click  to perform the sort.
5. Select **Edit | Undo Sort** to return the list to the original order.
6. Insert a new **Column A** and set the column width to **3.00** units.
7. Label the column **No** in cell **A1**. Number each row in column **A**, starting in cell **A2**, e.g. **1, 2, 3** etc.

continued over

Exercise 102 - Continued

- Sort by **Price** in **descending** order. Which car is the second cheapest?
- Sort the cars into ascending numeric order by **Mileage**. Which car has the most mileage?

*Note: The answers for this exercise are listed in the **Answer Section** at the end of the guide.*

- Using column **A**, re-sort the range back to its original order.

Note: Leading zeros may have to be added to labels that include numbers so that they sort correctly.

- Save the workbook as **Cars2** and close it.

Exercise 103 - Revision

- Open the workbook **League**.
- Sort the teams into alphabetic name order.
- Undo** the last operation.
- Sort the teams into descending order of points. If the points are equal, then sort on the greater goal difference - if this is the same, again in descending order. Then sort on **For** (descending).
- Print a copy of the **LEAGUE TABLE**.
- Close the workbook without saving.

Exercise 104 - Revision

1. Open the workbook **Staff**.
2. Display the **AutoFilter** and filter the list to display only the employees in the **Computer Services** department.
3. Display all the records.
4. Filter the list to show the employees between **40** and **50** years old inclusive.
5. Print a copy of the filtered list.
6. Remove the **AutoFilter**.
7. Close the workbook without saving.

Answers

Exercise 22

Step 3 - **98,740**

Step 4 - **61,624**

Step 7 - **59,868**

Step 8 - **34,297**

Step 9 - **246,074**

Exercise 28

Step 7 - **83,877**

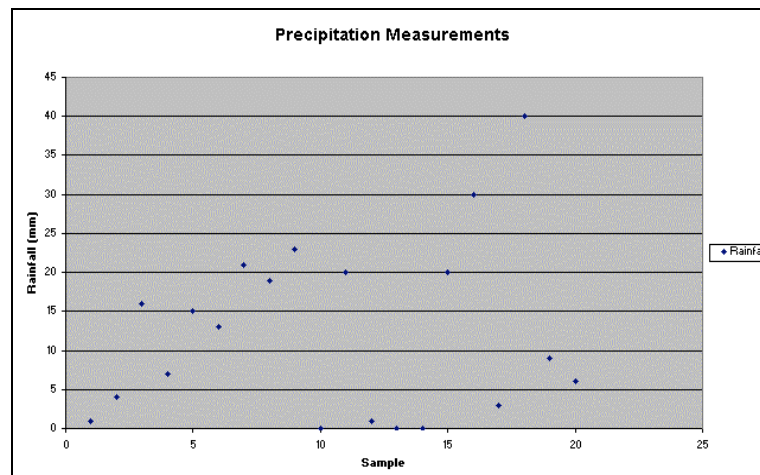
Exercise 56

Step 13 Cambridge

Exercise 57


Step 10 March

Exercise 59



Exercise 60

Step 1 **Chart Wizard**

Step 2 Selecting **Insert | Chart** or by clicking the **Chart Wizard** button, .

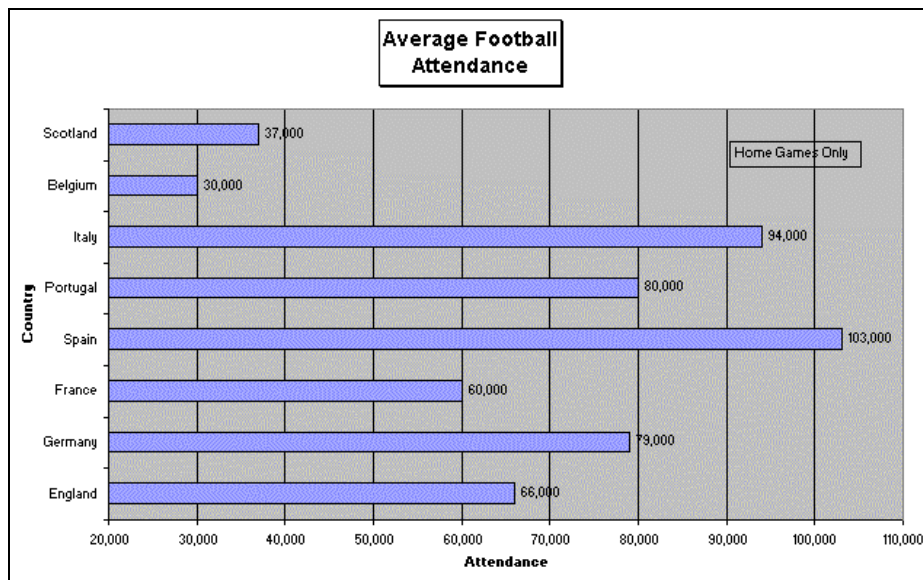
Step 3 Can be done either way but before if possible to be able to display a preview.

Step 4 **Column, Line and Pie**

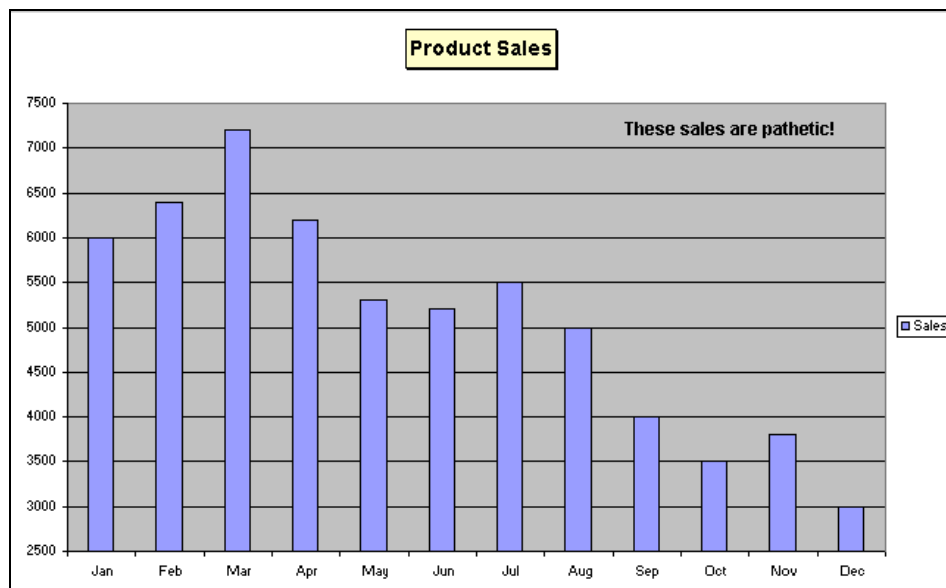
Exercise 60 - Continued

- Step 5 **Bar, XY Scatter and Line - Column**
- Step 6 **Line chart**
- Step 7 **XY Scatter chart**
- Step 8 **Line or Column chart**
- Step 9 **XY Scatter chart**
- Step 10 **Pie chart**
- Step 11 **Column chart** the data is represented by vertical columns and a **Bar** chart displays horizontal bars. The two axes change places.

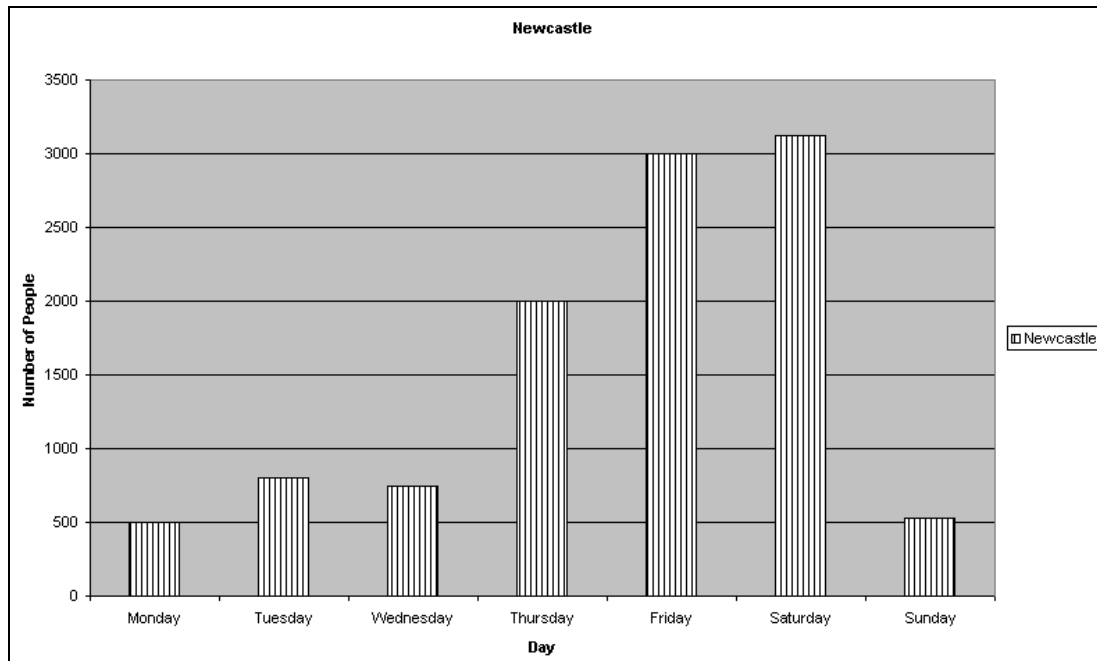
Exercise 66



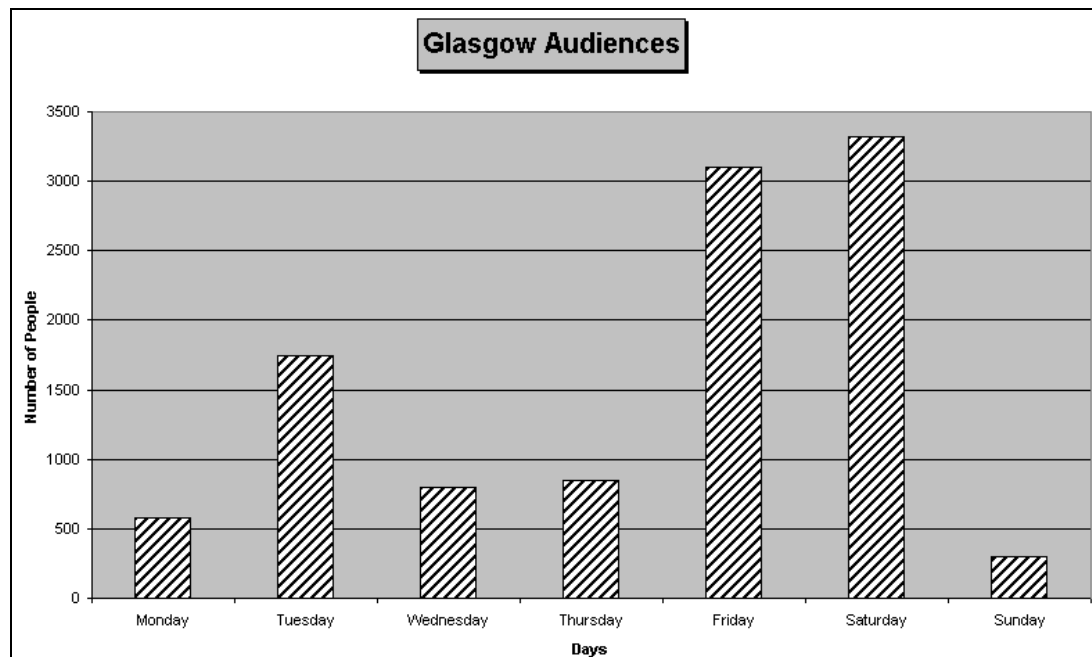
Exercise 67



Exercise 69



Exercise 71



Exercise 79

Step 11 - **=A4*B3**

Step 12 - **=\$A4*B\$3**

Step 14 - **=\$A7*E\$3**

Exercise 86

Step 2 - Total is **86415**, Average is **14402.5**

Step 3 - Count is **6**

Step 4 - Min is **6700**, Max is **21050**

Step 6 - When **0** is added to the list the answers that change are: Average **12345**, Count **7** and Min **0**.

Exercise 91

Step 4 - **2000**

Step 5 - **12720**

Exercise 102

Step 8 - **Ford Escort L342 PUK**

Step 9 - **Fiat 126**

Glossary

Active Cell	The currently selected cell in a spreadsheet
Addressing	A method of referencing cells, relative, absolute or mixed.
Alignment	The position of data in a cell. For chart labels, this is the angle at which relevant text is displayed
AutoSum	A function to sum a range of numbers
Average	Function that adds a range and divides the number of numbers
BODMAS	The order in which calculations are performed in a formula
Border	The edge of a cell or range, type and colour of line
Category Axis	Horizontal (X) axis of a chart (vertical for bar charts)
Cell	The smallest part of a spreadsheet, the intersection of one row and one column
Chart	A pictorial representation of numerical data
Chart Area	The area of a worksheet containing the whole chart, which can be moved and resized
Chart Wizard	Automated feature for producing charts. Prompts user with a series of dialog boxes then creates chart based on responses
Count	Function that displays the number of numbers in a range
Data Series	The values that make up one 'set' of data on a chart
Delete	To erase the contents of a selected cell or range
Embedded	A term that describes any object (e.g. chart) placed on a worksheet, that can be selected, resized or moved
Excel	<i>Microsoft's</i> spreadsheet application software
Fill Handle	A cursor used to copy data
Font	A type or style of text
Footer	Information appearing on the bottom of every printed page
Format	Changing the appearance of information
Formula	A calculation, can use values and/or cell references
Formula Bar	A bar above the main worksheet area that displays the actual content of the active cell

Function	Specialised formulas that make calculations easier
Gridlines	On a chart these are lines in the data area showing the position of certain interval markers on the axes
Header	Information appearing on the top of every printed page
House style	Rules set by an organisation that govern the appearance of all of their documents
IF	Logical function that carries out a test and performs one action if true and another if false
Importing	Transferring data into a spreadsheet from an external source
Label	Text entries that describe the contents of areas of the chart or worksheet e.g. titles, legends, column/row titles
Legend	A text box that identifies the patterns or colours assigned to each data series in a chart
Maximum	Function that displays the largest number in a range
Minimum	Function that displays the smallest number in a range
Pixel	Individual small squares that make up a screen display
Plot Area	The area of a chart containing all of the plotted data
Range	A group of adjacent cells
Text Box	A frame containing text that allows labels to be displayed on charts and graphs.
Walls	The area of a 3D column chart forming the back and sides of the plot area
Value Axis	Vertical (Y) axis of a chart (horizontal for bar charts)
Workbook	A spreadsheet file
Worksheet	A single page within a workbook