

# e-Quals 7262 01-023

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**CENTRES**

## Spreadsheets Level 2

## Notice

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## Design a spreadsheet to meet a given specification

### Create a data capture form to facilitate data input

#### Data Input, Processing and Output

There are some terms that you need to be aware of when you are working with spreadsheets.

#### DATA INPUT

#### DATA PROCESSING

#### DATA OUTPUT

**Data to be input** is the data put into the spreadsheet (excluding formulas and functions). It mainly refers to the data entered on which particular calculations are performed. (It can, however, be months or headings that can change in a spreadsheet).

**Data generated while processing** is the calculation performed on the input data, in other words, the formulas/functions in the spreadsheet.

**Output data required** is the data required from the spreadsheet, in a way it can be said to be the purpose of the spreadsheet, as it is the result of the calculations or the values resulting from the formulas.

Consider the following simple spreadsheet:

	A	B	C	D	E	F	G	H	
1	<b>GROCERS PARADISE</b>								
2	<b>Items Sold</b>								
3		<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>totals/Item</b>	
4	Mushrooms (lb)	55	60	90	55	46	54	360	
5	Tomatoes (lb)	78	98	100	89	87	99	551	
6									

The input data would be the items sold per item per month, B4:G5.

The data processing would be the cells containing the formulas in the totals column, H4:H5.

The output data would be the values resulting from the same formulas i.e. H4:H5 in most cases the area of data processing in a spreadsheet is the same as the output data.

Let's expand the spreadsheet.

	A	B	C	D	E	F	G	H
1	<b>GROCERS PARADISE</b>							
2	<b>Items Sold</b>							
3		<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>totals/Item</b>
4	Mushrooms (lb)	55	60	90	55	46	54	360
5	Tomatoes (lb)	78	98	100	89	87	99	551
6								
7	<b>Item Prices</b>							
8	Mushrooms (lb)	£1.60						
9	Tomatoes (lb)	£0.60						
10								
11	<b>Income from Sales</b>							
12	Mushrooms (lb)	£88.00	£96.00	£144.00	£88.00	£73.60	£86.40	£576.00
13	Tomatoes (lb)	£46.80	£58.80	£60.00	£53.40	£52.20	£59.40	£330.60
14								

The original areas of input data remain the same, however, the unit prices are figures on which calculations are made in the next section, therefore, these are also input data. B8:B9.

The income from sales, B12:G13, is data processing and output data as it contains the formulas

=amount sold\*item prices

In addition, the Totals column in this section is also data processing and output data, containing the formulas

=sum(total income per item over 6 months).

To finish the spreadsheet, the income for the next six months will be forecast with a percentage increase of 10%.

	A	B	C	D	E	F	G	H
1	<b>GROCERS PARADISE</b>							
2	<b>Items Sold</b>							
3		<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>totals/Item</b>
4	Mushrooms (lb)	55	60	90	55	46	54	360
5	Tomatoes (lb)	78	98	100	89	87	99	551
6								
7	<b>Item Prices</b>							
8	Mushrooms (lb)	£1.60						
9	Tomatoes (lb)	£0.60						
10								
11	<b>Income from Sales</b>							
12	Mushrooms (lb)	£88.00	£96.00	£144.00	£88.00	£73.60	£86.40	£576.00
13	Tomatoes (lb)	£46.80	£58.80	£60.00	£53.40	£52.20	£59.40	£330.60
14								
15	<b>Forecasted Sales</b>							
			105%					
16	Mushrooms (lb)	£92.40	£100.80	£151.20	£92.40	£77.28	£90.72	£604.80
17	Tomatoes (lb)	£49.14	£61.74	£63.00	£56.07	£54.81	£62.37	£347.13
18								

therefore, the percentage increase is a piece of input data as it is used to forecast the income.

The forecasted income for Jan-Jun per item is data processing and output data, B16:G17: in addition, the total forecasted income, H16:H17.

## **Input Data in More Detail**

### **Variable Input Data**

Variable input data is data that is likely to change at a daily rate, weekly or monthly rate, therefore, in the example above, the figures in the items sold section, B4:G5, are variable input data as these will change monthly.

### **Constant Input Data**

Constant input data is that which is likely to change less often, on a quarterly or bi annual basis, for example.

In this case the item prices have been fixed for the six-month period, therefore they are constant input data. (In some cases, unit prices will change constantly over a period, which would then make them variable input data).

As is the percentage increase on the forecasted section; this figures may change every six months, but it will not change often.

In addition, the month headings will change for every six-month period, hence, these can be included in the constant input data section.

### **Data Capture Forms**

The purpose of a data capture form is to collect the information that is to be entered into a spreadsheet. (It will list all of the input data that will be used to update the spreadsheet). It should be presented in such a way as to enable correct data entry thus minimising possible errors.

A data capture form's design and layout will change according to the spreadsheet that it refers to, it can be designed so that it matches the input area of the spreadsheet as closely as possible. In this way, it is easier to read and enter the information.

Items of information should be shown in the same order and under the same headings, numbers of decimal places etc.

A sample data capture for a monthly update of the above spreadsheet could be

<b>Input Data for Grocer's Spreadsheet</b>	
<b>Items Sold in _____ (month)</b>	<b>Unit Prices</b>
Mushrooms (lb) _____	_____
Tomatoes (lb) _____	_____
<b>Percentage Increase</b> _____	

The Unit Prices and Percentage Increase need to be included as the spreadsheet will be updated accordingly in the month of January and July.

## **Plan a spreadsheet structure**

### **Inserting and Deleting Rows**

Rows can be inserted into the spreadsheet at the operator's need.

Move the cursor to the row underneath the insertion point.

Choose Rows from the Insert Menu.

A blank row will appear in your spreadsheet.

To delete a row, move the cursor on to the row to be deleted.

Choose Delete from the Edit Menu and the spreadsheet will close up.

### **Inserting and Deleting Columns**

To add a column to the spreadsheet, move the cursor to the column to the right of the point of insertion.

Choose Columns from the Insert Menu.

A fresh column will be inserted.

To delete a column, move the cursor to the column to be deleted.

Choose Delete from the Edit Menu and the column will be deleted.

## Hiding Columns

A certain level of confidentiality may be attained in your spreadsheet. If you want staff salaries to be hidden from the screen, it is quite easy to do so. Of course, this is not much good against an experienced spreadsheet user, however, it may be of some use where juniors and inexperienced computer users are concerned.

To hide a **single** column, move the highlight anywhere into that column.

Choose Column from the Format Menu and select Hide. This will reduce the column width to 0.

Alternatively "drag" the right column border (on the column headings) to the left until the column is hidden.

To hide **more than one column**, highlight a cell in each column you want to hide.

For example to hide columns B-F (inclusive) highlight as follows

	A	B	C	D	E	F	
1	QUARTERLY SALES FIGURES - 2001						
2							
3		Amount Sold					

Choose to Hide the Column in the Format Menu.

The columns B-F will be taken from the screen and will read A G H I J etc.

	A	G	H	I
1	QUARTERLY SALES FIGURES - 2001			
2				

## Restoring Hidden Columns

To **return** the hidden columns to your screen, highlight across the two columns that cover the hidden columns. In the above case you would highlight across A and G columns.

	A	G	I
1	QUARTERLY SALES FIG		
2			
3			

Choose Column from the Format Menu and choose Unhide. The columns will open up to their previous width settings.

To return a single column: choose Go To from the Edit Menu and enter a cell reference that is in the column that is hidden. The highlight will move to the gap where the column is hidden. Immediately after, choose to unhide the column from the Format Menu and your column should be returned to the screen.

## Protected Cells

When you have created your spreadsheet and have the basic formulae, functions and layout well worked out, you can "protect" some or all of the information. This will guard against incorrect keystrokes, unnecessary re-formatting and possible errors made by an inexperienced operator. It is protection against an accidental mistake on one of the keys by yourself or another experienced operator.

## Protecting Data

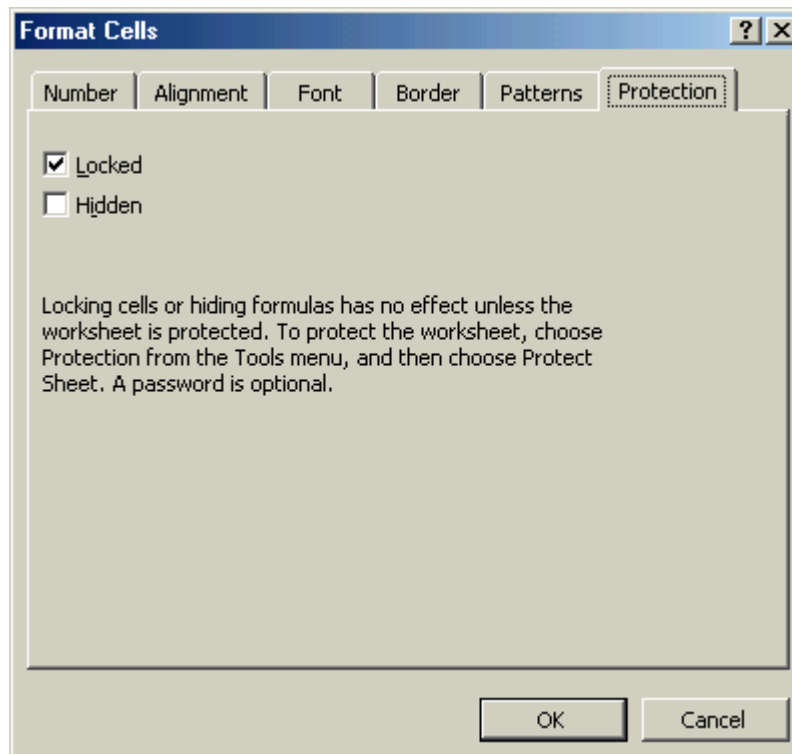
Basically the area that you want to leave free is where input data is going to be entered frequently.

All the titles, formulas and headings can be protected.

When a spreadsheet is created each of the cells is "locked", which, *when used in conjunction with Protect Data*, means that the information within those cells cannot be changed.

To indicate which cells are to remain unprotected, you must first "unlock" them. Highlight the cell(s) that you wish to "unlock".

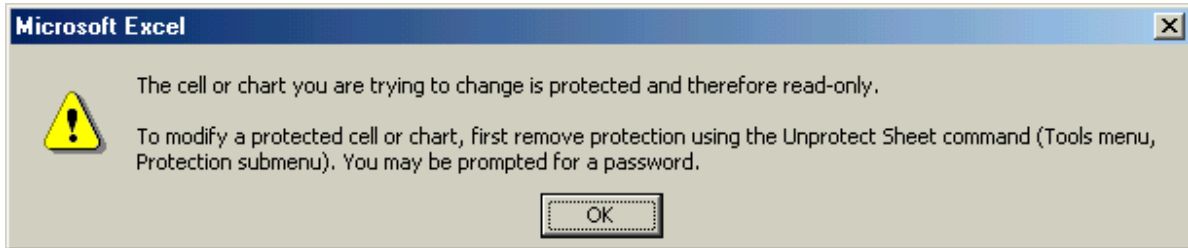
Choose Cells from the Format Menu, and select the Protection tab and the following dialogue box will appear



Click on the Locked box until it is blank.

Once you have "unlocked" all the required cells, (you can unlock more than one block or series of cells before you switch protection on), choose Protection and Protect Sheet from the Tools menu.

If you try to change any of the areas that you have left "locked" the following dialogue box will appear



If you move into the area where you unlocked the cells, you will only be able to make restricted changes, look at the menus and most of the options will be shaded in grey which means that they can not be used. However, basic changes to the input data can be made.

To cancel Protect Data, just enter the Tools Menu again and click on Protection and Unprotect sheet.

To lock the cells again, highlight them and click on the Locked box on the Protection tab in the Format, Cells Menu until the tick appears.

Unfortunately, there is no instant way of checking which cells have been locked or unlocked.

	A	B	C	D
1	Sales Figures			
2				
3		Month 1	Month 2	Totals
4				
5	Shoes	1	2	=SUM(B5:C5)
6	Socks	3	4	=SUM(B6:C6)
7	Total	=SUM(B5:B6)	=SUM(C5:C6)	
8				
9				

The highlighted area contains the cells which would be "unlocked" as this is the information which would change often.

Other areas would remain locked as titles would not need to be changed and values from formulae are automatically updated when input data is changed.

## Cell naming

A cell range can be given a name, a row, column or block of cells

	A	B	C	D	E	F	G
37		<b>Monthly Costs</b>					
38		May	June	July	August		Totals
39							
40	Wordprocessors	£1,900.00	£2,000.00	£2,100.00	£2,200.00		£8,200.00
41	Spreadsheets	£1,200.00	£1,500.00	£2,300.00	£1,550.00		£6,550.00
42	Databases	£2,000.00	£1,800.00	£2,000.00	£1,750.00		£7,550.00
43	DTP	£1,800.00	£2,500.00	£3,000.00	£2,105.00		£9,405.00
44							
45	Totals	£6,900.00	£7,800.00	£9,400.00	£7,605.00		£31,705.00

The cell range A37:G45 could be given a Range Name of Monthly Costs

*Figure 13*

In a large spreadsheet it is easy to find a certain section by using a named range. Use the Go To option out of the Edit Menu, highlight the name of the range and click on OK.

The highlight will move to that range and it will be highlighted in black.

In addition, if you have an area of the spreadsheet that you want to print often, named ranges are useful for setting print areas. Choose the range from the Go To option in the Edit Menu, once the range is highlighted, you can set it as a Print Area from the File Menu.

### To name a cell range

Highlight the required cells.

Choose Range Name from the Insert Menu.

Enter an appropriate name.

Click on OK, (If you are using more than one use an underscore between\_ words).

Range Names can be used in formulas

If a range has the name Sales the formula to total values would be

**=SUM(Sales)**

To find the average the formula would be

**=AVERAGE(Sales)**

If text is included in the range, as in Figure 13, ordinary text will be ignored and only the values calculated, **however**, if the range includes **month names or dates**, these will be given a serial number and calculated as well, therefore your values from your formula will most likely be wildly inaccurate.

## Absolute Cell References

The type of cell reference (can be referred to as cell address) that has been used so far is called a Relative Reference. This means that where a formula uses this cell reference, when it is copied using Fill Left/Right or Fill Up/Down (or when copying formulas to other parts of the spreadsheet using Copy and Paste), the cell reference will change in relation to its original position in the spreadsheet.

Where you wish a cell reference or cell address to remain the same or constant when it is copied to other areas of the spreadsheet, using Fill Left/Right/Fill Up/Down, you must make it absolute, or fix it so that it will not change.

In Works you must do this in your original formula from which the other formulas are being copied.

If a formula is being copied across a row, then the column must be fixed using the \$ sign, for example,

\$B4            \$I\$165

The row reference need not be changed as it will not increase across the row, only the column reference will.

For example, consider the following information

	A	B	C	D	E	F	G
1	<b>GROCERS PARADISE</b>						
2	<b>Items Sold</b>						
3		<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
4	Mushrooms (lb)	55	60	90	55	46	54
5	Tomatoes (lb)	78	98	100	89	87	99
6							
7	<b>Item Prices</b>						
8	Mushrooms (lb)	£1.60					
9	Tomatoes (lb)	£0.60					
10							
11	<b>Income from Sales</b>						
12	Mushrooms (lb)						
13	Tomatoes (lb)						
14							

To calculate the Income from Sales in July for Mushrooms, the formula in words would be

**=items sold\*item price**

which would be entered into **B12**. Normally it would read

**=B4\*B8**

However, although we want the Item Sold reference to change as it is copied across (using Fill Right), the Item Price needs to remain the same. (We could use the actual unit price value, however, if the price changes we would need to change all the formulas. However, if we use the cell reference, once the value has been changed in the Unit Price cell, the formulas will automatically recalculate their results). Therefore, the Item Price cell reference **B8** will need to be made absolute in the first cell of the initial formula.

To make it absolute add the dollar sign \$ before the column reference, **\$B8**, making the correct formula,

**=B4\*\$B8**

As the formula is filled right, the first cell reference will change whereas the second will remain constant across the row.

<b>11</b>	<b>Income from Sales</b>						
<b>12</b>	Mushrooms (lb)	=B4*\$B8	=C4*\$B8	=D4*\$B8	=E4*\$B8	=F4*\$B8	=G4*\$B8

In the same way, if copying the formula down a column and the cell needs to remain absolute as it is copied, then the row would be fixed:

Row\$Col

B\$67          IV\$456

If a formula is to be copied to a block of cells and the absolute cell refers to each and every one of those formulas, then both the column and the row reference can be fixed by the dollar sign.

\$Col\$Row

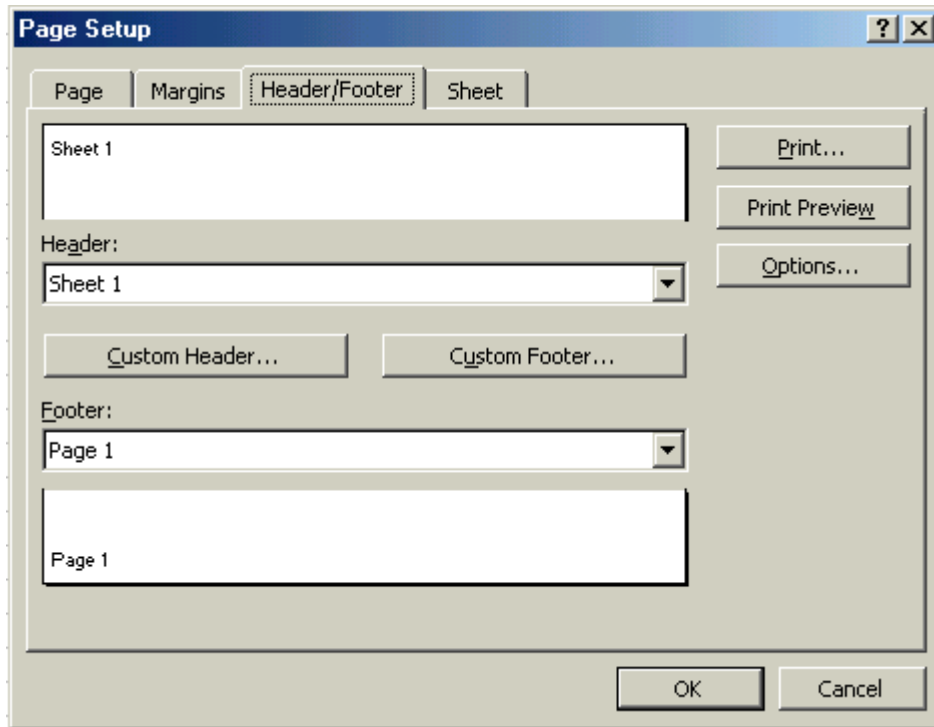
\$C\$59          \$IV\$15000

For example, in the same spreadsheet, the forecasted sales are calculated from a percentage. The percentage relates to all the formulas within the block, so the percentage becomes a fixed cell reference both on the column and the row.

<b>11</b>	<b>Income from Sales</b>						
<b>12</b>	Mushrooms (lb)	=B4*\$B8	=C4*\$B8	=D4*\$B8	=E4*\$B8	=F4*\$B8	=G4*\$B8
<b>13</b>	Tomatoes (lb)	=B5*\$B9	=C5*\$B9	=D5*\$B9	=E5*\$B9	=F5*\$B9	=G5*\$B9
<b>14</b>							
<b>15</b>	<b>Forecasted Sales</b>		1.05				
<b>16</b>	Mushrooms (lb)	=B12*\$C\$15	=C12*\$C\$15	=D12*\$C\$15	=E12*\$C\$15	=F12*\$C\$15	=G12*\$C\$15
<b>17</b>	Tomatoes (lb)	=B13*\$C\$15	=C13*\$C\$15	=D13*\$C\$15	=E13*\$C\$15	=F13*\$C\$15	=G13*\$C\$15

## Headers and Footers

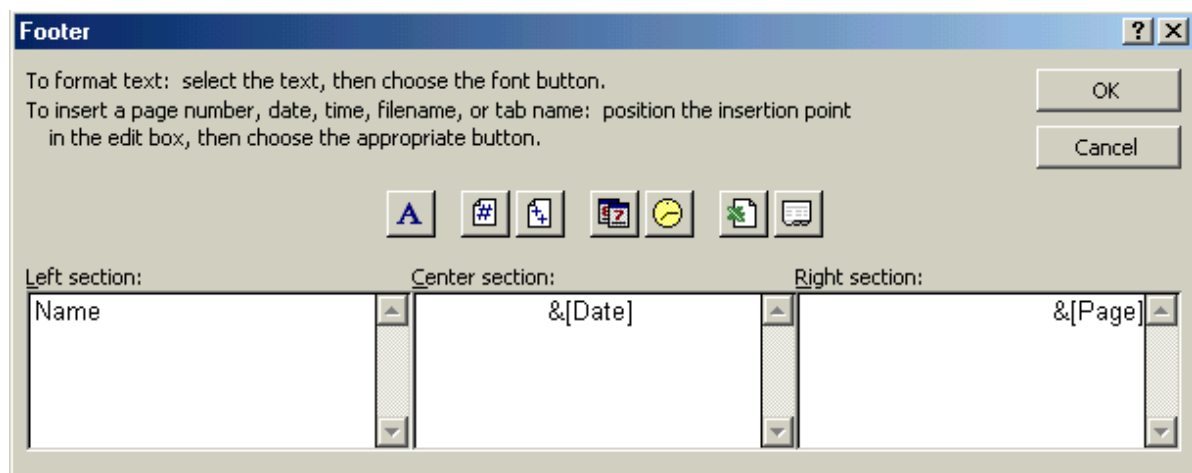
Headers and Footers work in the same way as they do in the word processor, except you can *not* use header and footer paragraphs. To access the header and footer options, choose Page Setup from the File menu and select the Header/Footer tab.




You will be given an automatic header, which matches your filename and an automatic footer, which gives you a page number. Text is automatically centred unless you state otherwise.


To enter your own headers and footers, choose Custom Header and Custom Footer in turn and make any required changes.

For example, to left align your name, centre the date and right align the page no as footer, the footer box in the dialogue box



you would enter your name in the Left Section, enter the date in the Centre Section by

clicking on the  date button and enter in the page numbering in the Right Section by

clicking on the  page numbering button. If you require the word Page in front of the number, then simply click the cursor in front of the page code and type in the word Page.

## Use suitable formats for data

### Alignment: left centre right

To change the justification or enhancement of a single cell, move the cursor to that cell and click on the appropriate buttons on the Formatting Bar. (Alternatively, the settings for Bold, Italic and Underline, Left, Centre and Right justification can all be found under Style and Modify in the Format Menu).

### Text enhancements

To change the appearance of information in more than one cell, highlight the series and choose the appropriate buttons on the Formatting Bar or choose Style and Modify from the Format Menu.

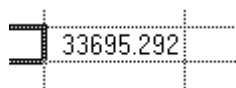
## Formatting Cells

### General

When a new spreadsheet is opened each of the cells is in General Format. This means that if figures or text are entered into a cell they will be shown as they have been typed.

(The only difference here is typing in a date, see separate section)

For example if you type in 33695.292

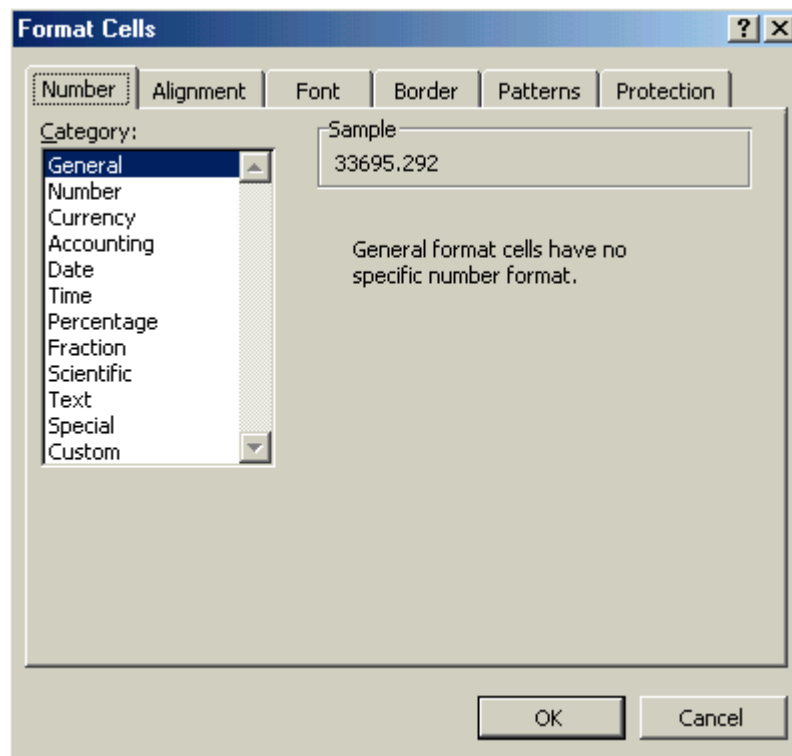


will appear in the cell, etc.

### Changing the Format of a Cell

If you want to choose any of the alternative formats for cells:

To change the format of a single cell, move the cursor into that cell and choose Cells and the Number tab from the Format Menu.

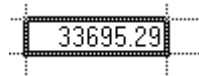


To change the format of more than one cell, highlight the required number of cells and choose the required format from the shown Category.

## Number Format

If figures are required to have a set number of decimal places or to appear as whole numbers, Number format gives you the option of specifying a set number of decimal places.

Therefore using 33695.292 again, to two decimal places, gives you the following




33695.29

Although these figures **appear** to a set number of decimal places, any calculations on these figures will be made using the **full** number entered. Therefore, although 33695.29 appears in the cell, (the full number appears in the formula bar), any calculations made on this cell will use the full 33695.292.

## Currency

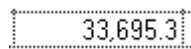
The currency format will add a £ sign to the figure and ask you to how many decimal places you want the value. For example, 33695.292, to two decimal places will appear as



£33,695.29

## Comma(choose custom)

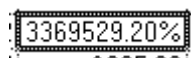
To choose the comma format, select custom and choose #,##0 and this will add commas between thousands in figures of 4 digits or more. You can specify the number of decimal places by choosing the correct option or entering in your requirements in the Type area. For example, 33695.292 to 1 decimal place will appear as



33,695.3

## Percent

The percentage format will multiply any figure entered or calculated into that cell by 100 and request a set number of decimal places. For example, 33695.292 will appear as



3369529.20%

## Scientific

Scientific format gives you the exponential notation of your number to a set number of decimal places. For example 33695.292 to two decimal places would be 3.37+04.

## Custom

Leading Zeros format adds zeros (0s) to the beginning of your number to a specified number of digits. To enter in your chosen amount of leading zeros, select Custom and type in the amount of zeros you require. A sample will appear above the type entry area.

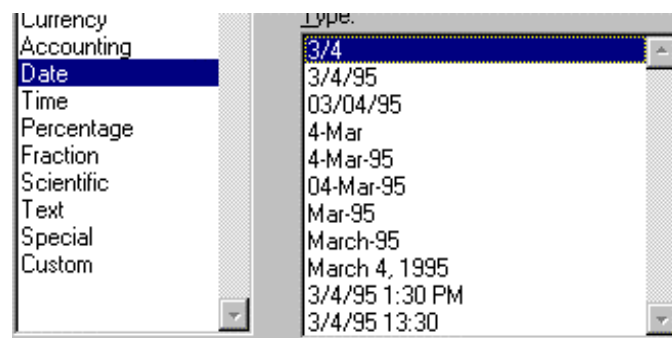
If you have specified 5 digits, if you enter 369 into your cell, it will appear as 00369.

If you have specified 4 digits, the same number would appear as 0369.

## Time/Date

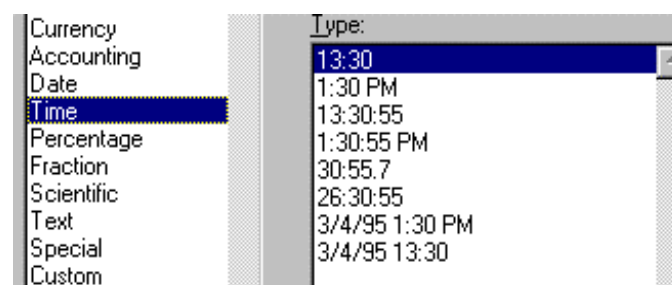
As dates are typed into the spreadsheet, they are automatically aligned to the right hand side of the cell and if you type in the month in short form i.e. Jan, the whole word will appear in the cell. To change this you can change the format of the cell to Date.

The following selection list will be shown:



The different options show the date you enter in different ways. When you actually enter a date in short, e.g. 01 January 1994, use the oblique or forward slash, i.e. 01/01/94 rather than a full stop.

To enter a time, use time selection and choose the required format from the list of alternatives. Use the colon to separate the hours, minutes and seconds. You can choose to show the time with the hours, minutes and seconds all showing or the hour and minute only. It can be displayed in 24 hour clock time or 12 hour clock time.



Enter 16:00 in 24 hour format it would appear as 16:00

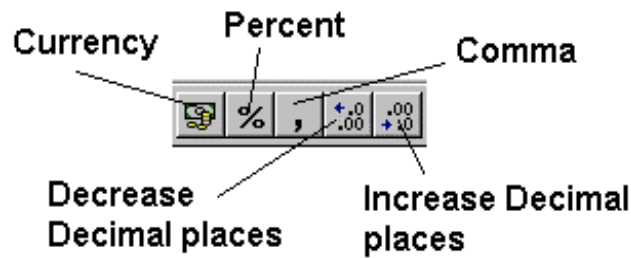
Enter 16:00 in 12 hour format it would appear as 04:00PM.

Enter 04:00 in 24 hour format it would appear as 04:00

Enter 04:00 in 12 hour format it would appear as 04:00AM.

## Five Shortcuts

There are five shortcuts to formatting cells. There are five buttons on the formatting bar,



These perform the same formats as the Format Menu.

Move the highlight to the required cell and click on the chosen format button or highlight the required cells



currency automatically inserts the £ sign and two decimal places



percent automatically multiplies the number inserted by 100 with percent sign



comma adds a comma to 4 or more digit figures on thousands and two decimal places



increases the amount of decimals spaces



decreases the amount of decimal places.

## Perform calculations using formulas

Using the spreadsheet you can find the highest number contained in a series of cells, the lowest number in a series of cells and the average number of a series of cells. This is useful if you are working with statistics and need to summarise some of the information.

Look at the following information:

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
<b>1</b>	14	5	8	16	5	0	15

### Maximum

Used to find the highest value in a range.

the maximum value is 16

The formula with function used would be

**=MAX(Cell Range)**  
**=MAX(A1:G1)**

### Minimum

Used to find the lowest value in a range

e.g. in the above range the minimum value is 0

The formula with function used would be

**=MIN(Cell Range)**  
**=MIN(A1:G1)**

### Average

To find the average value in a range of cells

in the above range the average value would be 7

The formula with function would be

**=AVERAGE(Cell Range)**  
**=AVERAGE(A1:G1)**

## Count

The function =COUNT(Cell range) will count how many cells in the cell range contain information, text, numerical data or formulae. Consider the following information:

	A	B	C	D	E	F	G	H
1	1	3	5	7	9		23	
2	5		16		8	9	24	
3	45		65	98		59		
4	January	February	March					
5				April	May	Totals	Sum	
6								
7								
8								

Entering the =COUNT function in A7 for cell range A1:A4 would return the figure 4, as 4 cells contain information.

Entering the =COUNT(A1:G5) would return the figure 22 as that is the number of cells that contain information within that cell range.

## Round

The ROUND function rounds a specified number (or value in a cell reference) to a set number of places, mostly to the right of the decimal point.

=ROUND(X,number of places)

X refers to the specified number, value or formula.

If the required last digit is followed by a 5 up to 9 the digit will be rounded up to the next number, if it is followed by 4 or less, the last digit will remain the same.

For example, to round 123.456 to two decimal places, the last digit 5 will become a 6, as the next digit is a 6, therefore the number will become 123.46.

However, 123.454, the 5 will remain constant, as the following digit is 4, therefore the number will become 123.45.

	A	B	C	D
1	1.695			
2				
3		2.493		
4				1876.2956

Referring to the above table, to round the figure in

A1 to 1 decimal place, the formula would be =ROUND(A1,1) value in cell **1.7**

B3 to 2 decimal places, the formula would be =ROUND(B3,2) value in cell **2.49**

D4 to 3 decimal places, the formula would be =ROUND(D4,3) value in cell **1876.296**

In addition to figures of the values contained in cell references, the =ROUND function can be used to round the value resulting from a formula. Consider the following information

	A	B	C	D	E	F
1						
2		Wk1	Wk2	Wk3	Wk4	Avg Wk Figs
3						
4	TVs	15	16	17	25	18.25
5	Radios	29	32	47	23	32.75
6	Videos	33	46	29	35	35.75
7	Satellite	5	15	13	18	12.75

The formula to calculate the average weekly figures would be =AVERAGE(b4:e4) which would give the figures above.

However, the nearest whole number may be required, therefore, the =ROUND function can be used.

=ROUND(Formula,number of places)

for example, from the table above

=ROUND(AVERAGE(B4:E4),0)

giving the answers in the totals column:

18  
33  
36  
13

## Date

The date function creates a serial number for a date to enable calculations using dates.

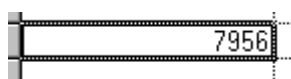
=DATE(Year,Month,Day)

Enter the required date into the brackets to receive the serial number. To show the date as normal, change the format of the cell to Time/Date.

For example, 12 October 1921, the formula would be

=DATE(21,10,12)

which would give the serial number in the cell as



To change the appearance to read 12 October 1921 or 12/10/21, choose Time/Date from the Format Menu and choose the style of date you want. To read in long form, the date would appear as follows:

12 October 1921
-----------------

To calculate the date 6 weeks from this date the formula would be

=DATE(21,10,12)+(7\*6)

(Seven days in a week multiplied by six calculates six weeks and add it on to the date function.)

Change the format of that cell to Time/Date and it will give you the date six weeks from 12 October 1921. i.e. 23 November 1921.

= =DATE(2002,10,12)+(7*6)	
<b>A</b>	<b>B</b>
November 23, 2002	

If this information was calculated in cell A1, in an adjacent cell, you could calculate the date of the following week in the year 1921 by using the cell reference of A1,

**Formula to calculate the date, 7 days forward from the date in cell A1**

= =A1+7	
<b>A</b>	<b>B</b>
November 23, 2002	November 30, 2002

**Now**

If you want the current date to appear in a cell, the function will be

=NOW()


The brackets do not contain any information.

The serial number for the date will appear first in the cell, however, change the format to Time/Date and the current date or time will appear depending on the format you choose.

= =NOW()
<b>A</b>
August 14, 2001

The information will be updated at each recalculation using Calculate Now from the Options Menu.

## Autosum

The Autosum button on the tool bar  will automatically perform the =SUM function.

Move the highlight to the cell at the end of the row or at the bottom of the column to be totalled.

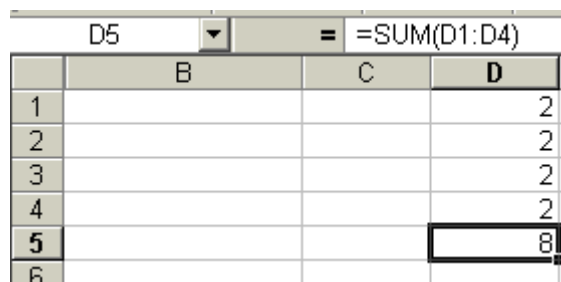
Click on the Autosum button.

The =SUM and cell range will appear in the formula bar.

Immediately press the ENTER key or click on the formula bar tick. (Do not move the arrow/cursor keys or click on the mouse as this will spoil the formula)

The calculation will automatically be made.

**NB** The Autosum will always read a column of cells before a row.



	B	C	D
1			2
2			2
3			2
4			2
5			8
6			

## Create and use simple IF statements

Consider the following information:

If a salesman sells more than 10 objects, he will earn a bonus of £10, if not, he will not earn a bonus.

or the following:

If a librarian lends a book 19 times, she will order 10 new ones, if not she will order only 1.

This type of statement can be translated into your spreadsheet by using an IF statement

**=IF(Condition,ValueifTrue,ValueifFalse)**

Breaking this down into basics, this is stating

### Function

**=IF(Condition**      If something happens

**,**                      either

**Value if True** this occurs

**,**                      or, if not, then

**Value if False)**      this occurs instead.

Looking at the two sentences above again

<b>If a salesman sells more than 10 objects,</b>	<b>he will earn a bonus of £10,</b>	<b>if not, he will not earn a bonus</b>
<i>Condition</i>	<i>Value if True</i>	<i>Value if False</i>

<b>If a librarian lends a book 19 times,</b>	<b>she will order 10 new ones,</b>	<b>if not, she will order only 1</b>
<i>Condition</i>	<i>Value if True</i>	<i>Value if False</i>

Therefore when you are handed a spreadsheet to create, the easiest way of transferring the information is to write the whole formula/function in words first.

To transfer the first statement to a basic spreadsheet:

	A	B	C	D	E	F
1	September 7, 2001-1994					
2						
3	Sales Figures for	Salesman John				
4						
5		Month 1	Month 2	Totals	Bonus	
6						
7	Shoes		1	3	4	
8	Socks		3	15	18	
9						
10						

The IF statement can be entered in the first cell and then Filled down.

The IF statement would be entered into cell E7, referring to the total number of items Salesman John has sold over the two months. Begin the statement with the condition,

**=IF(D7>10**

**(If John has sold a number greater than 10,**

add the Value if True,

**=IF(D7>10,10.00**

**(If John has sold a number greater than 10, he earns a bonus of £10.00**

add the Value if False

**=IF(D7>10,10,0)**

**(If John has sold a number greater than 10, he earns a bonus of £10, if not he earns nothing extra)**

The appropriate values will appear in the cells E7 and E8 when the formula has been entered in both cells.

	Totals	Bonus
4		£0.00
18		£10.00

Cell contains formula =IF(D7>10,10.00,0)

Cell contains formula =IF(E7>10,10.00,0)

**Calculate the result of an IF statement**

	A	B	C	D	E	F	G	H
1	Librarian	Jane						
2								
3	<b>Leasing Details</b>							
4			January	February	March	April	Total	<b>New Order</b>
5	David Copperfield		8	5	5	6	24	
6	Hard Times		1	0	1	2	4	
7	Pride and Prejudice		2	4	2	3	11	
8	The Woman in White		4	5	8	7	24	
9								

The IF statement would be entered into the first cell H5,

**=IF(G5>19,**

**If Jane leases the book more than 19 times,**

**=IF(G5>19,10,**

**If Jane leases the book more than 19 times, she will order 10 books,**

**=IF(G5>19,10,1)**

**If Jane leases the book more than 19 times, she will order 10 books, if not, she will order only 1.**

The cells below would contain similar information for each book.

## Define the printout required for a given application

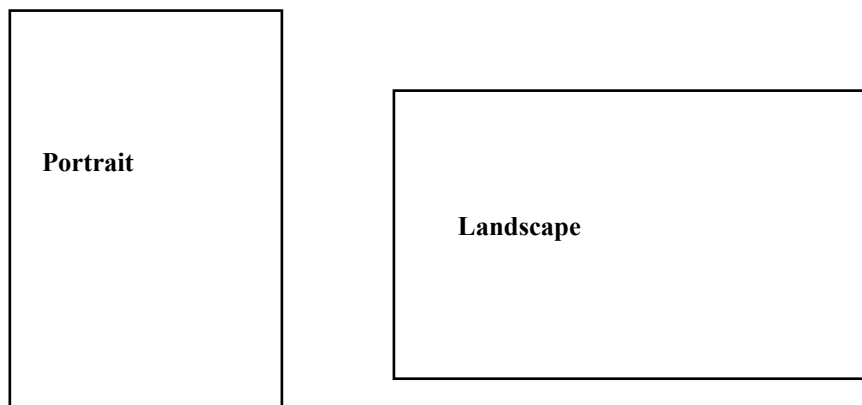
Printing information from the spreadsheet is similar to printing using the word processor, choose the Print option from the File Menu or use the Print button from the Standard Bar.

It is always of great advantage to use the Preview option, especially with the spreadsheet, as it cuts down on time and paper wastage.

There are a couple of additional options that you can use with your spreadsheet when it comes to printing. These are as follows:

### Printing Landscape

As you work with the spreadsheet you may find it difficult to fit much on an A4 size sheet of paper when printed in the ordinary way. You can choose to print it 'sideways' or landscape



The usual way of printing (where the width is smaller than the length) is known as Portrait. To change the way of printing to Landscape you must change the page settings. To change the page settings, choose Page Setup from the File Menu and choose Page and change the orientation to Landscape.

Click on OK and this will return you to your main spreadsheet screen. Use the Preview Option to check that your spreadsheet will print in Landscape.

To cancel Landscape printing, change the page settings in Page Setup back to Portrait, using the same method as described above. When you are working with Landscape remember that the file settings only effect *the one* file, as each time a new file is created, be it word processor, spreadsheet or database, Excel will revert back to the default settings. However, where the printer settings are concerned, these will effect *all the* files created or open until you choose to revert back to Portrait.

### In addition

In addition to printing in Landscape to fit more information onto a page, you have two other alternatives. Decrease the margins and/or reduce the size of the font. Always use the Preview option to check how your spreadsheet looks before you print the information out.

## **Test Data**

Test data is data or figures that are entered into the input areas (data entry areas) of a spreadsheet that enable the user to check the output data (i.e. the results of formulas). Test data can be as simple as 1, 2 or 5 etc and once the test spreadsheet has been completed, it is ready for more complex data.

In the spreadsheet exercises following this section, in some cases the operator will be required to create a spreadsheet model from the information given in the exercise. The test data used may not be as simple as those listed above. The complexity of test data will depend on the creator of the test spreadsheet.

## Spreadsheet Exercise 1

### *Peter Plowright's Motor Vehicle Spare Parts*

Complete the following exercise as if you were Peter Plowright.

- 1 Peter Plowright started a motor vehicle spare parts business with a bank loan approximately twelve months ago. His bank has requested a copy of his sales for his first year's trading.
- 2 Using the sample spreadsheet overleaf, create a new file to take account of the following:
  - a the totals of each product for the period and
  - b the total number of products sold in a month.
- 3 He can now use simple test data for his amount sold figures i.e. simple figures such as 1 or 2 with which he can easily check his formulas in his totals column and totals row. (Use the figures on the next page).
- 4 Once he has checked his formulas he leaves the test data for the moment as he will be using it to check his next set of formulas
- 5 He now wants to be able to calculate the sales figures
  - a per item per month
  - b totals for all the items per month
  - c totals for each item for the twelve month period.

In order to do this he will put the unit price of each item into a separate cell:

#### **Unit Prices**

Spark Plugs	£10.00
Carburettors	£65.00
Distributor Caps	£27.00
HT Leads	£23.00
Tyres	£74.00

- 6 He then adds the second section to the spreadsheet.
- 7 The formula he will need in the first cell corresponding to January and spark plugs is  
 $\text{=unit price*amount sold}$
- 8 Now that he has worked out his formulas and checked them with the test data, he can enter the actual amounts sold (take out the original test data).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Spark Plugs	50	65	67	79	85	99	100	110	112	103	164	105
Carburettors	56	25	36	45	35	48	12	14	45	58	75	54
Distributors	25	32	34	25	29	38	34	33	26	24	26	28
HT Leads	15	13	19	21	24	17	13	23	21	21	21	25
Tyres	200	254	210	265	287	158	163	178	195	147	169	200

- 9 The bank manager has also asked him to estimate or forecast his sales figures for the first six months of the following year. To do this he has decided to work on a percentage increase of 5%. He adds another part to his spreadsheet, which will calculate the forecasted increase. He begins by putting the percentage value in a single cell.
- 10 He now wants to protect most of his spreadsheet so that he or anyone else using the spreadsheet can not accidentally change his formulas, titles etc. Only the areas where he enters the amount sold and the cells containing the unit prices and the percentage increase (input data) do not need protecting.
- 11 He has now completed his spreadsheet, he prints out his 1993 sales figures with his forecasted sales figures for the bank (you may need to take Protect Data off before you can do this).
- 12 Print out a copy of the cell contents (formulae) for the forecasted sales figures for first half 1994, with Peter Plowright aligned to the left, the current date centred and Report 1 at the right hand side of the footer.
- 13 Now print out a copy of the whole spreadsheet as normal and indicate areas of input data, output data and data processing.

Design a data capture form to update the spreadsheet each month.

**See Next Page For Layout**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	<b>P PLOWRIGHT MOTOR VEHICLE PARTS</b>													
2														
3		01-Jan-02	01-Feb-02	01-Mar-02	01-Apr-02	01-May-02	01-Jun-02	01-Jul-02	01-Aug-02	01-Sep-02	01-Oct-02	01-Nov-02	01-Dec-02	Totals
4	<b>Amount Sold</b>													
5	Spark Plugs	50	65	67	79	85	99	100	110	112	103	164	105	
6	Carburettors	56	25	36	45	35	48	12	14	45	58	75	54	
7	Distributor Caps	25	32	34	25	29	38	34	33	26	24	26	28	
8	HT Leads	15	13	19	21	24	17	13	23	21	21	21	25	
9	Tyres	200	254	210	265	287	158	163	178	195	147	169	200	
10														
11	Totals													
12														
13	Spark Plugs	£10,00												
14	Carburettors	£65,00												
15	Distributor Caps	£27,50												
16	HT Leads	£23,00												
17	Tyres	£74,00												
18														
19	<b>Sales Figures</b>													
20	Spark Plugs													
21	Carburettors													
22	Distributor Caps													
23	HT Leads													
24	Tyres													
25														
26	Totals													
27														
28	<b>Forecasted Figures for First Half</b>													
29	Percentage Increase		105.00%											
30														
31	Spark Plugs													
32	Carburettors													
33	Distributor Caps													
34	HT Leads													
35	Tyres													
36														
37	Totals													
38														

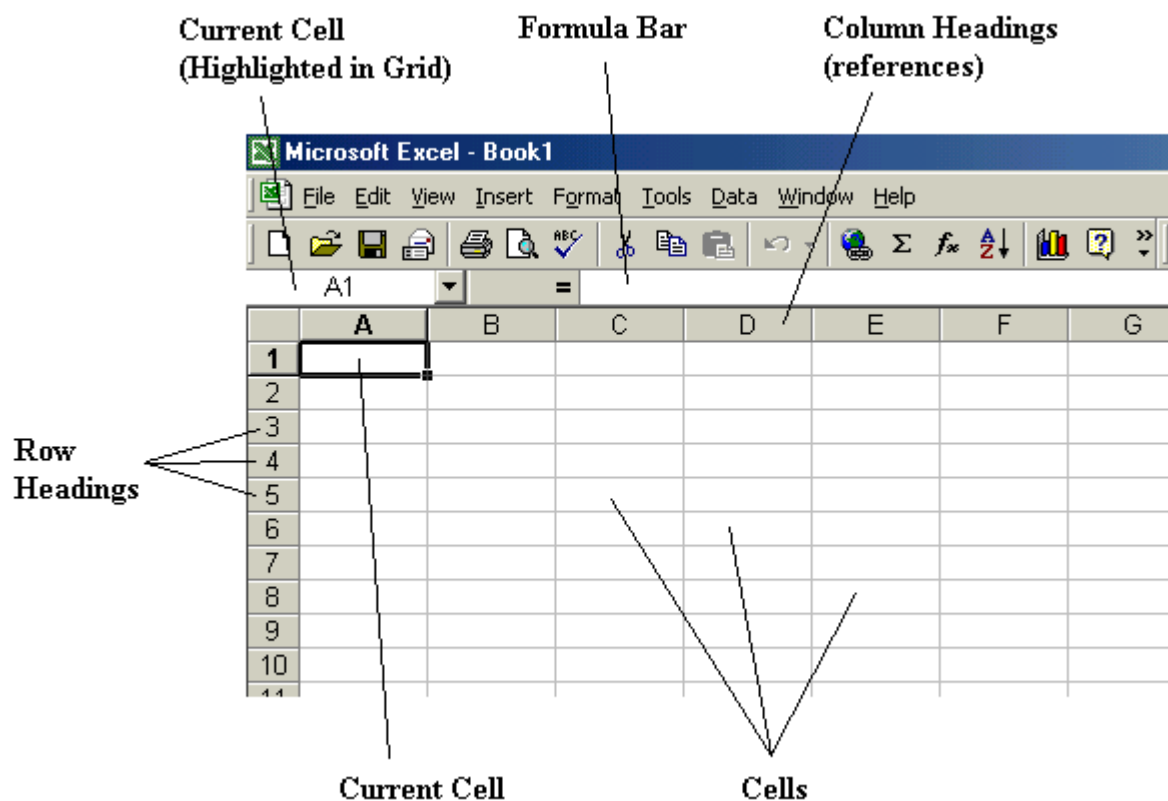
## Create and test a simple spreadsheet

### Create a spreadsheet according to a given design

#### Enter titles and values

To open the spreadsheet software and create a new spreadsheet in Excel, click on the Start button, move up to programs and click on Microsoft Excel and a new spreadsheet will be opened for you

Notice the filename of the spreadsheet is given as Book 1.



**Figure 1**

The main area of the spreadsheet is a series of cells in a grid pattern. Only a small area of the spreadsheet is visible at one time. The number of cells across the spreadsheet is 256 and the number down is 65,536. In total, there are 16,777,216 cells in the whole of one single spreadsheet file.

(If you need to open an existing file choose the "Open Existing File" button in Figure 1 or choose Open from the File Menu.)

## Entering Text

Type the text in the cell where you want the entry. Text is displayed in the cell and the formula bar. Once you have finished press the ENTER key (or click on the tick). Text in the spreadsheet is used for titles, notes or column headings.

If the text is longer than the column width, it will overlap into the next cells to the right. This is fine if the cells are to remain empty

	A	B	C	D
1	THIS IS A TITLE OF A SPREADSHEET			
2				

however, if there are contents in those cells, the original will have to be widened. (See next sub-section.)

1	Perambulu	1
2	Refrigerator	5

Text is automatically aligned to the left hand side.

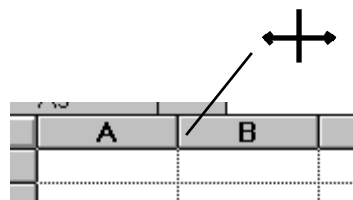
*To edit the cell, either use F2 to bring the flashing cursor into the cell or click on the formula bar itself with the mouse.*

## Column Widths

Excel automatically gives a column width of 8.43 characters.

To widen the column (which will widen all the cells in the column) move the highlight into the column (any single cell will do) and choose Column Width from the Format Menu. Alter the width to the required value.

Alternatively move the cursor to the thick black line to the right of the column reference until it changes to a double headed arrow:



Click on the left mouse button and drag the line to the left or right, decreasing or increasing the width respectively.

## Entering Numbers

Type the number or value into the required cell. It will automatically be aligned to the right hand side. Again the number appears in the cell and formula bar. Once you have completed the entry, press the ENTER key (or click on the tick). If a series of ##### symbols appears, the entered number is too long for the width of the cell. Make the cell wider to see the whole number.

Dates are treated as numbers, they are automatically aligned to the right of the cell.

## Formulas

A formula is an equation entered into a cell, which calculates a new value or result from ordinary numbers, or from values contained elsewhere in the spreadsheet. Again, as you enter the formula, the information will appear both in the cell and in the formula bar. However, once you have entered the formula, the result or value will show in the cell whilst the actual formula appears in the formula bar.

To edit the formula, either use F2 to bring the flashing cursor into the cell or click on the formula bar.

Simple arithmetic equations can be calculated e.g.  $2+2+3+4$ . Highlight the cell where you want the formula and start the formula with an = sign. For our example equation you would type:

$=2+2+3+4$

The + (addition) and - (subtraction) signs are called 'operators' within the spreadsheet equation. The operators for multiplication and division are \* and / respectively. Examples are:

4 added to 2                       $=4+2$

4 minus 2                          $=4-2$

4 multiplied by 2                 $=4*2$

4 divided by 2                     $=4/2$

## Using Cell References in Formulas

When you are working with figures from the spreadsheet in formulas, the cell reference should be used. The advantage of this is that when figures in the cell references are changed, the results of calculations from the formulas are automatically recalculated and entered in the spreadsheet. As you build your spreadsheet to be more complex, changing one figure in a cell can alter values in many other cells. Therefore a basic spreadsheet can easily be updated once the formulas are set.

Look at the following:

	A	B	C	D
1		9		
2		15		
3		18		
4				

To add the figures together simply (in another cell), the formula would be

`=B1+B2+B3`

To multiply them together it would be

`=B1*B2*B3`

If any of the figures are changed in the cells, the formula would remain the same but the result would be automatically updated without changes.

## Operator Order of Precedence

When working with a long arithmetic equation, for example

$$=4+2*6+4-14/7$$

the Excel spreadsheet does not work along the equation from left to right i.e. adds 4 and 2 together and multiplies the result by 6, then adds that result to 4 etc. It works on the number separated by the multiplication or the division operators first and then calculates from left to right on the remaining numbers, using the above equation:

$$=4+\underline{2*6}+4-\underline{14/7}$$

will be calculated first and will become

$$=4+12+4-2$$

Excel calculates division and multiplication first and then addition and subtraction. If an equation is made up entirely of multiplication and division it will work from left to right, for example:

$$=6*2/3$$

$$=12/3$$

$$=4$$

If an equation is made up entirely of addition or subtraction it will again work from left to right, for example:

$$=5+4-2+6$$

$$=9-2+6$$

$$=7+6$$

$$=13$$

To change the order of calculation within an equation, place the figures you want first into parentheses (brackets):

$$=(5+4)*(6-2)+15*2$$

$$=9*4+15*2$$

$$=36+30$$

$$=66$$

## Functions and Cell Ranges

Functions are used in formulas to perform specific calculations. They can be built-in equations, which perform mathematical or logistical operations. For example:

=SUM

will calculate the result of the addition of a series of cells.

Some functions, such as =SUM, work on specified cells, (a row, a column or a block) these cells are entered into a formula as a cell range.

**A Cell Range** can be read down a column, across a row or as a block of cells. If we use the following table:

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>
<b>1</b>	5	6	7	8	9	10	11
<b>2</b>	10	9	5	11	4	3	6
<b>3</b>	6	2	1	9	4	2	3
<b>4</b>	5	10	11	12	16	9	10

*Figure 4*

Reading across the first row, the cell range would be

A1:G1.

Reading down the second column, the cell range would be

B1:B4.

Begin the cell range with the first cell reference, the colon represents the intermediate cells, and end the range with the last cell reference.

To indicate a **block** of cells (i.e. more than one row or one column), begin the range with the cell at the top left corner, add the colon for the middle cells and end the range with the cell at the bottom right corner. Using the values in the table above, the cell range to indicate the whole block would read

A1:G4

When using a function such as = SUM in a formula, Excel needs to have a specified area to work on. For example,

=SUM(Cell Range)

Therefore to calculate the sum of the first row in Figure 4, you would type in a cell

=SUM(A1:G1)

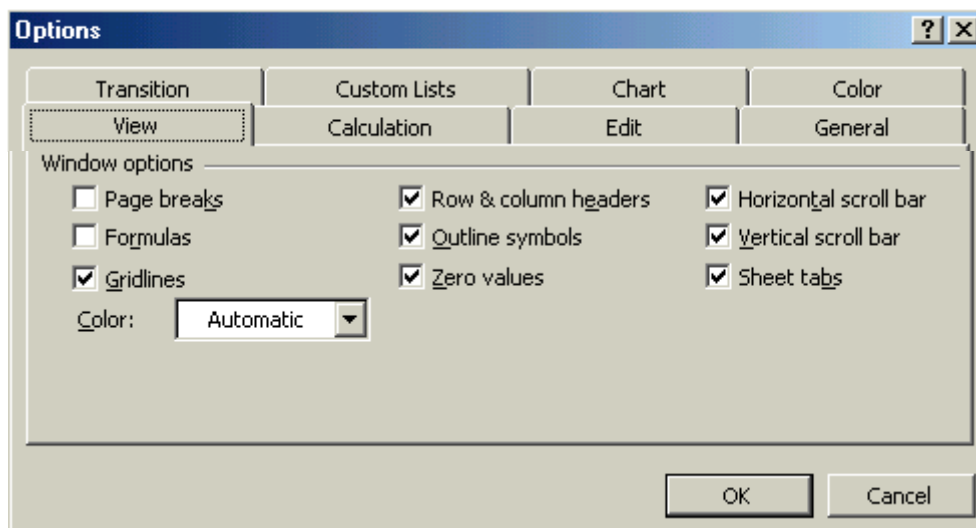
The answer 56 would appear in the cell (but the formula would appear in the formula bar).

=			=SUM(A1:G1)
G	H	I	
11	56		

The best place to enter a formula such as =SUM would be at the end of the column, row or block of cells the formula/function will be working on.

### Show Formulas

As you look at the spreadsheet as a whole, you will only see values (results) of calculations in those cells containing formulas. This is known as the spreadsheet or **cell display**. If you wish to look at all the formulas or the contents of the spreadsheet, choose Options from the Tools Menu. Select the View tab and click in the Formulas box. All the contents/formulas will then appear.



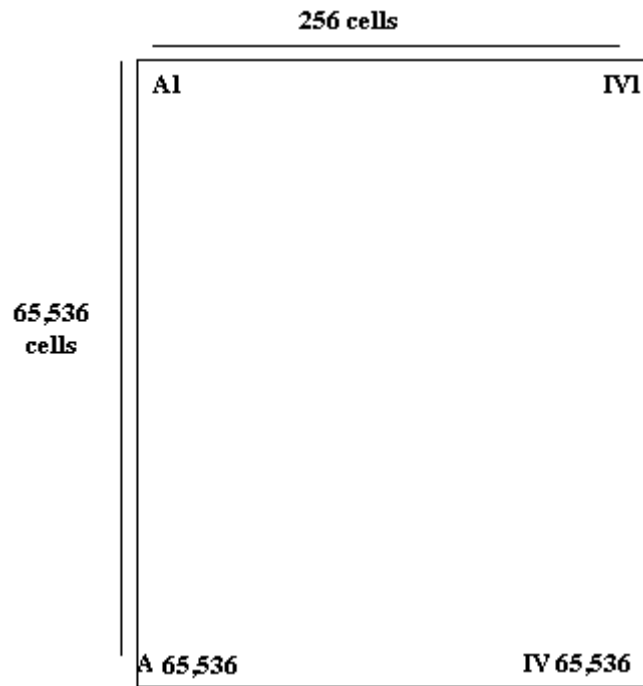
	F	G	H
1	10	11	=SUM(A1:G1)
2	3	6	=SUM(A2:G2)
3	2	3	=SUM(A3:G3)
4	9	10	=SUM(A4:G4)
5			

Notice that the column widths doubled in size when the contents are showing to enable most formulas to be visible. However, if any changes are made, e.g. they are reduced or increased, these changes will be incorporated into the first spreadsheet, therefore changing your original layout. To return to your original spreadsheet screen, choose Tools, Options and in the View tab switch the formulas off. Showing Formulas is extremely useful as you edit or update your spreadsheet to incorporate new circumstances.

## Cell References

Each cell has its own reference. Read the corresponding column letter across to start the reference and read the row number down to finish the reference, for example, the reference for the cell in the top left hand corner of the grid is A1.

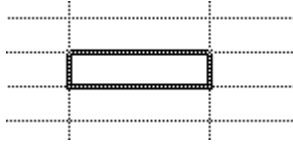
As the highlight is moved across the spreadsheet, the column labels will reach Z, they will then change to AA-AZ, BA-BZ, along to IA-IV; IV being the last column. The last cell reference in the spreadsheet will be IV65536.



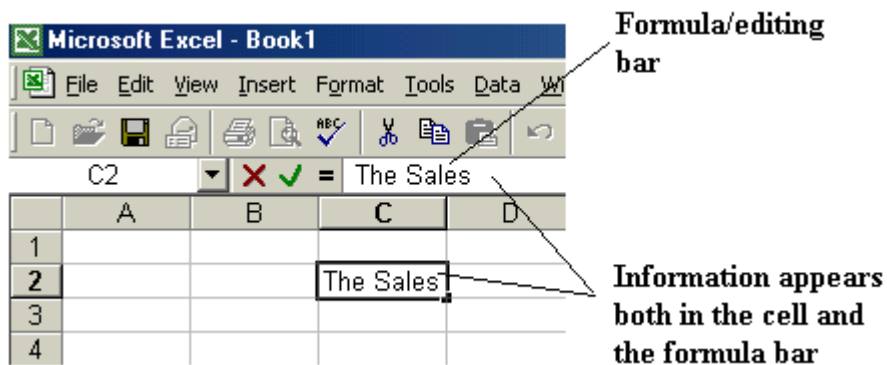
*Figure 2*

## The Formula Bar


Each cell contains a single piece of information. Each cell can contain up to 255 text characters. As the information is typed into the active cell (the cell with the thick highlight around the edges):



it will appear both in the cell and the **formula bar** near the top of the screen, indicated in Figure 3.



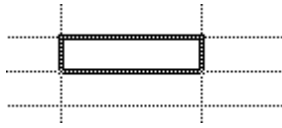
*Figure 3*

To enter the information into the spreadsheet press the ENTER key or click on the  next to the formula bar. Only a small piece of the text, number or formula can be seen in the cell at one time (see Column Widths in the next section).

## Improve and adjust design to facilitate data entry and output

As with a word processing file, once your spreadsheet has been set up, you can easily add, delete and copy information or insert spaces where you need to.

(For convenience, in this section, the highlighted cell



is referred to as the cursor.)

### Highlighting Information

In order to make some of these changes it is necessary to highlight or select text on which you are working.

Either use the mouse or the keyboard

#### Using the Mouse

Point to the cell where you want to begin the highlight.

Hold the left mouse button down and "drag" the black highlight either along the row, down the column or across and down when highlighting a block of cells.

Notice that the first cell in the highlight remains white, however, this is still part of the highlight, it is just where it begins.

**First Cell in the Highlight**

	<b>Amount Sold</b>		
	January	February	March
Shoes	10	12	6
Dresses	15	10	8
Jackets	14	11	15

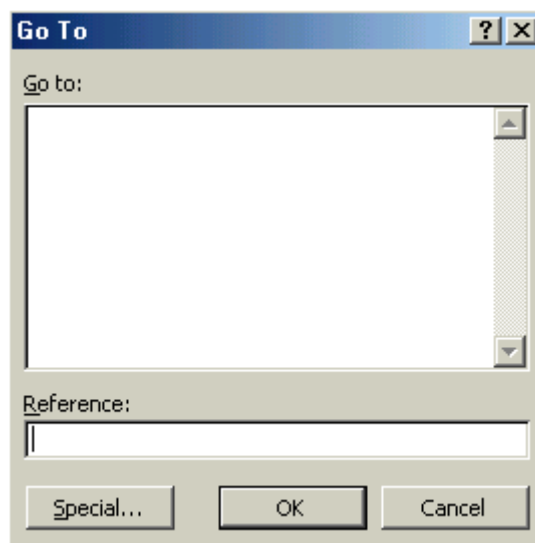


## Moving Around the Spreadsheet

Use the cursor/arrow keys to move the highlighted cell or point and click with the mouse to move to the required cell. The cursor keys will move one cell at a time. The mouse will move you directly to a selected cell on screen.

Use the scroll bars to the right and bottom of the grid screen to move to an area off the screen.

Use the Go To option in the Edit Menu to move to a specific cell reference. Enter the required cell in the dialogue box



and then click on OK. The highlight will be moved to the selected cell.

PAGE UP will move you up the spreadsheet by 20 rows at a time.

PAGE DOWN will move you down the spreadsheet by 20 rows at a time.

CTRL PAGE UP will move you 8 columns to the left at a time.

CTRL PAGE DOWN will move you 8 columns to the right at a time.

HOME will move you to the beginning of a row.

END will take you to the last cell in a row containing information.

CTRL HOME will take you to the top left of your spreadsheet.

CTRL END will take you to the last cell in the spreadsheet containing (or that has contained) information.

### **Copying Information (Copy and Paste)**

Copying cells is where the information is repeated in another part of the spreadsheet.

Highlight the cells, which are to be copied.

From the Edit Menu choose Copy.

Move the cursor to the beginning of the area to be copied **to**.

Choose Paste from the Edit Menu.

### **Moving Information (Cut and Paste)**

Cutting cells takes the information from these cells and moves them elsewhere in the spreadsheet.

Highlight the cells to be moved.

Choose Cut from the Edit Menu. (The information will be stored on the clipboard).

Move the cursor to the beginning of where the information is to go.

Choose Paste from the Edit Menu.

### **Deleting Information**

To delete information from a single cell, move the cursor to that cell and press the DELETE key. At this point the formula bar will become clear, press either ENTER or click on the tick next to the formula bar.

Alternatively, choose the Clear option from the Edit Menu and all contents will be erased.

To delete information from a number of cells, highlight the required cells and choose Clear from the Edit Menu. (Alternatively use the DELETE key on the keyboard).

## Saving Time in the Spreadsheet

There are a couple of shortcuts to filling in information in the Excel spreadsheet, which you may find useful.

### Fill Series (Numbers)

As you are entering information into the spreadsheet you may find that you are filling a series of numbers such as

1,2,3,4,5,6,7            or            5,6,7,8,9,10 (an increment of 1)  
26,28,30,32            or            157,159,161,163 (an increment of 2)

along a row or down a column, e.g. for numbering a list of items.

Rather than type each number, you can type in the first and then automatically fill in the rest of the series of numbers.

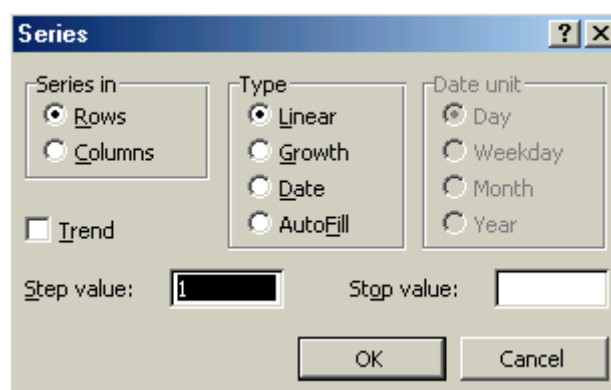
To do this enter the starting value of the series in the first cell.

Begin highlighting in this cell and extend it along the row or down the column to the end of the series.

Choose Fill and Series from the Edit Menu.

Choose to fill across a row or down a column by clicking in the Series in section.

Choose the required increment in the Step By box



(if you want the numbers to decrease in a series by a certain amount e.g. 10,8,6,4,2 enter a negative number in the Step By box).

Click on the OK button.

Your series of numbers should appear in the highlighted cells.

## Fill Up/Down and Fill Left/Right

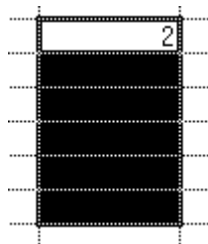
If you are working with a series of cells, which contain the same number, you can use the four options Fill, Down, Up, Right or left to copy the information across. Fill Up or Down copies the contents from one cell to the next cell down and a specified number of adjacent cells up or down a column while Fill Left or Right performs the same action across a row.

	A	B	C	D	E	F	G
1	4		5	5	5	5	5
2	4						
3	4						
4	4						

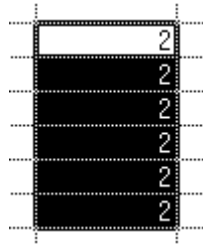
The number 4 can be copied down the column from cell A1 or the number 5 can be copied across the row from cell C1.

To Fill Down enter a figure/text into the cell to be copied from

Highlight **from** this cell down the column as many cells as are required. Figure 9a.



*Figure 9a*



*Figure 9b*

From the Edit Menu choose Fill and Down and the information will be copied down, Figure 9b.

To Fill Right, enter a figure into the cell to be copied from.

Highlight from this cell across the row as many cells as are required. Figure 10a.

From the Edit Menu, choose Fill and Right. The information will be copied across. Figure 10b.



*Figure 10a*



*Figure 10b*

Filling Up or Filling Left can be carried in the same manner as described above.

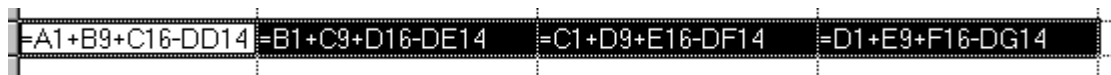
## Filling with Formulas

Copying formulas down and to the right into immediately adjacent and subsequent cells is very useful when you are using cell references.

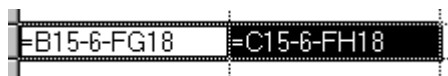
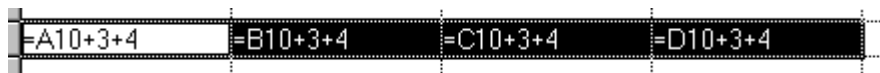
As a formula is copied across a row using **Fill, Left** or **Right**, the spreadsheet will read the original cell references and as the formula is copied into the next cell any column references will increase by one letter and so on until it reaches the last cell in the highlight. For example, look at the following



This formula will be copied into the next three cells using Fill and Right, note the change in the cell references



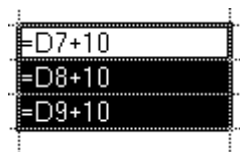
Any ordinary numbers/values will remain constant as you Fill Left/Right, for example,



If you are copying the formulas down using **Fill** and **Down** the row references will change , for example,



Again, ordinary numbers/values will remain constant, for example



These two practices are very useful when you are working in one area of your spreadsheet using related information from another, instead of constantly typing in different formulas, with a little planning much time can be saved e.g.

To calculate the total sales received for each month per item you would use the formula

$$=\text{UNIT PRICE}*\text{AMOUNT SOLD}$$

which you would enter into a similar block of information underneath i.e.

13		<b>Amount Received</b>		
14		January	February	March
15	Shoes	=B5*10		
16	Dresses			
17	Jackets			
18				

Instead of typing each formula you could use Fill and Right as the information used in the cells to the right will be directly related from the original block of information (Amount Sold).

13		<b>Amount Received</b>		
14		January	February	March
15	Shoes	=B5*10	=C4*10	=D5*10
16	Dresses			
17	Jackets			

The cell reference in the first formula used in the Shoes/January Amount Received cell is taken from the Shoes/January Amount Sold cell. Therefore as you fill right, the corresponding information will be taken from the first row in the Amount Sold. The unit price is used here as a constant number, therefore it remains the same as it is copied across.

A formula is used for each new line as you cannot use Fill and Down here as the unit price value is different for each item sold.

## Moving and Copying Between Spreadsheets

If you require information transferred between spreadsheets you can use the usual methods of Copy and Paste or Cut and Paste.

Copying/moving information from one spreadsheet to another allows you to use a spreadsheet model again and again e.g. sales figures for different months or years would follow the same format. It also means that related information from one spreadsheet can be moved into another to make a larger spreadsheet, saving time rather than keying in the data again, avoiding possible errors.

### Copying/Cutting Information

To copy or move information from one spreadsheet to another, both spreadsheets need to be open (if copying to a new spreadsheet, Create a New File).

Highlight the information to be copied, choose Copy from the Edit Menu.

From the Window Menu, move into the other document.

Move the highlight to the top left cell of the area to be copied to and choose Paste from the Edit Menu.

Use **Copy/Cut and Paste** if you are copying self-contained areas of the spreadsheet i.e. no cell references relating to other parts of the spreadsheet in formulae. The information and formulas will automatically be rearranged in the new spreadsheet. Unfortunately, it will not copy information containing external cell references as the new spreadsheet will not contain the relevant information needed for the formulae.

For example, if a lower part of a spreadsheet needs to be copied as in the TOTAL SALES from the following:

	A	B	C	D	E
1	<b>AMOUNT SOLD</b>				
2		<b>January</b>	<b>February</b>	<b>March</b>	<b>Totals</b>
3	Shoes	1	2	3	6
4	Socks	3	6	7	16
5					
6	<b>Prices</b>	Shoes	£5	Socks	£2
7					
8	<b>TOTAL SALES</b>				
9		<b>January</b>	<b>February</b>	<b>March</b>	<b>Totals</b>
10	Shoes	5	10	15	30
11	Socks	6	12	14	32

Information as it appears in original spreadsheet

*Figure 12a*

As this second part of the spreadsheet has formulas containing information/references from the Amount Sold and Unit Prices, as it is copied across the new spreadsheet will not contain the necessary information and therefore the formulae will be meaningless.

	A	B	C	D	E
1	TOTAL SALES				
2		January	February	March	Totals
3	Shoes	0	0	0	0
4	Socks	0	0	0	0
5					

**Information copied across to other spreadsheet has no relevant information on which to work.**

*Figure 12b*

However, you can copy the values or results of formulae across to other spreadsheets, using

### **Paste Special**

Paste Special allows the operator to copy/cut information from one spreadsheet to another with only values in the cells transferred, not the formulas.

Therefore in the example in Figures 12a and 12b, we could copy the Total Sales section to another spreadsheet without any change because only the results of calculations/formulae.

To use Paste Special:

Highlight the cells to be copied/moved.

Choose Copy/Cut from the Edit Menu.

Use the Window Menu to move into the other spreadsheet.

Move cursor to position of first cell to be copied into.

Choose Paste Special from the Edit Menu.

Choose Values only from the dialogue box.

The values will be copied to the other spreadsheet.

	A	B	C	D	E
1	<b>AMOUNT SOLD</b>				
2		<b>January</b>	<b>February</b>	<b>March</b>	<b>Totals</b>
3	Shoes	1	2	3	6
4	Socks	3	6	7	16
5					
6	<b>Prices</b>	Shoes	£10	Socks	£5
7					
8	<b>TOTAL SALES</b>				
9		<b>January</b>	<b>February</b>	<b>March</b>	<b>Totals</b>
10	Shoes	5	10	15	30
11	Socks	6	12	14	32
12					

The highlighted cells to be copied to another spreadsheet

	A	B	C	D	E
1	<b>TOTAL SALES</b>				
2		<b>January</b>	<b>February</b>	<b>March</b>	<b>Totals</b>
3	Shoes	5	10	15	30
4	Socks	6	12	14	32
5					

The highlighted cells have been copied to a new work book, using the Paste Special facility choosing to paste values only

## Paste Special within Spreadsheets

Some information containing formulas may be required to be re-produced (copied) in another part of the spreadsheet, for example to produce a summary of information. The formulae would be readjusted if "Paste" from the Edit Menu were used, unless all of the cell references were made absolute which would be a long and tedious task.

However, "Paste Special" can be used to copy the values resulting from the formulas.

Highlight the cells to be copied, choose Copy from the Edit Menu.

Move to first cell to be copied to and choose Paste Special from the Edit Menu.

Choose Values only and the information will be copied.

### Using Copy and Paste:

	A	B	C	D	E
1	<b>AMOUNT SOLD</b>				
2		<b>January</b>	<b>February</b>	<b>March</b>	<b>Totals</b>
3	Shoes	1	2	3	6
4	Socks	3	6	7	16
5					
6	<b>Prices</b>	Shoes	£10	Socks	£5
7					
8	<b>TOTAL SALES</b>				
9		<b>January</b>	<b>February</b>	<b>March</b>	<b>Totals</b>
10	Shoes	5	10	15	30
11	Socks	6	12	14	32
12					

**Total Sales copied from one part of the spreadsheet and pasted to another section using copy and paste**

15	<b>TOTAL SALES</b>				
16		<b>January</b>	<b>February</b>	<b>March</b>	<b>Totals</b>
17	Shoes	£75	£150	£0	£225
18	Socks	£28	£64	£0	£92
19					

**Notice that the values in the cells have changed when using normal Paste, the formulae have been pasted**

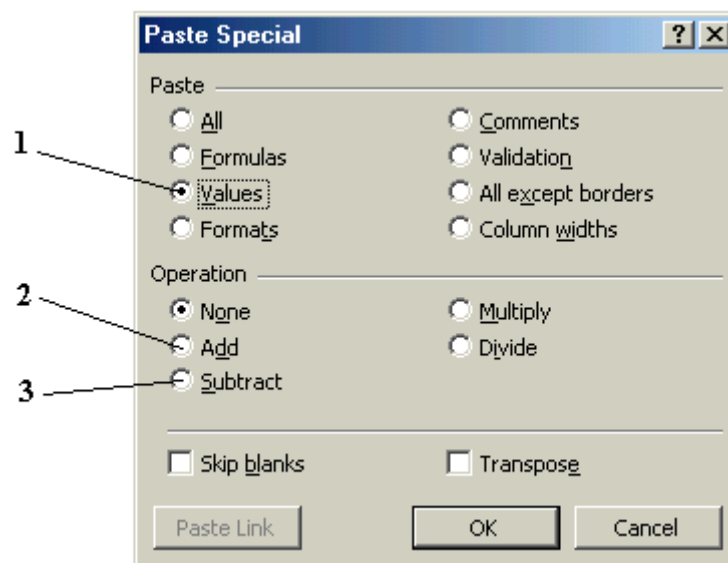
## Using Copy and Paste Special:

	A	B	C	D	E	F
1	<b>AMOUNT SOLD</b>					
2		<b>January</b>	<b>February</b>	<b>March Totals</b>		
3	Shoes	1	2	3	6	
4	Socks	3	6	7	16	
5						
6	<b>Prices</b>	Shoes	£5	Socks	£2	
7						
8	<b>TOTAL SALES</b>					
9		<b>January</b>	<b>February</b>	<b>March Totals</b>		
10	Shoes	5	10	15	30	
11	Socks	6	12	14	32	
12						

TOTAL SALES copied to another part of spreadsheet using Copy and Paste Special.

15	<b>TOTAL SALES</b>					
16		<b>January</b>	<b>February</b>	<b>March Totals</b>		
17	Shoes	5	10	15	30	
18	Socks	6	12	14	32	
19						

## The Paste Special Dialogue Box



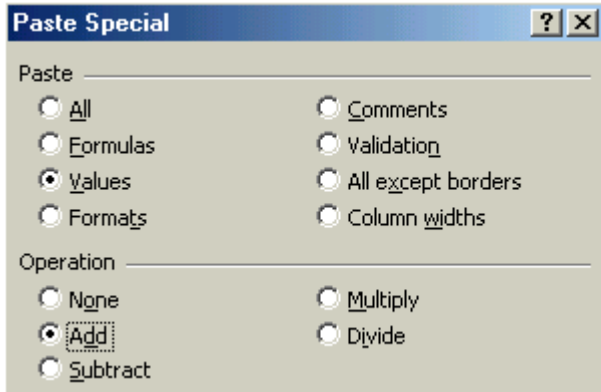
- 1 copies the values to either another spreadsheet or area within same spreadsheet.
- 2 will add the values of the highlighted cells on to the values contained in the destination cells.
- 3 will subtract the values in the highlighted cells from the values in the destination cells.

	A	B	C	D	E	F	G	H	I
1	12	11	24	31		32	14	23	78
2	22	32	45	21		23	21	56	42

A1:D2 to be added to F1:I2

	A	B	C	D
1	12	11	24	31
2	22	32	45	21

Cells A1:D2 highlighted, Copy from Edit Menu  
Move to cell F1, choose Paste Special



Choose Values and Add from  
Dialogue box

F	G	H	I
44	25	47	109
45	53	101	63

Values from A1:D2 added to F1:I2, cell display changes

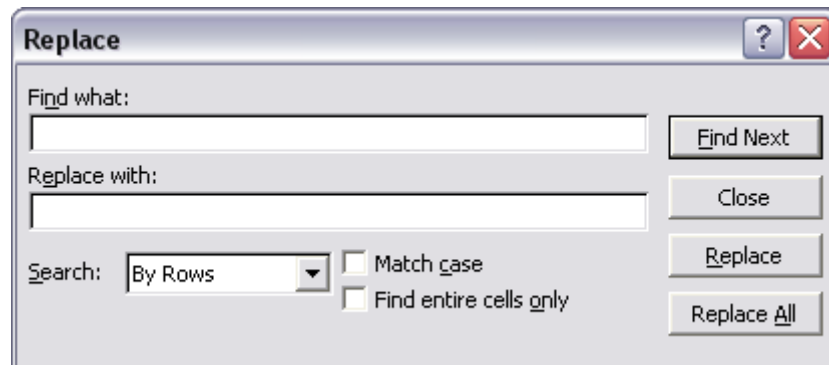
If values A1:D2 were to be subtracted, highlight the cells, choose Copy from the Edit Menu, move to F1 and choose Paste Special. Select Subtract values from the dialogue box and the results would be

F	G	H	I
20	3	-1	47
1	-11	11	21

## Use search and replace to edit data/formulas

Excel gives you the option of finding data/formulas and replacing it with another. This is extremely useful if you are working with a spreadsheet, which contains many occurrences of a piece of information that has changed. Instead of retyping the document it is easy to change each incident with the Find and Replace facility.

In Excel, the Replace option is found in the Edit Menu. You will be given the following dialogue box:



Type in the data/formula you want to find at Find What and the replacement word at Replace With.

Match Case works by only looking for data that matches the case of the original text.

The search will begin from the position of the cursor. If you are in the middle of the document the search will scan through all of your cells unless you change this option in the search box. The search will end when it returns to the cursor position.

Once you have entered your replacement data, click on either the Replace or the Replace All button.

The Replace button will work through your spreadsheet bringing up each occurrence of the data/formula. Choose whether you want to replace the data or not, clicking on Replace will replace the data and take you to the next occurrence, clicking on Find Next will take you straight to the next piece of data.

The Replace All button will automatically change all the occurrences without asking for confirmation. The choice is yours, however, good advice would be to use the Replace button as you can verify all the changes made.

## Spreadsheet Exercise 2

Create the following spreadsheet ensuring that you use formulas for all of the output areas.

Once completed and saved please study the spreadsheet and find where the input areas and output areas are (you may find it useful to show formulas).

Delete all data from the input area(s) only to create a blank or model.. **(Be very careful not to delete any formulas).**

Save the spreadsheet as SPDEX2A.

Print a copy of the new blank spreadsheet showing the cell contents.

	A	B	C	D	E	F	G
1	<b>Florists Sales</b>						
2							
3	<b>Month:</b>	March					
4							
5	<b>Week ending (Sat):</b>	02-Mar-02	09-Mar-02	16-Mar-02	23-Mar-02	30-Mar-02	<b>Totals/Month</b>
6	Bouquets	5	10	19	32	44	110
7	Baskets	16	39	34	5	42	136
8	Posies	9	4	3	1	4	21
9	Corsages	4	9	16	18	22	69
10	<b>Totals per Week</b>	34	62	72	56	112	
11							
12							
13	Price						
14	Bouquets	£15.75					
15	Baskets	£21.50					
16	Posies	£7.50					
17	Corsages	£10.35					
18							
19							
20	Income from Sales						
21	Bouquets	£78.75	£157.50	£299.25	£504.00	£693.00	£1,732.50
22	Baskets	£344.00	£838.50	£731.00	£107.50	£903.00	£2,924.00
23	Posies	£67.50	£30.00	£22.50	£7.50	£30.00	£157.50
24	Corsages	£41.40	£93.15	£165.60	£186.30	£227.70	£714.15
25							
26					Total Income		£5,528.15
27							
28					Overheads		£2,750.00
29							
30					Income after Costs		£2,778.15
31							
32					Tax	25%	£694.54
33							
34					Net		£2,083.61

## Using split/freeze window to retain column and row heading visibility

As you will have seen from working with the spreadsheet exercises that it is very awkward to scroll between different areas of the sheet. If you are entering formula on Row 60 and using information from Row 1, it can be very awkward and time consuming to scroll back to the beginning and then back or even to use the CTRL key with Home and Page Up and Page Down.

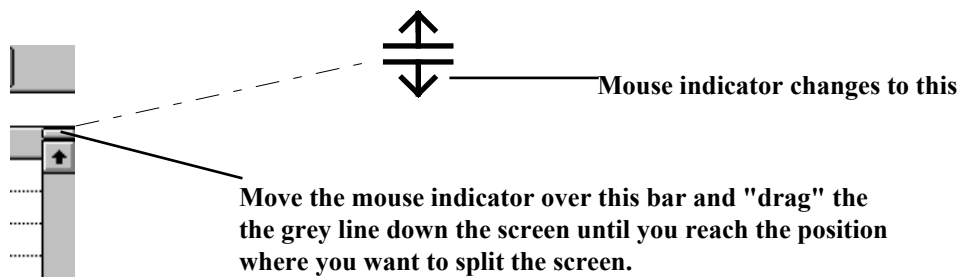
Therefore, it would be much easier to see different areas of the spreadsheet at once. Breathe a sigh of relief, you can!

### Splitting the Screen

You can split your screen in half vertically, horizontally and look at two different areas of the spreadsheet, or you can split your screen in four, looking at four different areas.

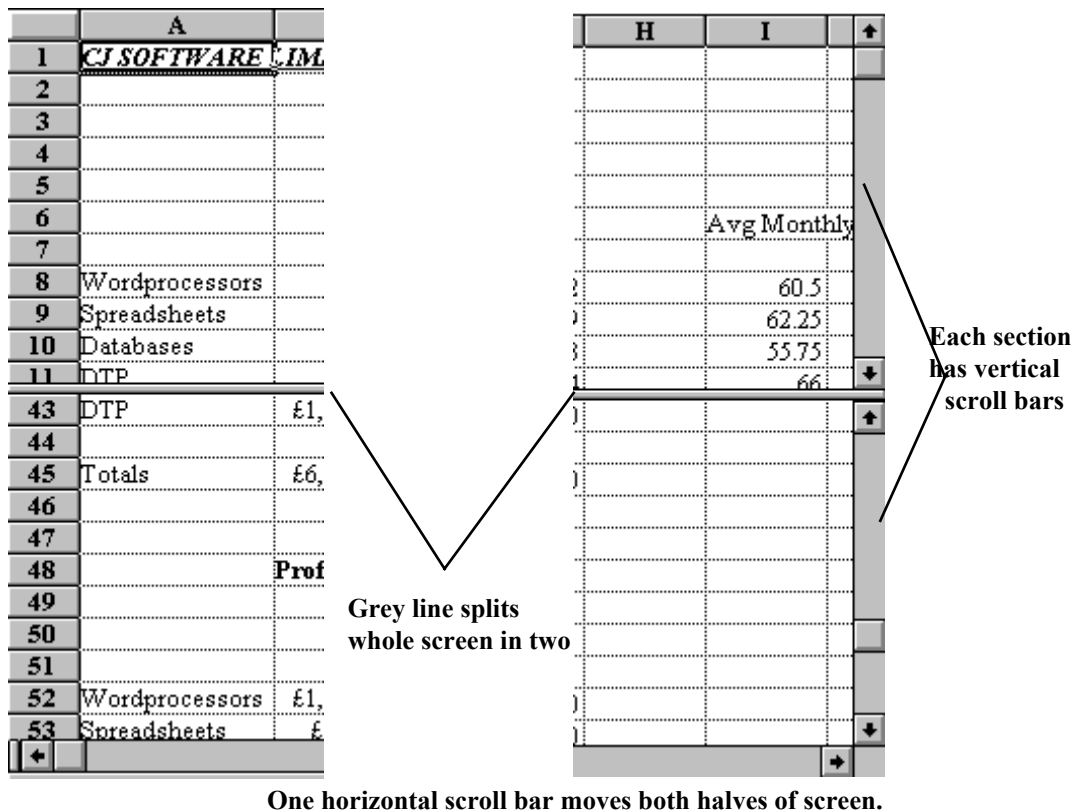
#### Horizontally

Look to the right of your screen between the scroll bar and the formula bar, there is a little bar.



Move the mouse indicator over the bar and "drag" the shaded grey line that appears across your screen until you reach the position where you want to split the screen.

Release the mouse button and your screen will be split in two, with each section having a separate scroll bar on the right hand side.



However, there is only one scroll bar at the bottom, as you use this to move to left or right both halves of the screen move at once. Each of the screen halves is called a "pane".

To work on either of the two panes, using the mouse, click anywhere on either of the two and the highlighted cell will appear where you click.

To use the keyboard to switch between the two panes, press the function key F6 (at the top of your keyboard) and this will move the highlighted cell between the two panes.

### Vertically

To split the screen vertically, look at the left of the horizontal scroll bar, again there is a small bar. Click on this and "drag" the shaded grey line to the right to the position of the required split.



Release the mouse button and the screen will be split into two panes vertically. There should be two scroll bars to move you to the right and left in each pane but only one scroll bar at the right side, again scrolling up and down will effect both panes. Again, F6 will move you between the two panes, or point and click with the mouse.

### **Into Four**

Follow the same procedures as above, click first on one bar and "drag" the shaded grey line to its required position and then perform the same with the other. It does not matter whether you choose horizontal or vertical split first.

There will be two scroll bars to the right hand side of the screen and two underneath.

To move between windows, either point and click with the mouse, or use F6 to move clockwise through the four panes, the SHIFT key with F6 will move you anti-clockwise around the four panes.

### **Cancelling the Splits**

Move the mouse indicator over the grey line until the indicator changes to the opposing arrows symbol, "drag" the bar off the main spreadsheet screen:

for a horizontal split, "drag" it over the column headings and release the mouse button, the split will be cancelled.

for a vertical split, "drag" it over the row headings and release the mouse button, the split will be cancelled,

for a four way split, repeat both the above procedures.

### **Freezing Panes/Titles (or Screen Borders)**

As you begin working with larger spreadsheet you may find that moving down or across the sheet means that some information disappears that you need to constantly refer to. One of the solutions to this is to split the screen, however, there is an alternative, which can be of more use. This is known as Freezing Titles, where you can leave some of the information such as titles and headings at the top or side of the screen, so that as you move down your heading will constantly refer to the information on screen.

For example, consider the following. If you are working with a long list of items corresponding to headings such as

**Video Sales - Amounts Sold Jan-Dec 02**

<b>Film Titles</b>	<b>January</b>	<b>February</b>	<b>March</b>	<b>April</b>
<u>Disney:</u>				
Peter Pan	2	3	5	6
The Jungle Book	5	6	4	6
Beauty & the Beast	9	8	14	12
Aladdin	32	12	43	21
Snow White	21	2	1	34
Duck Tales	3	12	12	13
Lady and the Tramp	4	7	6	8
<u>Action/Adventure</u>				
Die Hard	5	3	4	6
Die Hard 2	3	4	3	53
Terminator	2	23	23	34
Terminator 2	88	77	56	34
Running Man	22	12	33	12
Demolition Man	1	45	23	5
Project X	1	3	4	2
<u>Thrillers and Detectives</u>				
Basic Instinct	34	35	36	37
Presumed Innocent	3	3	3	3
48 Hours	34	34	34	34
Another 48 Hours	34	25	23	45
Fatal Attraction	2	3	4	5
Beverly Hills Cop	6	6	4	6
Beverly Hills Cop II	67	54	56	45
<u>Comedy</u>				
Green Card	54	34	54	3
Ruthless People	1	2	3	4
Outrageous Fortune	5	2	22	22
Death Becomes Her	23	23	23	23
Big	2	3	4	5

As you work down the spreadsheet the titles and the months will disappear off the top of the screen.

To avoid this, you can leave (freeze) the month headings (titles) at the top. You can Freeze the Titles.

To freeze the titles **only** at the top of the screen, either move the highlighted cell **to the far left** of the row **immediately underneath** the information or highlight the whole row by clicking on the row heading number at the left of the screen. Choose Freeze Panes from the Window Menu.

As you scroll down the spreadsheet, the top titles will remain constantly on your screen.

As you scroll across the spreadsheet the titles at the left will again disappear off the screen. Therefore if you have a wide spreadsheet it may be useful to keep the titles at the left hand side.

To freeze the titles **only** at the left side of the screen, either move the highlighted cell to **the top** of the column **immediately to the right** of the area or highlight the whole column by clicking on the column heading. Choose Freeze Panes from the Window Menu.

As you scroll across the spreadsheet, the left titles will remain constantly on your screen.

Titles are frozen here

	A	H	I	J
1	Video Sales - Amc			
2				
3	Film Titles	July	August	September
4				
5	Disney:			
6	Peter Pan	9	5	3
7	The Jungle Book	9	6	1
8	Beauty & the Beast	17	8	8
9	Aladdin	61	23	8

To cancel Freeze Panes, choose the same option again, Unfreeze Panes from the Window Menu.

To freeze information at the top of the screen and to the left at the same time, move the highlighted cell to the row underneath and to the right of the areas to be frozen. (i.e. everything above and to the left of the cell will be frozen.) In this way, as you scroll down all the information at the top will remain constant but all the rest will move. As you scroll to the right, all the information at the left of the screen will remain constant but all the rest will move.

	A	B	
1	Video Sales - Amounts Sold Jan		
2			
3	Film Titles	January	Fe
4			
5	Disney		
6	Peter Pan		2

Titles are frozen whilst this cell highlighted.

Information can be brought to the top and left of the screen in order to see the relevant information.

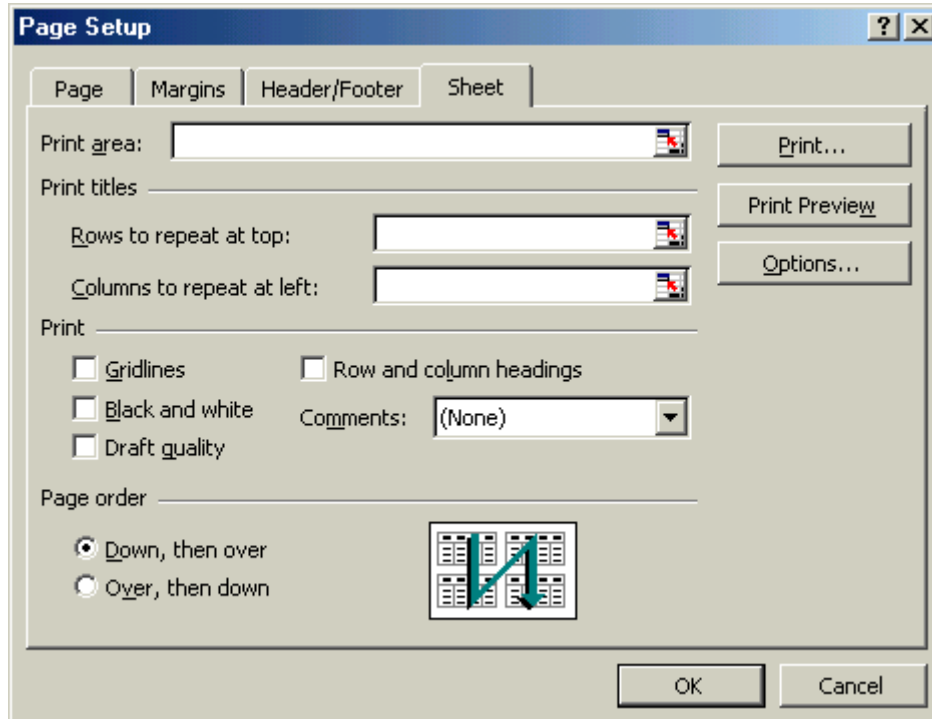
Notice information from right of spreadsheet can be seen

	A	F	G
1	Video Sales - Amc		
2			
3	Film Titles	May	June
17	Terminator	23	132
18	Terminator 2	12	23
19	Running Man	5	4
20	Demolition Man	6	65

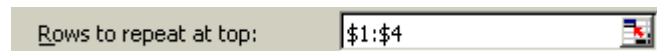
while corresponding information from the lower part of the spreadsheet can be seen

## Freezing Titles/Panes and Printing from the Spreadsheet

Once you have set your screen borders, you may wish to set print titles so that that you will have a title appear on every sheet of your workbook. To carry out this procedure, select File and Page Setup and choose the Sheet option.



Click into Rows to repeat at top and type in the rows that you to freeze.



This will freeze the top four cells.

To freeze column A, click in to the Columns to repeat at left, and type:



This will freeze column A.

Consider the following figure as a spreadsheet with these titles.

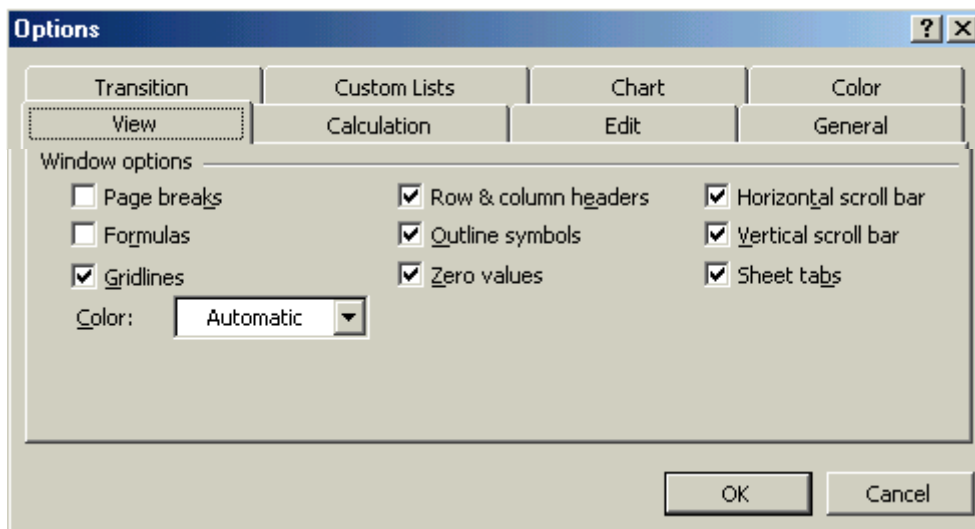
	Title One	Title Two	Title Three
O			
N			
E			
T			
W			
O			
T			
H			
R			
E			

If we split it into nine pages the titles would appear on the pages as follows:

O	Title One	O	Title Two	O	Title Three
N		N		N	
E		E		E	
T	Title One	T	Title Two	T	Title Three
W		W		W	
O		O		O	
T	Title One	T	Title Two	T	Title Three
H		H		H	
R		R		R	
E		E		E	

## Show Formulas

As you look at the spreadsheet as a whole, you will only see values (results) of calculations in those cells containing formulas. This is known as the spreadsheet or **cell display**. If you wish to look at all the formulas or the contents of the spreadsheet, choose Options from the Tools Menu. Select the View tab and click in the Formulas box. All the contents/formulas will then appear.



	F	G	H
1	10	11	=SUM(A1:G1)
2	3	6	=SUM(A2:G2)
3	2	3	=SUM(A3:G3)
4	9	10	=SUM(A4:G4)
5			

Notice that the column widths doubled in size when the contents are showing to enable most formulas to be visible. However, if any changes are made, e.g. they are reduced or increased, these changes will be incorporated into the first spreadsheet, therefore changing your original layout. To return to your original spreadsheet screen, choose Tools, Options and in the View tab switch the formulas off. Showing Formulas is extremely useful as you edit or update your spreadsheet to incorporate new circumstances.

## Printing Cell Contents

At some point you may be asked to produce a printout of cell contents. This simply means a printout of the spreadsheet with formulas, i.e. choose Show Formulas from the Options Menu and then print out.

## Test a template spreadsheet

The spreadsheets that you have completed so far have been a mixture of those that can be used repeatedly to record new pieces of information in a standard framework (examples are exercises 2, 4 and 9) and those that are "one-offs" as exercise 6 and exercise 8, produced for a specific purpose.

When it comes to using the first type of spreadsheet repeatedly, it would be better to create a template spreadsheet as it would be easier to enter information. The template would have blank input areas, however, it would contain the relevant data processing (formulas) so that as the new data is entered, the output data (results from formulas) is automatically calculated.

Consider the following information:

	A	B	C	D	E	F	G
1	<b>Florists Sales of Basic Arrangements</b>						
2							
3	<b>Month:</b>	March					
4							
5	<b>Week ending (Sat):</b>	02-Mar-02	09-Mar-02	16-Mar-02	23-Mar-02	30-Mar-02	<b>Totals/Month</b>
6	Bouquets	5	10	19	32	44	110
7	Baskets	16	39	34	5	42	136
8	Posies	9	4	3	1	4	21
9	Corsages	4	9	16	18	22	69
10	<b>Totals per Week</b>	34	62	72	56	112	
11							

The spreadsheet breaks down into the following

**Input Data**                      the month  
    first week ending date  
    sales per item per week

**Output Data**                      subsequent week ending dates  
    totals per item per month  
    totals for all items per week

	A	B	C	D	E	F	G
1	<b>Florists Sales</b>						
2							
3	<b>Month:</b>	March					
4							
5	<b>Week ending (Sat):</b>	37317	=B5+7	=C5+7	=D5+7	=E5+7	<b>Totals/Month</b>
6	Bouquets	5	10	19	32	44	=SUM(B6:F6)
7	Baskets	16	39	34	5	42	=SUM(B7:F7)
8	Posies	9	4	3	1	4	=SUM(B8:F8)
9	Corsages	4	9	16	18	22	=SUM(B9:F9)
10	<b>Totals per Week</b>	=SUM(B6:B9)	=SUM(C6:C9)	=SUM(D6:D9)	=SUM(E6:E9)	=SUM(F6:F9)	
11							
12							
13				<b>Variable</b>			
14				<b>Output</b>			
15							

As it stands, if the user were to update the spreadsheet, confusion may arise when the new input data is entered, old input data may be left or even formulas accidentally written over.

It would be easier and clearer to update if the following spreadsheet were used

	A	B	C	D	E	F	G
1	<b>Florists Sales</b>						
2							
3	<b>Month:</b>						
4							
5	<b>Week ending (Sat):</b>		07-Jan-00	14-Jan-00	21-Jan-00	28-Jan-00	<b>Totals/Month</b>
6	Bouquets						0
7	Baskets						0
8	Posies						0
9	Corsages						0
10	<b>Totals per Week</b>	0	0	0	0	0	
11							

The user can easily see which figures have been entered and which areas need to be filled.

Before the model (template) spreadsheet is used, it would be necessary to test the formulas are correct. Therefore, a spreadsheet could be created using test (input) data, which would enable the user to check the results either with a calculator or manually on paper. Therefore when the test (input) data has been deleted, the user can be confident that the cell ranges and functions used in his/her formulas will produce the correct results.

### Creating the Model

Create the test spreadsheet as in previous exercises.

Save as a filename.

Delete the areas of input data, **ensuring** that the formulas **remain**.

Save the "blank" spreadsheet under a new filename.

The original test spreadsheet will be under the old filename while the model spreadsheet will be saved in a separate file.

Once the model spreadsheet is ready for use, at the beginning of each period that it covers, it will be recalled, new information entered and then the updated spreadsheet (covering the current period) will be saved under a new filename. The blank spreadsheet will be left intact for use at a later period.

### Spreadsheet Exercise 3

The Army Training Section has just bought a new computer and has decided to start keeping their training statistics in a spreadsheet. They want to design a spreadsheet that can be used as a template (model) that will cover the whole year. It will be updated each month. First they create a test spreadsheet that checks the formulas. They run three courses each month over a twelve month period.

Rifle Firing

Pistol Firing

Respirator Checks

Using the figures overleaf as simple test data, design a spreadsheet to calculate the total numbers trained per course over the twelve months and the total number trained per month.

There are four ranks trained

Privates

Corporals

SNCOs

Officers

Using the test data overleaf, add another section to the spreadsheet to note how many individuals of each rank were trained each month, the total numbers of each rank trained. Find the maximum number of each rank trained and the average number of each trained per month over the 12 month period.

An allowance is paid by the Training Section to each individual who is trained. The amount of money depends on the rank

Privates

£30.00

Corporals

£32.00

SNCOs

£35.00

Officers

£40.00

Again, add another section to your spreadsheet to calculate the allowance paid for each rank per month, the total paid for each rank over the twelve months and the total paid out over the twelve month period.

The Training Section receive a bonus of £15,000 if the amount paid out in allowances is over £50,000. If not, no additional funds are received. The allowance limit is likely to increase each year. Add another section to your spreadsheet to calculate whether the Training Section will receive their bonus or not.

Design a data capture form on a separate sheet of paper that would allow you to easily update the spreadsheet each month. In addition, make a sketch of the layout and note the input and output data.

Print out the Allowances Paid section of your spreadsheet with a header: Report 1. Allowances Paid. Save the spreadsheet as SPDEX11.

Now that the test spreadsheet has been created, delete the input data (test data) so that all values from formulas will read as 0. Once the spreadsheet is blank, save the spreadsheet as SPDEX11A to make your model or spreadsheet template. Print out a copy of the blank spreadsheet.

**See Next Page For Layout**



## Spreadsheet Exercise 4

The Sully Enterprise Maternity Wards require a spreadsheet to record, on a weekly basis, the number of babies that have been delivered for each midwife on each ward and the total number of babies delivered. The spreadsheet will be used for each week's figures.

Create a spreadsheet following the layout guideline overleaf. Calculate the total number of babies delivered by each midwife and the total number of babies delivered per ward over the week.

Each delivery lasts on average 10 hours (which could change every few weeks). Use this figure to work out how long each midwife spent delivering babies on each ward. Also work out the total number of hours each midwife spent delivering in the whole week.

Each midwife is paid on an hourly rate of £8.00. Work out the amount of money each would receive in a week from the total number of hours already calculated.

If a midwife delivers less than 7 babies per week, she will only receive travel expenses of £150.00, if 7 or more, she will earn a bonus of £500 (which includes the £150 for travel). Work out how much travel expenses/bonus the midwife will earn per week and from this work out the amount she will receive in total with her salary.

Calculate the total amount the hospital will have to pay out in salaries.

Save the spreadsheet as SPDEX12.

Print a copy of the Salaries section of the spreadsheet

Midwife	Salary/Wk	Bonus	Salary + Bonus
Anne			
Jane			
Frederica			
Sandra			
Fiona			
Marianne			

with Report 1. Sully Hospital Maternity Wards as a header and your name as a footer. (Hide the intervening columns and then set print area to print your report).

This spreadsheet will form the basis of a template that the hospital admin staff can use repeatedly.

Delete the input data from the spreadsheet and save as SPDEX12A.

Design a data capture form to update the weekly spreadsheet.

Print a copy of the blank spreadsheet.

**See Next Page For Layout**

	A	B	C	D	E	F	G	H
1	SULLY ENTERPRISE HOSPITAL MATERNITY WARDS							
2								
3	Week Ending							
4								
5	Wards:	Cumtwokwik	Waitawile	Longardslog				
6								
7	No. of Deliveries				Total/Midwife			
8								
9	Anne	2	3	2				
10	Jane	3	1	0				
11	Frederica	4	0	0				
12	Sandra	6	2	2				
13	Fiona	3	0	6				
14	Marianne	0	2	2				
15								
16	Total/Week							
17								
18	No of Hours in Delivery			Average Delivery:		10 hours		
19				Hourly Rate:		£16.00		
20								
21						Salary/W Bonus Salary+Bonus		
22	Anne							
23	Jane							
24	Frederica							
25	Sandra							
26	Fiona							
27	Marianne							
28								
29						Total Salaries:		
30								

## **Spreadsheet Exercise 5**

The College Library in Barry needs to order some new books as its current stock is beginning to look grubby. Certain conditions apply to its main categories of books: popular fiction, classical fiction, non-fiction, reference books and journal library.

### **Popular Fiction**

If the average (weekly) number of times a book is borrowed in a month exceeds 10, they will order 10 new books, if not, they will order 2.

### **Classical Fiction**

If the total number of times a book is borrowed over a month is equal to or more than 100, they will order 5 new books, if not, they will not order any books.

### **Non-Fiction**

If the average (weekly) number of times a book is borrowed over a month is less than 10, they will not order any books, or else they will order 5.

### **Reference**

If the average (weekly) number of times a book is referred to is equal to or over 10, they will order 5 new books, if not, they will order 0.

### **Journal**

If the total number of journals is equal to or greater than 10, they will order 5 new ones, or they will order none.

Using the books listed overleaf, create a spreadsheet for the library that they can use to find the total number of times a book was borrowed etc per month and the average number of times over the four weeks. They need to note the numbers for their new orders (the current stock is listed overleaf) using the information above and find the anticipated stock after their orders have been made. (Current Stock + New Order).

Print out a report of the books in their sections with details of the current stock, new order and anticipated stock. (Hide the intervening columns and set print area).

Print out a copy of the same area with cell contents.

**See Next Page For Layout**

	A	B	C	D	E	F	G	H	I	J	K
1	BARRY COLLEGE LIBRARY										
2											
3		Week 1	Week 2	Week 3	Week 4	Monthly Total	Weekly Average	Current Stock	New Order	Anticipated Stock	
4											
5	Popular Fiction										
6											
7	A Woman of Substance	5	6	7	8			15			
8	Poirot's Last Case	1	9	15	30			16			
9											
10	Classical Fiction										
11											
12	David Copperfield	15	19	20	55			13			
13	Hard Times	12	13	15	6			14			
14	Pride and Prejudice	14	15	18	20			6			
15	The Woman in White	40	45	20	43			20			
16											
17	Non-Fiction										
18											
19											
20	The Pictorial History of W.	2	9	15	3			4			
21	Henry VIII & Catherine of	1	2	1	0			3			
22											
23	Reference										
24											
25	Tourism in Wales	0	0	0	0			2			
26	Road Atlas of England & Wa	1	2	1	3			1			
27											
28	Journals										
29											
30	History Today	1	3	4	1			2			
31	Practical Computing	15	16	8	9			2			
32											

## Fill Series (Dates)

When you are using a series of month names, years, or a combination of day, month, year in a series of cells in your spreadsheet etc, you can use the Fill Series option as you would with a series of numbers. You could be working with details of a schedule of a series of weekly meetings or monthly meetings, using the Fill Series option would save a fair amount of time.

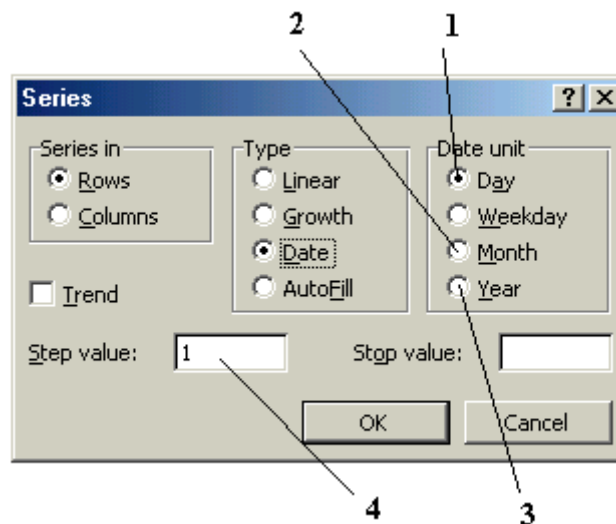
For example if you are using the following series:

01 January 2002    02 January 2002    03 January 2002    04 January 2002 (1 day)  
*or*  
01 January 2002    08 January 2002    15 January 2002    23 January 2002 (7 days)  
*or*  
January            February            March            April (1 month)  
*or*  
January            April            July            October (3 months)

Enter the first date in the first cell.

Begin your highlight in this cell and highlight across the row or down the column as far as the series is to go.

Choose Fill Series from the Edit Menu, the following



**1** increases the date by the increase specified in **4**.

for example, 01 June 1994 across 4 cells by an increase of 2 days will read

**01 June 2002    03 June 2002    05 June 2002    07 June 2002**

An increase of 7 will give you a series of weekly dates.

**2** will increase the month in the date by the required increment specified in **4**.

for example, 01 June across 4 cells by an increase of 2 months will read

**01 June          01 August          01 October          01 December**

**3** will increase the year in the date by the required increment specified in **4**

for example, 01/06/86 across 4 cells by an increase of 3 years will read

**01/06/86          01/06/89          01/06/92          01/06/95**

**4** Choose the increment in this box, see above examples.

**Weekday** - The weekday option will increase the series by steps of your choice, however, it will ignore the dates covered by a weekend.

For example, if you choose Weekday and an increment of 1 beginning with

**30/09/02** (which falls on a Friday)

across a series of 4 cells, the spreadsheet would give you the following series:

**30/09/02          03/10/02          04/10/02          05/10/02**

The two dates 01/10/02 and 02/10/02 will be ignored as they cover the weekend.

## Spreadsheet Exercise 5

A chip shop owner requires a spreadsheet, which will provide information about his sales figures for his six most popular food items over a six week period.

The spreadsheet should be designed so that it can be used repeatedly for the changing data for each six week period.

Each week the sales figures will be updated and when the current period is complete a new file will be used for the next period.

The wholesale prices can vary from week to week. The retail prices are calculated from the wholesale figures as a fixed percentage. The percentage value is fixed for the six week period, however, it may change for the next period.

The formula to calculate the retail price and percentage value are as follows

$$\text{Retail Price} = \text{Wholesale Price} + X \% \text{ of Wholesale Price}$$

The retail prices will need to be rounded to 2 decimal places using a formula.

Complete the spreadsheet using the figures shown overleaf as test data, in addition find the highest and lowest income per item for the six week period. Calculate the total sold per item over the six weeks and the total number of items sold per week. Find out the total income for the six week period.

When you have completed the spreadsheet, print out a report of the wholesale and retail prices with the following as a title

JIM'S FISH AND CHIP SHOP

and

REPORT 1. WHOLESALE AND RETAIL PRICES

as a footer.

In addition, print a report of the income with

JIM'S FISH AND CHIP SHOP

as a title and

REPORT 2. INCOME

as a footer.

Save this file as SPDEX14.

Once the reports have been printed, Jim needs to import details of his costs from another spreadsheet file, Spdex5a.

Using this information, calculate his profits from his costs against the income he has gained from his sales. Calculate his total profits over the six week period.

From this figure, calculate the total he is left with after payment of 17.5% tax.

If this final figure is above £1000, he gets a loan of £5000 from his bank manager, if not he receives a sum equal to 25% of his profits after tax. Enter a formula into the spreadsheet that will tell him on a six weekly basis what figure he will receive from his bank.

Save the changed spreadsheet as Spdex5b.

As mentioned at the beginning of the exercise, this spreadsheet will be used repeatedly. The figures that you have been using are test data. Open your original file (SPDEX14) and delete the areas of input data (wholesale prices, amount sold and the first date) to create a model containing only formulas, which will be Jim's template for each series of six weeks.

Print out a copy of this blank spreadsheet showing the cell contents (you may find it useful to significantly reduce the size of the font).

Save the blank spreadsheet as Spdex5c.

**See Next Page For Layout**

	A	B	C	D	E	F	G	H	I	J
1	<b>MONTHLY SALES OF MAIN FOOD ITEMS</b>									
2										
3		02-Dec-01	09-Dec-01	16-Dec-01	23-Dec-01	30-Dec-01	06-Jan-02	Total	Highest	Lowest
4	<b>Wholesale Prices (per portion)</b>									
5	Cod	£0.90	£0.95	£0.96	£0.97	£0.98	£0.99			
6	Haddock	£0.80	£0.82	£0.84	£0.86	£0.88	£0.89			
7	Chips	£0.60	£0.63	£0.63	£0.64	£0.63	£0.64			
8	Scallops	£0.30	£0.31	£0.31	£0.34	£0.34	£0.29			
9	Meat Pies	£0.60	£0.64	£0.66	£0.67	£0.67	£0.65			
10	Cornish Pasties	£0.62	£0.62	£0.64	£0.63	£0.62	£0.61			
11										
12		X= 60%								
13										
14	<b>Retail Prices (per portion)</b>									
15	Cod									
16	Haddock									
17	Chips									
18	Scallops									
19	Meat Pies									
20	Cornish Pasties									
21										
22	<b>Amount Sold</b>									
23	Cod	50	45	55	60	62	60			
24	Haddock	39	40	41	42	43	44			
25	Chips	100	110	115	100	105	113			
26	Scallops	40	36	38	40	43	47			
27	Meat Pies	40	45	43	48	51	53			
28	Cornish Pasties	21	23	25	27	29	31			
29										
30	<b>Income (£)</b>									
31	Cod									
32	Haddock									
33	Chips									
34	Scallops									
35	Meat Pies									
36	Cornish Pasties									
37										
38	Totals									

	A	B	C	D	E	F	G	H	I	J
39										
40	<b>Costs</b>									
41	Cod	£20.00	£18.00	£25.00	£30.00	£30.00	£30.00			
42	Haddock	£15.00	£12.00	£12.00	£12.00	£12.00	£13.00			
43	Chips	£50.00	£55.00	£56.00	£50.00	£55.00	£50.00			
44	Scallops	£12.00	£10.00	£10.00	£12.00	£12.00	£13.00			
45	Meat Pies	£15.00	£16.00	£14.00	£16.00	£17.00	£17.50			
46	Cornish Pasties	£13.00	£12.50	£14.20	£15.00	£15.00	£16.00			
47										
48	<b>Profit</b>									
49	Cod									
50	Haddock									
51	Chips									
52	Scallops									
53	Meat Pies									
54	Cornish Pasties									
55										
56					Total					
57					Tax	17.50%				
58					After Tax					
59										
60				Possible Loan of:		£5,000.00	Percentage:	25%		
61										
62					Loan of 10%					
63										

## Spreadsheet Exercise 6

Ivor Banger is a shady car dealer who has brought his business into the twenty first century. He has decided to computerise his car sales records by entering data into a spreadsheet. He needs to be to show how many cars he sold per month and from this, calculate, sales income and profit.

Create the following spreadsheet using the exact same cell references.

Percentage mark-ups are per type of vehicle as are the prices he pays. Percentages should be shown as zero decimal places. Currency should be formatted to two decimal places.

The spreadsheet will show:

- 1 Total number of cars sold per type for the six-month period
- 2 Total number of cars sold per month for all types
- 3 Expenditure per car sold type per month
- 4 Total expenditure per type for the six-month period
- 5 Total expenditure per month for all types
- 6 Sales income per car type per month
- 7 Total sales income per type for the six-month period
- 8 Total sales income per month for all types
- 9 Profit per car per month
- 10 Total profit per type for the six-month period
- 11 Total profit per month for all types
- 12 Total expenditure for the six-month period
- 13 Total income for the six period
- 14 Total profit for the six-month period

For item 3 use the round function to two decimal places. Items 12, 13 & 14 should appear at the end of the spreadsheet and should be the sum of items 3, 6 & 9 respectively. Not the sum of sums.

Implement data protection.

Save as SPDEX6

Produce a printout of the expenditure section using frozen panes. Use the section name as a header with standard footers. Repeat for sales income section and total income section.

**See Next Page For Layout**

	A	B	C	D	E	F	G	H
1	<b>Ivor Banger Car Sales Ltd.</b>							
2								
3	<b>Cars Sold</b>							
4		January	February	March	April	May	June	<b>Total</b>
5	Near Dead	4	9	13	1	3	17	
6	Cut'n'Shut	1	3	2	11	1	6	
7	Dozen Owners	8	5	3	6	9	9	
8	Not 2 Bad	7	4	9	2	12	15	
9	Decent Motors	0	1	4	1	2	6	
10	<b>Total</b>							
11								
12	<b>Cost Prices</b>	<b>Percentage Mark-up</b>						
13								
14	Near Dead	£20.00	150%					
15	Cut'n'Shut	£50.00	200%					
16	Dozen Owners	£100.00	300%					
17	Not 2 Bad	£400.00	210%					
18	Decent Motors	£1,000.00	300%					
19								
20	<b>Expenditure</b>							
21								
22	Near Dead							
23	Cut'n'Shut							
24	Dozen Owners							
25	Not 2 Bad							
26	Decent Motors							
27	<b>Total Expenditure</b>							
28								
29	<b>Sales Income</b>							
30								
31	Near Dead							
32	Cut'n'Shut							
33	Dozen Owners							
34	Not 2 Bad							
35	Decent Motors							
36	<b>Total Income</b>							
37								
38	<b>Profit</b>							
39								
40	Near Dead							
41	Cut'n'Shut							
42	Dozen Owners							
43	Not 2 Bad							
44	Decent Motors							
45	<b>Total Profit</b>							

## Spreadsheet Exercise 7

A Sports Centre devotes one day per week for companies to use different sports facilities in order to promote healthy workers.

There are eight companies who take advantage of the offer each week.

Power Smith & co  
Donald Swale Ltd  
Henryson's Letterheads  
Swally Printing Ltd  
Stanley Electronics  
Sole Trading Advice  
Stowaway Boats Ltd

Use the figures overleaf to design and test a spreadsheet and formulas/functions to calculate the number of sports each company books per week and the total number of people who attend each sport regardless of the company.

Each sport costs the company the following price per person

	Keep Fit	Weights Room	Squash	Badminton	Swimming
Pool	£8.00	£10.00	£5.00	£5.00	£2.00

The spreadsheet needs another section to calculate the costs for each company per sport, with the total costs per company over the day and the total costs per sport.

If a company books 3 or more sports sessions they receive a discount of 5% per sport booked. For example, if a company books three sessions they receive a discount of 5% of the total payable \* 3 sessions.

Discount = total amount payable\*percentage discount\*sessions booked  
(The above discount is the true part of the if statement)

The percentage is likely to change every three months.

Add another part to the spreadsheet to calculate the actual discount per company and another to calculate the actual amount due from each company.

On a sheet of paper, define the following areas from the spreadsheet you have just created.

Input data - three areas  
Output data - ten areas

Write the formulas/functions (in words) corresponding to the output areas of the spreadsheet.

Design a data capture form you could use each week to update the spreadsheet.

Print a report of the spreadsheet entitled Final Costs:

<b>Costs</b>	<b>Total</b>	<b>Discount</b>	<b>Amount Due</b>
Power Smith & co			
Donald Swale Ltd			
Henryson's Letterheads			
Swally Printing Ltd			
Stanly Electronics			
Sole Trading Advice			
Stowaway Boats Ltd			
<b>Totals</b>			

with information from your completed spreadsheet.

(Hide the columns between the Company and Total before setting Print Area.)

Once you have printed the report, print a copy of the spreadsheet as a whole.

Save the spreadsheet as SPDEX7.

Now that the test spreadsheet has been created, the sports centre require a template that they can use repeatedly. Therefore delete all the input data, leaving the formulas intact. Now print a copy of the spreadsheet with cell contents.

**See Next Page For Layout**

	A	B	C	D	E	F	G	H	I
1	WAIFY WENDY'S SPORTS & FITNESS EMPIRE								
2									
3		Date:							
4									
5	Sports	Keep Fit	Weights	Squash	Badminton	Swimming		Sessions	
6			Room			Pool		Booked	
7	Prices/Person	£8.00	£10.00	£5.00	£5.00	£2.00			
8									
9	Sessions Booked								
10	Power Smith & Co	1	2	4	4	5			
11	Donald Swale Ltd	3		1	2				
12	Henryson's Letterheads		2		1				
13	Swally Printing Ltd	1							
14	Stanly Electronics		4		6				
15	Sole Trading Advice	1		4		12			
16	Forte Building Services		1						
17	Stowaway Boats Ltd	4		2		2			
18	Totals								
19									
20	Percentage Discount	5%							
21									
22		Keep Fit	Weights	Squash	Badminton	Swimming			
23			Room			Pool	Total	Discount	Amount Due
24	Power Smith & Co								
25	Donald Swale Ltd								
26	Henryson's Letterheads								
27	Swally Printing Ltd								
28	Stanly Electronics								
29	Sole Trading Advice								
30	Forte Building Services								
31	Stowaway Boats Ltd								
32	Totals								

## Spreadsheet Exercise 8

A small bookshop requires a spreadsheet to calculate the weekly sales over a six week period. The spreadsheet will provide a model for future sales.

Use the information overleaf as a basic design for a spreadsheet.

Each first week's prices of the six week period are the same as the recommended retail prices (RRP).

The Lord of the Rings	<b>£16.00</b>
Life & Times of T Blair	<b>£8.50</b>
Diana: Her True Story	<b>£12.00</b>
The Elenium Trilogy	<b>£13.50</b>

Each subsequent week's price is calculated from the following formula:

= First Week's Price-(no of sales in *previous* week/min sales for discount)  
(The above being the true part of the if statement)

The minimum number of sales for discount should be in a separate cell. The number for this six week period is 80.

Using the figures overleaf, calculate each week's prices, the total amount and the highest and lowest prices (remember you will need to use an If Statement on this one).

In addition calculate the income per week per book and the total income for each week. Calculate the total income per book over the period and the total income for all books over the period.

Print out a copy of the spreadsheet showing details of the following information from your completed spreadsheet

<b>Weekly Prices</b>	<b>Totals</b>	<b>RRP</b>	<b>Highest</b>	<b>Lowest</b>
The Lord of the Rings		£16.00		
Life & Times of J Major		£8.50		
Diana: Her True Story		£12.00		
The Elenium Trilogy		£13.50		

with a header Report 1, Weekly Prices Summary and your name as a footer.

On a separate sheet of paper identify the input areas and output areas of the spreadsheet.

Design a data capture form that would update your spreadsheet each week.

**See Next Page For Layout**

	A	B	C	D	E	F	G	H	I	J	K
1		Weekly Sales		What the Dickens!	Bookshop						
2		20-May-01									
3		Week Ending									
4		20-May-01									
5											
6	Book Sales										
7											
8	The Lord of the Rings	60	60	50	65	20	30				
9	Life & Times of T Blair	30	40	30	40	80	60				
10	Diana: Her True Story	40	50	50	60	40	50				
11	The Elenium Trilogy	30	50	60	70	40	80				
12											
13	Discount based on Sales of		80								
14											
15	Weekly Prices							Totals	RRP	Highest	Lowest
16											
17	The Lord of the Rings								£16.00		
18	Life & Times of T Blair								£8.50		
19	Diana: Her True Story								£12.00		
20	The Elenium Trilogy								£13.50		
21											
22											
23	Income										
24		Week 1	Week 2	Week 3	Week 4	Week 5	Week 6				
25	The Lord of the Rings										
26	Life & Times of T Blair										
27	Diana: Her True Story										
28	The Elenium Trilogy										
29	Totals										

## Produce graphs and charts

It is possible in Excel to present numerical data in a graphical format, by the use of charts. This is particularly useful when you need to show a particular trend, when examining sales figures or when summarising the performance of a particular company or of a product.

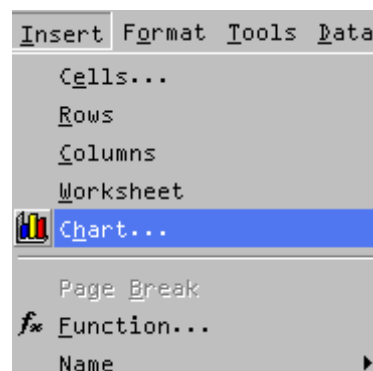
If we consider the following information regarding monthly costs:

Monthly Costs (£)	January	February	March	Total
Rental	800	200	650	1650
Services	200	180	180	560
Food	250	105	110	465
Travel	185	187	165	537
Insurance	120	156	136	412
Total	1555	828	1241	3624

We may need to show the above information as a graphical representation, i.e. a bar chart, a column chart or a pie chart. The first thing you need to do is to highlight the information that you wish to chart. In this case we do not want to show any totals, just the breakdown figures.

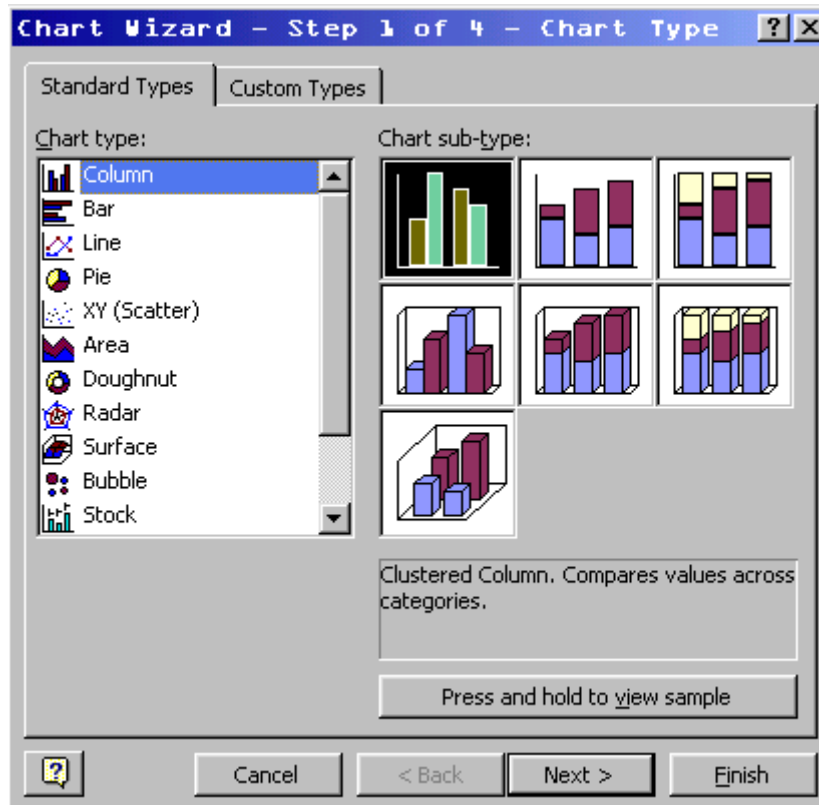
Monthly Costs (£)	January	February	March	Total
Rental	800	200	650	1650
Services	200	180	180	560
Food	250	105	110	465
Travel	185	187	165	537
Insurance	120	156	136	412
Total	1555	828	1241	3624

Once the information is highlighted, as above, then you need to choose Insert from the menu bar and select Chart.



Once you have chosen chart, then the chart wizard will begin and the following dialogue box will appear.

See Next Page



The chart wizard shown to the left will allow you to choose the appropriate chart type in this case, Column. You can also choose a chart sub-type by selecting the preferred picture.

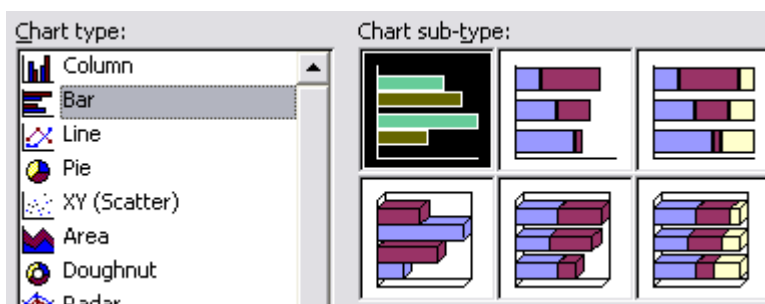
There is a full list of different options that you can select. Try to choose the most appropriate chart for any particular spreadsheet.

You do have the option to “Press and hold to view sample”, which will give you a preview of your finished chart.

At this point you can select from a number of different chart layouts which all depends how you wish the data to be graphically represented.

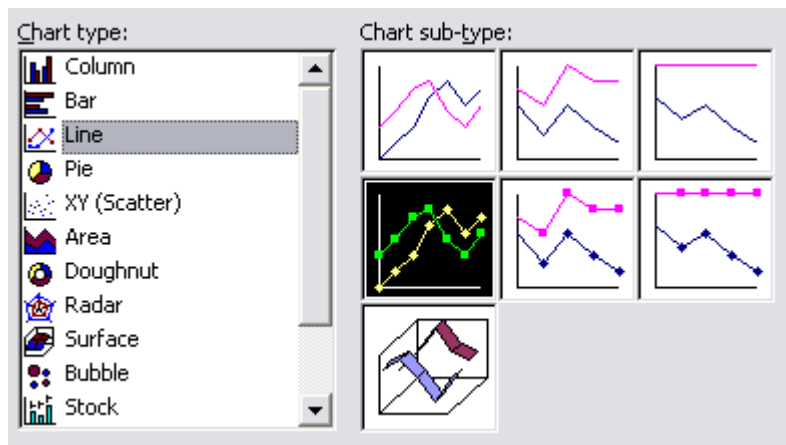
## Bar Chart

Generally used for grouped/discrete data, especially comparing size.



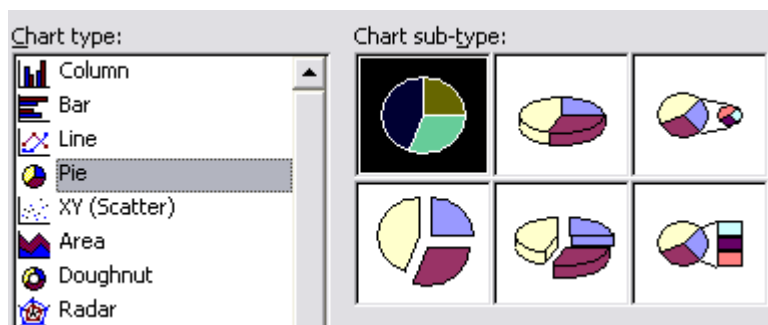
## Line Chart

Used to show continuous data, trends at equal intervals.



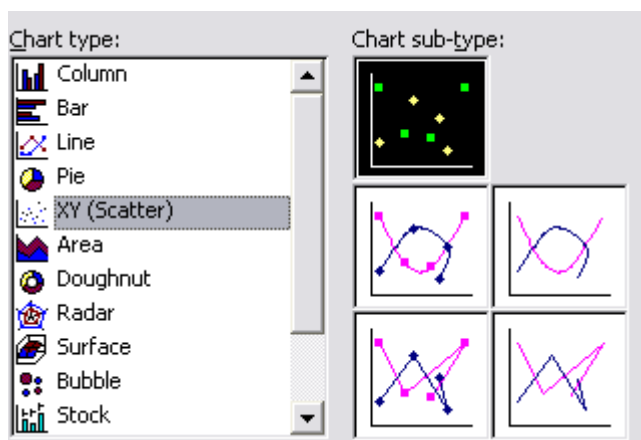
## Pie Chart

Used for showing a single data series of 100%.

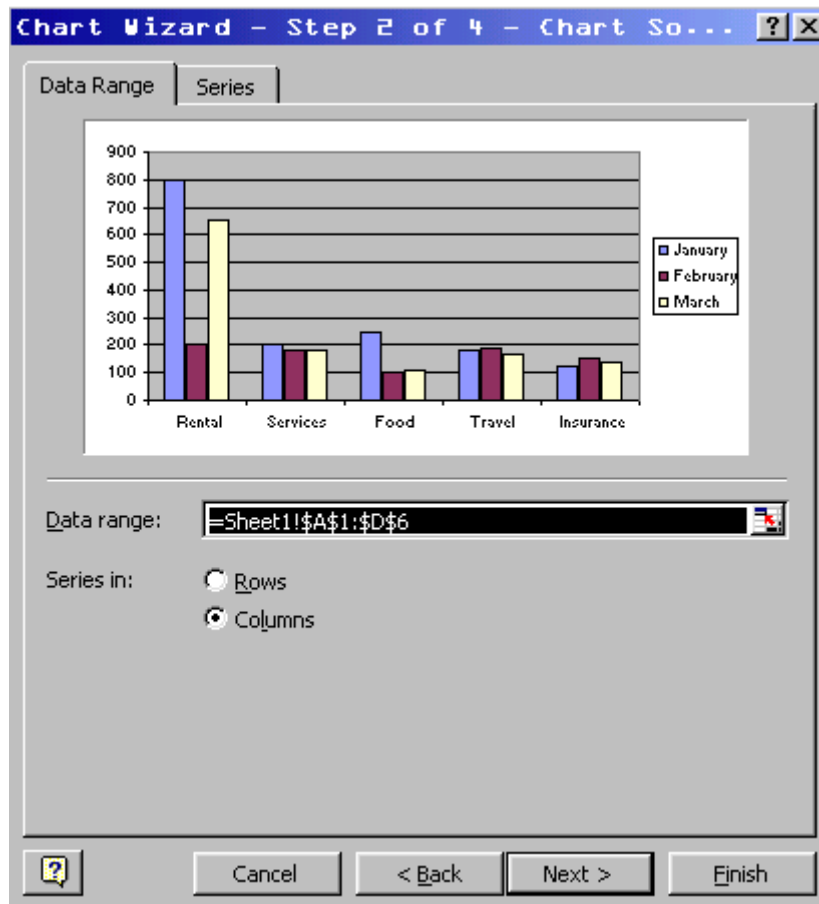


## XY scatter chart

Used to show dependant and independent values and unequal intervals.



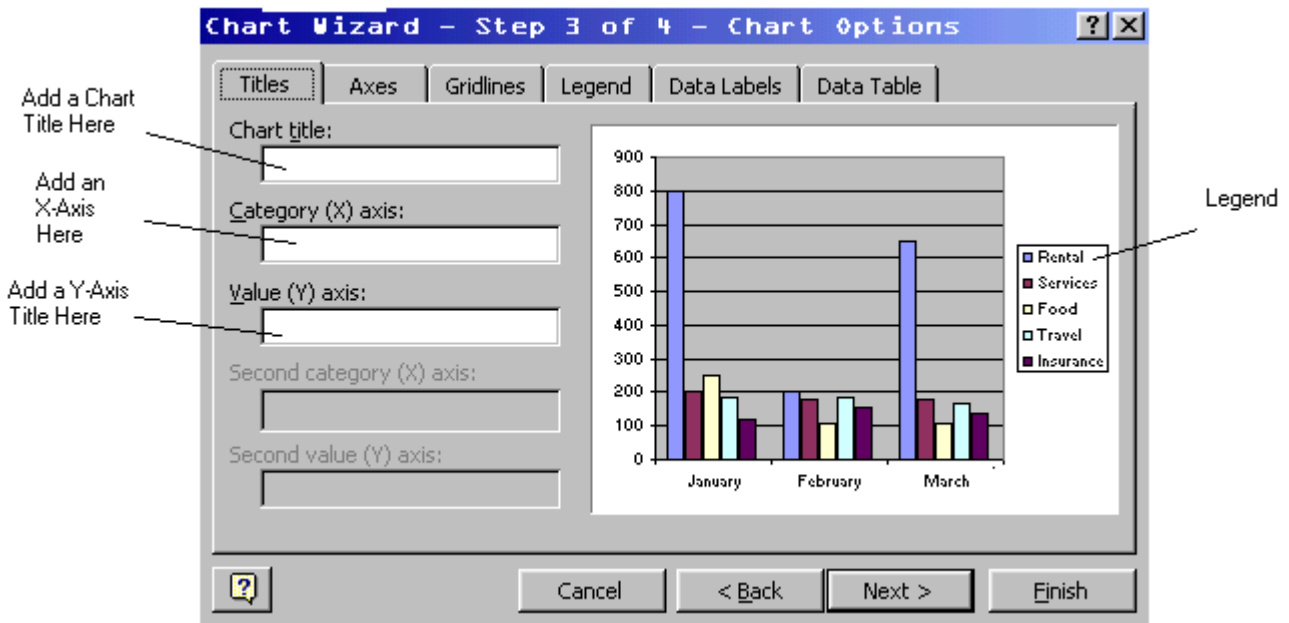
Once you are happy with your selection, then choose the **Next** button



Choosing the **Next** button will bring up the following box which will allow you to select the data range and series, (the data range will be shown and can be altered, if necessary). In this example you wish to see the series in Columns; this will show the different items along the X-axis and the Month headings as the legend.

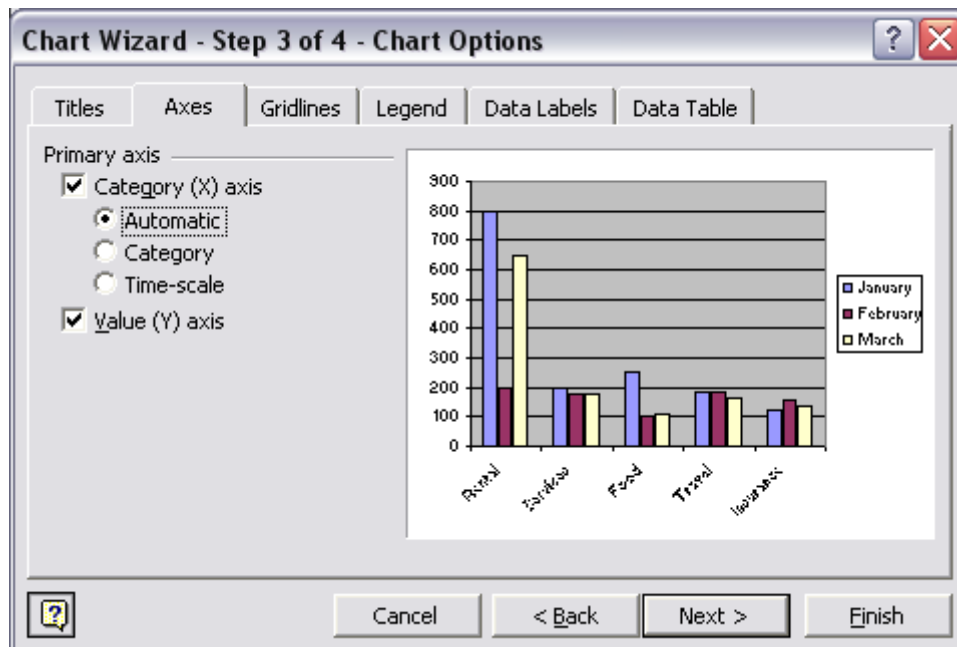
Make your selection and choose **Next**.

The following Chart Options box appears showing you a sample chart. You are able to choose whether you want to add a legend or not and you are also able to add a chart and axis titles. There is a wide selection of options here and

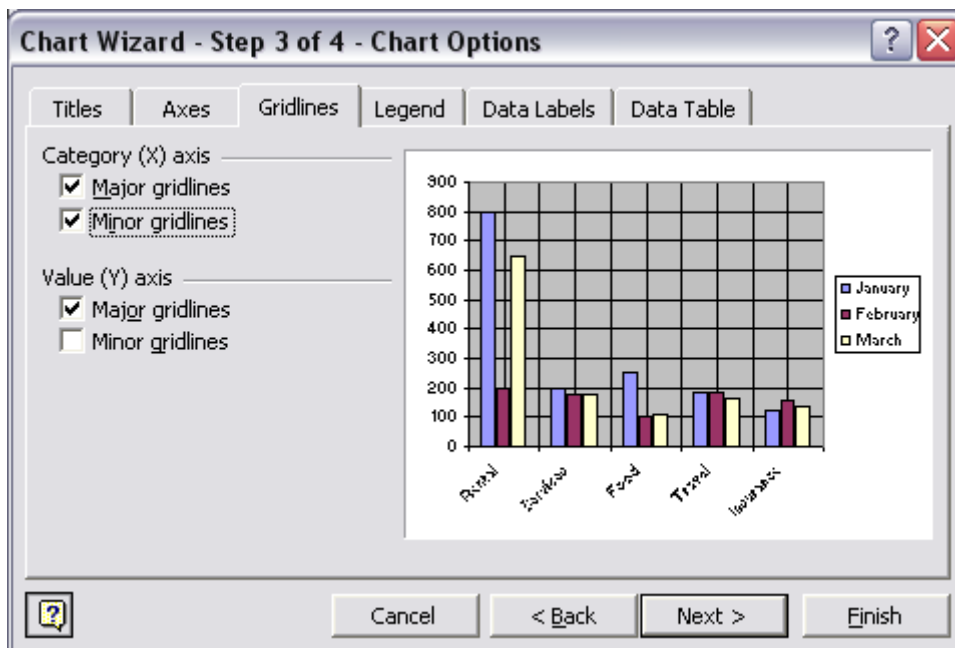


Step 3 of the Chart Wizard enables you to edit certain areas of your chart layout.

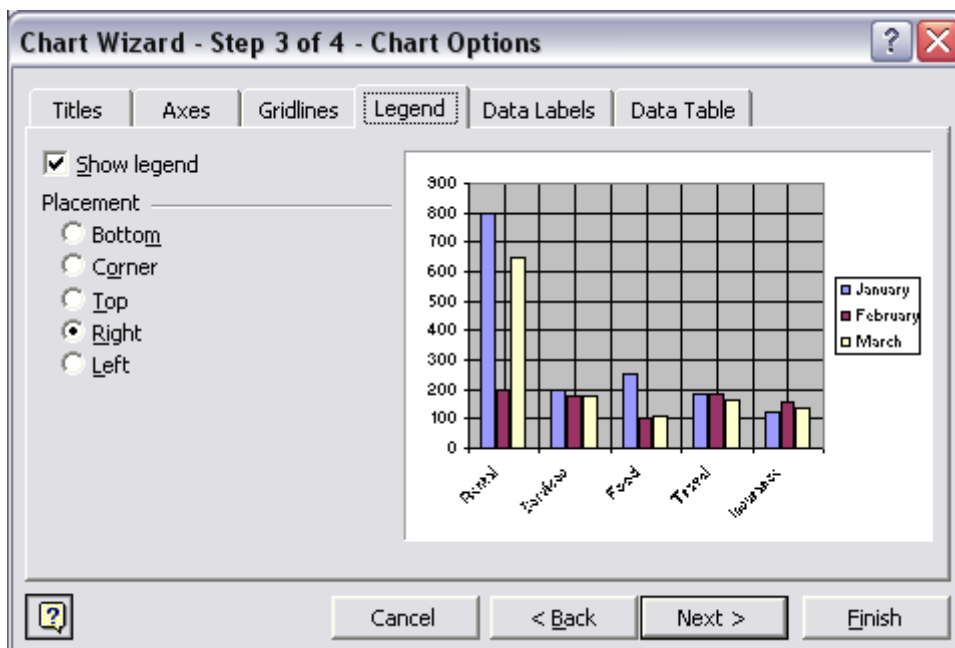
The Axes tab enables you to edit your primary axes.



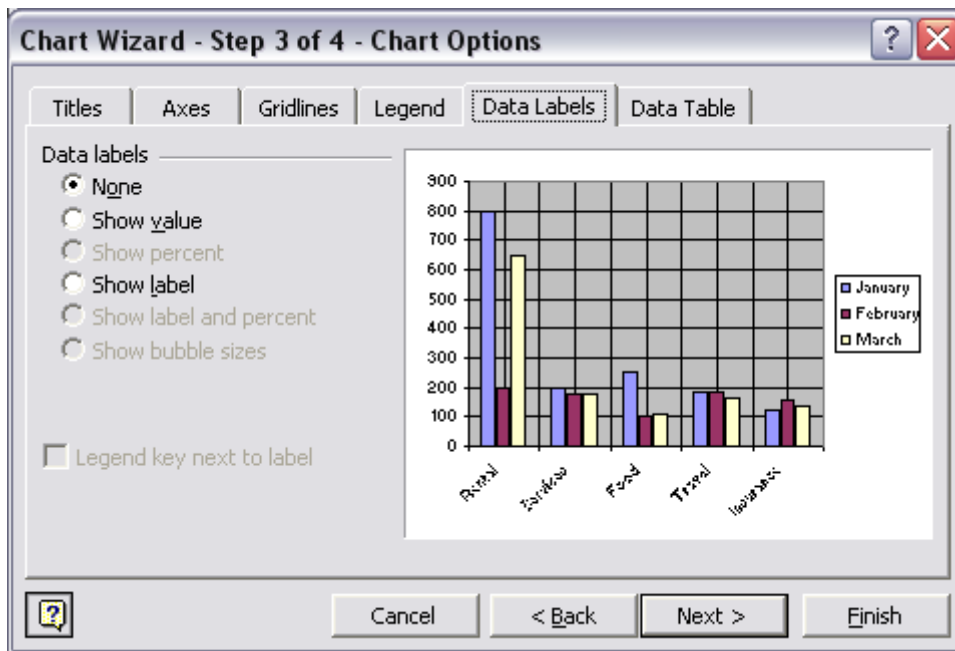
The Gridlines tab enables you to add major and minor gridlines.



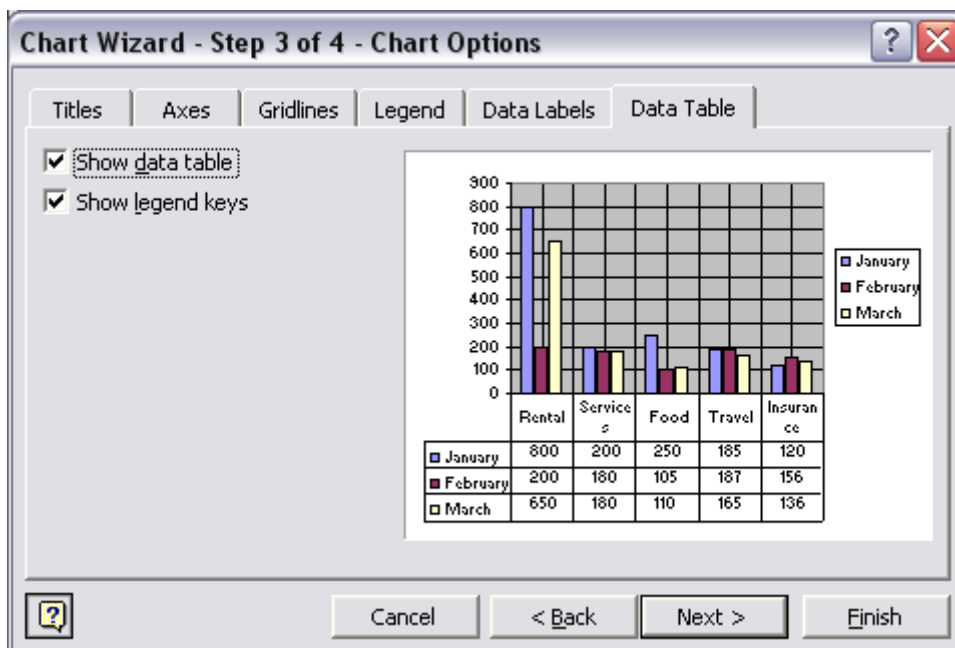
The Legend tab enables you to show your legend and position it.



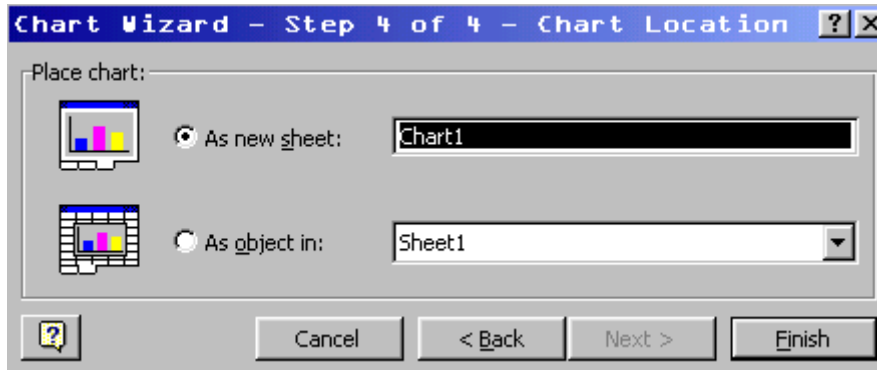
The Data Labels tab enables you to show your data labels as a value, a percent, a label, a label and percent or as bubble sizes.



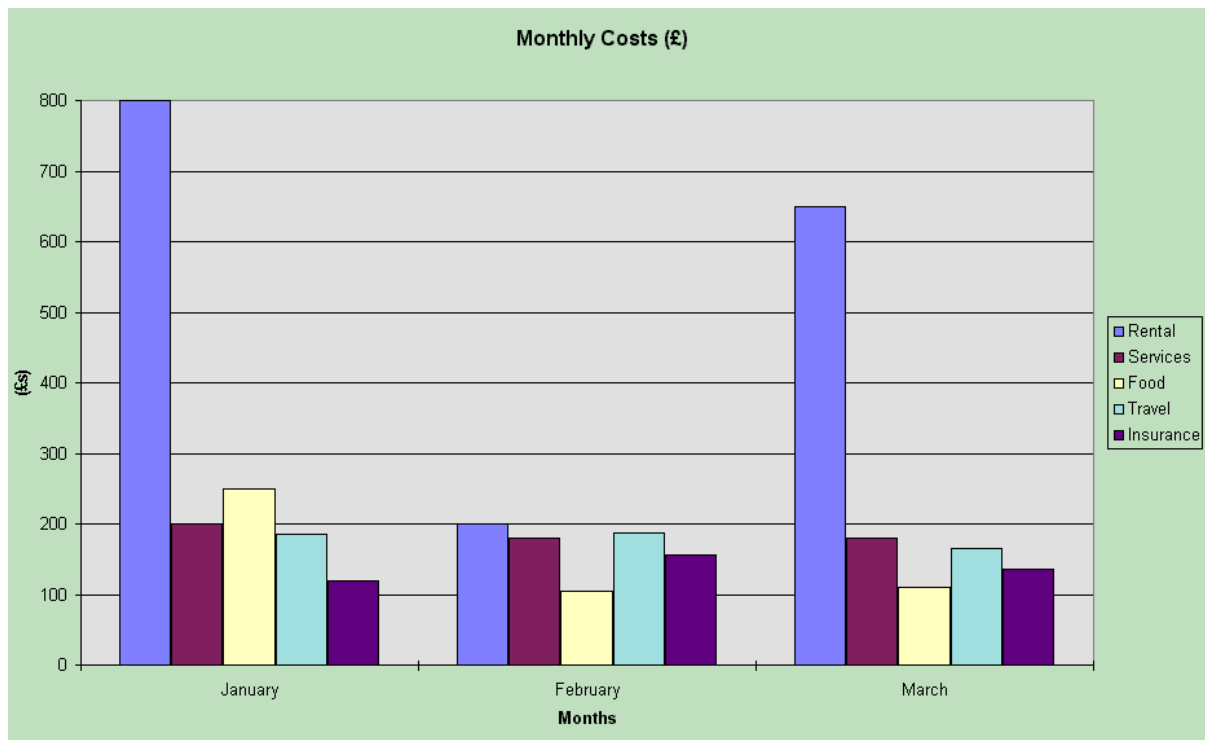
The Data Table tab enables you to show your data table underneath the chart.



If you add chart and axis titles in this box then they will appear on your chart. Click on the **Next** button and the Chart Location box will appear. Choose whether you want position your chart on the same sheet or on a separate sheet. Choosing **As new sheet**, will place the chart on its own page.

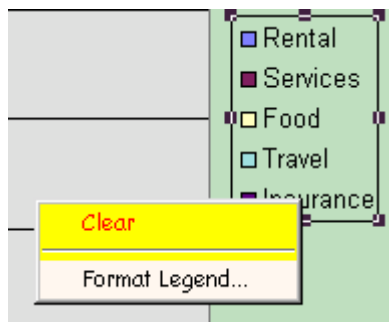


Click on the **Finish** button and this will give you the finished chart

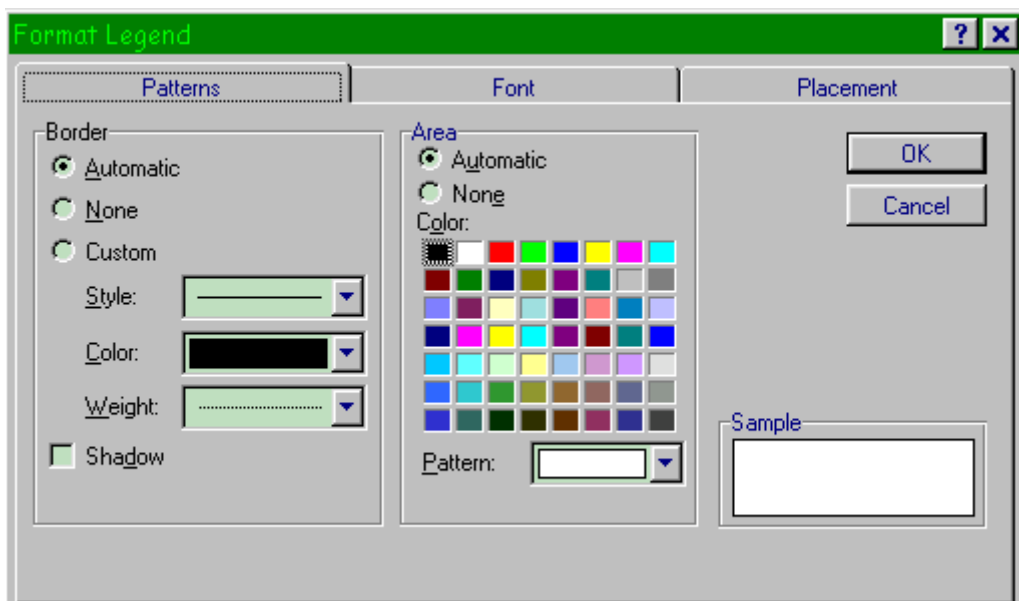


If you wish to save the chart as part of the spreadsheet book, then choose Save.

## Editing Existing Charts

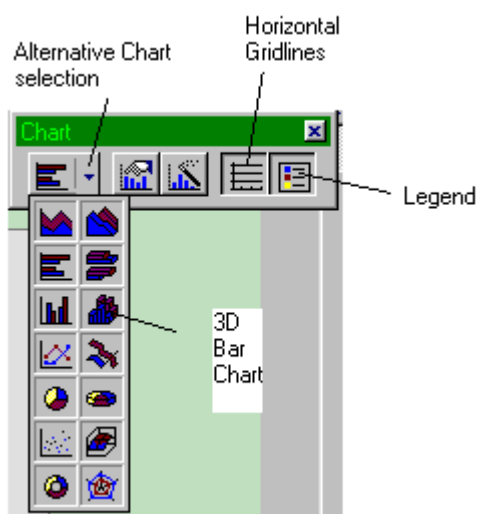


If you want to edit any area of your chart then you need to right-click on that area. In this example if you want to format the legend, then you need to select that option.



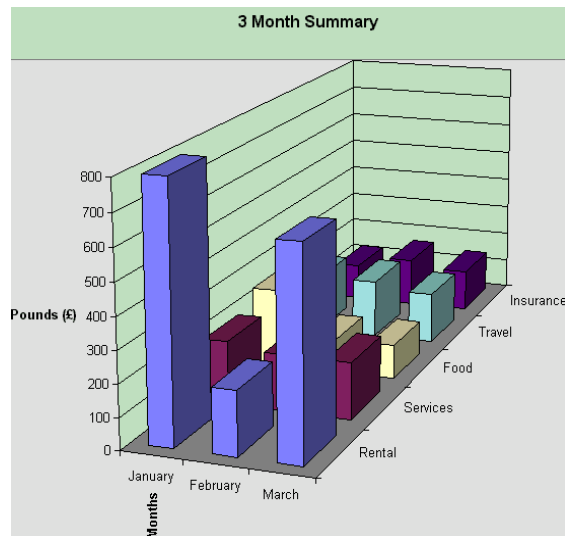
The above dialogue box will allow you to alter the appearance of the legend, i.e. the Pattern, the Font and the Placement.

## Changing the Chart Type



If you want to alter the existing chart, then you need to click on the chart box that appears on the chart, (if it doesn't appear on your chart, then you need to click on the View menu, choose Toolbars..., and select Chart). You are able to choose an alternative chart type, switch on/off the horizontal gridlines and the legend, by clicking on the required button. If you chose the 3D Bar Chart then the following would appear:

The 3D bar chart is probably a better alternative than the row bar chart. It is advisable to study the data that you want to display as a chart, and then decide on the most appropriate one before starting the chart wizard.



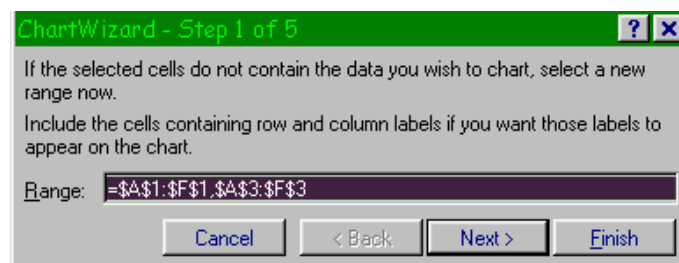
### Using Pie Charts

If you consider the following information, you could represent it graphically by use of a pie chart. You would need to highlight the input data and start the chart wizard, in the usual manner.

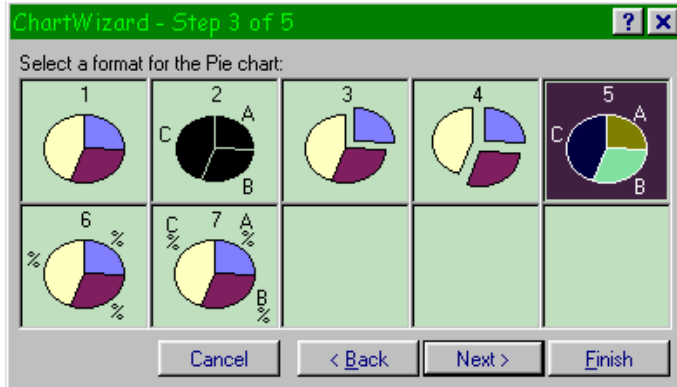
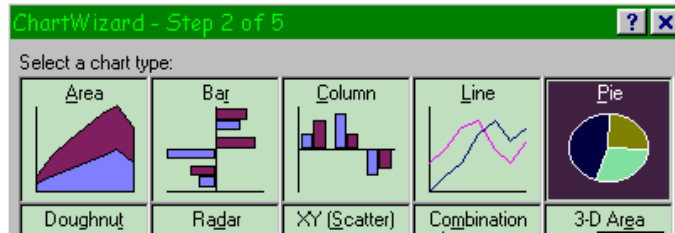
Students	1994	1995	1996	1997	1998	
Male	1000	1400	2600	1900	1500	
Female	1200	1600	3000	2100	1800	
Total	2200	3000	5600	4000	3300	18100

You need to decide what you want to show on your pie chart and then highlight the specific range of cells, e.g., the Female student numbers over the 5 year period.

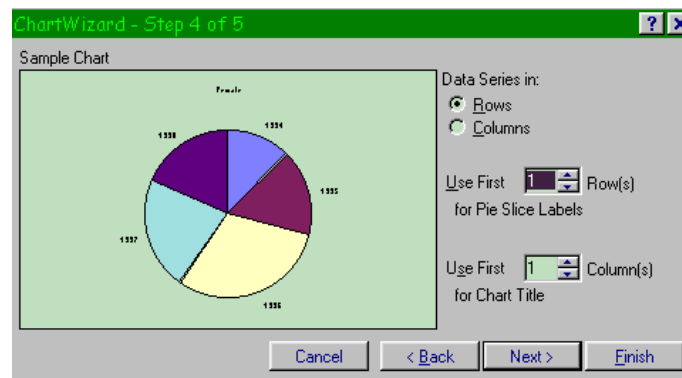
Highlight the specific cell range as shown and then select the Insert menu and choose Chart and “as new sheet”. To highlight more than 1 block of cells, use your CTRL key.



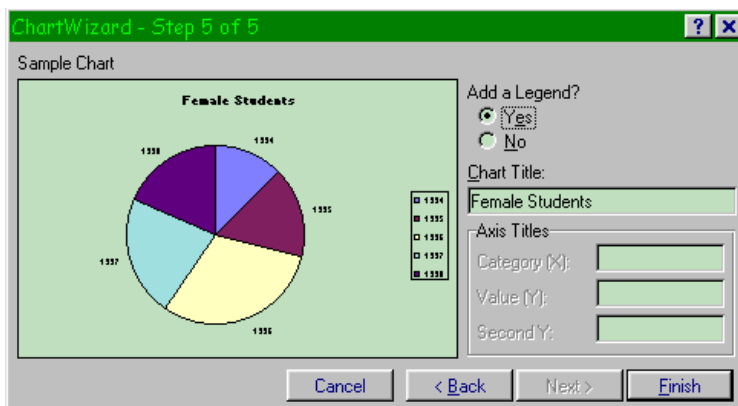
Select the required Chart format, in this case, Pie and then click on the Next button



You are then able to choose any specific format for your pie chart. You may wish to show your values, or segment your chart. In this case you want show the values as a number

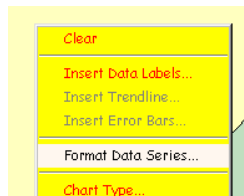
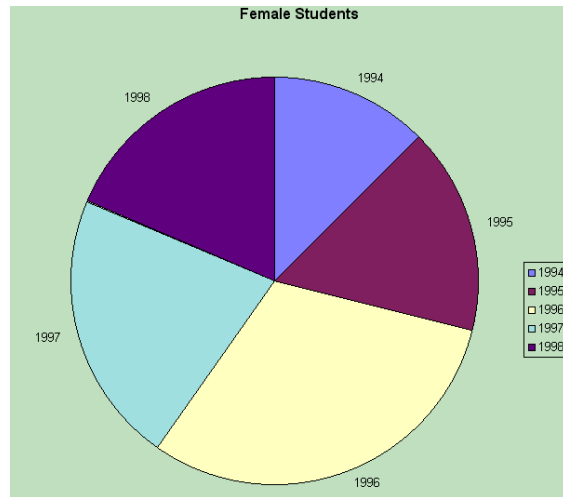


You are shown a sample chart and are able to select the Data Series and you are also able to read any existing data in rows 1 or 2. You can select Row 1 and this will then show your years as labels. You then need to select the Next button.

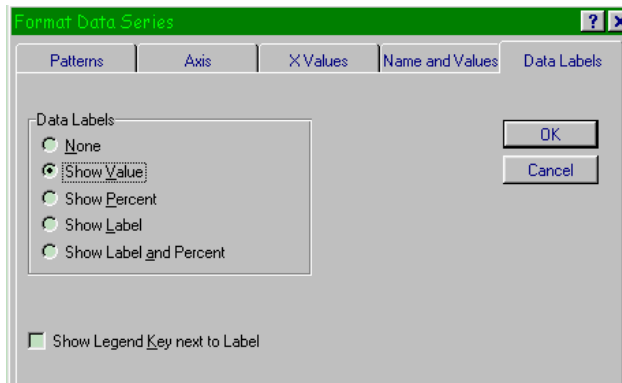


The next step in the ChartWizard will allow you to add a legend and also a Chart Title. Click on the Finish button and the following chart will appear.

The pie chart shows the information as segmented pieces. In this particular example you may want to show the value rather than the year. You need to right-click on the legend and choose, Format Data Series..

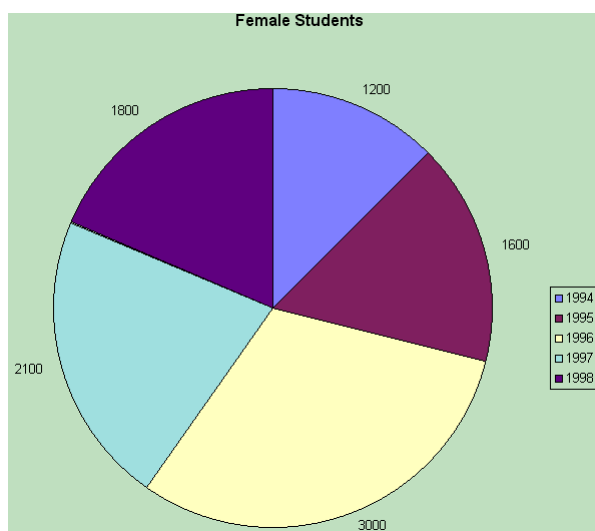


The following box will appear on your screen and this will allow you to alter the whole format of the chart, if you wish.



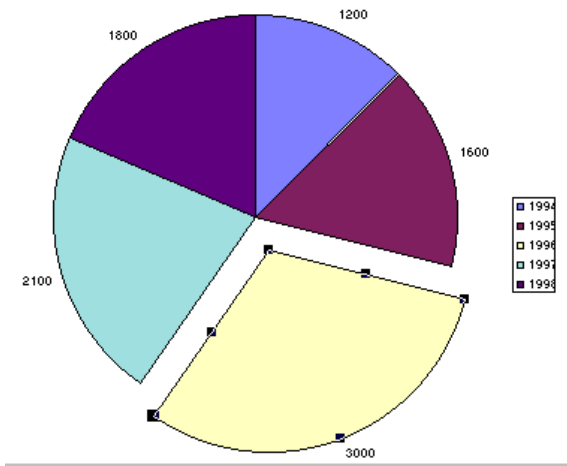
Selecting the Data Labels tab will entitle you to change your labels so that they show as the values. Once you have selected the appropriate labels, go to the OK button.

The chart will now show the values for each year. Once you are happy with the layout of your pie chart, you can then save it and print it.



You may wish to segment your pie chart to emphasise certain areas of data e.g., on this particular you may want to separate the largest section from the remainder of the pie chart. To move any of the segments, you need to click on the pie chart and then click on the particular segment that you want to move.

Female Students



## Spreadsheet Exercise 9

Using the existing spreadsheet **SPDEX2.xls**, from level 1 spreadsheets, create the following:

- 1 A pie chart to show the distribution of the income amongst the five items.

Show a Legend

Show each section as a percentage

Insert an appropriate title

Save the chart as a separate object and name the sheet, **Income**

Amend each section of the pie chart so that they have different shading, using patterns (DO NOT USE COLOURS).

- 2 A bar chart to show the numbers sold of the individual items over the six-monthly period

Use a 3D bar chart and insert a title, and axis labels

Show a legend

Insert an appropriate heading and axis titles

Save the chart as a separate object and name the sheet **Sales Figures**

Amend each set of bars so that they have different shading, using patterns (DO NOT USE COLOURS).

Save as SPDEX9

## Spreadsheet Exercise 10

Using the existing spreadsheet **SPDEX5.xls**, from level 1 spreadsheets, create the following:

1. A column chart to show the individual expenses over the six-month period.

Use a column chart and insert an appropriate title, and axis labels

Do not show a legend but do show values for each bar

Save the chart as a separate object and name the sheet **Expenses**

Amend each set of bars so that they have different shading, using patterns (DO NOT USE COLOURS).

2. A pie chart to show the total expenses of the family over the six-month period.

Show a Legend

Show each section as a percentage

Insert an appropriate title

Save the chart as a separate object and name the sheet, **Total Expenses**

Amend each section of the pie chart so that they have different shading, using patterns (DO NOT USE COLOURS).

Close the pie sections, separate the largest portion, to emphasize it and rotate it to the front.

Increase the font size of the percentage values and bold enhance.

## Spreadsheet Exercise 11

Using the existing spreadsheet **SPDEX7.xls**, from level 1 spreadsheets, create the following:

1. A column chart to show the numbers bought for each item

Set the series to read in rows

Show a Legend

Insert a title of Numbers Bought and appropriate X and Y-axis titles

Save the chart as a separate object and name the sheet, **Number Bought - Column**

2. A line chart to show the numbers bought for each item

Set the series to read in rows

Show a legend

Insert a title of Numbers Bought and appropriate X and Y-axis titles

Save the chart as a separate object and name the sheet **Numbers Bought - Line**

3. A pie chart to show the total numbers bought over the six-month period

Do not show a Legend

Show each section with a label and value

Insert a title of Total Numbers Bought

Save the chart as a separate object and name the sheet, **Total Numbers Bought**

Amend each section of the pie chart using different textures (DO NOT USE COLOURS).

Close the pie but pull out the largest section

Save as SPDEX11

## Spreadsheet Exercise 12

Using the existing spreadsheet **SPDEX8.xls**, from level 1 spreadsheets, create the following:

1. A custom type cone chart to show the income from each item over the four-month period

Set the series to read in rows

Do not show a Legend

Insert a title of Income

Save the chart as a separate object and name the sheet **Income**

2. A custom type blue pie chart to show the total profits

Set the series to read in rows

Insert a title of Total Profit

Save the chart as a separate object and name the sheet **Total Profits**

Close the pie and expand the section with the lowest profit

Save as SPDEX12

### **Spreadsheet Exercise 13**

Peter Plowright from exercise 1, requires to show the item he has sold most over the 12 month period as a pie chart.

Look at the amount he has sold and choose the correct item to show on a pie chart. Show the label and the percentage value. Separate the segment that has the highest value and emphasise the segment by changing it to a pattern.

Save as SPDEX13

## Spreadsheet Exercise 14

Using the existing spreadsheet **SPDEX4.xls**, create the following:

1. Produce 3 pie charts or similar (of your choice) to show the no. of deliveries in each ward

Do not show a Legend

Show the name of the midwife and the percentage

Insert the particular ward name as a title

Close the pie sections and expand the largest section

Save the chart as a separate object and name the sheet **Cumtwokwik, Waitawile & Longardslog**, respectively

Save as SPDEX14

## Spreadsheet Exercise 15

Using the existing spreadsheet **SPDEX8.xls**, create the following:

- 1 Produce a pie chart to show which company booked the most sports, in that particular week.

Do not show a Legend

Insert an appropriate title and show the percentage and label

Save the chart as a separate object and name it appropriately

Change the colour format to show patterned areas

Close the pie, explode the largest section and rotate to view it, to the front.

- 2 Produce a custom chart, of your choice, to show the costs to the companies involved. Label and format appropriately and save as a separate chart.

Save as SDEX15

## Spreadsheet Exercise 16

Using the existing spreadsheet **SPDEX9.xls**, create the following:

- 1 Produce 4 different types of chart, i.e., pie, column, bar and line, to show the income from books over a six-week period.

You have the choice whether to include a legend or not

Insert necessary titles and show any values that you deem appropriate

Save the charts as separate objects and name them appropriately

For the pie chart, change the colour format to show patterned areas, Close the pie, explode the largest section and rotate to view it, to the front.

For the column and bar charts, change the colour format to show textured areas and enhance as necessary

Save as SPDEX16

## Spreadsheet Exercise 17

The chip shop owner from Exercise 5 now requires a graphical representation of his Amount Sold and Income sections, to show to his Bank Manager.

He requires a bar chart and a column chart, respectively, showing the values over the six week period.

The bar chart will show the amount sold section, including the six main items. Include a Heading of “**6 Week Summary**”, appropriate axis labels and a legend. You may need to edit the legend to omit any additional information that you may not require.

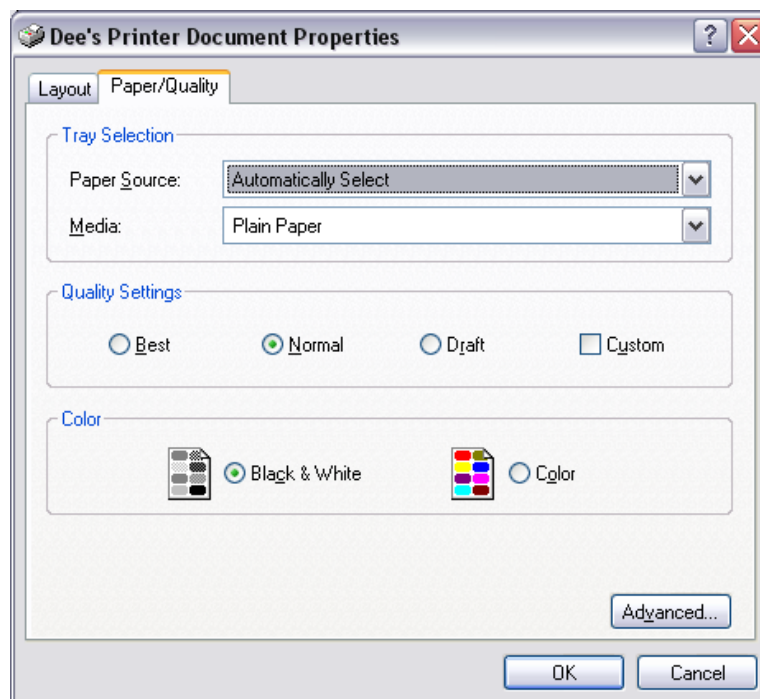
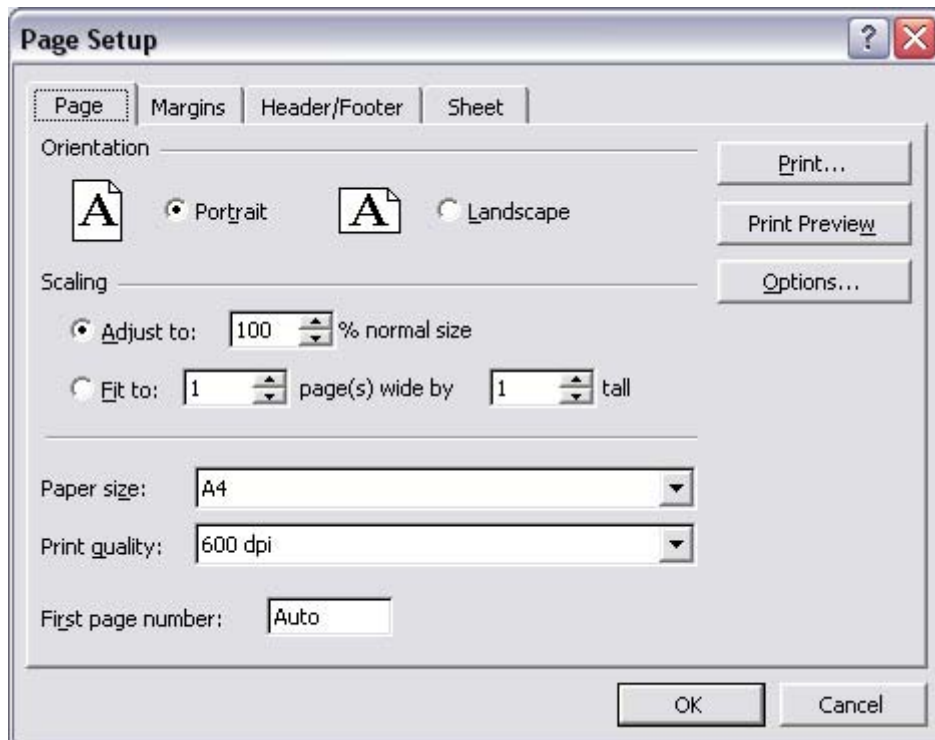
The column chart will show the income and can be shown using any 3D chart, along with appropriate axis labels and a heading.

Save as SPDEX17

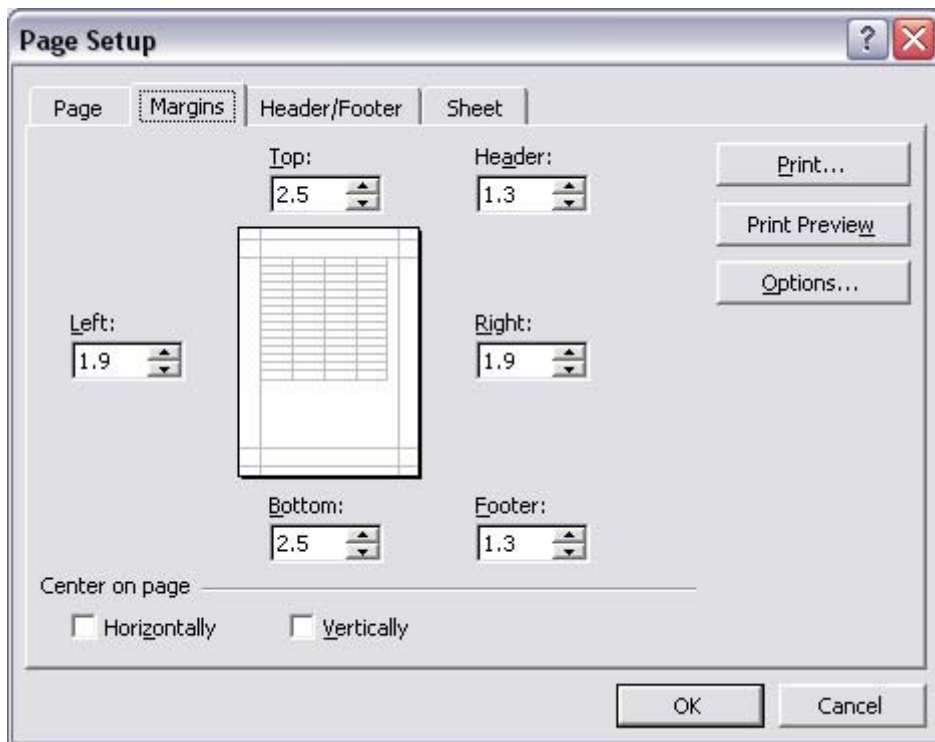
## Export and print spreadsheets

### Monochrome/colour printing facilities

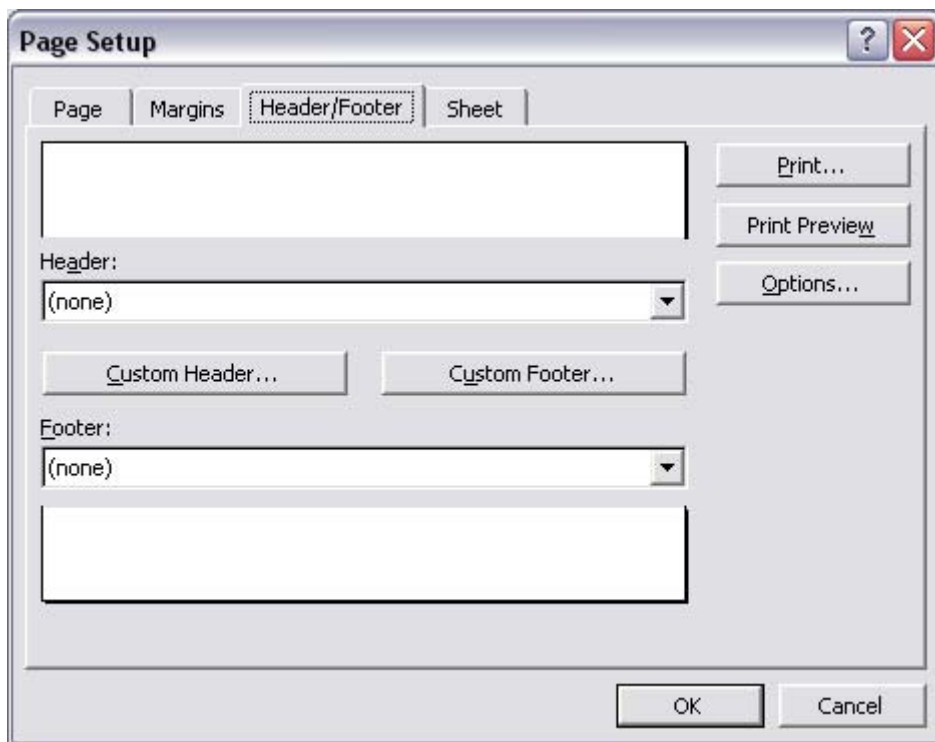
To print out a complete spreadsheet, click on File and Page Setup and from here you can change the orientation, scale in percentage, fit to one page. You can also change the paper size and quality and also choose Options to enable you to alter between colour and monochrome



In Margins you can change any margins settings and choose to centre the page either horizontally or vertically

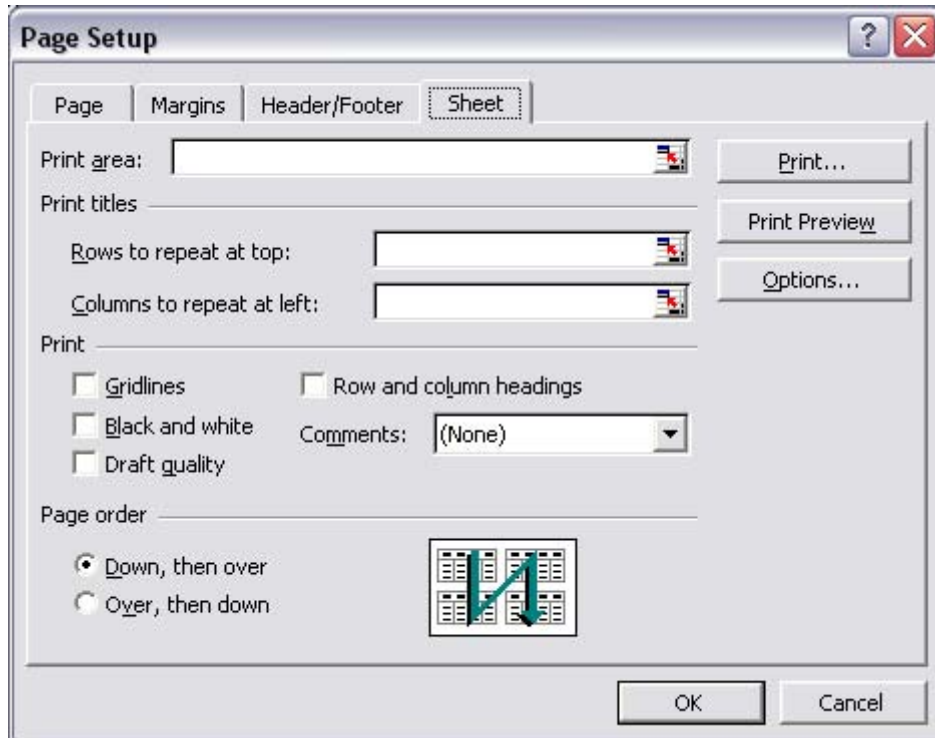


In Header/Footer, you can choose to either add or remove headers and footers.



## Sheet option

In the Sheet tab, you can print a selected area, print titles either in rows or columns. You can print gridlines, row and column headings, print in black and white and also draft quality. Here, you can also choose a particular page order to print in.



Choose Page Setup and Margins from the File Menu and click on Print Gridlines until the ✓ appears in the box. Choose the Preview option to see how your spreadsheet will look.

In addition you can choose to print the Row and Column headings i.e. the A,B,C etc, and 1,2,3 etc, at the top and sides of the spreadsheet.

Choose Page Setup and Margins from the File Menu and click in the Print, Row and Column Headings box until the ✓ appears. Again check the Preview option.

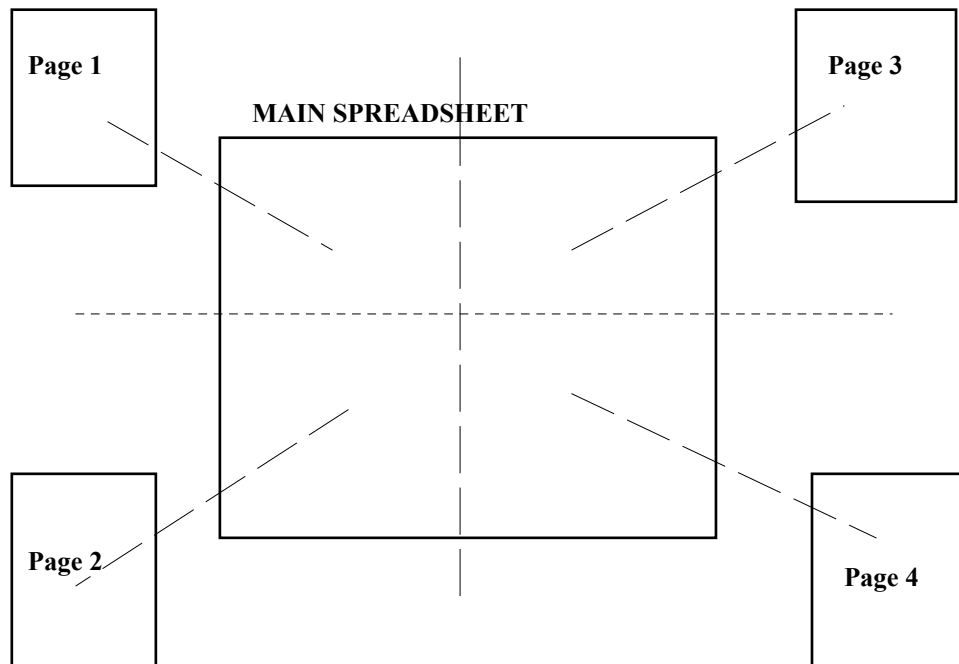
To cancel either of these, click in the boxes until they are clear.

It may be worth remembering that when you come to print the gridlines, the printer will take a while to print one sheet compared to its usual printing.

## Page Breaks

The Excel spreadsheet breaks your sheet into pages automatically both vertically and horizontally. It reads down the sheet until it reaches the bottom of the information, splitting the spreadsheet into relevant pages.

If the spreadsheet is too wide for one page it will then move along the top of the spreadsheet, begin the next page and read down again, illustrated in Figure 7.



*Figure 7*

However, you can insert your own page breaks both horizontally and vertically.

For a **horizontal page break**, move the cursor to the row number underneath the page break insertion point and choose Page Break from the Insert Menu

For a **vertical page break**, move the cursor to the column heading to the right of the insertion point and again choose Page Break from the Insert Menu

A broken line (horizontal or vertical) indicates the page break.

	E	F	G	H
8	9	10	11	56
1	4	3	6	48
9	4	2	3	27
2	16	9	10	73

A vertical dashed line is positioned between columns F and G, and a horizontal dashed line is positioned between rows 2 and 9, indicating page breaks.

To delete a page break (horizontal), move the cursor underneath the page break and choose Remove Page Break from the Insert Menu

To delete a page break (vertical), move the cursor to the right of the page break and choose Remove Page Break from the Insert Menu

When you are inserting page breaks it will effect the whole of the spreadsheet, i.e. a horizontal page break will work across the 256 cells while a vertical page break will work down the 65,536 cells.

### Selected areas or whole sheet

If you want to print a small area or a specific area of the spreadsheet, highlight the area you want to print.

1				
2	Amount Sold			
3				
4	5	6	7	8
5	10	9	5	11
6	6	2	1	9
7	5	10	11	12
8				
9				
10				

Choose Print Area and Set Print Area from the File Menu.

Only one area of the spreadsheet can be chosen at one time, therefore highlighting a new piece of the spreadsheet will replace the old print area.

Once you have set the print area use Print and choose the print options as usual.

From the printer options, you can choose whether to print the selection, the selected chart or the whole workbook.

	A	B	C	D	E	F	G	H	I	J	K	L
1	Monthly Costs (£)	January	February	March	Total							
2	Rental	800	200	650	1650							
3	Services	200	180	180	560							
4	Food	250	105	110	465							
5	Travel	185	187	165	537							
6	Insurance	120	156	136	412							
7	Total	1555	828	1241	3624							

**Print**

Printer: Dee's Printer

Name: HP DeskJet 930C/932C/935C

Status: Idle

Type: HP DeskJet 930C/932C/935C

Where: USB001

Comment:  Print to file

Print range:  All  Page(s) From: To:

Copies: Number of copies: Collate

Print what:  Selection  Entire workbook  Selected Chart

Buttons: Preview, OK, Cancel

To print either values or formulas, click on the Tools menu and choose Options. From here you can switch the formulas on and off.

**Options**

Transition | Custom Lists | Chart | Color

View | Calculation | Edit | General

Show:  Formula bar  Status bar  Windows in Taskbar

Comments:  None  Comment indicator only  Comment & indicator

Objects:  Show all  Show placeholders  Hide all

Window options:

- Page breaks  Row & column headers  Horizontal scroll bar
- Formulas  Outline symbols  Vertical scroll bar
- Gridlines  Zero values  Sheet tabs

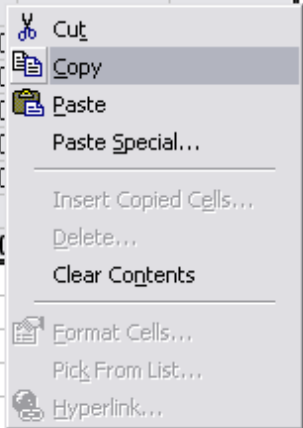
Color: Automatic

Buttons: OK, Cancel

## Export data or graphic to another spreadsheet file

If you wish to extract an existing spreadsheet table or an object such as a chart in to another spreadsheet file, then firstly highlight the data/object and then cut/copy the data.

20					
21	<b>INCOME FROM HIRE</b>				
22					
23	Canoes	£90.00	£135.00	£150.00	£165.00
24	Motor Boats	£360.00	£420.00	£480.00	£480.00
25	Skifs	£80.00	£120.00	£120.00	£160.00
26	Rowboats	£180.00	£247.50	£292.50	£315.00
27	Dinghys	£40.00	£62.50	£75.00	£75.00
28					
29	<b>Totals</b>	<b>£750.00</b>	<b>£985.00</b>	<b>£1,117.50</b>	<b>£1,195.00</b>
30					
31					
32	<b>PROJECTED INCREASE FOR NEXT SUMMER</b>				
33					
34	<b>Percentage Increase</b>		<b>10%</b>		
35					



To place the data in to another spreadsheet, open that spreadsheet and then make use of paste or paste special as appropriate.

## Copy only values, formulas, comments, or cell formats

Instead of copying entire cells, you can copy specified contents from the cells— for example, you can copy the resulting value of a formula without copying the formula itself. Select the cells you want to copy, click Copy select the upper-left cell of the paste area. On the Edit menu, click Paste Special. Click an option under Paste, and then click OK.

## About using formulas to calculate values on other worksheets and workbooks

You can share data stored on different worksheets and workbooks by using linking, or external references. Linking is especially useful when it is not practical to keep large worksheet models together in the same workbook. You can link to another worksheet in the same workbook. The name of the worksheet and an exclamation point (!) precede the range reference.

You can link to a worksheet in another workbook. Not only can you create links between different worksheets, but you can also construct hierarchies of linked workbooks. For example, a group of sales offices may track data in individual workbooks; the data is then rolled into a workbook that summarizes the data at the district level, which is then rolled into a workbook that summarizes data at a regional level.

Excel displays formulas with links to other workbooks two ways, depending on whether the source workbook— the one that supplies data to a formula— is open or closed. When the source is open, the link includes the workbook name in square brackets, followed by the worksheet name, an exclamation point (!), and the cells that the formula depends on. When the source is closed, the link includes the entire path.

The source workbook for this formula is not open, so the link includes the complete path. If Budget.xls were open, the formula would appear as =SUM([Budget.xls]Annual!C10:C25). If the name of the other worksheet or workbook contains non-alphabetic characters, you must enclose the name (or the path) within single quotation marks.

### **Where links can be used effectively**

You are able to merge data from several workbooks and you can link workbooks from several users or departments and then integrate the pertinent data into a summary workbook. That way, when the source workbooks are changed, you won't have to manually change the summary workbook.

### **Drag information between programs**

You can move or copy information, or you can create a linked object, a shortcut, or a hyperlink between documents in different programs by using drag-and-drop editing. Both programs must support OLE. Arrange the program windows so that both the source file and the destination file are open and visible. You must be able to see the information you want to drag as well as the location where you want to drop it.

Select the information, and then use the right mouse button to drag the selection to the new location in the other program. To drag information from Microsoft Excel, you must point to the border of the selection before dragging.