CONTENTS

INTRODUCTION

These notes and exercises are aimed at those who already know how to use Excel 2010 but would like to further their knowledge of the application.

Knowledge assumed

you will have either attended the Excel 2010 Getting Started training course, or have experience of using Excel at a basic level, including using simple functions

Areas covered

formatting worksheets (including conditional formatting)

linking worksheets

using named ranges

importing data from other applications

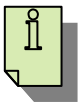
using templates

Document signposts

Instructions for you to type

Bold text

Shortcuts



Reminders

Notes

Exercises

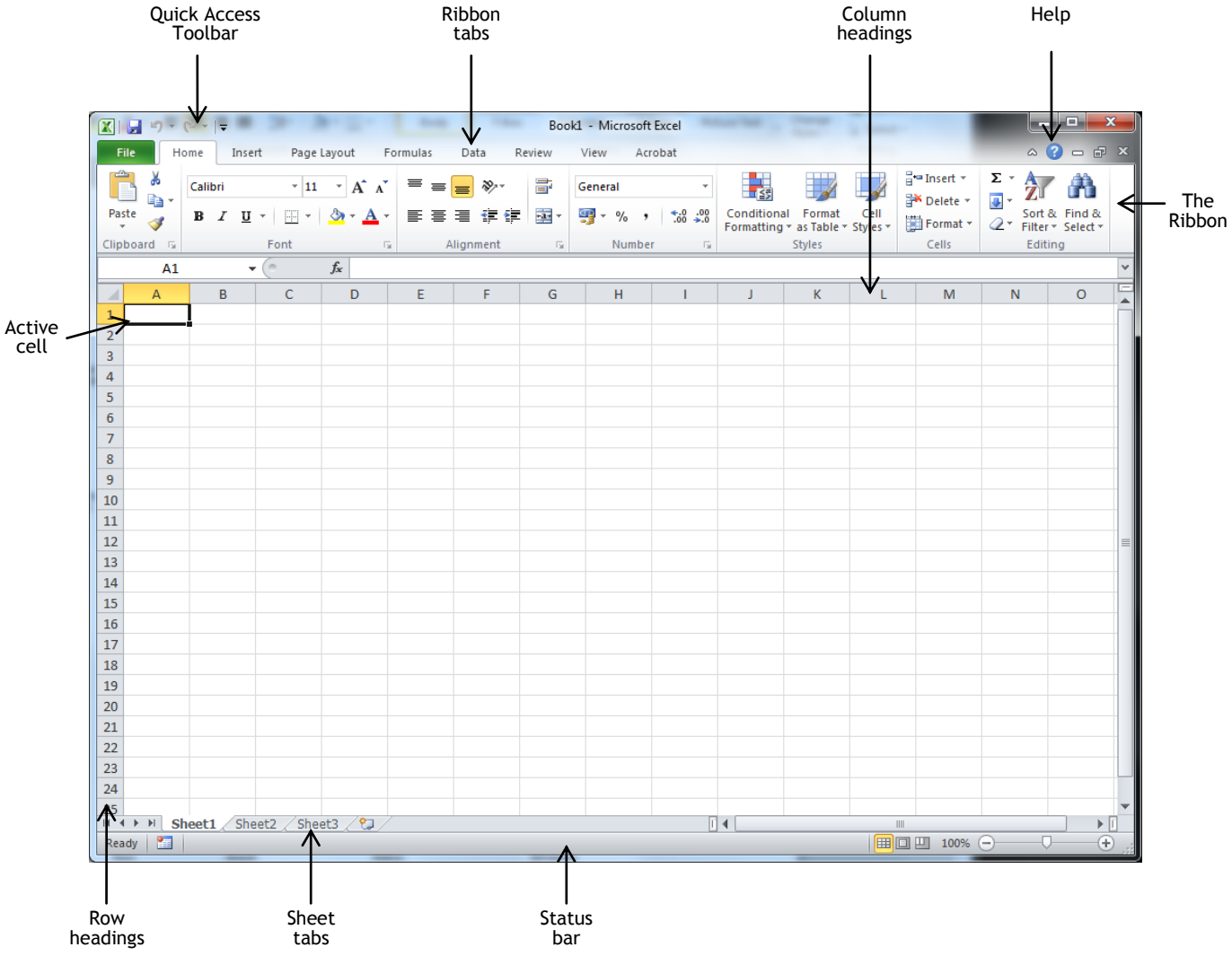
GETTING STARTED

The exercises in this training session continue from the Excel Getting Started course. The scenario for the previous course called for the delegates to create a workbook that organised the payroll of a small company.

In this course you will modify the workbook and use several worksheets to organise the payroll into months. In addition you will create a summary sheet using figures from the other sheets. You will have the opportunity to revise some of the functions that are included in the introductory course, before looking at a few new ones.

If you are attending a course in the IT Training Room the necessary files have been created for you to work with. For self-study you need to download the files from the intranet or email itskills@dmu.ac.uk to request a copy. Alternatively, create the worksheet shown on page 4. This will allow you to complete most of the exercises.

➢ Open Excel 2010



If you are working on your own:

- Create the following worksheet, inserting formulas that use appropriate functions to calculate the total pay in column D, and the summary values in cells C16, D16, B18, B20, and B21.

- Format columns B and D as currency.

	A	B	C	D
1	Name	Hourly Rate	Hours Worked	Total
2				
3	John Markshaw	£7.50	30	£225.00
4	Susan Jones	£5.50	15	£82.50
5	Nita Sonhil	£8.00	37	£296.00
6	Roy Barker	£15.00	37	£555.00
7	Tony Bare	£10.75	10	£107.50
8	Belinda Miles	£8.00	25	£200.00
9	Penelope East	£6.15	17	£104.55
10	Rupert Marks	£10.75	35	£376.25
11	James Colins	£8.00	20	£160.00
12	Sophie Doige	£7.50	20	£150.00
13	Mike Burns	£6.50	17	£110.50
14	Jasbir Bonsal	£7.50	10	£75.00
15	Marie Kaur	£7.50	12	£90.00
16	Total		285	£2,532.30
17				
18	Average	£8.36		
19				
20	Maximum Salary	£15.00		
21	Minimum Salary	£5.50		

REMOVING FORMATTING FROM CELLS

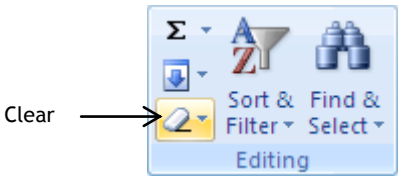
- Open the **Wages** workbook from the **ExcelIntermediate** folder on drive **C**

When you delete the contents of a cell that has a format assigned to it, for example currency, although the data is deleted, the cell retains the format. Therefore, you will sometimes need to remove formatting from a cell.

To delete the format from cell B18:

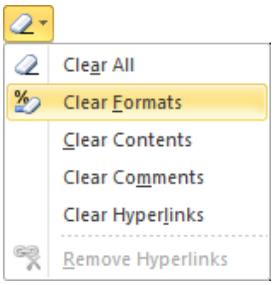
- Select cell **B18**
- Ensure that the **Home** tab is selected

From the **Editing** group of commands



- Click the **Clear** button

A list of commands is displayed:

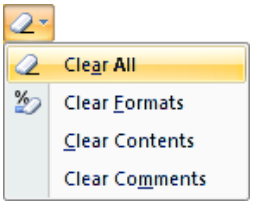


- Choose **Clear Formats**

The format has reverted to the General format which means that the cell has no specific number format. However, numeric data will be automatically right aligned.

To delete both content and formatting from rows 18, 20 and 21:

- Select rows **18, 20** and **21**
- Click **Clear**
- Choose **Clear All**



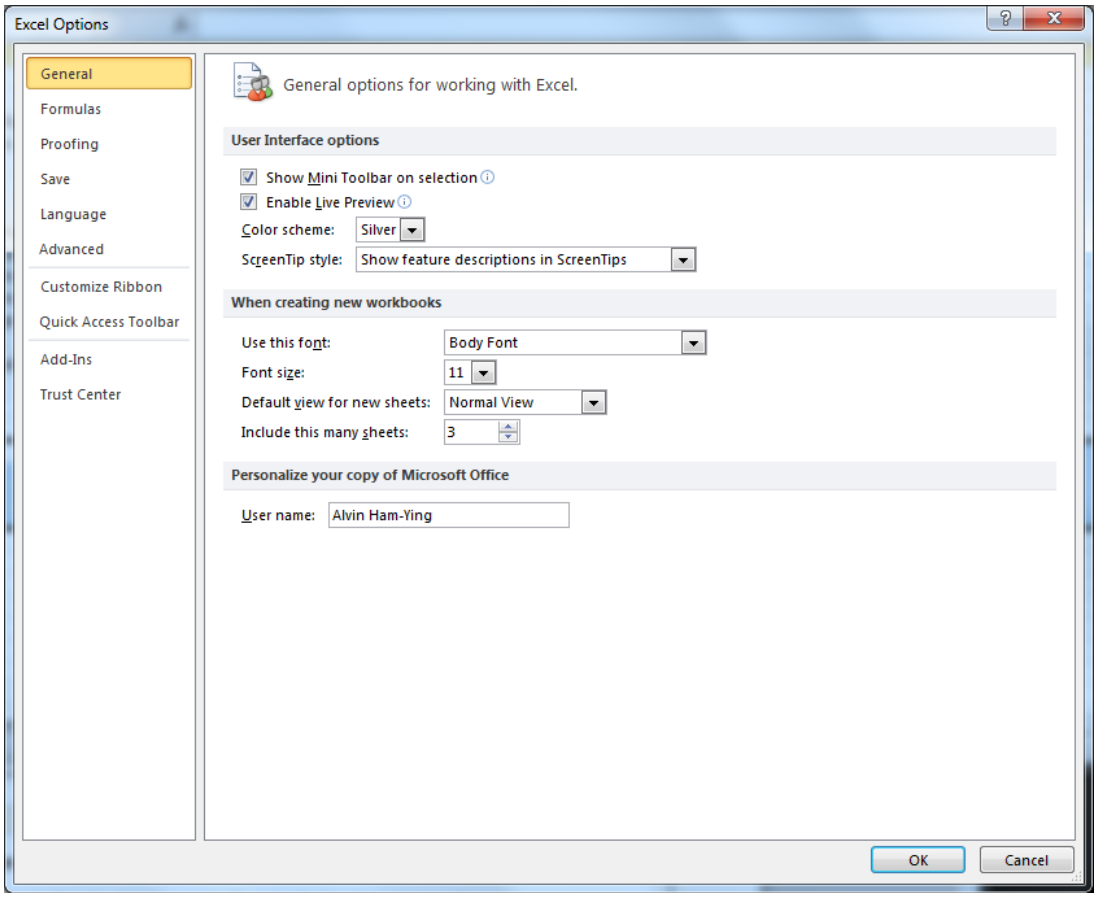
WORKING WITH WORKSHEETS

By default, when you open a new workbook it contains three worksheets named Sheet1, Sheet2, Sheet3.

To configure Excel to begin with a different number of worksheets:

- Select the **File** tab
- Click **Options**

The **Excel Options** dialog box is displayed with the **General** category selected.



In the **When creating new workbooks** section

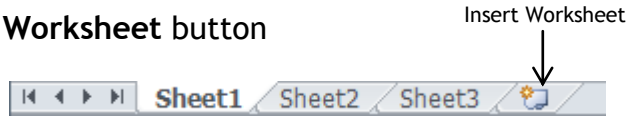
- Change the value in the box labelled **Include this many sheets:**

ADDING WORKSHEETS

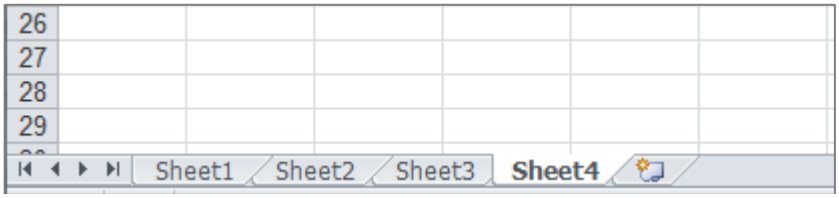
You will need four sheets in the workbook in order to complete the exercises in this training guide.

To add a fourth worksheet:

- Click the **Insert Worksheet** button



A new worksheet (Sheet4) is inserted as the last sheet.



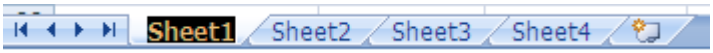
RENAMING A WORKSHEET

To make it easier to identify the contents of the worksheets, they should be renamed to reflect the information they hold.

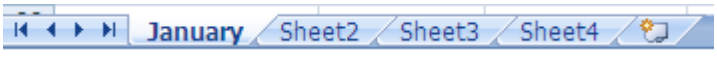
The first three sheets will hold data for the first three months of the year respectively and the fourth sheet will be a summary sheet.

- Double-click the name tab of the first sheet (Sheet1)

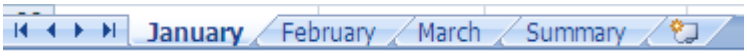
The name of the sheet is selected



- Type **January**
- Press **Enter**

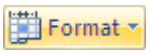


- Change the names of the other three sheets to **February**, **March**, and **Summary**

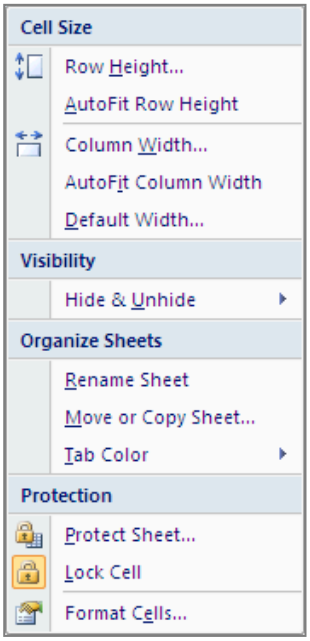


FORMATTING WORKSHEET TABS

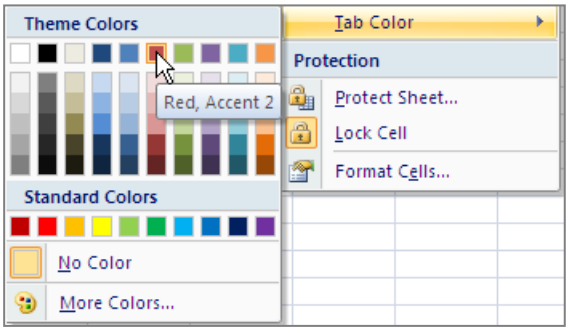
- Select the **January** worksheet
- Click **Format** in the **Cells** group of commands on the **Home** tab



A list of options is displayed.



- Point to **Tab Color**
- Select the colour **Red, Accent 2** from the **Theme Colors** section



The January tab is now formatted with the selected colour.

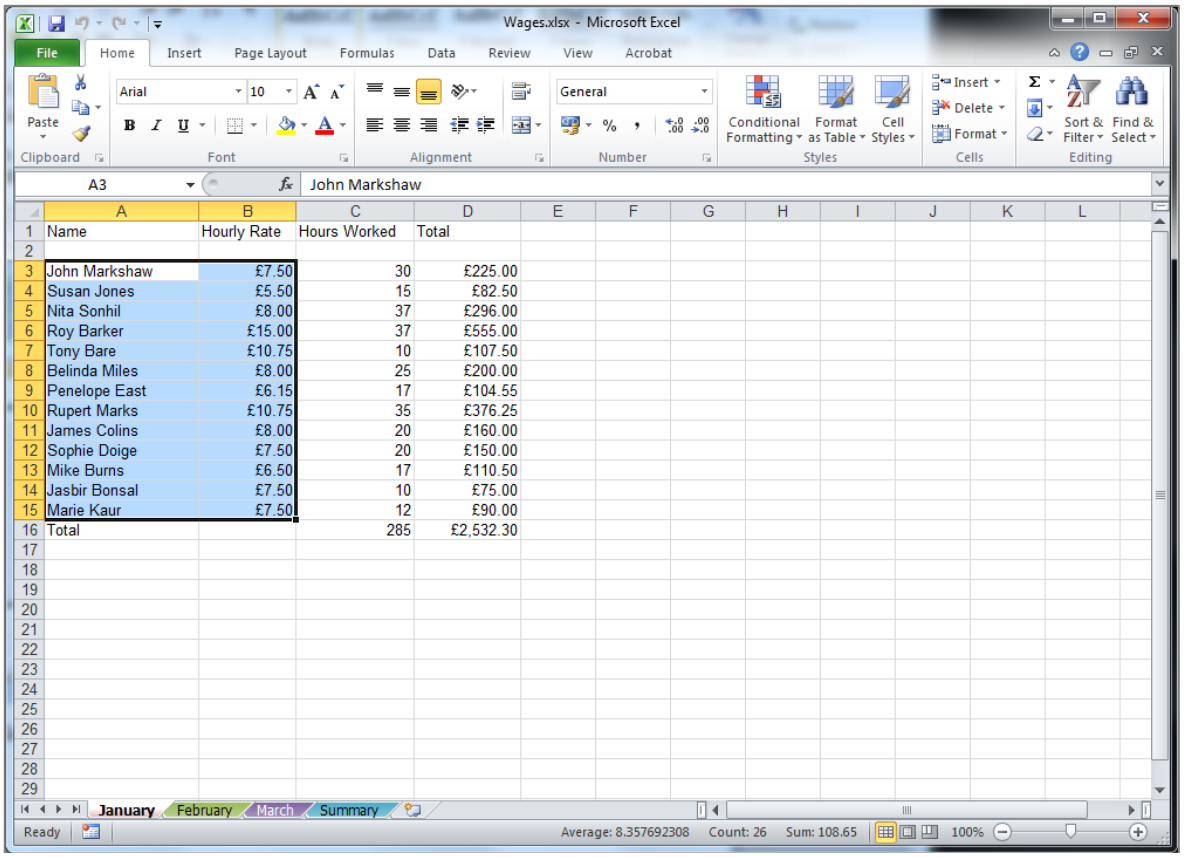
- Change the **February** tab to **Olive Green, Accent 3**
- Change the **March** tab to **Purple, Accent 4**
- Change the **Summary** tab to **Aqua, Accent 5**

COPYING INFORMATION FROM ONE SHEET TO ANOTHER

You are now ready to copy relevant information from the first sheet to the other worksheets. There is more than one way to copy data onto several worksheets. You will look at two of these methods.

In this first exercise you are going to use the common method of copying data into individual worksheets one at a time.

- Click the **January** sheet
- Select cells **A3 to B15**, the names of the staff and their hourly rates. For this exercise, **DO NOT** select the column headings



	A	B	C	D
1	Name	Hourly Rate	Hours Worked	Total
2				
3	John Markshaw	£7.50	30	£225.00
4	Susan Jones	£5.50	15	£82.50
5	Nita Sonhil	£8.00	37	£296.00
6	Roy Barker	£15.00	37	£555.00
7	Tony Bare	£10.75	10	£107.50
8	Belinda Miles	£8.00	25	£200.00
9	Penelope East	£6.15	17	£104.55
10	Rupert Marks	£10.75	35	£376.25
11	James Colins	£8.00	20	£160.00
12	Sophie Doige	£7.50	20	£150.00
13	Mike Burns	£6.50	17	£110.50
14	Jasbir Bonsal	£7.50	10	£75.00
15	Marie Kaur	£7.50	12	£90.00
16	Total		285	£2,532.30

- Click the **Copy** button in the **Clipboard** group on the **Home** tab

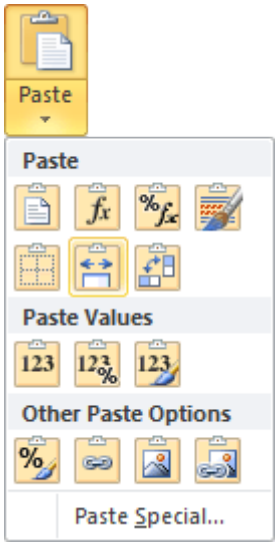
Paste Options

- Click on the tab for the **February** sheet

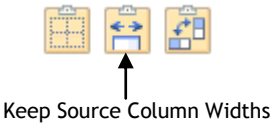
It is important that you position the insertion point in the cell to the top left of the area where the data is to be copied. You want the sheets to have the same layout, so:

- Click into cell **A3**
- Click the down arrow on the **Paste** button

A list of paste options is displayed in the form of icons:



- Hover the mouse pointer over each of the icons in turn to see what they are called and also to preview the effect on the selected sheet
- Click the **Keep Source Column Widths** option



- Move to the sheet for **March** and paste the same information into the cells starting at **A3** (ensure that the January column widths are pasted into the March sheet)

Copying to several worksheets simultaneously

In this second exercise you are going to copy data into two worksheets simultaneously. You will copy the column headings in the January worksheet, link the February and March worksheets together, and then paste the data to the linked sheets.

- Select the column headings **A1 to D1** on the **January** sheet
- Click the **Copy** button

To link the February and March sheets:

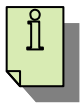
- Click on the tab for **February**, then press and hold the **Ctrl** key while you click the **March** tab

This action selects both worksheets. The February worksheet will still be visible, but anything you put on the February sheet will also appear on the March sheet in the same position.

- Select cell **A1**
- Click the down arrow on the **Paste** button and select the **Keep Source Column Widths** option

To cancel the link between the February and March sheets:

- Click on a different sheet (i.e. click on either the **January** tab or the **Summary** tab)
- Check that the headings have been copied to both the February and March worksheets.



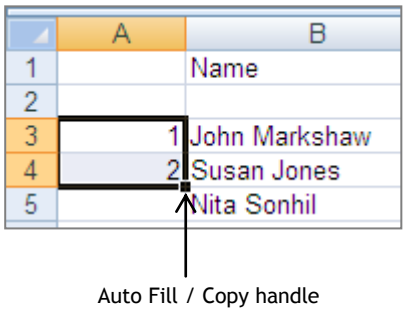
To select several consecutive worksheets, choose the first sheet then hold the **Shift** key while you select the last sheet.

Random sheets can be selected by holding the **Ctrl** key down as you select each sheet in turn.

ADDING CONSECUTIVE NUMBERS TO A RANGE

You are going to allocate a number to each of the staff by inserting a sequence of consecutive numbers. You will look at one way to achieve this, and then try an alternative method.

- Link the sheets for **January**, **February** and **March** (see page 11)
- Insert a new blank column to the left of the employee names
- Type **1** in cell **A3**
- Type **2** in cell **A4**
- Select **both** cells
- Use **Auto Fill** to copy the numbers down the column finishing at **A15**



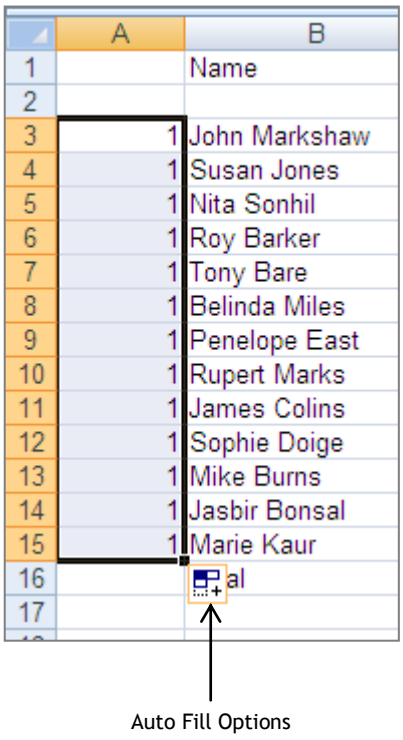
As you have typed in a sequence of numbers (in this case 1 and 2), Excel takes this as an example and uses it to generate the other numbers.

- Click on the **Summary** sheet to cancel the link
- Check the worksheets for **February** and **March** to ensure that the numbers have been inserted into column A

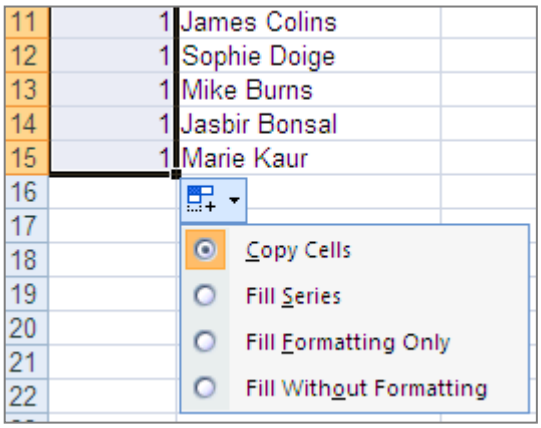
Alternative method for entering a sequence of consecutive numbers:

- Select the **January** worksheet
- Delete the numbers from the range **A3:A15**
- Type **1** in cell **A3**
- Use **Auto Fill** to copy the value in **A3** down the range **A4:A15**

The number 1 is copied into the cells and a little icon is displayed next to the Auto Fill tool. This is called the **Auto Fill Options** button.



- Click the **Auto Fill Options** button



- Select **Fill Series**

The numbers change to a sequence of consecutive numbers.

The Auto Fill Options button is not displayed when sheets are linked, therefore this second method cannot be used on linked sheets.

- Save the workbook

SIMPLE FORMULAS AND FUNCTIONS REVIEW

- Add the hours worked by each member of staff (shown below) to the February and March worksheets. The data is as follows:

Name	Hours Worked	
	February worksheet	March worksheet
John Markshaw	25	25
Susan Jones	25	10
Nita Sonhil	24	23
Roy Barker	13	15
Tony Bare	17	16
Belinda Miles	16	24
Penelope East	26	17
Rupert Marks	21	37
James Colins	24	25
Sophie Doige	23	23
Mike Burns	12	24
Jasbir Bonsal	18	12
Marie Kaur	19	37

When doing the following questions, consider linking worksheets and use this method if appropriate.

On each sheet:

- Calculate the pay for each person by including a formula in the Total column

  (Hourly Rate * Hours Worked)

- Using the Sum function, calculate the overall number of the **Hours Worked** and **Total** (pay) for the workforce. Put the answers in cells **D16** and **E16** on the February and March sheets so that they match the January sheet

- Ensure that the range **E3:E16** is formatted as **Currency** on the **February** and **March** sheets

- Save the workbook

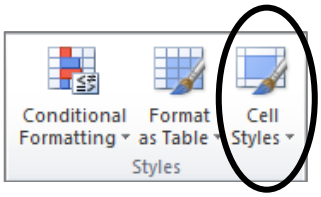
APPLYING FORMATTING STYLES

Excel provides a variety of styles that you can apply to your data. Styles can be used to highlight important information within the data, or to just make the data more attractive for inclusion in a PowerPoint presentation or similar.

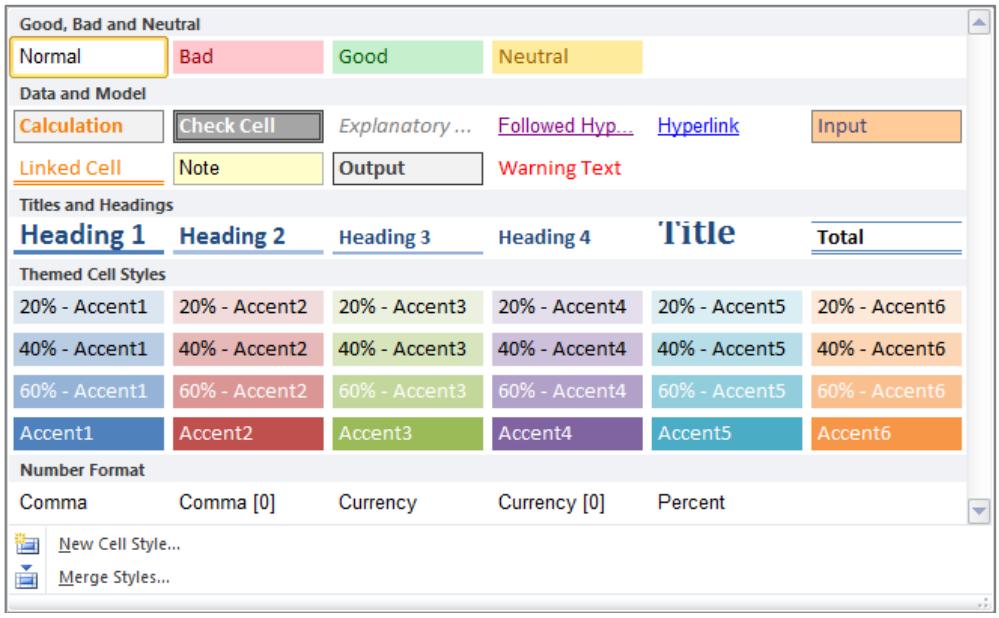
You will now look at the Styles group of commands on the Home tab.

USING CELL STYLES

- Select the range **A16:E16** on the **February** sheet
- Select **Cell Styles** from the **Styles** group of commands on the **Home** tab



A Styles Gallery is displayed.



- Select the **Total** style from the **Titles and Headings** section

The style is applied to the selected range and the gallery is closed.

The following steps show how colour can be added to the worksheet using the Themed Cell Styles section of the gallery.

With **A16:E16** still selected:

- Select **Cell Styles** from the **Styles** group
- Select **20% - Accent3** from the **Themed Cell Styles** section
- Select **A1:E1**
- Apply the cell style **Accent3**
- Select **A2:A15** and **C2:C15**

To select both A2:A15 and C2:C15:

- Select **A2:A15**
- Hold down the **Ctrl** key
- Select **C2:C15**
- Release the **Ctrl** key

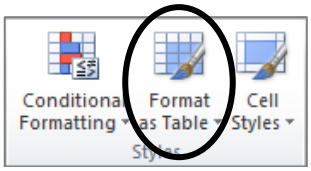
- Apply the cell style **40% - Accent3**
- Select **B2:B15** and **D2:D15**
- Apply the cell style **20% - Accent3**
- Select **E2:E15**
- Apply the cell style **Accent3**

Hopefully you will agree that the February sheet is now more attractively presented than the unformatted March sheet.

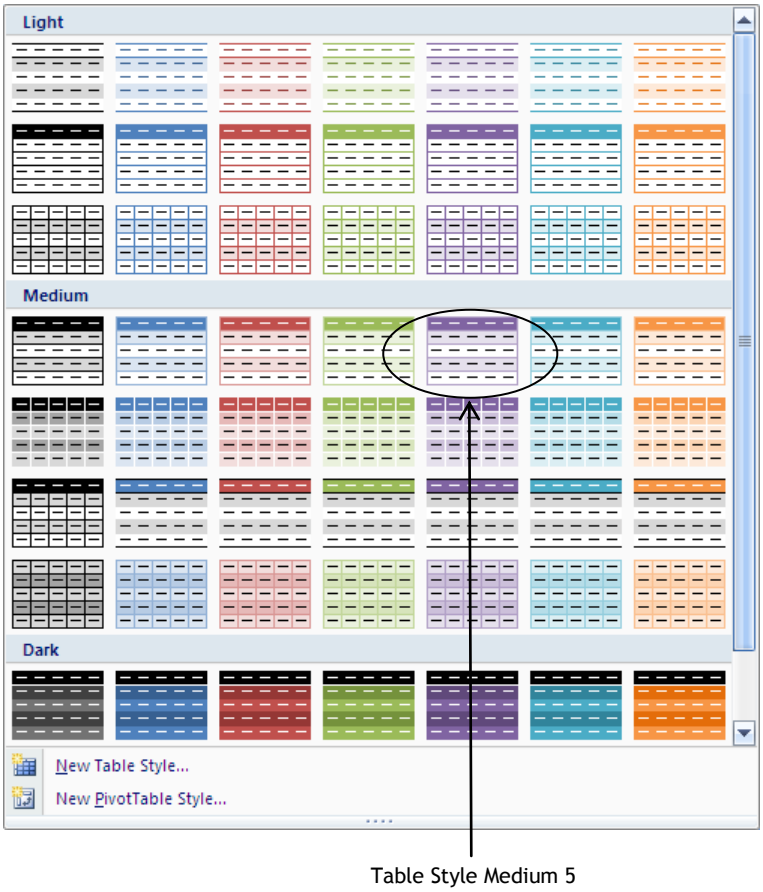
USING TABLE STYLES

Tables will be discussed later in the course, but in this section you will see how to use the table styles to improve the look of your data.

- Ensure the **January** sheet is selected
- Select the range of cells **A1:E16**
- Select **Format as Table** from the **Styles** group on the **Home** tab



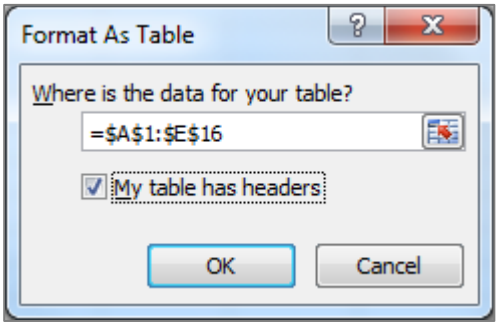
A gallery of table styles is displayed.



- Select **Table Style Medium 5**

The **Format As Table** dialog box is displayed.

- Check that the correct cell range is listed in the dialog box
- Ensure that there is a tick in the option box to indicate that the table has headers



- Click **OK**

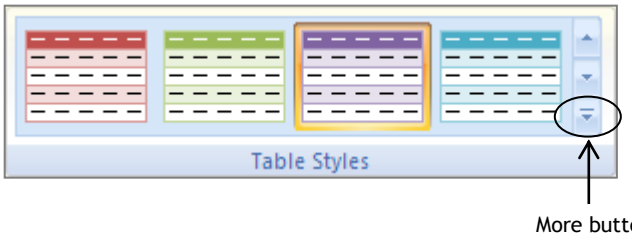
Your data is converted into an Excel Table (you will look at some of the advantages of this later in the course) and formatted in the style selected.

	A	B	C	D	E
1	Column1	Name	Hourly Rate	Hours Worked	Total
2					
3	1	John Markshaw	£7.50	30	£225.00
4	2	Susan Jones	£5.50	15	£82.50
5	3	Nita Sonhil	£8.00	37	£296.00
6	4	Roy Barker	£15.00	37	£555.00
7	5	Tony Bare	£10.75	10	£107.50
8	6	Belinda Miles	£8.00	25	£200.00
9	7	Penelope East	£6.15	17	£104.55
10	8	Rupert Marks	£10.75	35	£376.25
11	9	James Colins	£8.00	20	£160.00
12	10	Sophie Doige	£7.50	20	£150.00
13	11	Mike Burns	£6.50	17	£110.50
14	12	Jasbir Bonsal	£7.50	10	£75.00
15	13	Marie Kaur	£7.50	12	£90.00
16		Total		285	£2,532.30

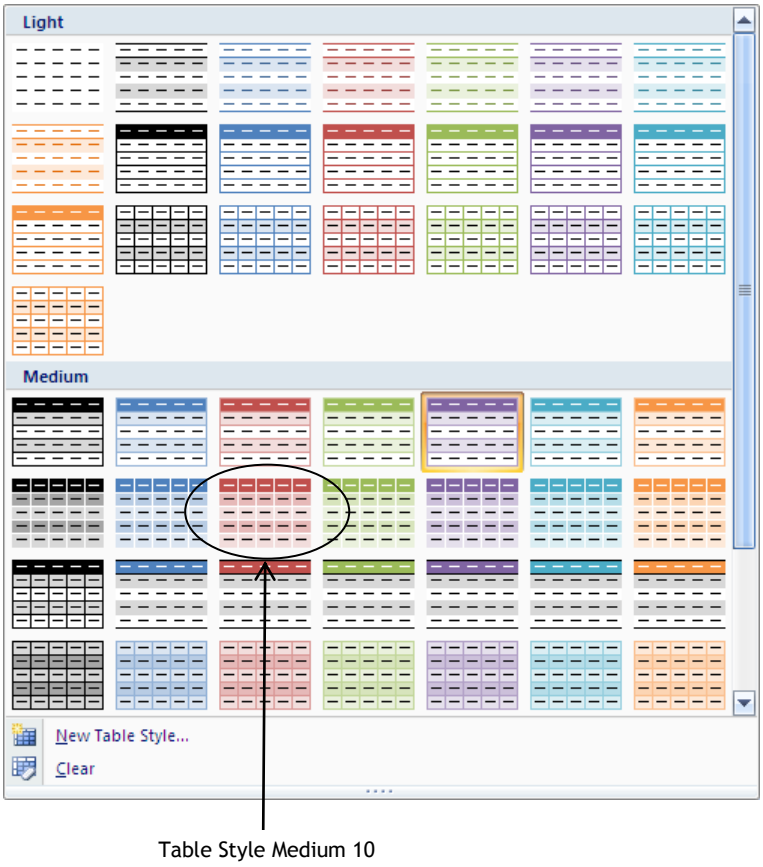
CHANGING THE STYLE

With the table still selected:

- Click the **More** button in the **Table Styles** group on the **Design** tab



The gallery of Table Styles is displayed.



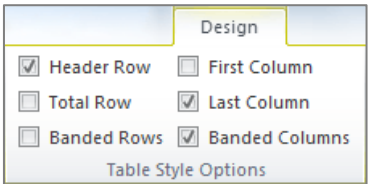
- Move the mouse pointer over the different styles and look at your table each time to see a live preview of how the table would look if that style was selected
- Select **Table Style Medium 10**

The table is formatted in the style selected.

The check boxes in the **Table Style Options** group on the **Design** tab allow you to tweak the display.

With the table still selected, in the **Table Style Options** group:

- Ensure that ticks appear in the check boxes for **Header Row**, **Last Column**, and **Banded Columns** only

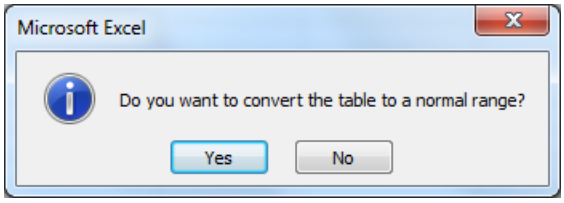


As our initial aim was not to create a table but to format the cell range, you will now convert the table back to a cell range.

With the table still selected:

- Select **Convert to Range** in the **Tools** group of commands on the **Design** tab

Excel asks for confirmation.



- Click **Yes**

The table is converted back to a normal range but retains all of the formatting.

	A	B	C	D	E	F
1	Column1	Name	Hourly Rate	Hours Worked	Total	
2						
3	1	John Markshaw	£7.50	30	£225.00	
4	2	Susan Jones	£5.50	15	£82.50	
5	3	Nita Sonhil	£8.00	37	£296.00	
6	4	Roy Barker	£15.00	37	£555.00	
7	5	Tony Bare	£10.75	10	£107.50	
8	6	Belinda Miles	£8.00	25	£200.00	
9	7	Penelope East	£6.15	17	£104.55	
10	8	Rupert Marks	£10.75	35	£376.25	
11	9	James Colins	£8.00	20	£160.00	
12	10	Sophie Doige	£7.50	20	£150.00	
13	11	Mike Burns	£6.50	17	£110.50	
14	12	Jasbir Bonsal	£7.50	10	£75.00	
15	13	Marie Kaur	£7.50	12	£90.00	
16		Total		285	£2,532.30	
17						
18						

- Delete the **Column1** column label in **A1**
- Save the workbook

USING CONDITIONAL FORMATTING

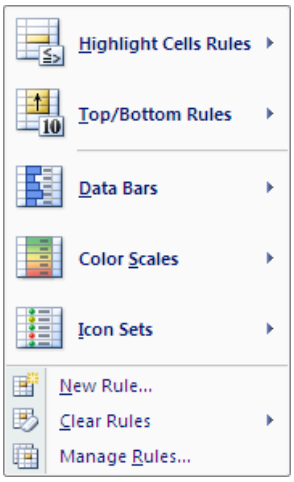
The Conditional Formatting command enables you to format cells based on particular criteria.

- Select the **March** worksheet

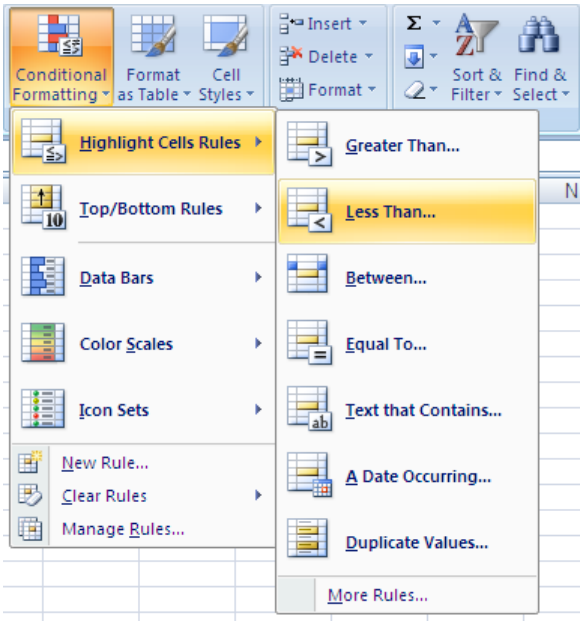
To highlight the Hourly Rates that are lower than £7.50:

- Select **C3:C15** (the Hourly Rates values)
- Select the **Conditional Formatting** command in the **Styles** group

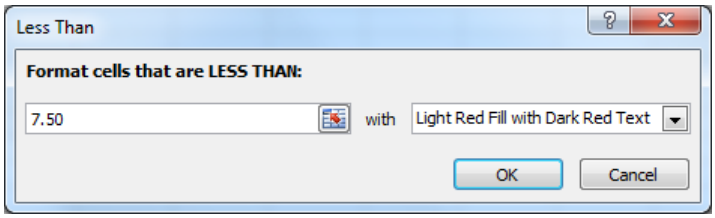
A list of options is displayed.



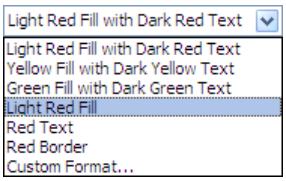
- Point to **Highlight Cells Rules**
- Select **Less Than...**



- Type **7.50** in the left-hand box of the **Less Than** dialog box



- Click the down arrow in the right-hand box to see the formatting options

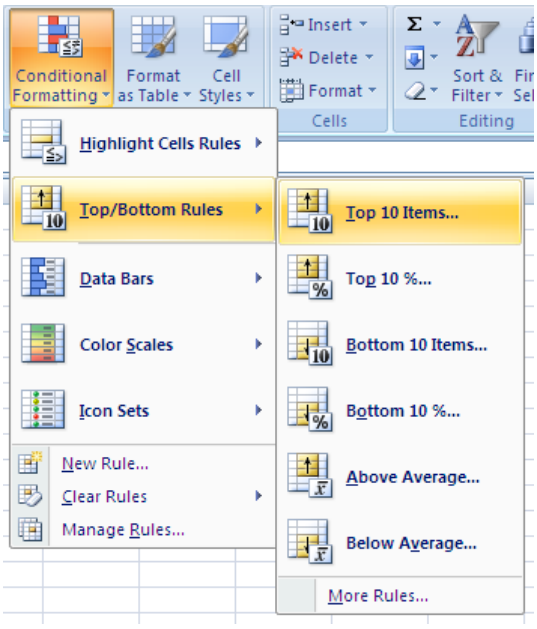


- Choose **Light Red Fill**
- Click **OK**

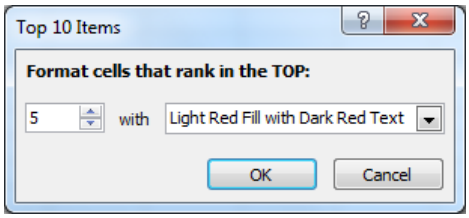
The three Hourly Rates less than £7.50 are highlighted in red.

Next you will highlight the highest five salaries in March.

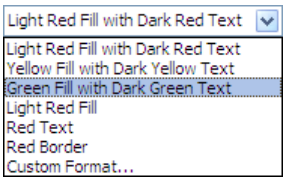
- Select **E3:E15** on the March sheet
- Select the **Conditional Formatting** command
- Point to **Top/Bottom Rules**
- Select **Top 10 Items...**



- Type **5** in the left-hand box of the **Top 10 Items** dialog box



- Click the down arrow in the right-hand text box to see the formatting options

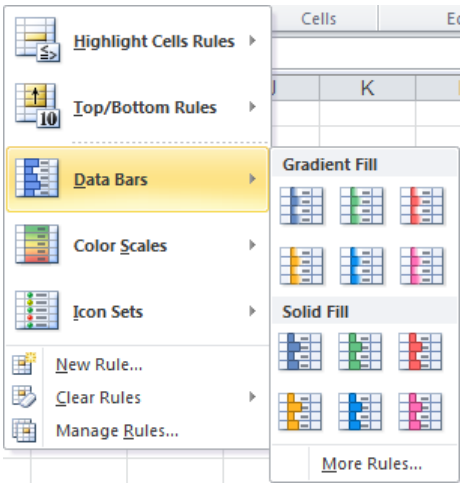


- Choose **Green Fill with Dark Green Text**
- Click **OK**

The highest five salaries are highlighted with the chosen format.

Finally you will add a pictorial representation of the data in the Hours Worked column.

- Select the range **D3:D15**
- Select the **Conditional Formatting** command
- Point to **Data Bars**



- Select one of the Data Bar options
- Save the workbook

WORKING WITH DATES

FORMATTING A DATE

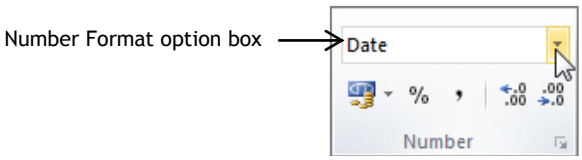
Excel offers a varied selection of date formats for you to choose from. In addition you can create your own customised formats. Any date format that you need is therefore achievable.

- Select the **January** worksheet
- In cell **A2** type the date **1/1/14**, and press **Enter**

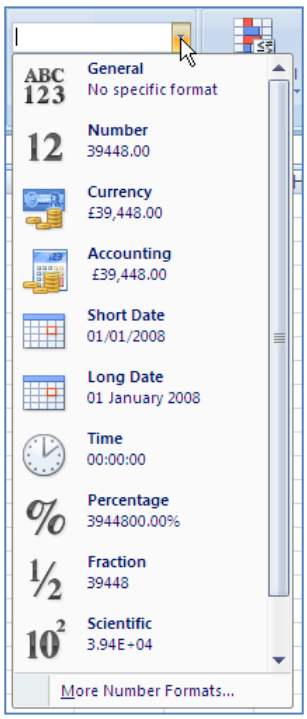
The date is displayed as 01/01/2014 but you want it to show as January-14.

- Select cell **A2** again

The Number Format option box in the **Number** group of commands shows that this cell is formatted as a date.



- Click the down arrow on the Number Format option box



There are two date formats in the list of options: Short Date (01/01/2014) and Long Date (01 January 2014), but neither of these will give you the format you want i.e. January-14.

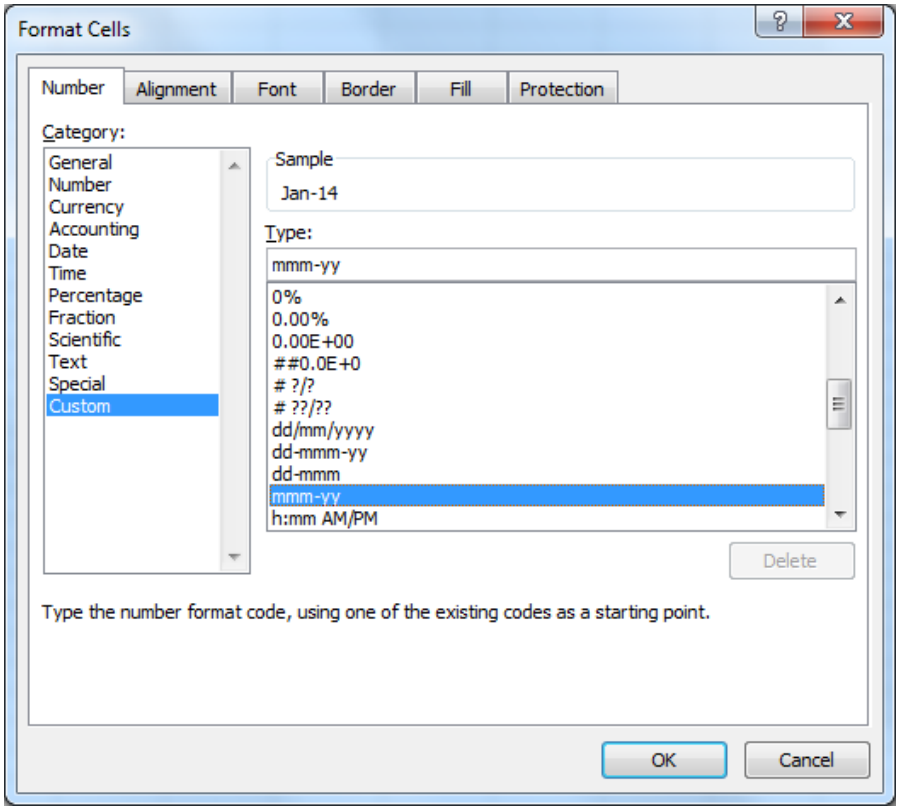
- Select **More Number Formats…**

The **Format Cells** dialog box is displayed with the **Date** category on the **Number** tab selected.

- Scroll down to see the different **Types** of date formats you can choose

None of the available formats will give you exactly what you want.

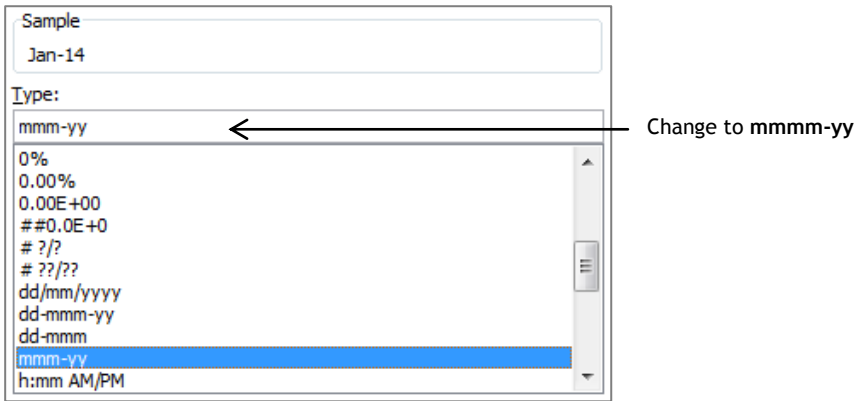
- Select **Custom** from the **Category** list
- Select **mmm-yy** in the **Type** list



The **Sample** section of the dialog box illustrates how the data in the current cell will be affected by the chosen format (**Jan-14**).

mmm in the format code instructs Excel to display the month using the shortened month name (**Jan**). To display the month as **January**, you need to change the format code to **mmmm-yy**. Since this is not in the list of options, you need to modify the existing code.

- In the **Type** textbox insert an **m** so that the format code reads **mmmm**



The **Sample** section displays **January-14**.

- Click **OK**
- Ensure that the column is wide enough to display the date in your chosen format

- Add corresponding dates to cell **A2** on the **February** and **March** sheets
- Change the format of the dates to match that on the January sheet

Your edited format (mmmm-yy) should appear at the bottom of the list of options in the Custom category.

DATE FUNCTIONS

Excel has several functions that can be used with dates, but the ones that are most frequently used are – NOW, TODAY, DATE, DAY, MONTH, and YEAR.

- Insert a new worksheet to experiment with these functions
- Rename the sheet **Date Functions**

NOW()

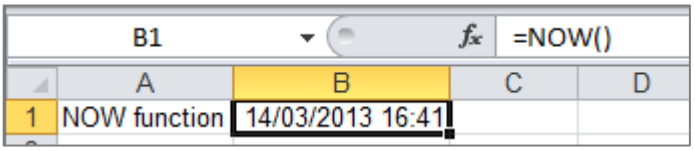
The NOW function returns the *current date and time* and is updated each time the worksheet is opened or calculated.

The syntax for the NOW function is:

=NOW()

- Ensure that the **Date Functions** sheet is selected
- In cell **A1** type **NOW function**
- In cell **B1** type the formula **=NOW()** and press ENTER

B1 displays the current date and time.



Formatting allows you to control what is displayed in B1 and how it is displayed.

- Change the format of **B1** to **Long Date**
- Change the format to **Time**
- Change the format to the **Custom** format **h:mm AM/PM**
- Change the format to the **Custom** format **dddd, dd mmmm, yyyy**
- Try other Date or Time Custom formats

TODAY()

The TODAY function returns the *current date* and is updated each time the worksheet is opened or calculated.

The syntax of the TODAY function is:

=TODAY()

- In cell **A3** type **TODAY function**
- In cell **B3** type **=TODAY()** and press ENTER

Today's date is added to B3. Remember that this date value is not a fixed value and will change to display the current date each time the workbook is opened.

DAY(), MONTH(), and YEAR()

The DAY, MONTH, and YEAR functions all take a date as an argument and return values equal to the day, month or year respectively.

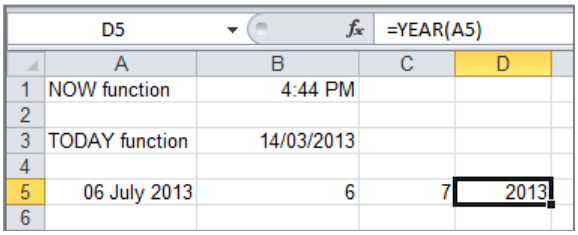
The syntax is:

=DAY(dateValue) or **=MONTH(dateValue)** or **=YEAR(dateValue)**

Where dateValue is a date or expression that results in a date.

- In cell **A5** type **6/7/13**
- Change the format of **A5** to **Long Date**
- In cell **B5** enter **=DAY(A5)**
- In cell **C5** enter **=MONTH(A5)**
- In cell **D5** enter **=YEAR(A5)**

Notice that these functions allow you to extract the different sections from a given date.



It is also worth noting that the result is a number and never text. For example, if the month is March the MONTH function will return the value 3 NOT March.

DATE()

The DATE function takes three arguments: Year, Month, and Day, and returns a result formatted as a date.

The syntax for the DATE function is:

=DATE(yearValue, monthValue, dayValue)

where yearValue, monthValue, and dayValue are numerical values or expressions that evaluate to give numerical values.

- In cell **A10** type **DATE function**
- In cell B10 enter **=DATE(2014,11,27)**

The value is displayed as 27/11/2014.

CALCULATIONS WITH DATES

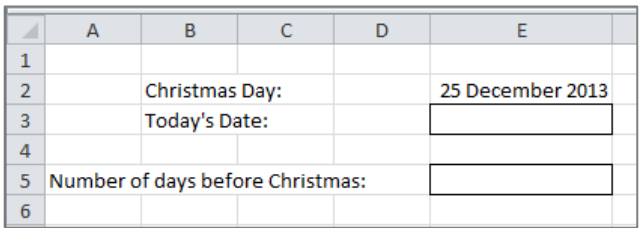
Excel stores a date as a serial number, thus allowing you to perform arithmetical calculations on dates.

The sequence of date serial number codes starts with 1 representing 1 January 1900. Therefore, it follows that 10 January 1900 is stored as 10.

If you type any date into a cell and change the format of the cell to the General format or the Number format, the serial number code for that date will be displayed.

To calculate the number of days between two dates, you subtract one date from the other and ensure that the format of the result is either General or Number.

- Open the workbook **DateExamples**
- Select the worksheet **Christmas**



	A	B	C	D	E
1					
2		Christmas Day:			25 December 2013
3		Today's Date:			
4					
5	Number of days before Christmas:				
6					

- In **E3** key in today's date
- In **E5** key in the formula **=E2-E3**
- Ensure that the format of **E5** is **General**

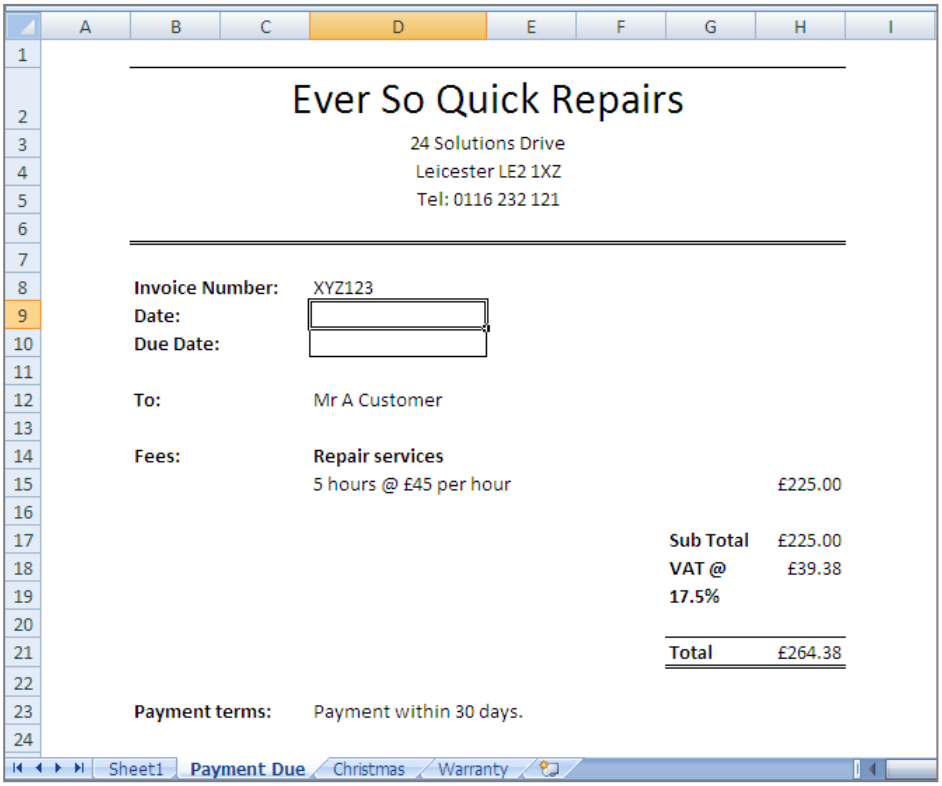
Adding a given number of days to a date is even more straightforward.

- Select **Sheet1**
- In **A2** type **23/8/14**
- In **B2** type **10**
- In **C2** enter the formula **=A2+B2**

The result in C2 is the date that is 10 days after 23 August 2014.

This idea can be used to calculate Payment Due dates on an invoice.

- Select the worksheet: **Payment Due**



- Enter today's date in **D9**

Unhiding gridlines:

You can show the gridlines to make it easier to select individual cells.

- Select the **View** tab
- Select the **Gridlines** check box in the **Show** group

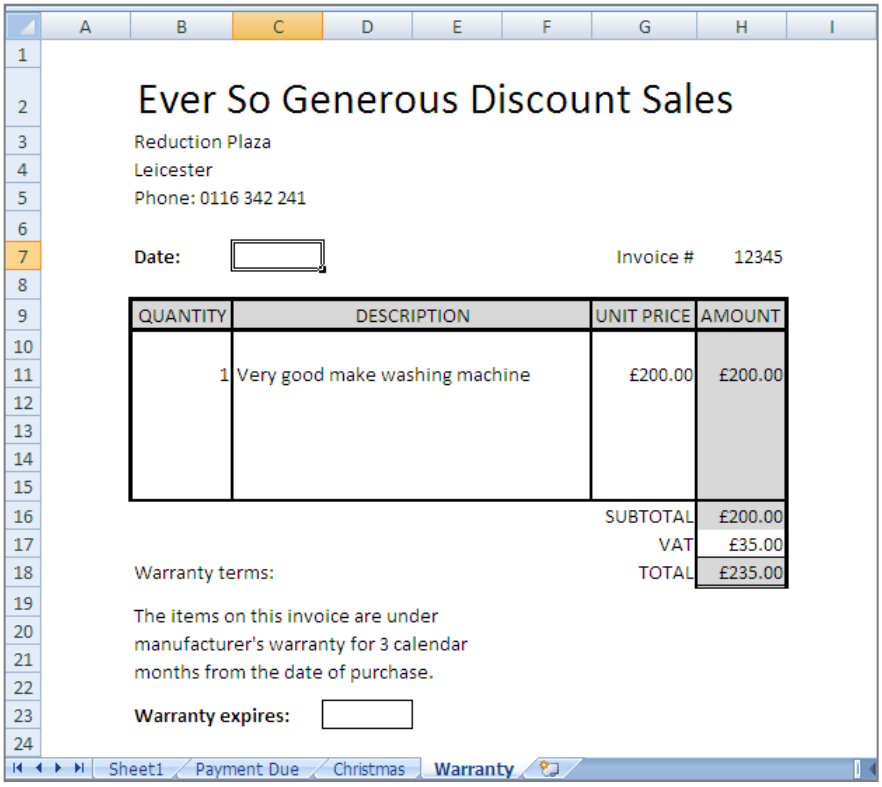
Payment must be made within 30 days. You therefore want D10 to contain a formula to calculate the Due Date.

- Key in the formula **=D9+30** in **D10**

D10 displays the correct payment due date.

The formula becomes a little more complicated if, instead of adding days, you need to add a given number of months or years to a date.

- Select the worksheet: **Warranty**



The warranty expires three calendar months from the date of the sales invoice. Because the months do not all have the same number of days, you cannot calculate the expiry date by adding 90 days to the invoice date.

One possible formula involves using the Date(), Year(), Month(), and Day() functions.

- Key in today's date in **C7**

- In **D23**, key in the formula **=Date(Year(C7), Month(C7)+3, Day(C7))**

The Date() function in D23's formula takes the year and day components of C7 as they are and adds 3 to the month component. The end result is that D23 now displays the correct expiry date.

- Save and close the **DateExamples** workbook

CALCULATIONS USING MULTIPLE WORKSHEETS

Calculations using figures from different worksheets are easily performed.

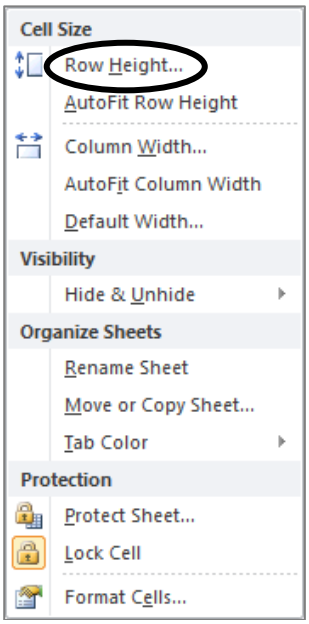
For this exercise, you are going to include totals in the Summary sheet of the Wages workbook using figures from the monthly worksheets. You will try two different methods:

1. Creating a simple formula using the sheet name to reference individual cells

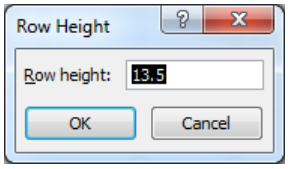
2. Linking sheets and using the Sum function to create a 3-D reference

First you will prepare the Summary sheet:

- Ensure that the **Wages** workbook is open
- On the **January** sheet, use the Format Painter to copy the format from cell **A1** to the range **A1:E1** on the **Summary** sheet
- Copy the format from **C2** on the **January** sheet to **A2:E2** on the **Summary** sheet
- Copy the format from **B2** on the **January** sheet to **A3:E3** on the **Summary** sheet
- Select **A1** on the **Summary** sheet
- Select the **Format** command in the **Cells** group on the **Home** tab
- Choose **Row Height...** from the drop-down menu

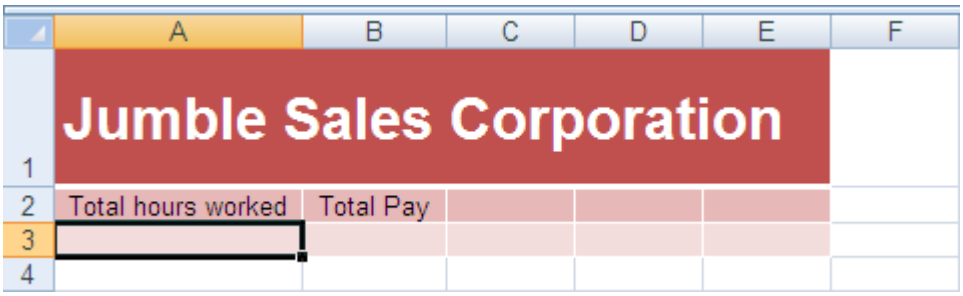


The Row Height dialog box is displayed.



- Change the height to **51.75**
- Click **OK**
- Using the Format command again, change the width of **Column A** to **17**
- Change the width of **Column B** to **9.5**
- Type **Jumble Sales Corporation** in **A1**
- Type **Total hours worked** in **A2**
- Type **Total Pay** in **B2**
- Centre align the text in **A2** and **B2**
- Change the size of the text in **A1** to **22** and centre it vertically

The Summary sheet is now ready for the calculations.



CREATING A FORMULA ACROSS SHEETS

You are going to calculate the Total Hours Worked for January to March.

- Ensure that the **Summary** sheet is selected
- Select cell **A3**
- Type =

At this point, Excel knows that you are producing a calculation and so will gradually build up the formula as you select different worksheets and cells.

- Select the sheet for **January**
- Click on the cell containing the Total Hours worked, **D16**
- Press **+**
- Select the sheet for **February**
- Click on the cell containing the Total Hours worked, **D16**
- Press **+**
- Select the sheet for **March**
- Click on the cell containing the Total Hours worked, **D16**
- Press **Enter**

The result of the calculation is displayed in the Summary sheet.

Check the formula and you will see that the name of each worksheet as well as the cell reference has been included. (When a worksheet name is included in a formula, an exclamation mark is put between the sheet name and the cell reference.)

=January!D16+February!D16+March!D16

3-D REFERENCE

A 3-D reference is a reference that refers to the same cell or range on multiple sheets.

You will use the SUM function and a 3-D reference to calculate the Total (pay) for January to March.

In the previous exercise, the cell references used in the formula could have been anywhere on a worksheet. However, with the 3-D reference method, the numbers that you are totalling must be in the same cell, or range of cells, on each worksheet. So, for example, if the Total is in cell E16 on the January worksheet, it must also be in cell E16 for February and March.

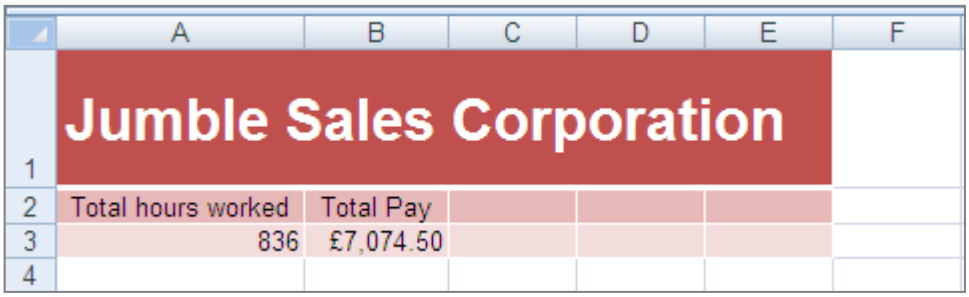
- Click into cell **B3** on the **Summary** sheet
- Type **=sum(**
- Select the worksheets for January, February and March by clicking **January**, hold the **Shift** key and click on **March**
- On the January worksheet select cells **E3 to E15**
- Complete the formula by typing **)**
- Press **Enter**

The total is displayed on the Summary sheet. Check the formula to see how it compares with the formula for the total hours worked.

=SUM(January:March!E3:E15)

- Format the cell as **currency**

If you used the same data in your worksheets that is shown in the training document, your answers should be as follows:



	A	B	C	D	E	F
1	Jumble Sales Corporation					
2	Total hours worked	Total Pay				
3	836	£7,074.50				
4						

- Save the workbook

WORKING WITH PERCENTAGES

CALCULATING A PERCENTAGE

If you want to know what 2% of any number is, multiply the number by 2%.

So if you want to calculate 2% of 50, the formula would be =50*2%.

- Choose an empty cell on the **Date Functions** sheet and calculate **7%** of **20**

(Answer 1.4)

- Calculate **85%** of **290**

(Answer 246.5)

Calculating a percentage increase

To calculate the result of an increase of 50% on 35, you multiply 35 by 150%. (100% is the original figure, 50% the increase.)

Original number (35)	=	100%	+
Increase required (50%)	=	50%	
Final figure	=	150%	of the original number

- In an empty cell, find the result of an increase of **11%** on **200**

(Answer 222)

Calculating a percentage decrease

To calculate a decrease of 20% on 55, multiply 55 by 80%.

Original number (55)	=	100%	-
Decrease required (20%)	=	20%	
Final figure	=	80%	of the original number

- In an empty cell, find the result of a decrease of **30%** on **£125** (do not include the **£** in the formula. **£** implies **currency** formatting)

Answer (£87.50)

RELATIVE AND ABSOLUTE REFERENCES

When a formula is copied, the cell references in the formula behave differently depending on whether they are relative or absolute references.

It is therefore important to understand the difference between these when copying formulas.

RELATIVE REFERENCE

In a formula, cell references (such as A1) are said to be relative, because if the formula is copied to a different place in the worksheet the cell references in the formula change accordingly. So, if you copy the formula across rows or down columns, the references automatically adjust.

By default new formulas use relative references.

Up to this point in the training session, when you have copied a formula or function to another cell or cells, the cell references have changed relatively.

The example below shows the effect of copying the formula in cell C1 to cells C2 and C3.

	A	B	C	
1	6	3	18	(=A1*B1)
2	4	2	8	(=A2*B2)
3	10	4	40	(=A3*B3)

However, let's say that in column C you want to produce a formula that will multiply cell A1 by a series of cells in column B.

In the example below you can see that the formula in cell C1 is correct (A1*B1).

However, as the formula contains relative cell references it has been copied *relatively* to C2 (and C3). This has resulted in A1 becoming A2 in the formula in C2, so instead of the desired result of 12 (6*2) C2 gives a result of 0.

Similarly, cell C3 gives a result of 0 instead of the desired result of 24.

	A	B	C	
1	6	3	18	(=A1*B1)
2		2	0	(=A2*B2)
3		4	0	(=A3*B3)

To solve this problem, we need to indicate to Excel that the reference to cell A1 in the formula must not change when the formula is copied.

ABSOLUTE REFERENCE

An absolute cell reference in a formula specifies that when the formula is copied to other cells, the cell reference must not be changed.

Using the same example as before, to ensure that the reference to cell A1 in the formula remains unchanged when it is copied to other cells, you make it an absolute reference by including $ signs ($A$1).

$A specifies that the reference must not be moved out of column A, and $1 specifies that the reference must not be moved out of row 1. So $A$1 specifies that the reference must not be moved out of the cell A1.

The formula was then copied to C2 and C3. While the absolute reference has remained unchanged, the relative reference (B1) has changed to B2 and B3 respectively.

	A	B	C
1	6	3	18 (=$A$1*B1)
2		2	12 (=$A$1*B2)
3		4	24 (=$A$1*B3)

Using Absolute References

To practice using relative and absolute references:

- Add a new worksheet to your workbook
- Rename the sheet: **Practice**
- Enter the following data

	A	B	C	D	E
1	Price (exc VAT)	VAT	Total Price		VAT
2	£25.00				17.50%
3	£10.25				
4	£6.83				
5	£9.87				
6	£10.50				
7	£6.00				
8	£45.60				

- In **B2**, calculate the VAT on the first item by multiplying the **Price (A2)** by the **VAT percentage (E2)**

Because you want to multiply each of the prices in column A by E2, you need to make the reference to E2 absolute before you copy the formula down the column.

- Edit the formula in **B2** so that it becomes **=A2*$E$2**
- Copy the formula in **B2** to the cells **B3:B8**

The values should be:

	A	B	C	D	E
1	Price (exc VAT)	VAT	Total Price		VAT
2	£25.00	£4.38			17.50%
3	£10.25	£1.79			
4	£6.83	£1.20			
5	£9.87	£1.73			
6	£10.50	£1.84			
7	£6.00	£1.05			
8	£45.60	£7.98			

The formulas should look like this:

	A	B	C
1	Price (exc VAT)	VAT	Total Price
2	25	=A2*$E$2	
3	10.25	=A3*$E$2	
4	6.83	=A4*$E$2	
5	9.87	=A5*$E$2	
6	10.5	=A6*$E$2	
7	6	=A7*$E$2	
8	45.6	=A8*$E$2	

- In cell **C2**, calculate the total price for the first item by adding the **Price (exc VAT)** to the **VAT**

The formula in C2 should be **=A2+B2**

No absolute references are needed for this formula because both A2 and B2 need to change relatively as the formula is copied down the column.

- Copy the formula in **C2** to the cells **C3:C8**

	A	B	C	D	E
1	Price (exc VAT)	VAT	Total Price		VAT
2	£25.00	£4.38	£29.38		17.50%
3	£10.25	£1.79	£12.04		
4	£6.83	£1.20	£8.03		
5	£9.87	£1.73	£11.60		
6	£10.50	£1.84	£12.34		
7	£6.00	£1.05	£7.05		
8	£45.60	£7.98	£53.58		

ABSOLUTE REFERENCES IN PRACTICE

The employees at Jumble Sales Corporation have been awarded a 5% increase in their pay to take effect from March. We will use this to further demonstrate how absolute cell references work in practice.

- Select the **March** worksheet
- To avoid confusion as the worksheet is extended, change the heading in **E1** to **Old Total Pay**
- In cell **F1** type the heading **New Hourly Rate**
- In cell **G1** type the heading **New Total Pay**
- Ensure that the new column headings are fully displayed

	A	B	C	D	E	F	G
1		Name	Hourly Rate	Hours Worked	Old Total Pay	New Hourly Rate	New Total Pay
2	March-14						
3	1	John Markshaw	£7.50	25	£187.50		

You have to recalculate the hourly rate for each person but, instead of entering the percentage as part of the individual formulas you can enter the percentage increase in a separate cell. By putting the percentage in a separate cell, you use the cell reference in the calculations and any future changes will be quick and easy to administer as you have only one figure to alter.

- In cell **J1** type the heading **Increase**
- Type **5%** in cell **J2**

Your worksheet should look something like this:

	A	B	C	D	E	F	G	H	I	J
1		Name	Hourly Rate	Hours Worked	Old Total Pay	New Hourly Rate	New Total Pay			Increase
2	March-14									5%
3	1	John Markshaw	£7.50	25	£187.50					

- In cell **F3** calculate the new hourly rate for John Markshaw

The New Hourly Rate is calculated by adding the increase (5% of Hourly Rate) to the original Hourly Rate. One possible formula is:

=(Increase * Hourly Rate) + Hourly Rate

i.e.: **=(J2*C3)+C3**

The parentheses around the first part of the formula are not necessary, but they can be useful in helping you to 'see' the structure of the formula more clearly.

The above formula works fine for John Markshaw, but before the formula is copied to the other staff, as the **Increase** is the same for all employees, you will need to use an **absolute** reference in the formula when referring to the cell containing the percentage increase.

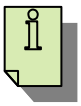
- Select cell **F3**, click into the formula bar and make the reference J2 an absolute reference

The formula should now be:

=($J$2*C3)+C3

- Copy the formula to the other staff
- Check the formula in one or two of the cells in the New Hourly Rate column to see that reference to cell J2 has not changed while the reference to the Hourly Rate cell has changed relatively to match the row number
- Include a formula in cell G3 to calculate the new total pay for John Markshaw
- Copy the formula to the other staff
- Sum the New Total Pay column
- Ensure that the values in column F and column G are formatted as currency

	A	B	C	D	E	F	G	H	I	J
1		Name	Hourly Rate	Hours Worked	Old Total Pay	New Hourly Rate	New Total Pay			Increase
2	March-14									5%
3	1	John Markshaw	£7.50	25	£187.50	£7.88	£196.88			
4	2	Susan Jones	£5.50	10	£55.00	£5.78	£57.75			
5	3	Nita Sonhil	£8.00	23	£184.00	£8.40	£193.20			
6	4	Roy Barker	£15.00	15	£225.00	£15.75	£236.25			
7	5	Tony Bare	£10.75	16	£172.00	£11.29	£180.60			
8	6	Belinda Miles	£8.00	24	£192.00	£8.40	£201.60			
9	7	Penelope East	£6.15	17	£104.55	£6.46	£109.78			
10	8	Rupert Marks	£10.75	37	£397.75	£11.29	£417.64			
11	9	James Colins	£8.00	25	£200.00	£8.40	£210.00			
12	10	Sophie Doige	£7.50	23	£172.50	£7.88	£181.13			
13	11	Mike Burns	£6.50	24	£156.00	£6.83	£163.80			
14	12	Jasbir Bonsal	£7.50	12	£90.00	£7.88	£94.50			
15	13	Marie Kaur	£7.50	37	£277.50	£7.88	£291.38			
16				288	£2,413.80		£2,534.49			



To apply an absolute cell reference quickly, select the reference and press the F4 key on the keyboard.

- Save the workbook

NAMED AREAS

While the worksheet is fairly small, typing a cell address into a formula is not too difficult. However, imagine that you have a very large worksheet, are working with formulas similar to those used in the last exercise and you can't see all of the data on the screen. It is very tedious to scroll up and down to remind yourself what you should be including in the formula.

In cases like these, it is much simpler to give relevant cells a descriptive *name* (this can be a single cell or a range) so that it's easy to remember and can be used in formulas throughout the workbook.

You are going to extend the worksheet further. The scenario for this exercise is that some of the staff have worked overtime and you need to include the overtime pay in their salary. However, instead of using the usual cell reference in the formula, you will name the cell(s) and use that instead.

- Select the range **G1:G16**
- Move the selected cells two columns to the right, to column I
- In **G1** type the heading **Overtime Hours**
- In **H1** type **Overtime Pay**
- In **K1** type **Overtime rate**
- Staff are paid one and a half times their normal rate of pay for overtime so in cell **K2** type **1.5**

	A	B	C	D	E	F	G	H	I	J	K
1		Name	Hourly Rate	Hours Worked	Old Total Pay	New Hourly Rate	Overtime Hours	Overtime Pay	New Total Pay	Increase	Overtime rate
2	March-14									5%	1.5
3	1	John Markshaw	£7.50	25	£187.50	£7.88			£196.88		
4	2	Susan Jones	£5.50	10	£55.00	£5.78			£57.75		
5	3	Nita Sonhil	£8.00	23	£184.00	£8.40			£193.20		
6	4	Roy Barker	£15.00	15	£225.00	£15.75			£236.25		
7	5	Tony Bare	£10.75	16	£172.00	£11.29			£180.60		
8	6	Belinda Miles	£8.00	24	£192.00	£8.40			£201.60		
9	7	Penelope East	£6.15	17	£104.55	£6.46			£109.78		
10	8	Rupert Marks	£10.75	37	£397.75	£11.29			£417.64		
11	9	James Colins	£8.00	25	£200.00	£8.40			£210.00		
12	10	Sophie Doige	£7.50	23	£172.50	£7.88			£181.13		
13	11	Mike Burns	£6.50	24	£156.00	£6.83			£163.80		
14	12	Jasbir Bonsal	£7.50	12	£90.00	£7.88			£94.50		
15	13	Marie Kaur	£7.50	37	£277.50	£7.88			£291.38		
16				288	£2,413.80				£2,534.49		

- The following people have worked overtime this month. Enter the overtime hours in column G.

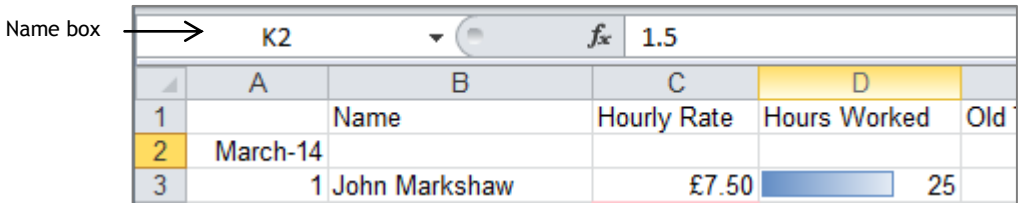
Name	Overtime Hours
John Markshaw	3
Susan Jones	10
Nita Sonhil	
Roy Barker	
Tony Bare	2
Belinda Miles	3.5
Penelope East	4
Rupert Marks	
James Colins	6
Sophie Doige	
Mike Burns	1
Jasbir Bonsal	
Marie Kaur	4

- If necessary format the cells with the **General** format

NAMING CELLS

- Select cell **K2** (the cell holding the overtime rate)

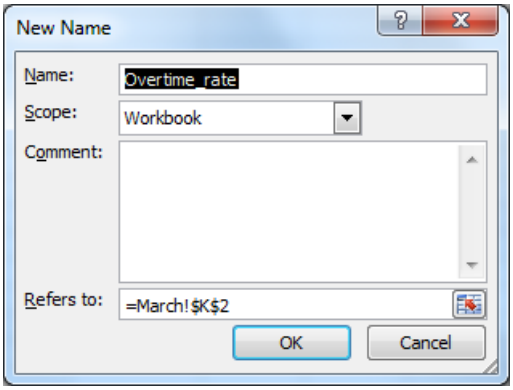
You can see that the cell reference is displayed in the Name Box to the left of the Formula Bar.



- Select the **Formulas** tab
- Click the **Define Name** command in the **Defined Names** group

If you click the down-arrow section of the command you will then need to select the Define Name option.

The New Name dialog box is displayed.



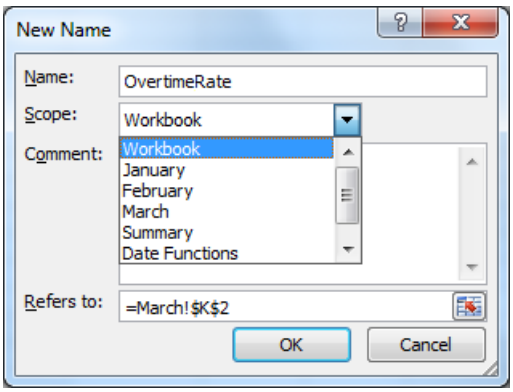
Excel has taken the text from the adjacent cell and has inserted it automatically as a suggested name. Note that spaces are not allowed in the name, so Excel has used an underscore character to separate the two words in the name. You can type an alternative name for the cell if the suggestion is not appropriate.

- Change the suggested name to **OvertimeRate**

Excel does not differentiate between upper case and lower case in names. Using upper case for the initial character of each word makes it easier to recognise the separate words in the name without having to use the underscore.

The Scope defines where the name will be recognised. The default scope is the Workbook, meaning that the name can be used in any worksheet within the workbook.

- Click the down-arrow to see the other Scope options



For this exercise, the name is to be used only on the March worksheet.

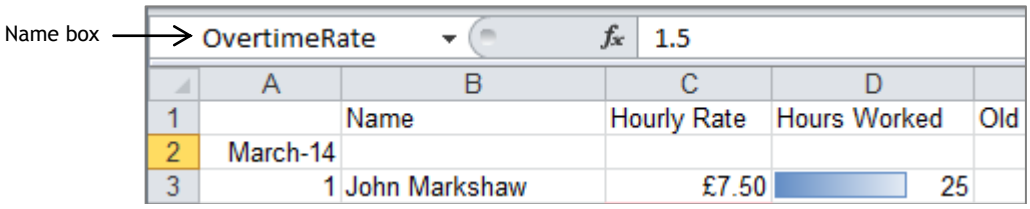
- Select **March** for the Scope

- Ensure that the cell address in the **Refers to:** section is **=March!$K$2**

When you name a cell (or range of cells), the name is linked to that specific cell (or range) and therefore the reference is given as an absolute reference.

- Click **OK** to complete the naming process

Cell **K2** now has the name OvertimeRate.



USING NAMED CELLS

You will now use the new name in a formula to calculate the Overtime Pay for the staff.

- Select cell **H3**
- Type **=F3*OvertimeRate*G3**

Explanation:
Take the New Hourly Rate for John Markshaw (F3), multiply it by the Overtime Rate to produce the Overtime Pay per hour. Then multiply the result by the number of Overtime Hours.

- Press **Enter**
- Copy the formula to the other cells in column H
- Edit the formula in column I (New Total Pay) to include the Overtime Pay

	A	B	C	D	E	F	G	H	I	J	K
1		Name	Hourly Rate	Hours Worked	Old Total Pay	New Hourly Rate	Overtime Hours	Overtime Pay	New Total Pay	Increase	Overtime rate
2	March-14									5%	1.5
3	1	John Markshaw	£7.50	25	£187.50	£7.88	3	£35.44	£232.31		
4	2	Susan Jones	£5.50	10	£55.00	£5.78	10	£86.63	£144.38		
5	3	Nita Sonhil	£8.00	23	£184.00	£8.40		£0.00	£193.20		
6	4	Roy Barker	£15.00	15	£225.00	£15.75		£0.00	£236.25		
7	5	Tony Bare	£10.75	16	£172.00	£11.29	2	£33.86	£214.46		
8	6	Belinda Miles	£8.00	24	£192.00	£8.40	3.5	£44.10	£245.70		
9	7	Penelope East	£6.15	17	£104.55	£6.46	4	£38.75	£148.52		
10	8	Rupert Marks	£10.75	37	£397.75	£11.29		£0.00	£417.64		
11	9	James Colins	£8.00	25	£200.00	£8.40	6	£75.60	£285.60		
12	10	Sophie Doige	£7.50	23	£172.50	£7.88		£0.00	£181.13		
13	11	Mike Burns	£6.50	24	£156.00	£6.83	1	£10.24	£174.04		
14	12	Jasbir Bonsal	£7.50	12	£90.00	£7.88		£0.00	£94.50		
15	13	Marie Kaur	£7.50	37	£277.50	£7.88	4	£47.25	£338.63		
16				288	£2,413.80				£2,906.35		

- Save the workbook

THE IF FUNCTION

The IF function is one of the most important functions as it enables you to create conditional formulas that provide decision-making capability.

For example, a wholesaler may offer an article at £4.50 if 100 or more are bought and £5 if fewer than 100 are bought. Or a web site may indicate that if the value of goods ordered is £25 or more then postage is free, otherwise the cost of postage is £2.75. Both of these are good candidates for the IF function.

The IF function includes a logical test on a given cell. A logical test produces an answer of either True/False or Yes/No. For example, 'is the value of E5 bigger than 100?'

The IF function is structured as follows:

=IF(Logical Test, Value 1, Value 2)

Which produces these results:

If the **Logical Test** is TRUE, **Value 1** is inserted into the cell
If the **Logical Test** is FALSE, **Value 2** is inserted into the cell

If the Value is text rather than a number, it must be enclosed in quotation marks ("text").

For example, you might want to include the words "solvent" or "bankrupt" as the result of a calculation in the worksheet.

You can compare two values with the following operators. When two values are compared using these operators, the result is a logical value, either TRUE or FALSE.

>	**More than**
<	**Less than**
=	**Equal to**
>=	**More than or equal to**
<=	**Less than or equal to**

EXAMPLE OF THE USE OF THE IF FUNCTION

Sums of £50,000 or more deposited in a bank account earn 5% interest, while sums less than £50,000 earn 3% interest.

The function would be:

=IF(Deposit>=50000,5%,3%)

Where "Deposit" is the name given to the cell containing the amount deposited.

The above formula can be interpreted as:

'If Deposit is more than or equal to 50,000 use 5%, otherwise use 3%'.

Therefore, for a deposit of £50,000, the test is TRUE, and the result is 5%

For a deposit of £49,999.99, the test is FALSE, and the result is 3%

Let's try out the IF function.

Some of the staff have worked unsocial hours. If a person works six or more unsocial hours they are paid an extra 33% of their hourly rate for the unsocial time. If they work less than six hours they are paid an extra 25% for each hour.

- In columns L and M of the March worksheet, enter the following data:

	L	M
1	Unsocial Hours rates	
2	Up to 6 hours	6 hours and over
3	25%	33%

- Insert a new column between **Overtime Hours** and **Overtime Pay**
- Add the column heading **Unsocial Hours** in the new column H
- Insert a new column between **Overtime Pay** and **New Total Pay**
- Add the column heading **Unsocial Hours Pay** in the new column J

G	H	I	J	K
Overtime Hours	Unsocial Hours	Overtime Pay	Unsocial Hours Pay	New Total Pay

USEFUL TO REMEMBER

You can use Freeze Panes to help you to align the data with the correct employee.

The following people have worked unsocial hours:

John Markshaw	2
Susan Jones	5
Belinda Miles	3
Penelope East	6
James Colins	5
Sophie Doige	8
Mike Burns	5
Marie Kaur	10

- Enter the unsocial hours in the correct cells in column H
- If necessary change the format of the unsocial hours values to General

You are now ready to enter the formula that will calculate the unsocial hours pay for the first employee.

The syntax of the conditional formula will be:

=(IF(H3>=6,$O$3,$N$3)*F3+F3)*H3

Explanation:

IF	The name of the function
H3>=6	H3 (the number of unsocial hours) greater than or equal to 6 (the condition required for the higher rate)
$O$3	O3 (absolute) is the cell that contains the % increase of the higher unsocial rate
$N$3	N3 (absolute) is the cell that contains the % increase of the lower unsocial rate
IF(H3>=6,$O$3,$N$3)	If the unsocial hours are greater than or equal to 6, take the figure in cell O3 to calculate the unsocial pay, if not, take the figure in cell N3 to calculate the pay
*F3+F3	Multiply by the New Hourly Rate (this calculates the extra pay per hour), plus the New Hourly Rate (to calculate the unsocial rate)
()	A pair of brackets have been included to ensure that the addition is done before the final multiplication
*H3	Once the unsocial rate of pay is calculated, the result is multiplied by the number of unsocial hours worked

- In cell **J3**, enter the conditional formula (remember the absolute references)
- Copy the formula to all employees
- Ensure that the values for Unsocial Hours Pay are formatted as currency
- Edit **K3**, the **New Total Pay,** to include the **Unsocial Hours Pay**

The formula in the New Total Pay column should now be:

=((New Hourly Rate * Hours Worked) + Overtime Pay) + Unsocial Hours Pay
(the brackets are not necessary)

- Copy the formula in **K3** to all employees

	A	B	F	G	H	I	J	K
1		Name	New Hourly Rate	Overtime Hours	Unsocial Hours	Overtime Pay	Unsocial Hours Pay	New Total Pay
2	March-14							
3	1	John Markshaw	£7.88	3	2	£35.44	£19.69	£252.00
4	2	Susan Jones	£5.78	10	5	£86.63	£36.09	£180.47
5	3	Nita Sonhil	£8.40			£0.00	£0.00	£193.20
6	4	Roy Barker	£15.75			£0.00	£0.00	£236.25
7	5	Tony Bare	£11.29	2		£33.86	£0.00	£214.46
8	6	Belinda Miles	£8.40	3.5	3	£44.10	£31.50	£277.20
9	7	Penelope East	£6.46	4	6	£38.75	£51.53	£200.05
10	8	Rupert Marks	£11.29			£0.00	£0.00	£417.64
11	9	James Colins	£8.40	6	5	£75.60	£52.50	£338.10
12	10	Sophie Doige	£7.88		8	£0.00	£83.79	£264.92
13	11	Mike Burns	£6.83	1	5	£10.24	£42.66	£216.69
14	12	Jasbir Bonsal	£7.88			£0.00	£0.00	£94.50
15	13	Marie Kaur	£7.88	4	10	£47.25	£104.74	£443.36
16								£3,328.84

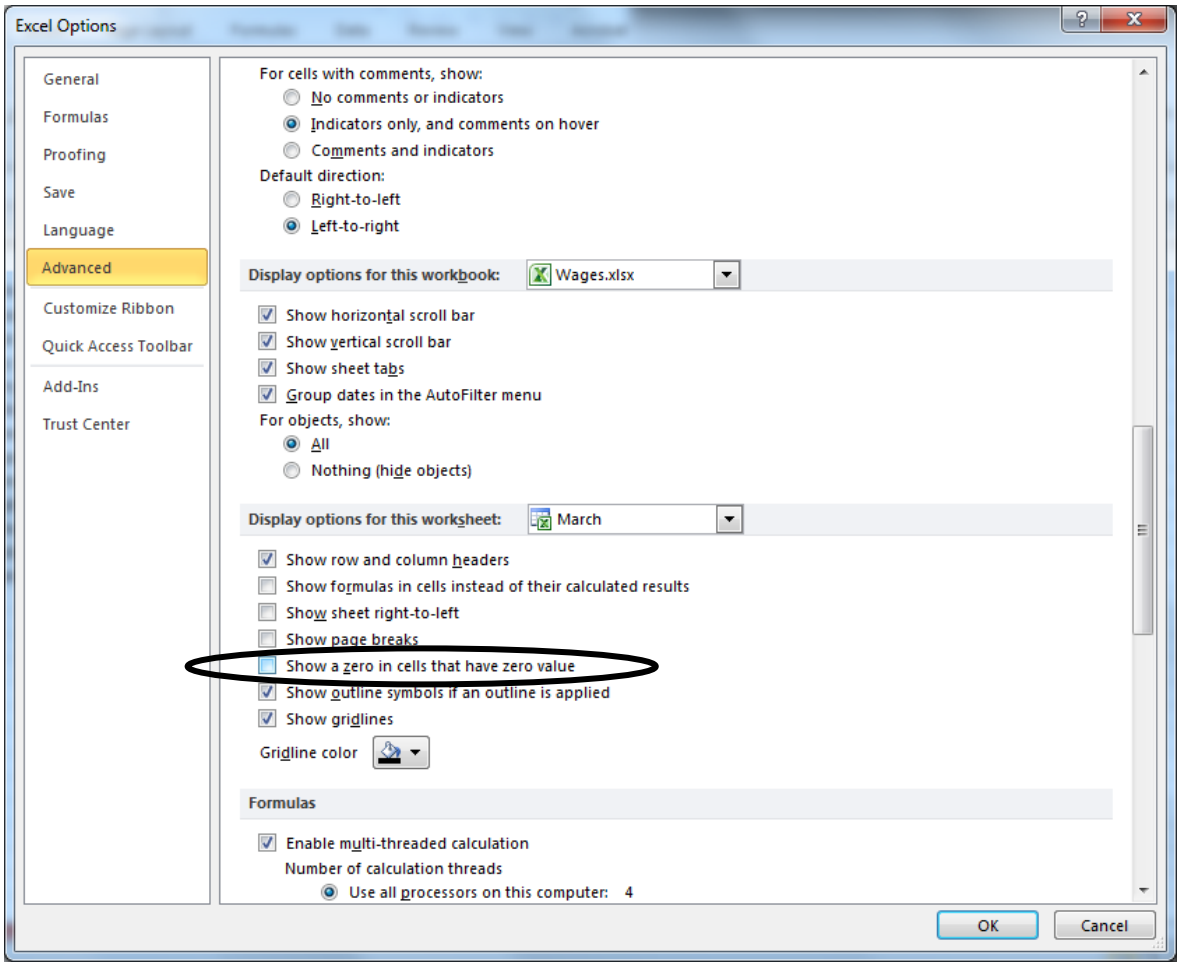
- Save the workbook

REMOVING ZERO VALUES FROM THE WORKSHEET

Some of the employees at Jumble Sales Corporation have not worked overtime, and some have not worked unsocial hours. This has therefore produced £0.00 entries in the columns that show the overtime pay and the unsocial hours pay.

Excel allows you to hide these zero values and only display the data for staff who have worked during additional hours.

- Select the **File** tab
- Click **Options**
- Select Advanced in the left-hand pane
- Scroll down until the **Display options for this worksheet** section is visible
- Click the check box **Show a zero in cells that have zero value** to remove the tick



- Click **OK**
- Save the workbook

REVIEW

- Open the workbook **DateExamples**
- Select the **Warranty** sheet

The Ever So Generous Discount Sales Company has decided to give a six months' warranty for items that cost more than £500 (the Unit Price).

- Give **G11** the name **Price**
- Select **D23**

The current formula in D23 is:

=DATE(YEAR(C7),MONTH(C7)+3,DAY(C7))

You need to modify this formula so that sometimes 6 is added to the month value and other times 3 is added. The condition is that whenever Price is bigger than £500 you must add 6, otherwise add 3.

- Edit the formula in **D23** to accommodate this condition
- Change the price in **G11** to **£650**

If your formula is correct, the expiry date in D23 should now display a date that is six months away.

- Save and close the DateExamples workbook

One possible solution for the new formula in D23 is:

=DATE(YEAR(C7), MONTH(C7)+IF(Price>500,6,3), DAY(C7))

TEMPLATES

If you need to create workbooks that are similar in design, you can save yourself the trouble of recreating the layout, format, etc by saving the design as a template.

For this exercise you will create a template based on one of the worksheets in the Wages spreadsheet, and use it to create a spreadsheet for the second quarter.

- Ensure that the **Wages** workbook is open
- Save a copy of this file with the name **template design**
- Select the **February** sheet
- Rename this sheet **Monthly Figures**

You will use this sheet to create a design that can be used each month, so this is the only sheet that you will keep in the template design workbook.

- Delete the other worksheets (January, March, Summary, Date Functions, and Practice)
- Delete the data in **A2** without altering the formatting

Next you will use the name of the company as a title for the worksheet.

- Insert a new row above the column headings

	A	B	C	D	E
1					
2		Name	Hourly Rate	Hours Worked	Total
3					
4	1	John Markshaw	£7.50	25	£187.50
5	2	Susan Jones	£5.50	25	£137.50

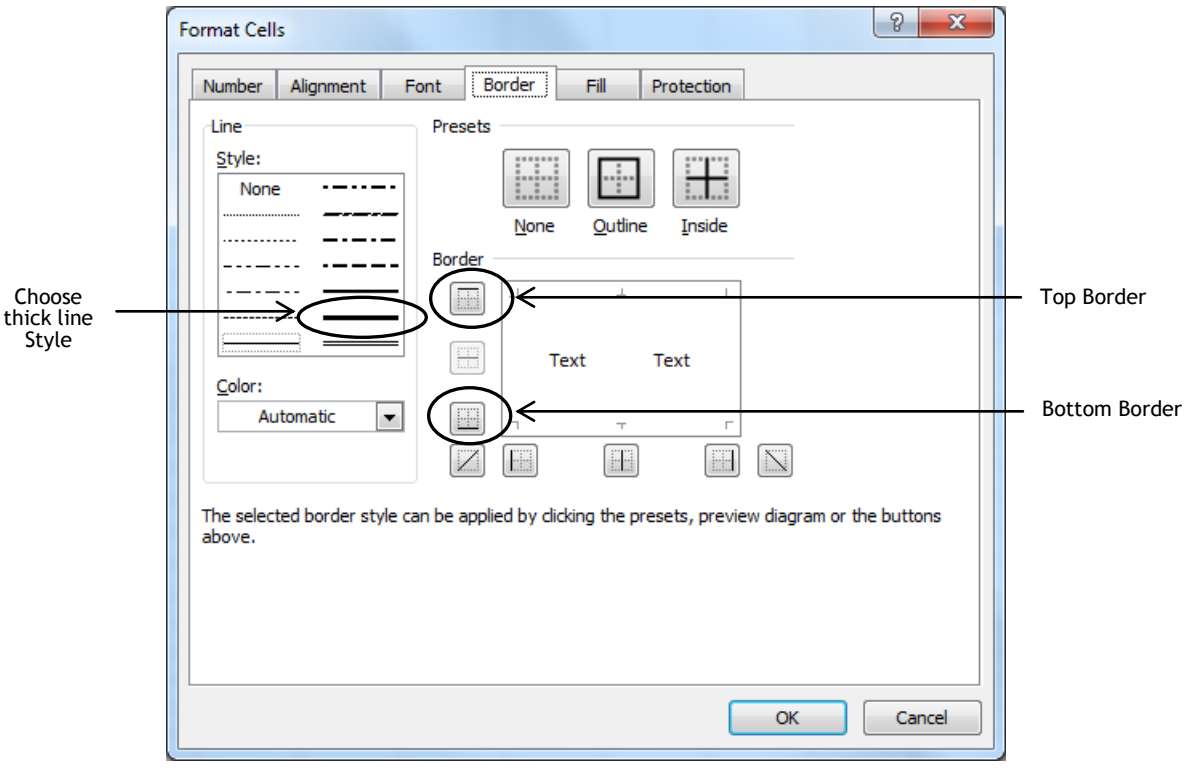
- Use the format painter to copy the formatting from **C3** to **A1:E1**
- Change the height of row 1 to **44.25**
- In **A1**, type the title **Jumble Sales Corporation**
- Change the font size of the title to **22**
- Centre the title across **A1:E1**
- Centre the title vertically

	A	B	C	D	E
1	Jumble Sales Corporation				
2		Name	Hourly Rate	Hours Worked	Total
3					
4	1	John Markshaw	£7.50	25	£187.50

To make the column headings stand out, you will put a white border above and below the headings.

- Select the cells **A2:E2**
- Click the down-arrow on the **Borders** tool in the **Font** group of commands 
- Select **More Borders…**

The **Format Cells** dialog box is displayed with the **Border** tab selected.



- Choose the thick solid line in the line **Style** section
- Click the drop-down arrow in the **Color** section and select **White**
- Click the **Top** and **Bottom** Border buttons
- Click **OK**

Next, because the hours worked will be different each month, this data must be removed.

- Select the range **D4:D16** and press the delete key

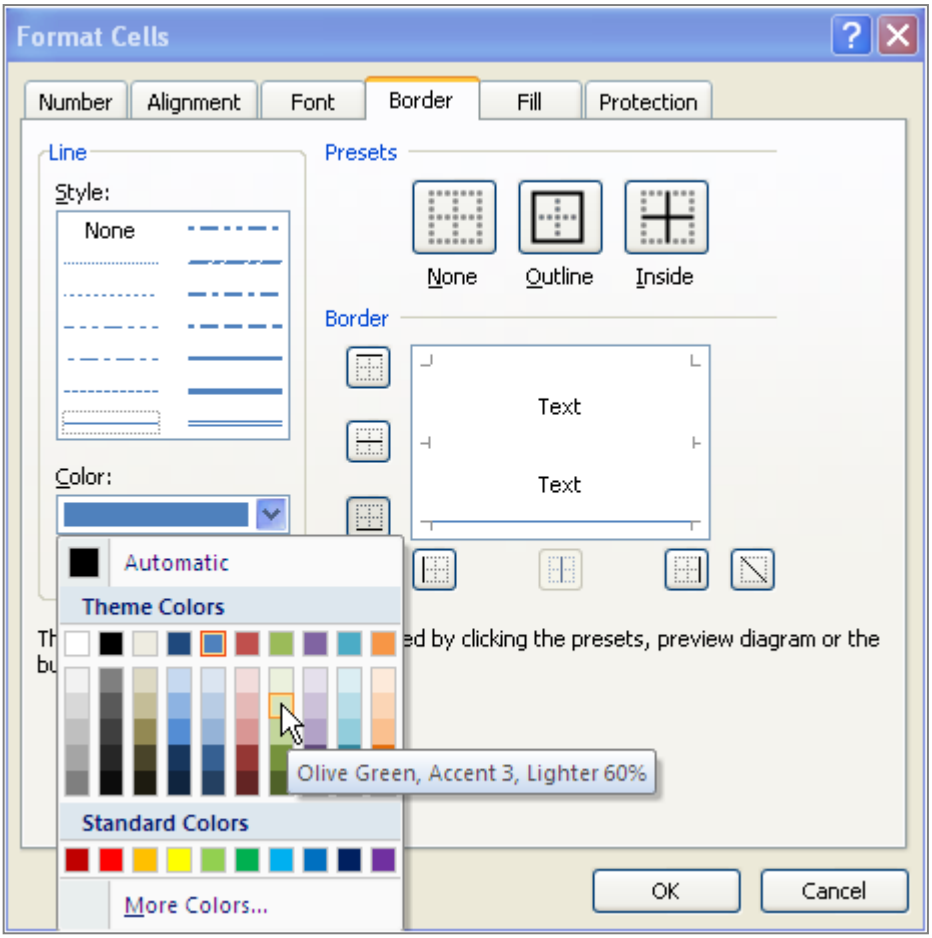
	A	B	C	D	E
1	Jumble Sales Corporation				
2		Name	Hourly Rate	Hours Worked	Total
3					
4	1	John Markshaw	£7.50		£0.00
5	2	Susan Jones	£5.50		£0.00
6	3	Nita Sonhil	£8.00		£0.00
7	4	Roy Barker	£15.00		£0.00
8	5	Tony Bare	£10.75		£0.00
9	6	Belinda Miles	£8.00		£0.00
10	7	Penelope East	£6.15		£0.00
11	8	Rupert Marks	£10.75		£0.00
12	9	James Colins	£8.00		£0.00
13	10	Sophie Doige	£7.50		£0.00
14	11	Mike Burns	£6.50		£0.00
15	12	Jasbir Bonsal	£7.50		£0.00
16	13	Marie Kaur	£7.50		£0.00
17				0	£0.00

The formulae for the total pay are to be kept in the worksheet, but you don't want to see the zero values in the template.

- Use the **Excel Options** dialog box to hide the zero values in the sheet (see page 50)

The worksheet will be easier to use if the Hours Worked column shows each cell separately.

- Select **D4:D16**
- Use the Border tool to select **More Borders…**
- Choose the colour **Olive Green, Accent 3, Lighter 60%**



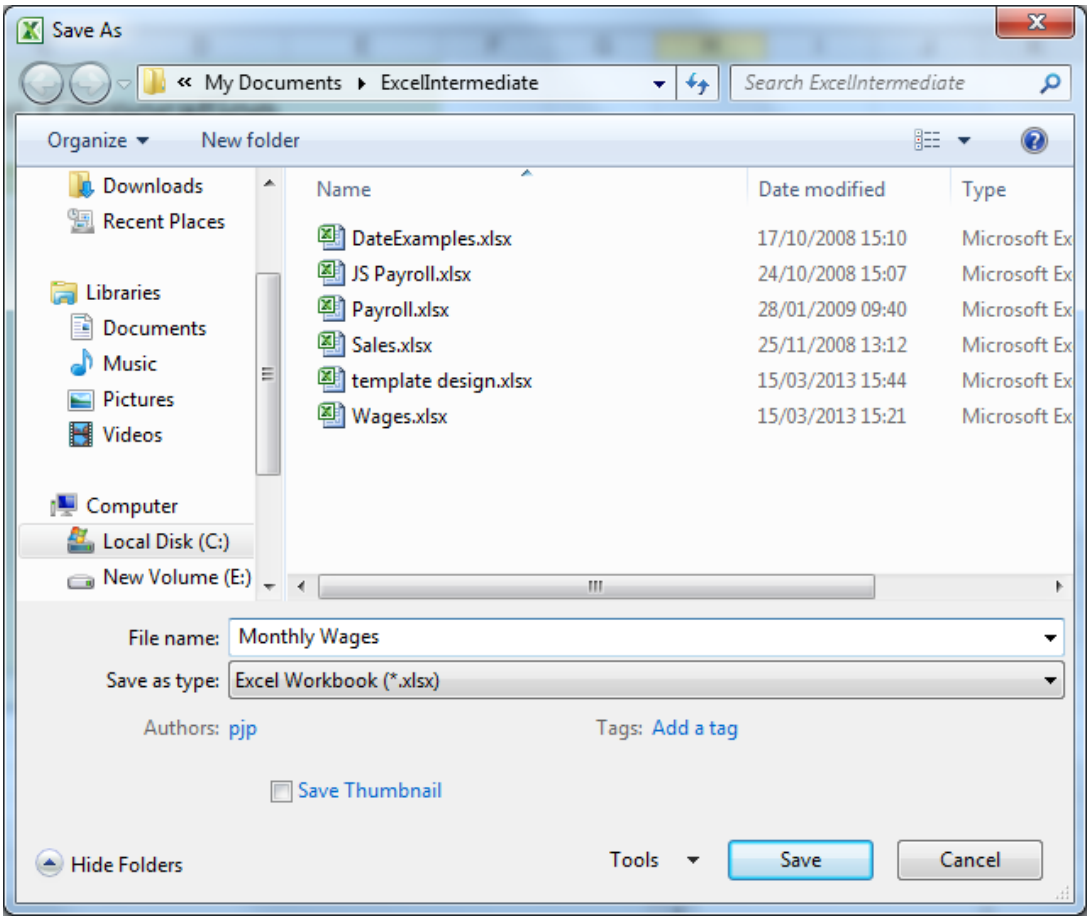
- Click the **Inside** button in the **Presets** section
- Click the **Top** border button in the **Border** section
- Click **OK**
- Save the workbook

The design is now completed and should look something like this:

	A	B	C	D	E
1	Jumble Sales Corporation				
2		Name	Hourly Rate	Hours Worked	Total
3					
4	1	John Markshaw	£7.50		
5	2	Susan Jones	£5.50		
6	3	Nita Sonhil	£8.00		
7	4	Roy Barker	£15.00		
8	5	Tony Bare	£10.75		
9	6	Belinda Miles	£8.00		
10	7	Penelope East	£6.15		
11	8	Rupert Marks	£10.75		
12	9	James Colins	£8.00		
13	10	Sophie Doige	£7.50		
14	11	Mike Burns	£6.50		
15	12	Jasbir Bonsal	£7.50		
16	13	Marie Kaur	£7.50		
17					

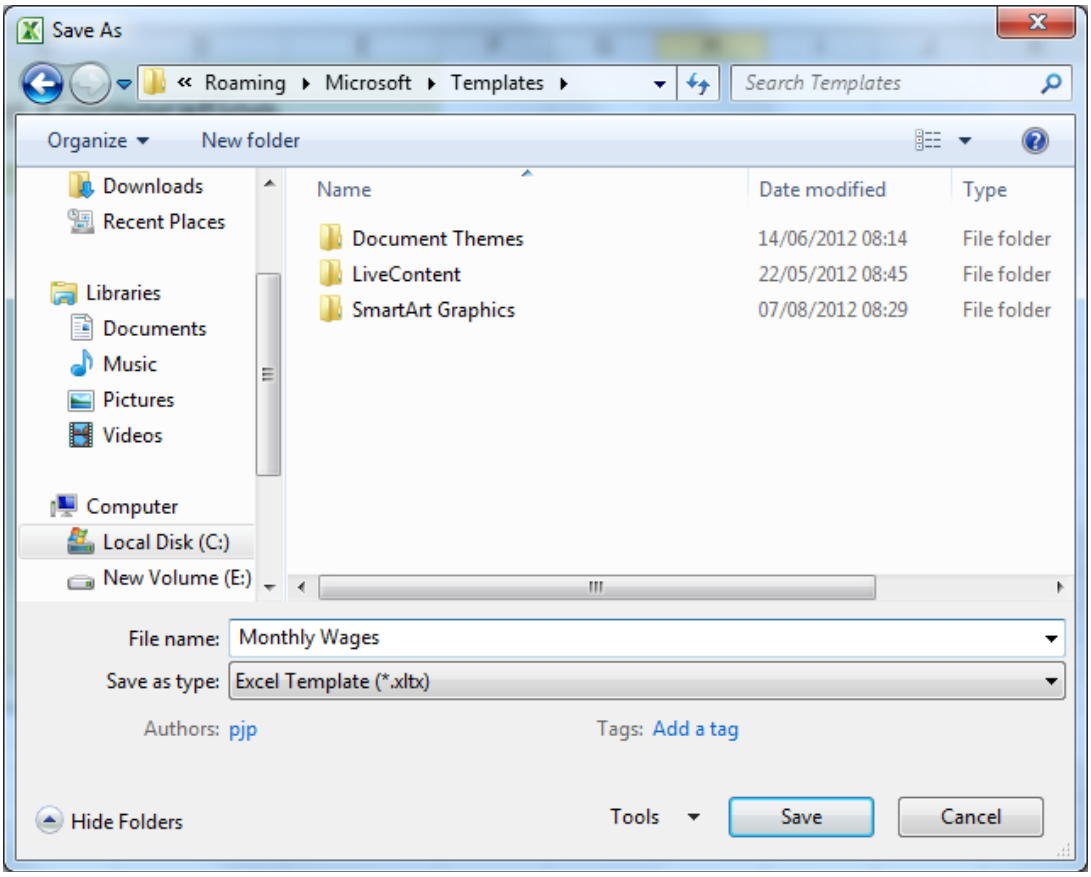
SAVING A WORKBOOK AS A TEMPLATE

- Select the **File** tab
- Click **Save As**
- Change the file name to **Monthly Wages**



- Click the down-arrow for the **Save as type** box to display a list of possible file types
- Scroll down the list and choose **Excel Template**

Excel automatically chooses the appropriate folder in which to save the template.

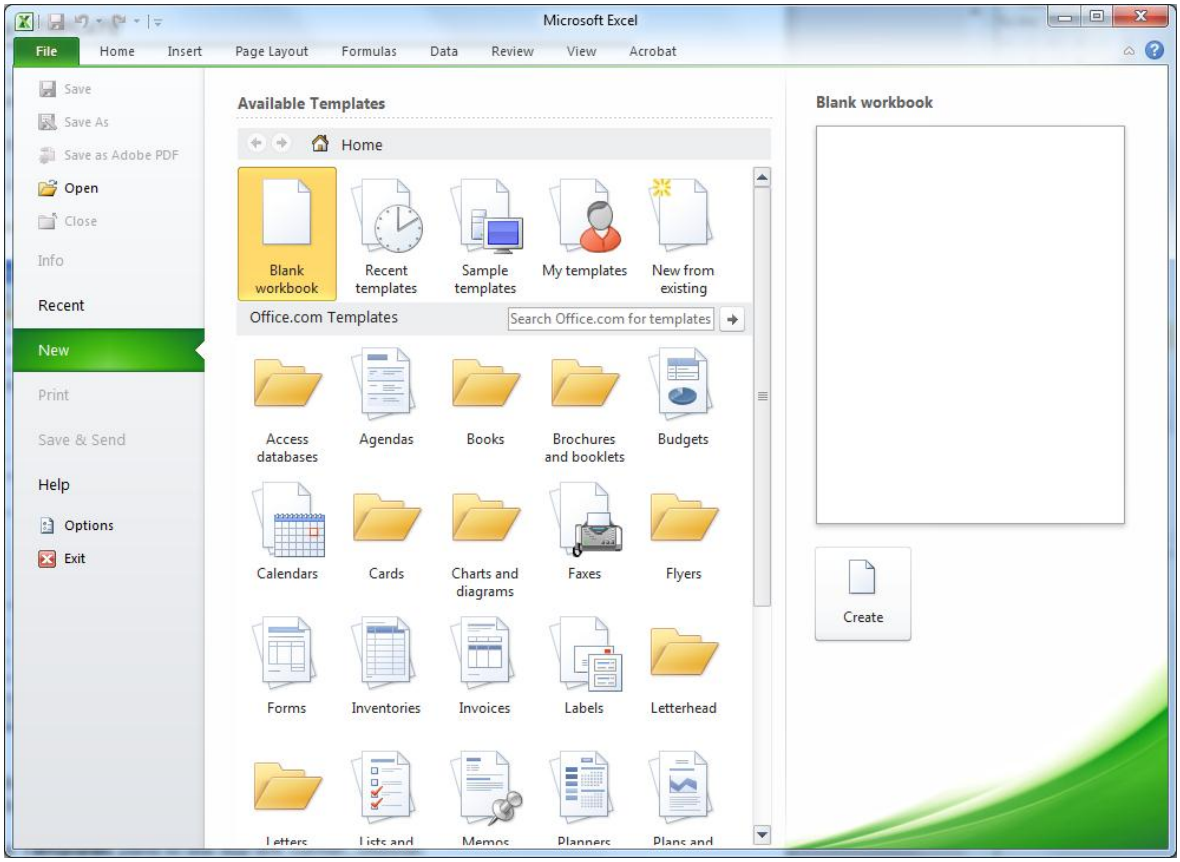


- Click **Save**
- Close the workbook

USING A TEMPLATE

You will now use the Monthly Wages template to quickly setup a workbook for the second quarter.

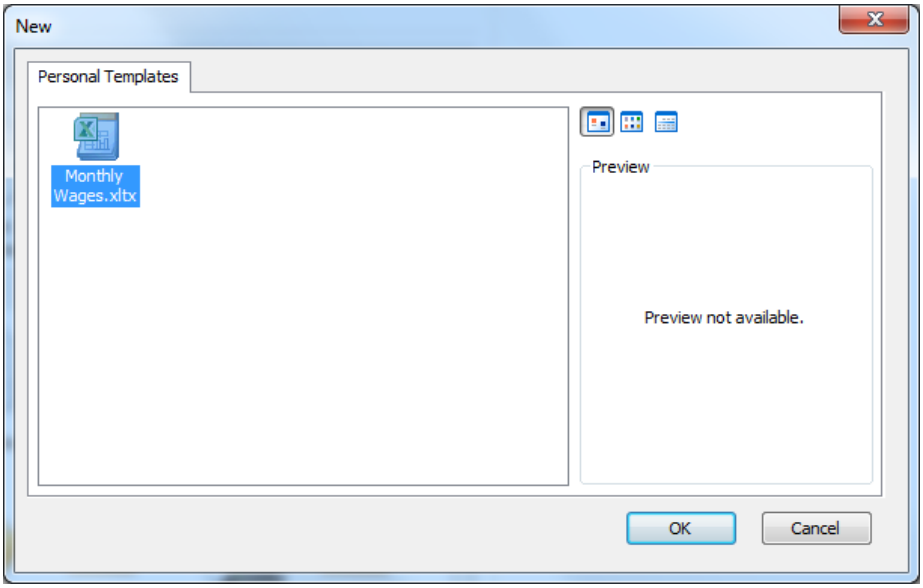
- Select the **File** tab
- Click **New**



From the **Available Templates** section:

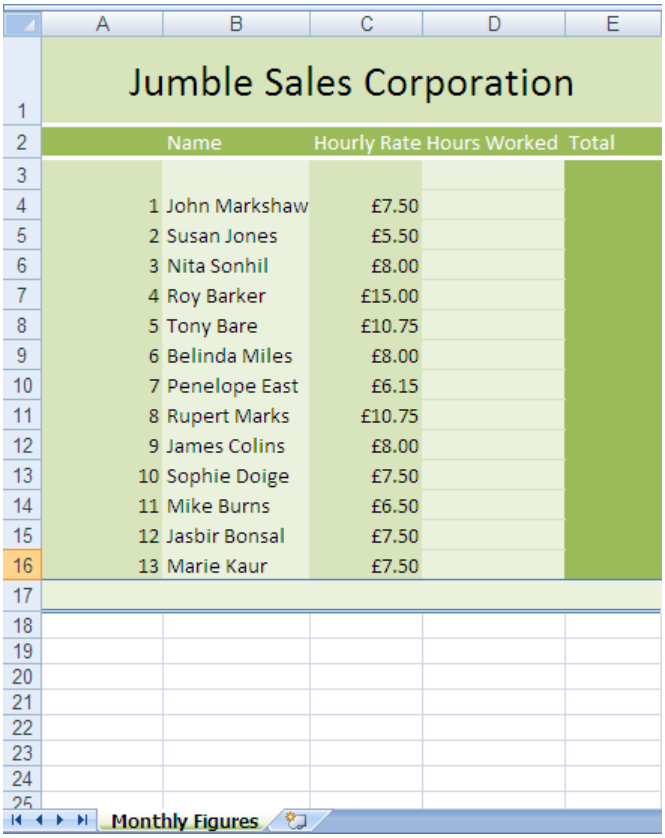
- Click **My templates**

The **New** dialog box is displayed showing the templates that you have created.



- Ensure that **Monthly Wages** is selected
- Click **OK**

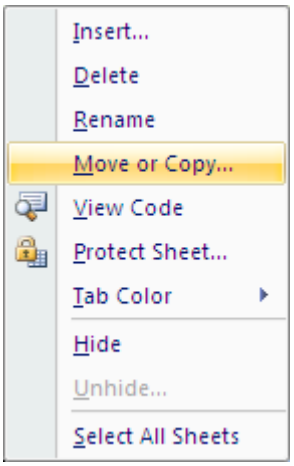
A new workbook is opened with the monthly wages design.



- Save this workbook in the **ExcelIntermediate** folder on drive **C** with the file name **Quarter2 Wages**

You need a separate sheet for each of the three months in the second quarter.

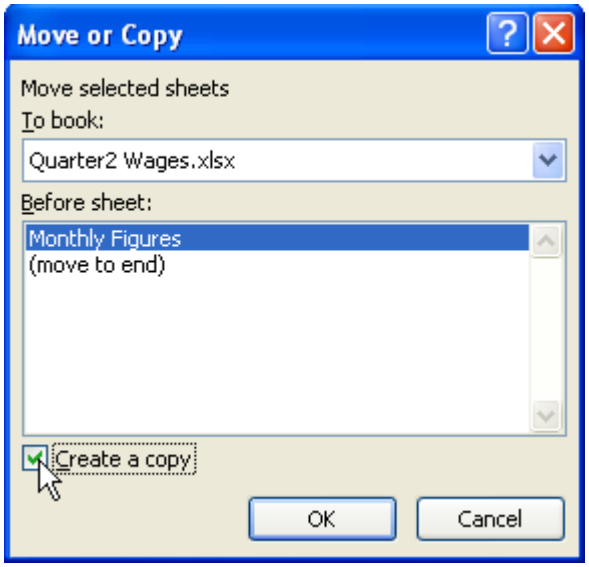
- Click the right mouse button on the **Monthly Figures** tab



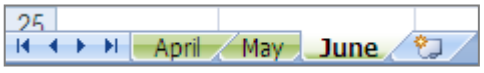
- Select **Move or Copy** from the shortcut menu

The Move or Copy dialog box is displayed.

- Click the **Create a copy** checkbox to put a tick in it



- Click **OK**
- Select the **Monthly Figures** worksheet and repeat the process to create another copy of the sheet
- From left to right, rename the tabs **April**, **May**, and **June**



- Select the **April** worksheet
- In **A3**, enter **1/4/14**

The cell has kept the original formatting and displays the date as **April-14**

- Enter **1/5/14** and **1/6/14** in **A3** of the **May** and **June** sheets respectively
- Add the hours worked by each member of staff (shown below) to the April worksheet. The data is as follows:

Name	Hours Worked
John Markshaw	25
Susan Jones	37
Nita Sonhil	15
Roy Barker	27
Tony Bare	20
Belinda Miles	24
Penelope East	12
Rupert Marks	35
James Colins	30
Sophie Doige	28
Mike Burns	23
Jasbir Bonsal	14
Marie Kaur	35

The formulas for the total pay are already stored in the worksheet, so as you type each value in the Hours Worked column the Total pay is automatically calculated and displayed.

H23

	A	B	C	D	E
1	Jumble Sales Corporation				
2		Name	Hourly Rate	Hours Worked	Total
3	April-14				
4	1	John Markshaw	£7.50	25	£187.50
5	2	Susan Jones	£5.50	37	£203.50
6	3	Nita Sonhil	£8.00	15	£120.00
7	4	Roy Barker	£15.00	27	£405.00
8	5	Tony Bare	£10.75	20	£215.00
9	6	Belinda Miles	£8.00	24	£192.00
10	7	Penelope East	£6.15	12	£73.80
11	8	Rupert Marks	£10.75	35	£376.25
12	9	James Colins	£8.00	30	£240.00
13	10	Sophie Doige	£7.50	28	£210.00
14	11	Mike Burns	£6.50	23	£149.50
15	12	Jasbir Bonsal	£7.50	14	£105.00
16	13	Marie Kaur	£7.50	35	£262.50
17				325	£2,740.05

- Save the workbook

COPYING DATA BETWEEN WORKBOOKS

The hours worked in May and June for each member of staff is exactly the same as the hours worked in January.

To complete the Quarter2 Wages spreadsheet you will copy the hours worked from the January sheet.

While the Quarter2 Wages workbook is still open:

- Open the **Wages** spreadsheet
- Select the **January** sheet
- Select the range **D3:D15** (the Hours Worked)
- Click the **Copy** button in the **Clipboard** group on the **Home** tab
- Use the button on the task bar to switch to the **Quarter2 Wages** spreadsheet
- Select both the **May** and **June** sheets (see page 11.)
- Select cell **D4**

To ensure that only the values and not the formatting is copied:

- Click the down-arrow on the **Paste** button in the **Clipboard** group

The Paste Values section has three options:

123	Values
123%	Values & Number Formatting
123	Values & Source Formatting

- Select **Values**
- Check that the figures have been copied into both May and June sheets
- Save and close the **Quarter2 Wages** spreadsheet

HIDING DATA IN THE WORKSHEET

These features are useful if your worksheet has confidential data that you wish to keep out of view of individuals passing by your computer as you work on the spreadsheet, or if the sheet is large and you wish to view only certain rows or columns.

HIDE AND UNHIDE ROWS AND COLUMNS

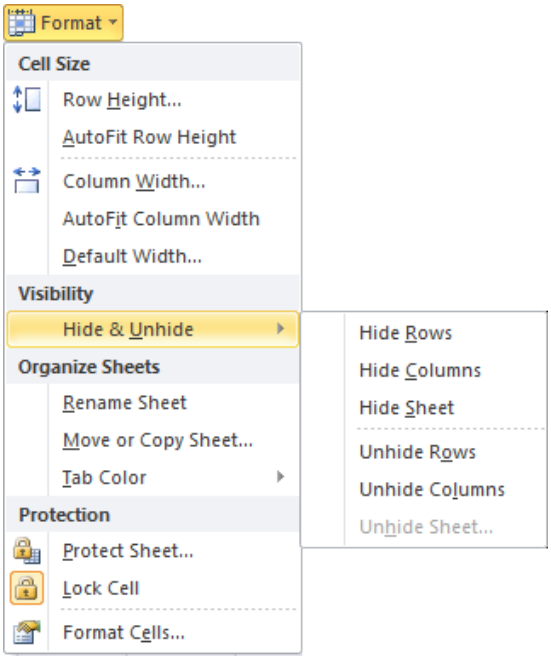
This is the most secure method of hiding data on a sheet.

Hide a column

- Select the **January** sheet in the **Wages** workbook

You are going to hide column C.

- Select **Column C**
- Click the **Format** command in the **Cells** group on the **Home** tab
- Hover the mouse pointer over the **Hide & Unhide** option



- Click **Hide Columns**

Column C is hidden.

	A	B	D	E
1		Name	Hours Worked	Total
2	January-08			
3	1	John Markshaw	30	£225.00

You can hide any number of columns simultaneously by first selecting all the columns to be hidden and then selecting Hide from the shortcut menu.

Rows can also be hidden using the same procedure.

Unhide a column

- Select columns **B** to **D** (i.e. use Shift NOT Ctrl, or use a dragging method)
- Click the **Format** command
- Hover the mouse pointer over the **Hide & Unhide** option
- Click **Unhide Columns**

If you have hidden column A you will not be able to select the columns on either side of it in order to unhide it – there is no column to the left of A. To unhide column A, on the row containing the column headings, point to the line between the row numbers and column B, click the right mouse button and choose Unhide from the shortcut menu.

Right-click here →

	B	C	D	E
1	Name	Hourly Rate	Hours Worked	Total
2				
3	John Markshaw	£7.50	30	£225.00
4	Susan Jones	£5.50	15	£82.50
5	Nita Sonhil	£8.00	37	£296.00

USING COMMENTS

Comments can be used in your worksheet in order to provide additional information in a cell or range of cells.

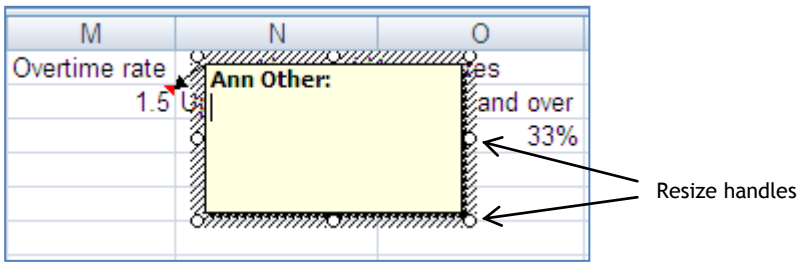
INSERTING A COMMENT

- Select the **March** sheet in the **Wages** workbook

You are going to add a comment to the cell containing the value for the overtime rate (M2).

- Select the cell **M2**
- Select the **Review** tab
- Click **New Comment** in the **Comments** group of commands

A box is opened ready for you to type your comment.



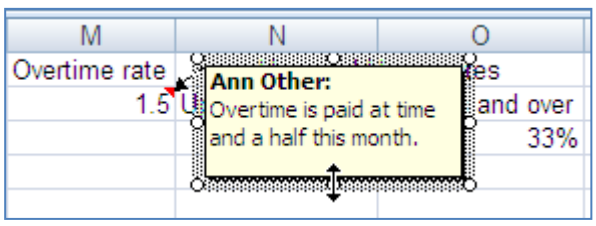
Notice that Excel enables you to see which users added comments, by inserting the user's name at the top of the comment.

- Type the following in the comment box:

Overtime is paid at time and a half this month.

Notice the circular resize handles around the comment box.

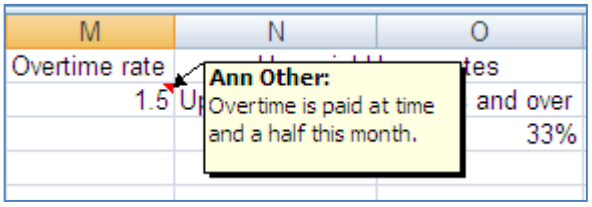
- Move the mouse pointer over the resize handle on the bottom edge and drag upwards to reduce the height of the box



- Click on any cell to close the comment box

- Excel puts a red triangle in the top right of the cell to indicate that a comment has been added
- Move the mouse pointer over the cell M2

The comment is displayed until the mouse is moved away.



- Add the following comment to cell **H1:**

Hours worked over the Easter weekend.

- Add short comments of your own to two other cells in the March sheet

EDITING A COMMENT

You will edit the comment in H1 to include the date of the Easter weekend.

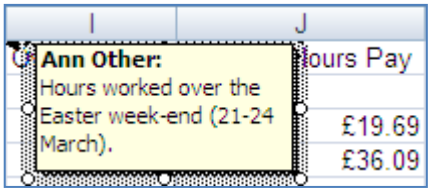
- Click cell **H1**

The Insert Comment button on the ribbon changes to Edit Comment.

- Click the **Edit Comment** button 

The comment box is opened ready for your changes or additions.

- Add the text **(21-24 March)** to the end of the comment



- Click into another cell to close the comment

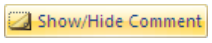
DISPLAYING COMMENTS

The default behaviour is for comments to be hidden until the mouse pointer hovers over the cell. It is possible however, to permanently display some or all of the comments on a worksheet.

Displaying an individual comment

To display the comment in H1:

- Select the cell **H1**
- Click **Show/Hide Comment** in the **Comments** group of commands



The comment is now displayed on the worksheet and will remain displayed until you decide to hide it once more.

With cell H1 still selected:

- Click **Show/Hide Comment** again

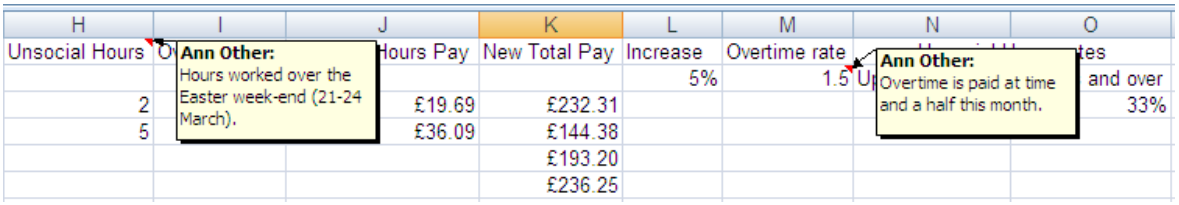
The comment in H1 is hidden.

Displaying all comments in the worksheet

To display all the comments:

- Click **Show All Comments** in the **Comments** group

All the comments on the sheet are now displayed.

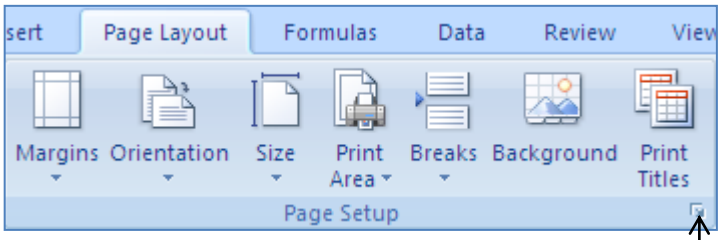


To hide the comments:

- Click **Show All Comments** once more

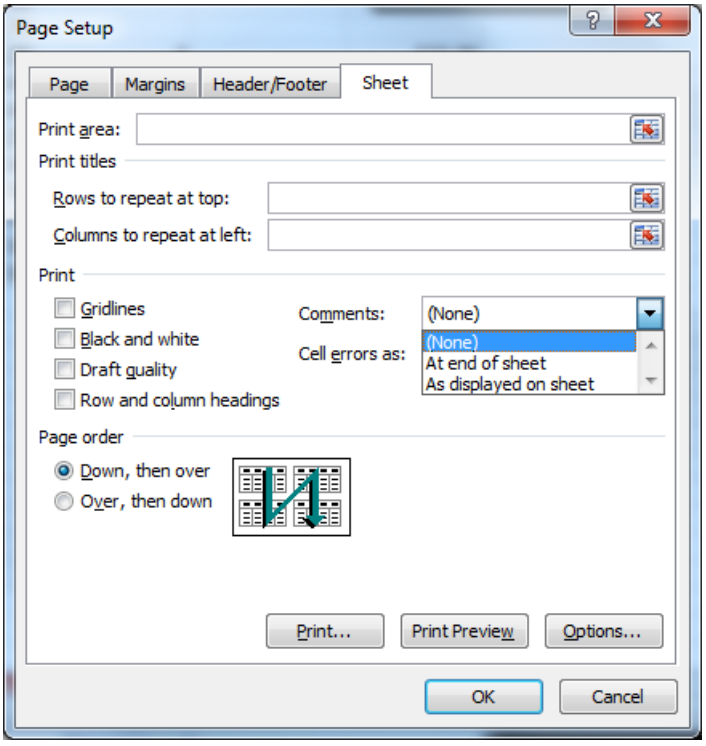
PRINTING COMMENTS

- Display all the comments on the March worksheet
- Select the **Page Layout** tab
- Use the **Orientation** button to change the layout to **landscape**
- Click the **Page Setup** dialog box launcher



The Page Setup dialog box is displayed.

- On the **Page** tab, select **Fit to 1** page wide by **1** tall
- Select the **Sheet** tab
- In the **Print** section, click the down-arrow in the **Comments** option box



The options available enable you to print the comments 'At end of sheet' or 'As displayed on sheet'.

- Select **As displayed on sheet**
- Click the **Print Preview** button

The Print Preview shows the sheet on one page with all your comments displayed.

- Print the sheet
- Hide the comments on the sheet
- Save the workbook

WORKBOOK VIEWS

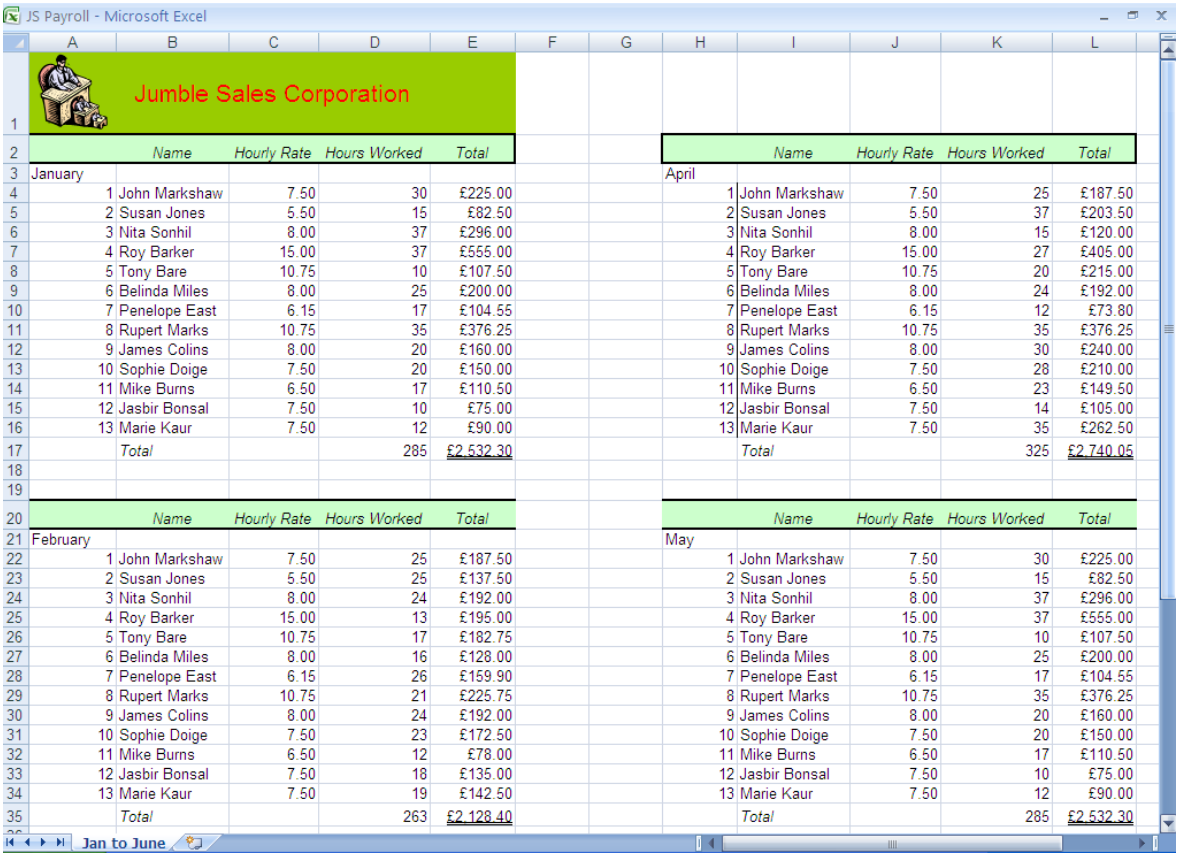
The default way that Excel displays a workbook is called the Normal view. However there are other display options that may be more suitable depending on the task that you are doing and the size of the worksheet.

- Open the workbook **JS Payroll**

When working on a worksheet of this size, you can reduce the amount of vertical scrolling by viewing the sheet in full screen mode.

- Select the **View** tab
- Click **Full Screen** in the **Workbook Views** group

The full screen is used to display the worksheet.



		Name	Hourly Rate	Hours Worked	Total
January					
	1	John Markshaw	7.50	30	£225.00
	2	Susan Jones	5.50	15	£82.50
	3	Nita Sonhil	8.00	37	£296.00
	4	Roy Barker	15.00	37	£555.00
	5	Tony Bare	10.75	10	£107.50
	6	Belinda Miles	8.00	25	£200.00
	7	Penelope East	6.15	17	£104.55
	8	Rupert Marks	10.75	35	£376.25
	9	James Colins	8.00	20	£160.00
	10	Sophie Doige	7.50	20	£150.00
	11	Mike Burns	6.50	17	£110.50
	12	Jasbir Bonsal	7.50	10	£75.00
	13	Marie Kaur	7.50	12	£90.00
		Total		285	£2,532.30

		Name	Hourly Rate	Hours Worked	Total
April					
	1	John Markshaw	7.50	25	£187.50
	2	Susan Jones	5.50	37	£203.50
	3	Nita Sonhil	8.00	15	£120.00
	4	Roy Barker	15.00	27	£405.00
	5	Tony Bare	10.75	20	£215.00
	6	Belinda Miles	8.00	24	£192.00
	7	Penelope East	6.15	12	£73.80
	8	Rupert Marks	10.75	35	£376.25
	9	James Colins	8.00	30	£240.00
	10	Sophie Doige	7.50	28	£210.00
	11	Mike Burns	6.50	23	£149.50
	12	Jasbir Bonsal	7.50	14	£105.00
	13	Marie Kaur	7.50	35	£262.50
		Total		325	£2,740.05

		Name	Hourly Rate	Hours Worked	Total
February					
	1	John Markshaw	7.50	25	£187.50
	2	Susan Jones	5.50	25	£137.50
	3	Nita Sonhil	8.00	24	£192.00
	4	Roy Barker	15.00	13	£195.00
	5	Tony Bare	10.75	17	£182.75
	6	Belinda Miles	8.00	16	£128.00
	7	Penelope East	6.15	26	£159.90
	8	Rupert Marks	10.75	21	£225.75
	9	James Colins	8.00	24	£192.00
	10	Sophie Doige	7.50	23	£172.50
	11	Mike Burns	6.50	12	£78.00
	12	Jasbir Bonsal	7.50	18	£135.00
	13	Marie Kaur	7.50	19	£142.50
		Total		263	£2,128.40

		Name	Hourly Rate	Hours Worked	Total
May					
	1	John Markshaw	7.50	30	£225.00
	2	Susan Jones	5.50	15	£82.50
	3	Nita Sonhil	8.00	37	£296.00
	4	Roy Barker	15.00	37	£555.00
	5	Tony Bare	10.75	10	£107.50
	6	Belinda Miles	8.00	25	£200.00
	7	Penelope East	6.15	17	£104.55
	8	Rupert Marks	10.75	35	£376.25
	9	James Colins	8.00	20	£160.00
	10	Sophie Doige	7.50	20	£150.00
	11	Mike Burns	6.50	17	£110.50
	12	Jasbir Bonsal	7.50	10	£75.00
	13	Marie Kaur	7.50	12	£90.00
		Total		285	£2,532.30

- Press **Esc** to cancel Full Screen mode

The Page Layout view splits the sheet into its separate pages, showing the header and footer for each page and the white space in the margins.

- Click **Page Layout** in the **Workbook Views** group
- Use the scroll bars to move between the different pages

The page layout view enables you to see the pages as they would appear when printed. This is useful if the design of the page is critical – you can see what the page looks like while you work on the spreadsheet.

Hiding the ribbon

The ribbon can be hidden in any of the display modes by double-clicking on one of the ribbon tabs. This can provide useful additional space for your sheet.

Double-clicking on the tab once more will unhide the ribbon.

To return to the normal display mode:

- Click **Normal** in the **Workbook Views** group

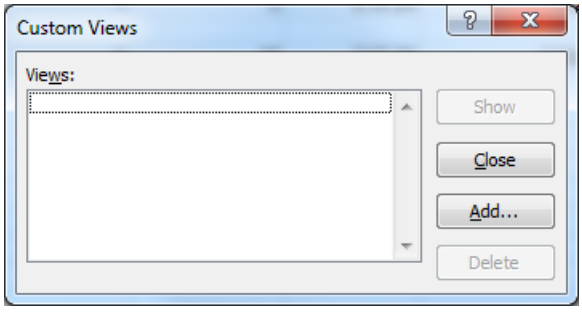
Excel also allows you to customise the display.

- Switch to the **Wages** workbook
- Ensure that the **March** worksheet is selected

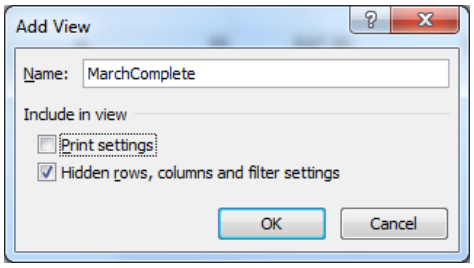
This worksheet is rather wide. It has a number of columns that are used to perform calculations, but most of the time you are not interested in seeing the data in those columns. You will therefore hide these columns and define the two different displays as custom views to enable you to switch easily between them.

- Click **Custom Views** in the **Workbook Views** group

The **Custom Views** dialog box is displayed.



- Click **Add…**
- Type **MarchComplete** as the Name of the view
- Remove the tick from **Print Settings** since we have not configured any special settings that we wish to recall



- Click **OK**

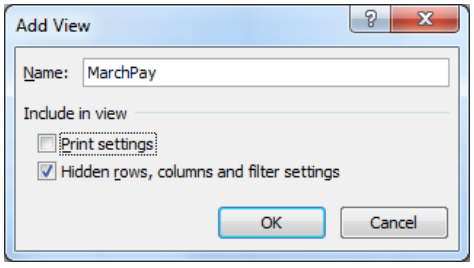
You will not notice any change. All that has happened is that you have defined a custom view that you can return to at the click of a button.

You will now hide some of the columns and define a second custom view.

- Hide columns **C**, **E**, **G**, **H**, **L**, **M**, **N**, and **O**

	A	B	D	F	I	J	K	P
1		Name	Hours Worked	New Hourly Rate	Overtime Pay	Unsocial Hours Pay	New Total Pay	
2	March-08							
3	1	John Markshaw	25	£7.88	£35.44	£19.69	£232.31	
4	2	Susan Jones	10	£5.78	£86.63	£36.09	£144.38	
5	3	Nita Sonhil	23	£8.40			£193.20	
6	4	Roy Barker	15	£15.75			£236.25	
7	5	Tony Bare	16	£11.29	£33.86		£214.46	
8	6	Belinda Miles	24	£8.40	£44.10	£31.50	£245.70	
9	7	Penelope East	17	£6.46	£38.75	£51.53	£148.52	
10	8	Rupert Marks	37	£11.29			£417.64	
11	9	James Colins	25	£8.40	£75.60	£52.50	£285.60	
12	10	Sophie Doige	23	£7.88		£83.79	£181.13	
13	11	Mike Burns	24	£6.83	£10.24	£42.66	£174.04	
14	12	Jasbir Bonsal	12	£7.88			£94.50	
15	13	Marie Kaur	37	£7.88	£47.25	£104.74	£338.63	
16			288				£2,906.35	
17								

- Click **Custom Views**
- Add the view as before, using the name **MarchPay**

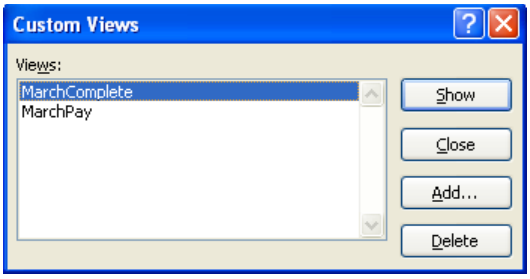


- Click **OK**

To switch between custom views:

- Click **Custom Views**

You should now have two views defined in the Custom Views dialog box.



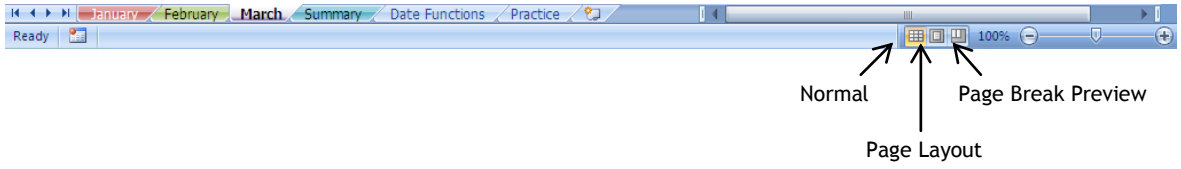
- Select **MarchComplete**
- Click the **Show** button

The display returns to the original view with all the columns expanded.

- Select the **January** sheet
- Click **Custom Views**
- Select **MarchPay**
- Click the **Show** button

The March sheet is automatically selected and only the columns that you wish to see are displayed.

Shortcuts to some of the views buttons are available on the status bar:

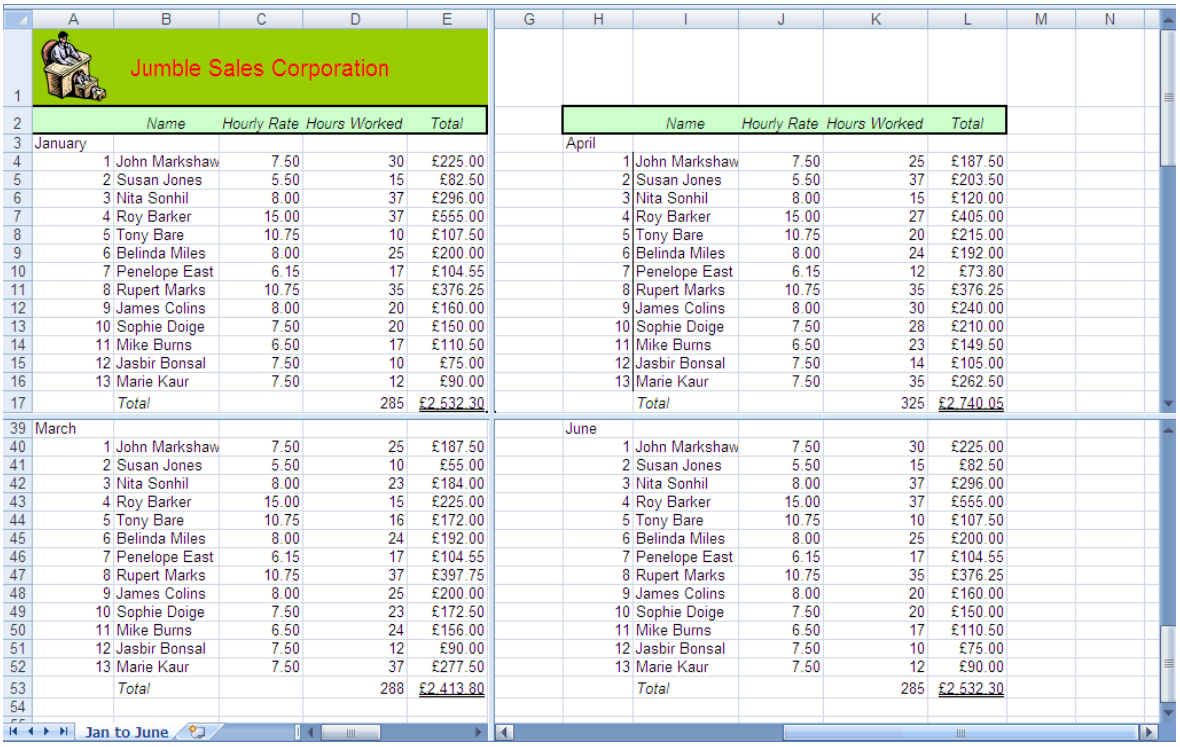


The Split command enables you to view distant parts of the worksheet at the same time.

- Switch to the **JS Payroll** workbook
- Select cell **F18**
- Click **Split** in the **Window** group on the **View** tab

Boundary lines are inserted above and to the left of the selected cell, thus splitting the sheet into four parts.

- Hide the ribbon to provide more viewing space
- Use the four scroll bars as necessary to display the figures for January, March, April and June (you may need to reduce the magnification slightly)



Jumble Sales Corporation

	Name	Hourly Rate	Hours Worked	Total
January				
1	John Markshaw	7.50	30	£225.00
2	Susan Jones	5.50	15	£82.50
3	Nita Sonhil	8.00	37	£296.00
4	Roy Barker	15.00	37	£555.00
5	Tony Bare	10.75	10	£107.50
6	Belinda Miles	8.00	25	£200.00
7	Penelope East	6.15	17	£104.55
8	Rupert Marks	10.75	35	£376.25
9	James Colins	8.00	20	£160.00
10	Sophie Doige	7.50	20	£150.00
11	Mike Burns	6.50	17	£110.50
12	Jasbir Bonsal	7.50	10	£75.00
13	Marie Kaur	7.50	12	£90.00
	Total		285	£2,532.30

	Name	Hourly Rate	Hours Worked	Total
April				
1	John Markshaw	7.50	25	£187.50
2	Susan Jones	5.50	37	£203.50
3	Nita Sonhil	8.00	15	£120.00
4	Roy Barker	15.00	27	£405.00
5	Tony Bare	10.75	20	£215.00
6	Belinda Miles	8.00	24	£192.00
7	Penelope East	6.15	12	£73.80
8	Rupert Marks	10.75	35	£376.25
9	James Colins	8.00	30	£240.00
10	Sophie Doige	7.50	28	£210.00
11	Mike Burns	6.50	23	£149.50
12	Jasbir Bonsal	7.50	14	£105.00
13	Marie Kaur	7.50	35	£262.50
	Total		325	£2,740.05

March				
1	John Markshaw	7.50	25	£187.50
2	Susan Jones	5.50	10	£55.00
3	Nita Sonhil	8.00	23	£184.00
4	Roy Barker	15.00	15	£225.00
5	Tony Bare	10.75	16	£172.00
6	Belinda Miles	8.00	24	£192.00
7	Penelope East	6.15	17	£104.55
8	Rupert Marks	10.75	37	£397.75
9	James Colins	8.00	25	£200.00
10	Sophie Doige	7.50	23	£172.50
11	Mike Burns	6.50	24	£156.00
12	Jasbir Bonsal	7.50	12	£90.00
13	Marie Kaur	7.50	37	£277.50
	Total		288	£2,413.80

June				
1	John Markshaw	7.50	30	£225.00
2	Susan Jones	5.50	15	£82.50
3	Nita Sonhil	8.00	37	£296.00
4	Roy Barker	15.00	37	£555.00
5	Tony Bare	10.75	10	£107.50
6	Belinda Miles	8.00	25	£200.00
7	Penelope East	6.15	17	£104.55
8	Rupert Marks	10.75	35	£376.25
9	James Colins	8.00	20	£160.00
10	Sophie Doige	7.50	20	£150.00
11	Mike Burns	6.50	17	£110.50
12	Jasbir Bonsal	7.50	10	£75.00
13	Marie Kaur	7.50	12	£90.00
	Total		285	£2,532.30

Jan to June

To return to the original window:

- Click **Split** once more

PAGE BREAKS

Excel automatically includes page breaks when a page is full, but you can force a page break earlier if you need to.

Inserting a page break

- Ensure that the workbook **JS Payroll** is still open and selected
- Select cell **E17**
- Click the **Page Layout** tab
- Click the **Breaks** command in the **Page Setup** group
- Select **Insert Page Break** from the list of options

You will see by the dotted lines, that a page break has been inserted between rows 16 and 17 and one between columns D and E.

This is not a useful page break so you will remove it.

Removing a page break

- Ensure that **E17** is still selected
- Click **Breaks** in the **Page Setup** group on the **Page Layout** tab
- Select **Remove Page Break**

You will add another page break, but this time you want to ensure that the January, February, April and May figures are each on separate pages. Choosing any cell between F18 and H20 should achieve an acceptable page break. For this exercise we will use H20.

- Select **H20**
- Insert a page break using the **Breaks** command
- To see the effect of the page break select the **Page Layout** view

You will notice that the spreadsheet is displayed on four pages.

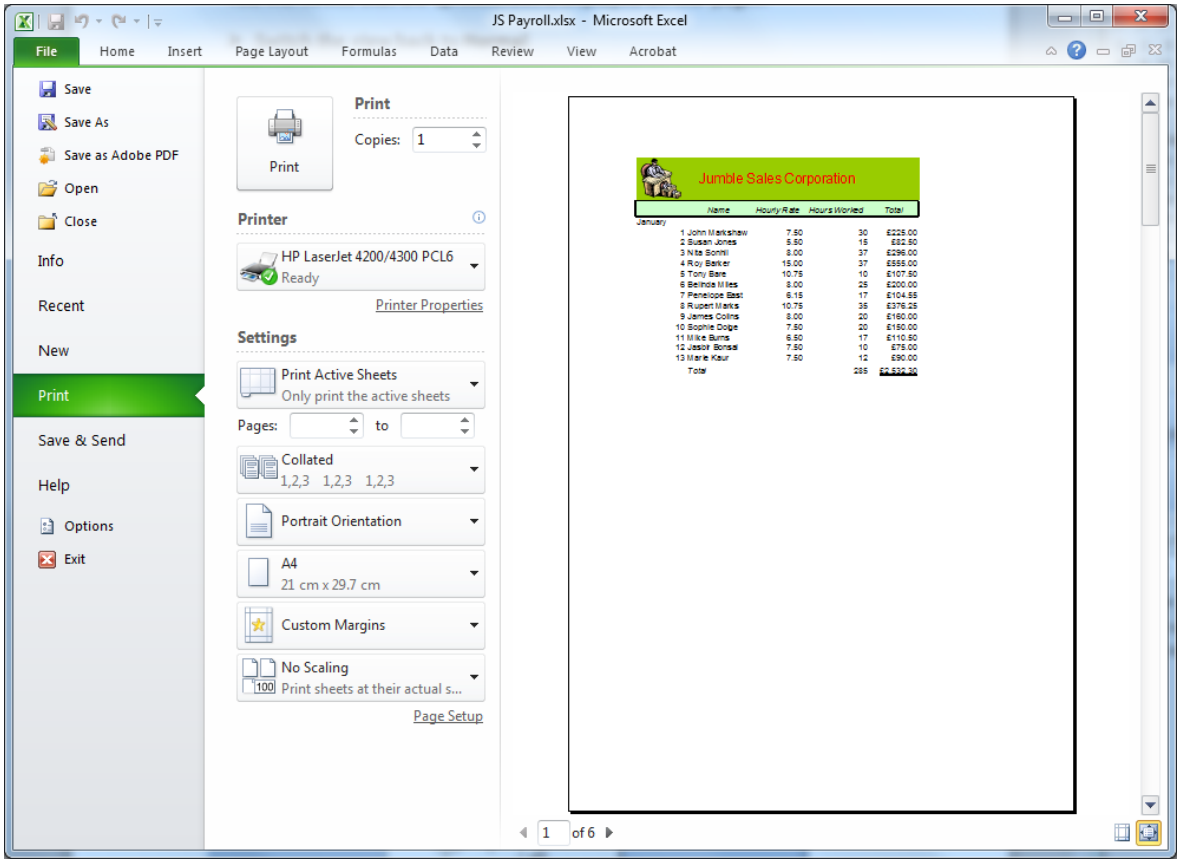
- Switch the view back to **Normal**
- Insert a further page break so that each of the six monthly figures will appear on a separate page
- Use the Page Layout view to check the six pages

Print Preview is another option that can be used to check the layout of the pages.

To see a print preview of the pages:

- Select the **File** tab
- Click **Print**

A preview of page 1 is shown on the right of the screen.



- Use either the scroll bar or the Next Page button to view the other pages

To remove all manually inserted page breaks:

- Select the **Page Layout** tab
- Click the **Breaks** command in the **Page Setup** group
- Select **Reset All Page Breaks**
- Close the JS Payroll workbook without saving any changes
- Save and close the Wages workbook

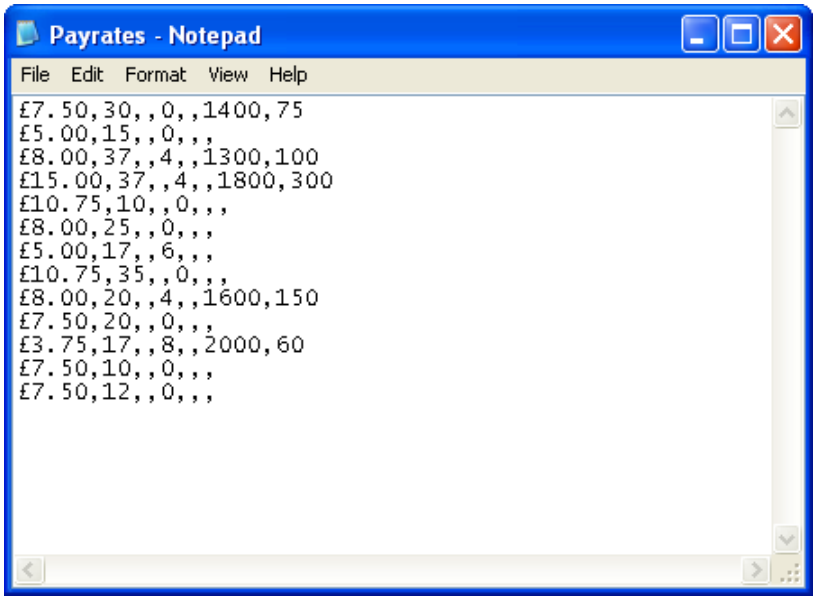
IMPORTING DATA

You may want to import data from another workbook, or perhaps another source. For this exercise you will import data into a worksheet, then practice adding formulas and functions to calculate pay.

IMPORTING DATA FROM TEXT FILES

Excel will allow you to import a variety of file types from various sources, including the CSV (comma separated variable) file type. This is particularly useful because most software packages that handle data can save files in CSV format. A CSV file can also be prepared directly using Notepad or a similar application. Data records in CSV format are shown in rows, with fields separated by commas.

There are other similar text-based formats that use characters such as a semi-colon, space or tab instead of a comma to separate the data fields. For this exercise, the data you will import includes commas as shown in the example below. It is important to note that there are an equal number of commas in each line. Where data is missing, the position is still shown by typing two commas, one after the other.



- Open the **Payroll** workbook from the **ExcelIntermediate** folder

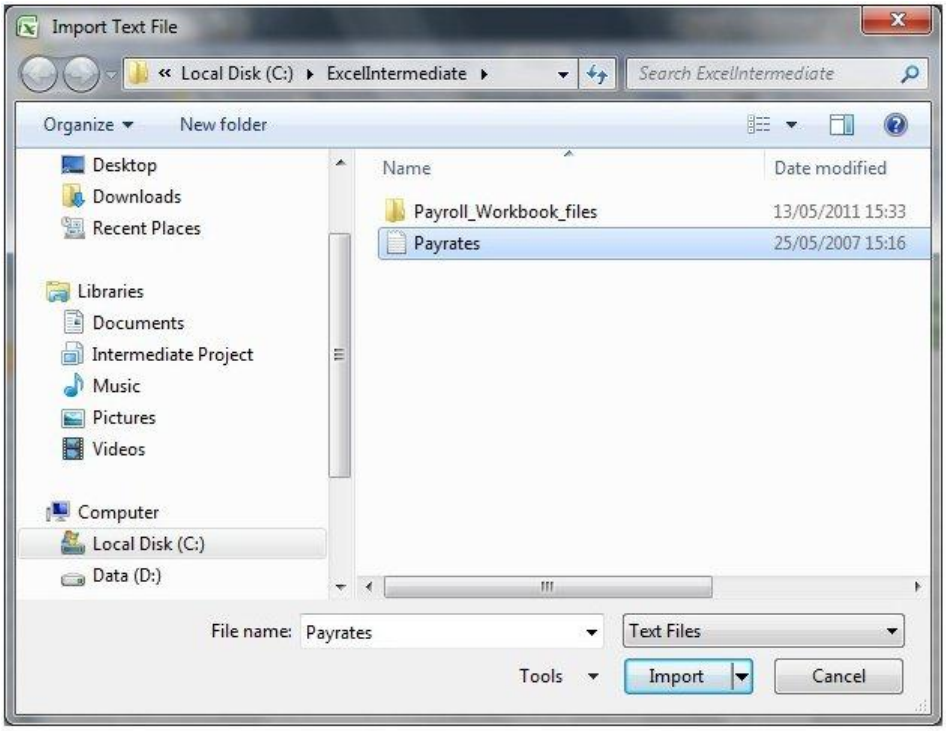
You will import data into the worksheet, starting at cell C2.

- Select **C2**
- Select the **Data** tab

- Select **From Text** in the **Get External Data** group

The **Import Text File** dialog box is displayed.

- Ensure that you are looking in the **ExcelIntermediate** folder on the **C** drive
- Select the file **Payrates**



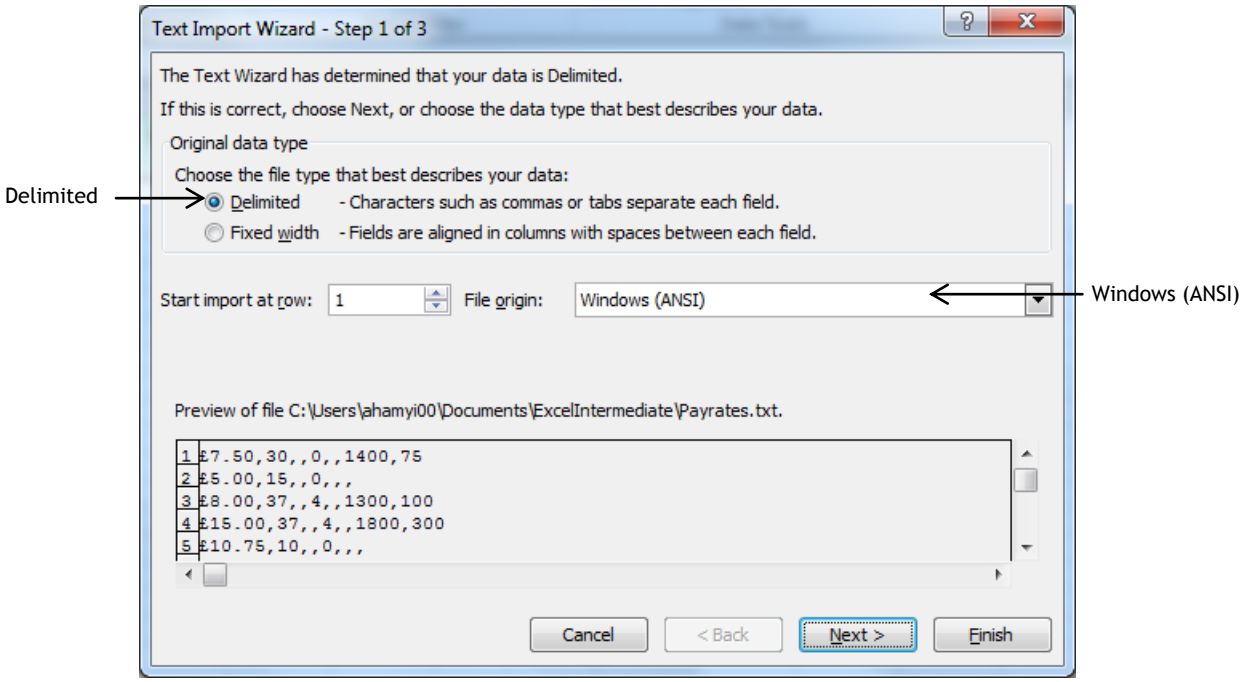
- Click **Import**

The **Text Import Wizard** dialog box is displayed.

Step 1 of 3

You can see that some assumptions about the data to be imported have already been made.

- Ensure that the **Delimited** option is selected



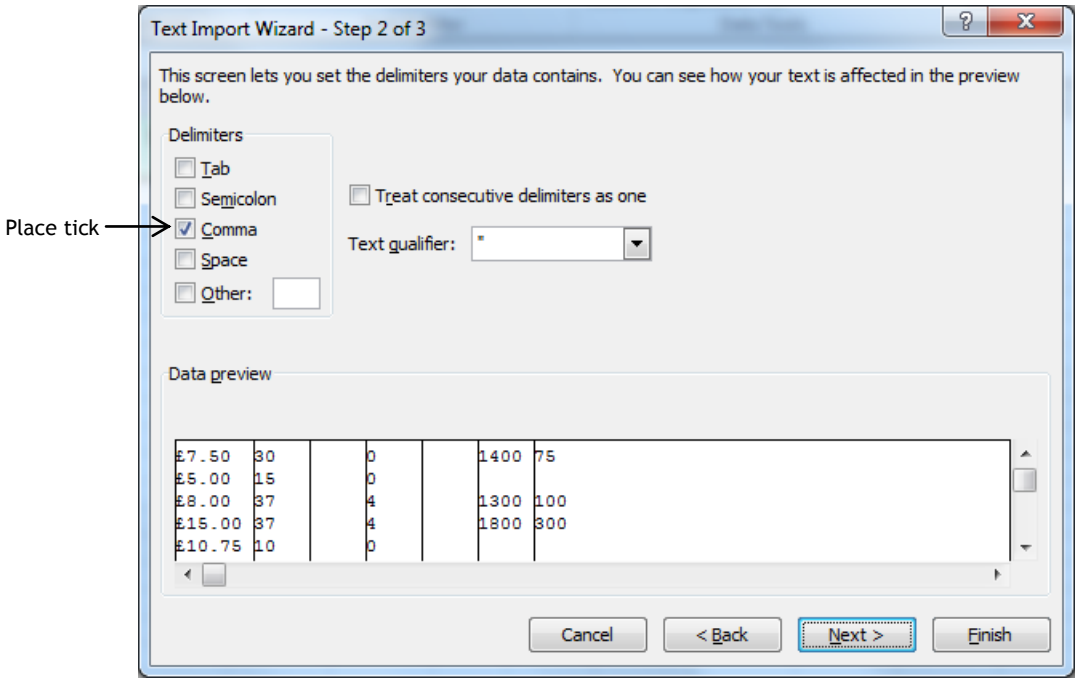
- Ensure that the **File origin:** option box displays **Windows (ANSI)**
- Click **Next**

Step 2 of 3

This step lets you set the delimiters your data contains, in this case commas.

In the Delimiters area:

- Remove the tick from **Tab**
- Select **Comma**



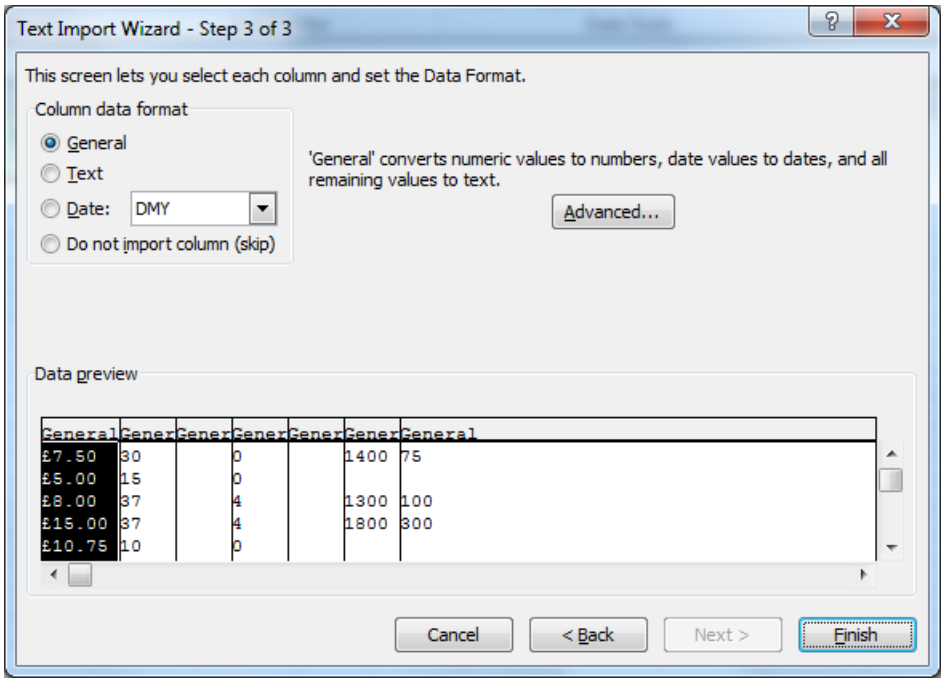
Notice that the Data preview changes to show the data separated into different columns when the correct delimiter is selected.

- Click **Next**

Step 3 of 3

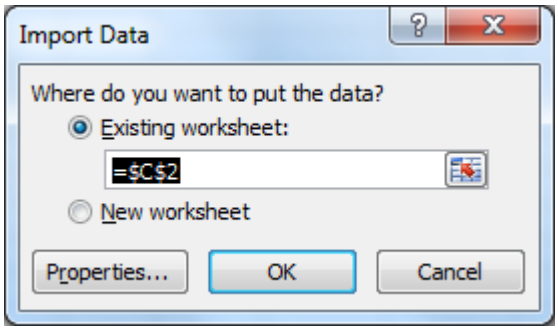
Using this screen you can specify the format of individual columns. All the columns have been set to the General data format. To change the format for any column, you simply select the column in the Data Preview and click the relevant data format.

Notice also that you do not have to import all columns.



- Click **Finish**

The **Import Data** dialog box is displayed.



- Check that **C2** in the **existing worksheet** is indicated
- Click the **Properties** button

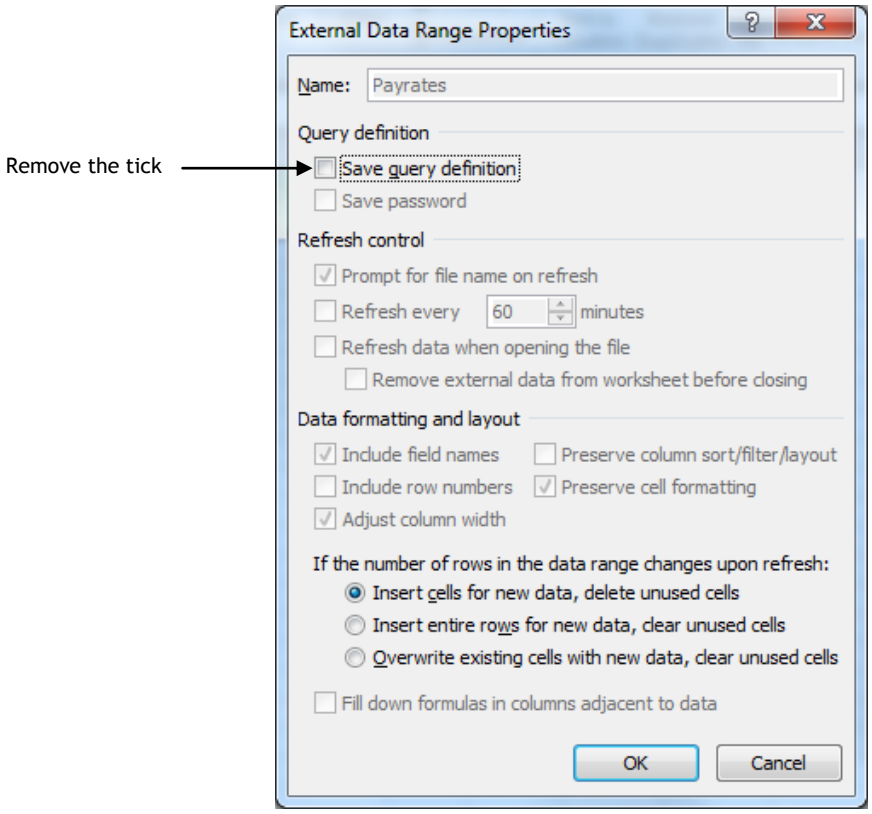
The External Data Range Properties dialog box is displayed.

The settings in this dialog box controls whether or not a link to the original data is created and how often the data should be refreshed.

A link is created by default.

To break the link with the source data:

- Remove the tick from the **Save query definition** check box



- Click **OK** to save the changes
- Click **OK** to complete the import

The data from the text file is copied into the worksheet.

- Make the cells wide enough to display all the data and column headings

	A	B	C	D	E	F	G	H	I	J	K
1	Jumble Sales Corporation	Staff Name	Hourly Pay	Hours Worked	Basic Pay	Overtime Hours	Overtime Pay	CC	Mileage	Pay for Mileage	Total Pay
2		John Markshaw	£7.50	30		0		1400	75		
3		Susan Jones	£5.00	15		0					
4		Nita Sonhil	£8.00	37		4		1300	100		
5		Roy Barker	£15.00	37		4		1800	300		
6		Tony Bare	£10.75	10		0					
7		Belinda Miles	£8.00	25		0					
8		Penelope East	£5.00	17		6					
9		Rupert Marks	£10.75	35		0					
10		James Colins	£8.00	20		4		1600	150		
11		Sophie Doige	£7.50	20		0					
12		Mike Burns	£3.75	17		8		2000	60		
13		Jasbir Bonsal	£7.50	10		0					
14		Marie Kaur	£7.50	12		0					

This next section is a revision of some of the functions and formulae that you used earlier in the course.

Hints are provided for you and, if necessary, you can look at the relevant section of the training document for more help. However, try to work the calculations out for yourself first.

Calculate the Basic Pay

- In cell **E2** enter a formula to calculate the Basic Pay for the first employee (Hourly Pay * Hours Worked)
- Copy the formula down to the other employees

Calculate the Overtime Pay (paid at 1.75 times the normal rate)

- In cell **B16** type **Overtime Rate**
- In **C16** type **1.75** (ensure that it is not displayed as currency)
- In **G2** type a formula that will calculate the overtime pay for the first employee, using an absolute cell reference as appropriate (Hourly Pay * Overtime Rate * Overtime Hours)
- Copy the formula down the column to the other employees

Calculate the pay for Mileage

Using the IF function

Next you will calculate the amount each member of staff is paid for mileage. The rate of pay per mile is determined by the engine size of the car so you will use the logical function (IF). (You used this on page 47 to calculate the pay for Unsocial Hours.)

- As you have used this function before, calculate the Mileage Cost yourself. Help in producing the calculation is printed on the next page. Use the following data in the calculation:

Jumble Sales Corporation has agreed to reimburse members of staff for petrol costs at the following rates per mile, depending upon engine size:

Up to 1600cc	**35p**
Over 1600cc	**45p**

- Enter the following data at the bottom of the worksheet

	B	C
18	Up to 1600cc	0.35
19	Over 1600cc	0.45

- In J2, enter a formula, using the IF function, to calculate the amount the first employee is reimbursed for using his own vehicle for business purposes

Help is given on page 86 if you need it!

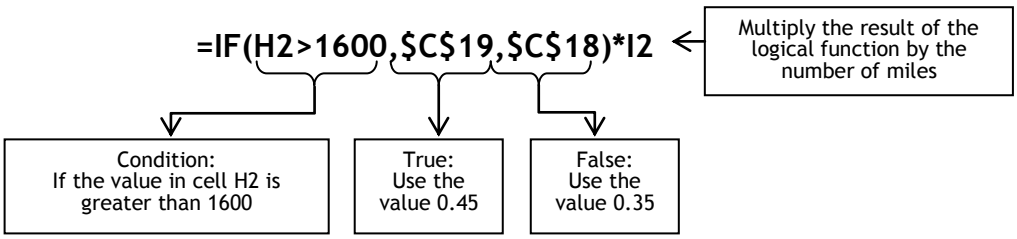
Help with the IF function:

In cell J2, you are creating a logical formula to calculate the amount to be claimed by John Markshaw for travel (Pay for Mileage)

The structure of the formula will be:

=IF(Engine size >1600,45p,35p)*Mileage

So for John Markshaw the formula will be:



Note the use of absolute references when specifying the cells containing the rates per mile (C18 and C19).

- Copy the formula in J2 to all employees

You will see error indicators in two of the cells – this will be covered in the next section.

Error indicators

As you copy the formula to the other employees, you will notice that an error indicator is displayed in two of the cells.

#VALUE!

	A	B	C	D	E	F	G	H	I	J	K
1	Jumble Sales Corporation	Staff Name	Hourly Pay	Hours Worked	Basic Pay	Overtime Hours	Overtime Pay	CC	Mileage	Pay for Mileage	Total Pay
2		John Markshaw	£7.50	30	£225.00	0	£0.00	1400	75	26.25	
3		Susan Jones	£5.00	15	£75.00	0	£0.00			#VALUE!	
4		Nita Sonhil	£8.00	37	£296.00	4	£56.00	1300	100	35	
5		Roy Barker	£15.00	37	£555.00	4	£105.00	1800	300	135	
6		Tony Bare	£10.75	10	£107.50	0	£0.00			0	
7		Belinda Miles	£8.00	25	£200.00	0	£0.00			0	
8		Penelope East	£5.00	17	£85.00	6	£52.50			0	
9		Rupert Marks	£10.75	35	£376.25	0	£0.00			0	
10		James Colins	£8.00	20	£160.00	4	£56.00	1600	150	52.5	
11		Sophie Doige	£7.50	20	£150.00	0	£0.00			#VALUE!	
12		Mike Burns	£3.75	17	£63.75	8	£52.50	2000	60	27	
13		Jasbir Bonsal	£7.50	10	£75.00	0	£0.00			0	
14		Marie Kaur	£7.50	12	£90.00	0	£0.00			0	
15											
16		Overtime Rate	1.75								
17											
18		Up to 1600cc	0.35								
19		Over 1600cc	0.45								

This particular error indicator implies that a cell referenced in the formula does not have a numerical value.

- Check the data in all the cells that were used to produce the pay for the mileage calculation in J3

Did you find anything that could have produced this error?

- Place the insertion point in cell **I3**

While the cell looks like it is empty, there is a space in it.

- Delete the space

The error indicator is removed from J3.

- Check cell **I11** and delete the space

To complete the exercise:

- Format the Pay for Mileage values as currency
- In cell **K2**, use a formula that will calculate the **Total Pay** for John Markshaw

  =Basic pay + Overtime pay + Pay for Mileage

- Replicate the formula down to the other employees

	A	B	C	D	E	F	G	H	I	J	K
1	Jumble Sales Corporation	Staff Name	Hourly Pay	Hours Worked	Basic Pay	Overtime Hours	Overtime Pay	CC	Mileage	Pay for Mileage	Total Pay
2		John Markshaw	£7.50	30	£225.00	0	£0.00	1400	75	£26.25	£251.25
3		Susan Jones	£5.00	15	£75.00	0	£0.00			£0.00	£75.00
4		Nita Sonhil	£8.00	37	£296.00	4	£56.00	1300	100	£35.00	£387.00
5		Roy Barker	£15.00	37	£555.00	4	£105.00	1800	300	£135.00	£795.00
6		Tony Bare	£10.75	10	£107.50	0	£0.00			£0.00	£107.50
7		Belinda Miles	£8.00	25	£200.00	0	£0.00			£0.00	£200.00
8		Penelope East	£5.00	17	£85.00	6	£52.50			£0.00	£137.50
9		Rupert Marks	£10.75	35	£376.25	0	£0.00			£0.00	£376.25
10		James Colins	£8.00	20	£160.00	4	£56.00	1600	150	£52.50	£268.50
11		Sophie Doige	£7.50	20	£150.00	0	£0.00			£0.00	£150.00
12		Mike Burns	£3.75	17	£63.75	8	£52.50	2000	60	£27.00	£143.25
13		Jasbir Bonsal	£7.50	10	£75.00	0	£0.00			£0.00	£75.00
14		Marie Kaur	£7.50	12	£90.00	0	£0.00			£0.00	£90.00
15											
16		Overtime Rate	1.75								
17											
18		Up to 1600cc	0.35								
19		Over 1600cc	0.45								

- Save the worksheet

COPYING DATA FROM A WORD DOCUMENT

You will copy a list of Hotels, currently saved in a Word document, into the workbook. This is a short exercise but it will show you how easily data can be copied from a Word document.

- Insert a new sheet in the Payroll workbook
- Rename the new worksheet **Hotels**
- Open the Word document called **Hotels**

The document contains a tabbed list.

- Select the list of hotels
- Click the **Copy** button
- Return to the **Payroll** workbook
- **Paste** the list into cell **A3** in the **Hotels** worksheet
- Make the cells wide enough to display all the data

	A	B
1		
2		
3	Courtyard	Hounslow
4	Holiday Inn	Leeds
5	Hilton Resort	London
6	Sheraton	Birmingham
7	Forte Posthouse	Edinburgh
8	Marriot	Glasgow
9	The Garden House	Coventry
10	Hilton Hotel	Northampton

- Save and close the Payroll workbook
- Close Word

Text typed into a Word table can also be copied into a worksheet.

IMPORTING DATA FROM AN ACCESS DATABASE

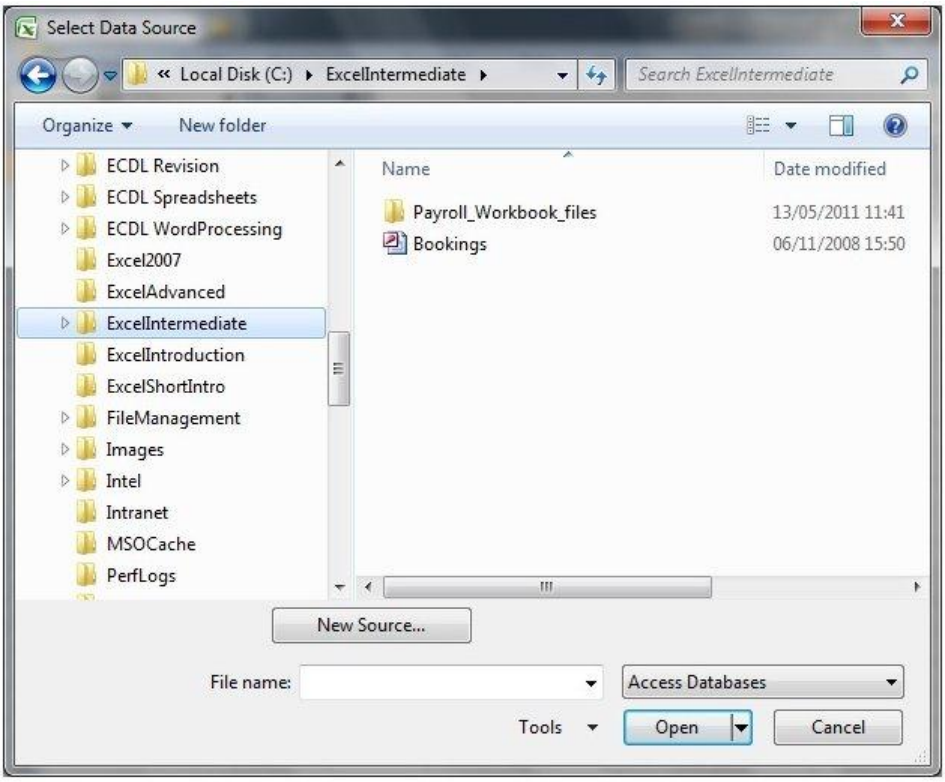
You do not need any knowledge of Access for this exercise. However if you intend to import data from Access on a regular basis it would be advantageous to have a basic understanding of the application.

You will import the Hotel Bookings table from a database called Bookings.

- Create a new blank Excel workbook
- Ensure that **A1** is selected, since you want the imported data to start at A1
- Select the **Data** tab
- Click **From Access** in the **Get External Data** group of commands

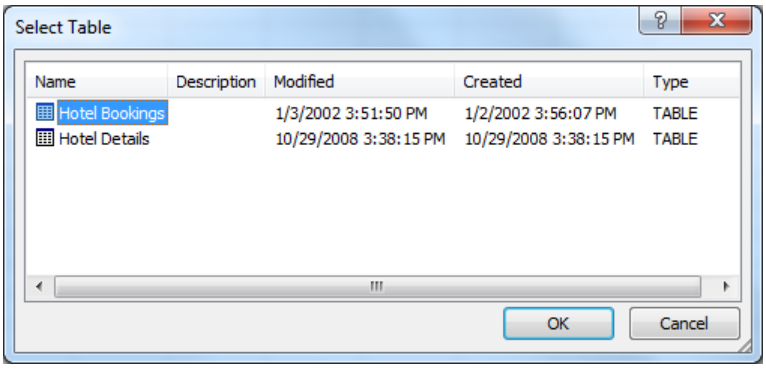
The Select Data Source dialog box is displayed.

- Locate the **ExcelIntermediate** folder on drive **C**



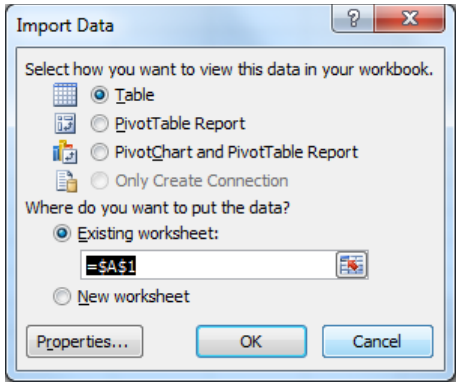
- Select the **Bookings** database
- Click **Open**

This database contains more than one table so the **Select Table** dialog box is displayed.



- Ensure that the **Hotel Bookings** table is selected
- Click **OK**

The Import Data dialog box is displayed.



To import the data into the current worksheet:

- Ensure that the **Existing worksheet** radio button is selected
- Click **OK**

The data from the database is inserted into the worksheet and formatted as a table.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Employee Name	Hotel Name	Town	Start Date	End Date	Nights	Paid on Ac	Room Per Night	Breakfast	Lunch	Dinner	Other	Total
2	Sophie Doige	Ramada	Reading	13/07/2008	16/07/2008	3	No	55	18	10	55	7.41	
3	Tony Bare	Ramada	Reading	27/07/2008	28/07/2008	1	Yes	55	18	10	55	3.45	
4	Belinda Miles	Courtyard	Hounslow	27/07/2008	29/07/2008	2	No	37	18	15	50	0	
5	Jasbir Bonsal	Hilton Hotel	Northampton	28/07/2008	30/07/2008	2	Yes	45	7	10	15	2.71	
6	Marie Kaur	Marriot	Glasgow	29/07/2008	30/07/2008	1	Yes	49	24	0	75	8.55	
7	Roy Barker	Courtyard	Hounslow	07/07/2008	09/07/2008	2	No	37	18	0	50	1.27	
8	John Markshaw	Holiday Inn	Leeds	25/07/2008	29/07/2008	4	No	70	0	0	80	10.72	
9	Nita Sonhil	Hilton Resort	London	25/07/2008	26/07/2008	1	Yes	45	7	0	15	2.45	
10	Penelope East	Sheraton	Birmingham	13/07/2008	15/07/2008	2	Yes	35	12	10	30	5.72	
11	James Colins	Forte Posthouse	Edinburgh	27/07/2008	29/07/2008	2	No	48	12	0	40	7.2	
12	Mike Burns	Marriot	Glasgow	22/07/2008	25/07/2008	2	Yes	49	24	30	75	3.42	
13	Susan Jones	The Garden House	Coventry	17/07/2008	19/07/2008	2	Yes	35	15	0	40	5.78	
14	Rupert Marks	Hilton Hotel	Northampton	22/07/2008	23/07/2008	1	No	45	7	0	15	4.24	

- Rename the worksheet: **Bookings**
- Format **H2 to M14** as **Currency**

Now calculate the total expenses:

- In cell **M2** create a formula that will calculate the **Total Expenses** for Sophie Doige:

  =(Breakfast + Lunch + Dinner + Other) + (Nights * Room Per Night)

- Look at the formula – could you simplify it? (Perhaps use the Sum function to add Breakfast, Lunch, Dinner and Other.)
- Copy the formula down to the other employees

Your answers should be:

M
Total
£255.41
£141.45
£157.00
£124.71
£156.55
£143.27
£370.72
£69.45
£127.72
£155.20
£230.42
£130.78
£71.24

- Save the workbook as **Hotel Bookings** in the ExcelIntermediate folder on drive C
- Close the workbook

IMPORTING DATA FROM AN HTML FILE

- Open the **Payroll** workbook
- Ensure that the **Data** tab is selected
- Click **From Web** in the **Get External Data** group of commands

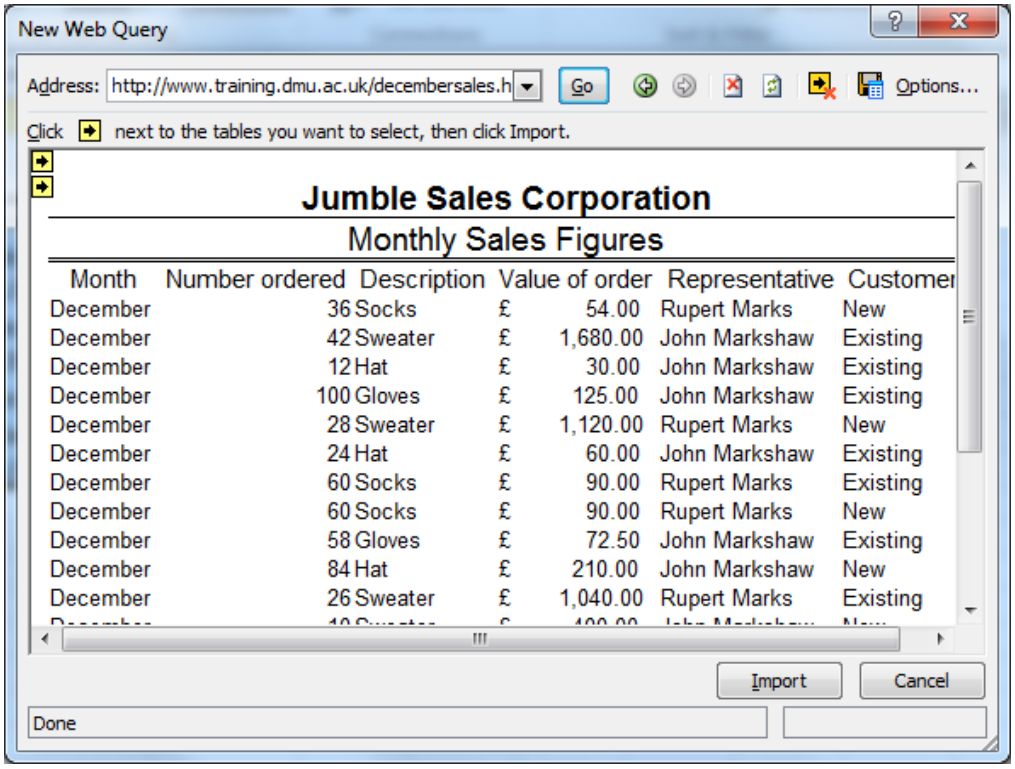
The **New Web Query** dialog box is displayed.

Excel identifies the tables in a web page and places a marker ⮕ at the top left corner of each table. This is to allow you to select the table that you want to import.

- Move the mouse pointer over the table markers to see an outline of the area that each marker represents
- In the **Address** box, type:

  http://www.training.dmu.ac.uk/DecemberSales.htm

- Click **Go**



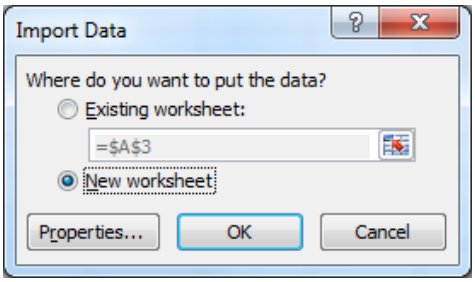
This web page has only one table so there is no need to select the table before importing. If no table is selected the whole page is imported.

- Click **Import**

The **Import Data** dialog box is displayed.

To import the data into a new sheet:

- Select the **New worksheet** radio button



- Click **OK**

The information from the web page is displayed in the worksheet.

- Rename the worksheet **December Sales**
- Save the workbook

EXPORTING DATA TO A WORD DOCUMENT

Exporting data into a Word document is a relatively simple operation using the Copy and Paste process. The data can be either copied as a snapshot or a linked copy.

CREATING A SNAPSHOT

A standard Copy and Paste will create a snapshot copy.

- Ensure that the **Payroll** workbook is still open
- Select the **July** worksheet
- Select cells **B1** to **K14**
- Click the **Copy** command on the **Home** tab
- Launch **Word**
- In a new document, change the Margins to **Narrow** and click **Paste**

The data is copied into the Word document in table format. The data is now completely separate from that stored in the Excel workbook and can be edited as a Word table.

Staff Name	Hourly Pay	Hours Worked	Basic Pay	Overtime Hours	Overtime Pay	CC	Mileage	Pay for Mileage	Total Pay
John Markshaw	£7.50	30	£225.00	0	£0.00	1400	75	£26.25	£251.25
Susan Jones	£5.00	15	£75.00	0	£0.00			£0.00	£75.00
Nita Sonhil	£8.00	37	£296.00	4	£56.00	1300	100	£35.00	£387.00
Roy Barker	£15.00	37	£555.00	4	£105.00	1800	300	£135.00	£795.00
Tony Bare	£10.75	10	£107.50	0	£0.00			£0.00	£107.50
Belinda Miles	£8.00	25	£200.00	0	£0.00			£0.00	£200.00
Penelope East	£5.00	17	£85.00	6	£52.50			£0.00	£137.50
Rupert Marks	£10.75	35	£376.25	0	£0.00			£0.00	£376.25
James Colins	£8.00	20	£160.00	4	£56.00	1600	150	£52.50	£268.50
Sophie Doige	£7.50	20	£150.00	0	£0.00			£0.00	£150.00
Mike Burns	£3.75	17	£63.75	8	£52.50	2000	60	£27.00	£143.25
Jasbir Bonsal	£7.50	10	£75.00	0	£0.00			£0.00	£75.00
Marie Kaur	£7.50	12	£90.00	0	£0.00			£0.00	£90.00

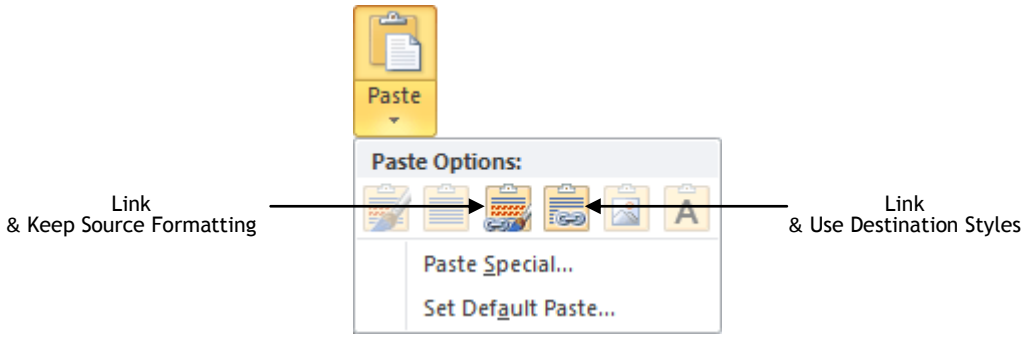
- Press Enter a couple of times to leave a gap below the table, ready for the next exercise
- Save the Word document with the name **Copied Data**

CREATING A LINKED COPY

Use this method if you wish to retain a link to the Excel worksheet. When the worksheet is updated and saved, the next time the Word document is opened, you will see the updated data.

- Switch to the **Payroll** workbook
- Select cells **B1** to **K14** on the **July** sheet
- Click **Copy**
- Switch to the **Copied Data** Word document
- Click the down arrow on the **Paste** button in the **Clipboard** group

There are two options that will create a linked copy.



- Click the **Link & Keep Source Formatting** option

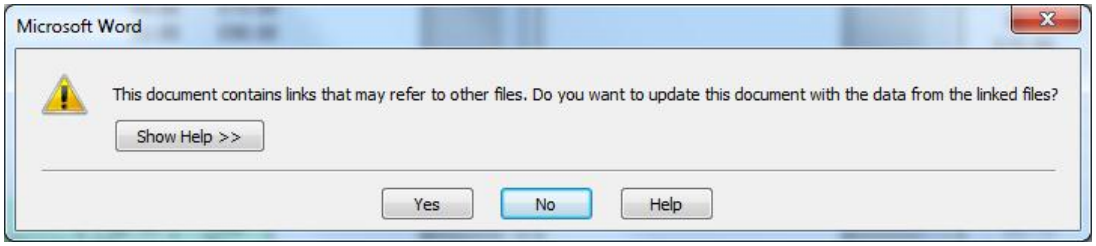
The data is copied into the Word document as an object.

Staff Name	Hourly Pay	Hours Worked	Basic Pay	Overtime Hours	Overtime Pay	CC	Mileage	Pay for Mileage	Total Pay
John Markshaw	£7.50	30	£225.00	0	£0.00	1400	75	£26.25	£251.25
Susan Jones	£5.00	15	£75.00	0	£0.00			£0.00	£75.00
Nita Sonhil	£8.00	37	£296.00	4	£56.00	1300	100	£35.00	£387.00
Roy Barker	£15.00	37	£555.00	4	£105.00	1800	300	£135.00	£795.00
Tony Bare	£10.75	10	£107.50	0	£0.00			£0.00	£107.50
Belinda Miles	£8.00	25	£200.00	0	£0.00			£0.00	£200.00
Penelope East	£5.00	17	£85.00	6	£52.50			£0.00	£137.50
Rupert Marks	£10.75	35	£376.25	0	£0.00			£0.00	£376.25
James Colins	£8.00	20	£160.00	4	£56.00	1600	150	£52.50	£268.50
Sophie Doige	£7.50	20	£150.00	0	£0.00			£0.00	£150.00
Mike Burns	£3.75	17	£63.75	8	£52.50	2000	60	£27.00	£143.25
Jasbir Bonsal	£7.50	10	£75.00	0	£0.00			£0.00	£75.00
Marie Kaur	£7.50	12	£90.00	0	£0.00			£0.00	£90.00

To test the link:

- Save and close the Word document
- Switch to the **Payroll** workbook and select the **July** sheet
- Change cell **F3** to show that Susan Jones has worked **10** hours overtime
- Save the workbook
- Switch to Word and open the document **Copied Data**

A message is displayed asking if you want to update the linked data.



- Click **Yes** to update

Notice that while the first table has not changed, data in the linked object has updated to show the changes.

Staff Name	Hourly Pay	Hours Worked	Basic Pay	Overtime Hours	Overtime Pay	CC	Mileage	Pay for Mileage	Total Pay
John Markshaw	£7.50	30	£225.00	0	£0.00	1400	75	£26.25	£251.25
Susan Jones	£5.00	15	£75.00	10	£87.50			£0.00	£162.50
Nita Sonhil	£8.00	37	£296.00	4	£56.00	1300	100	£35.00	£387.00
Roy Barker	£15.00	37	£555.00	4	£105.00	1800	300	£135.00	£795.00
Tony Bare	£10.75	10	£107.50	0	£0.00			£0.00	£107.50
Belinda Miles	£8.00	25	£200.00	0	£0.00			£0.00	£200.00
Penelope East	£5.00	17	£85.00	6	£52.50			£0.00	£137.50
Rupert Marks	£10.75	35	£376.25	0	£0.00			£0.00	£376.25
James Colins	£8.00	20	£160.00	4	£56.00	1600	150	£52.50	£268.50
Sophie Doige	£7.50	20	£150.00	0	£0.00			£0.00	£150.00
Mike Burns	£3.75	17	£63.75	8	£52.50	2000	60	£27.00	£143.25
Jasbir Bonsal	£7.50	10	£75.00	0	£0.00			£0.00	£75.00
Marie Kaur	£7.50	12	£90.00	0	£0.00			£0.00	£90.00

- Close the Word document without saving
- Close Word

Excel charts may be copied and linked into a Word document in the same way.

WORKING WITH MULTIPLE WORKBOOKS

You may have more than one workbook relating to a particular subject. To enable you to use them efficiently you can arrange them together on the screen and save the arrangement for future use. This also enables you to open two or more workbooks simultaneously.

CREATING A WORKSPACE FILE

To open a group of workbooks in one step, you create a workspace file.

A workspace file saves information about all open workbooks, such as locations, window sizes, and screen positions. This information is used to locate and open the relevant workbooks.

In this exercise you will use two workbooks, Payroll and Hotel Bookings to create a workspace file.

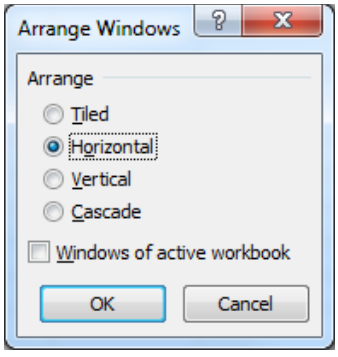
- Ensure that the **Payroll** workbook is still open
- Open the workbook **Hotel Bookings**

The next step is to arrange the worksheets on the screen as you would like to see them when the workspace file is opened.

- Select the **View** tab
- Click **Arrange All** in the **Window** group of commands

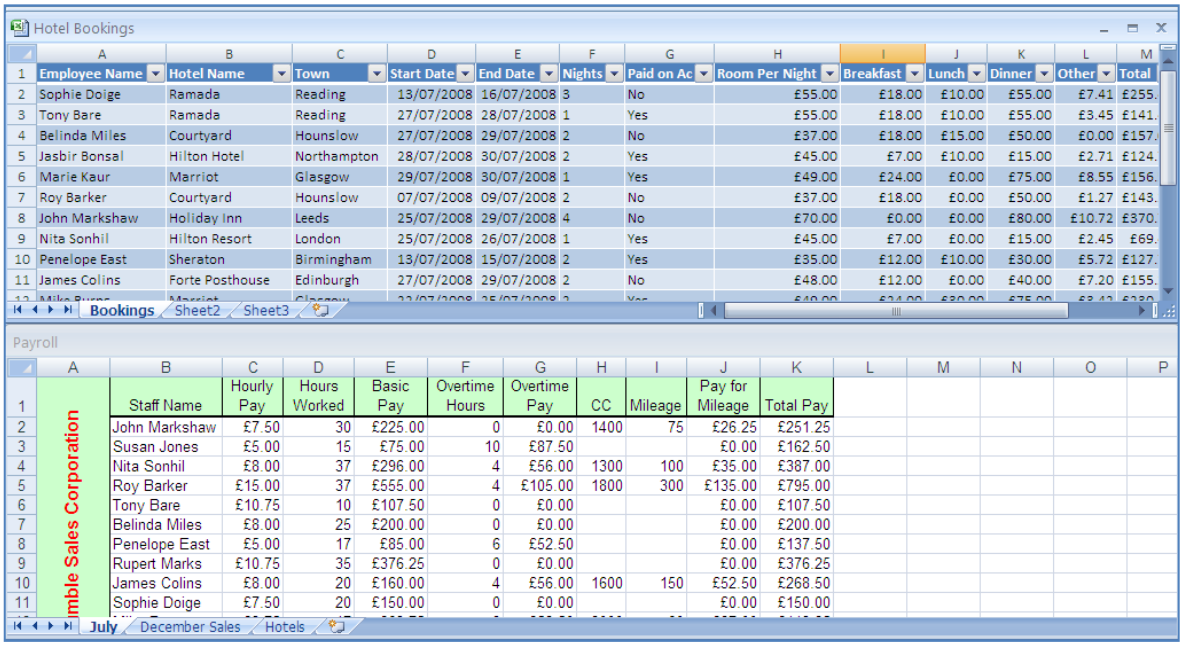
The **Arrange Windows** dialog box is displayed:

- Select **Horizontal**



- Click **OK**

The two open workbooks are arranged similarly to the following diagram:

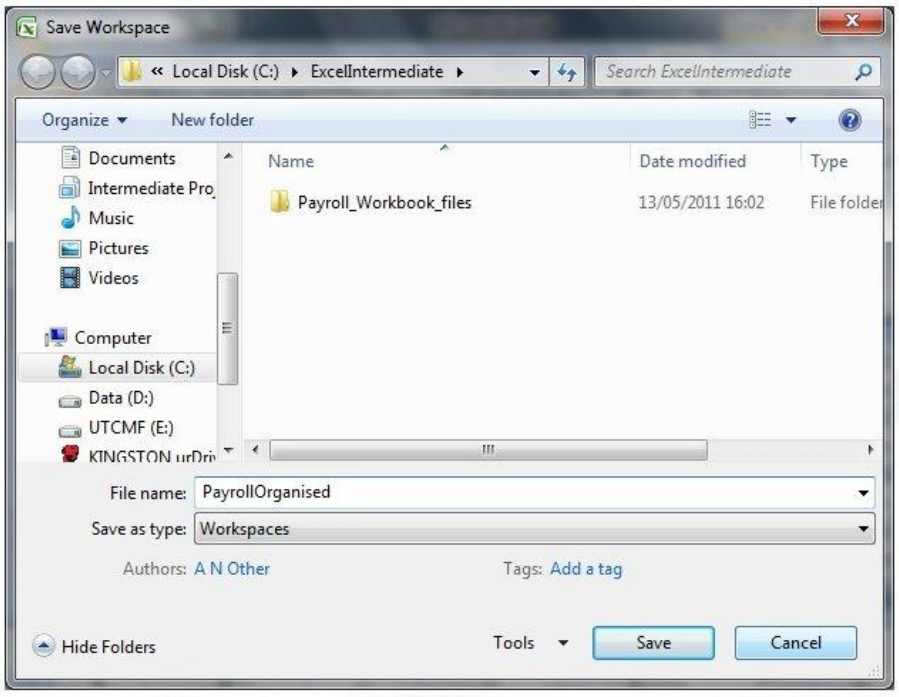


To save this arrangement as a workspace:

- Click the **Save Workspace** button in the **Window** group

The **Save Workspace** dialog box is displayed.

- In the File name option box type **PayrollOrganised**



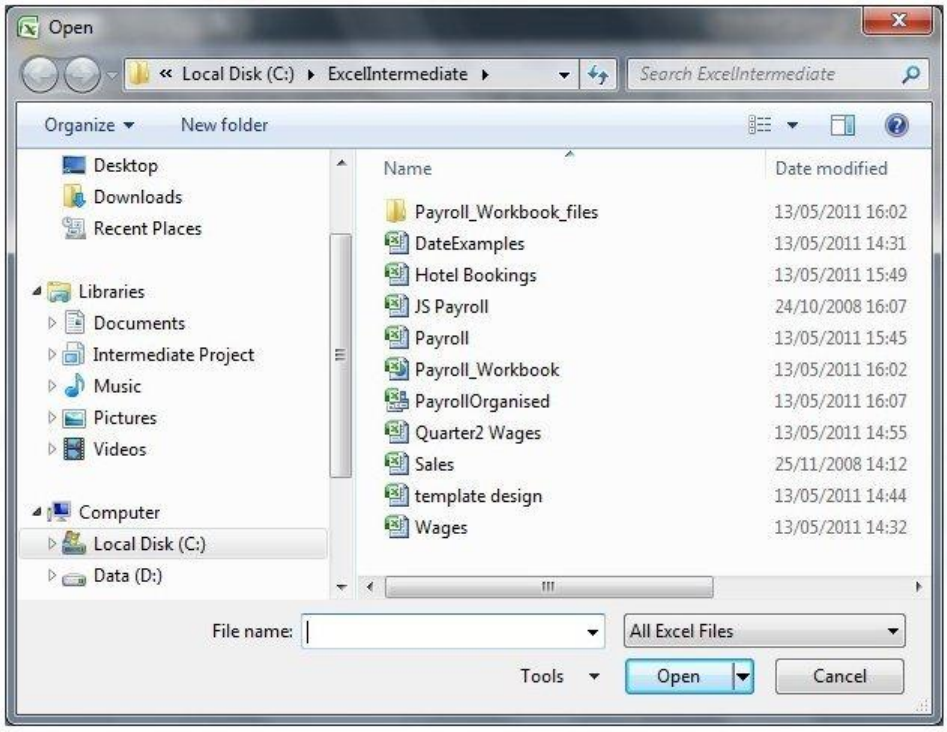
- Click **Save**

The workspace file does not contain the workbooks themselves, so you must continue to save changes you make to the individual workbooks.

- Close the workbooks

To open the workspace:

- Select the **File** tab
- Click **Open**



- Select **PayrollOrganised**
- Click **Open**

The workspace is opened showing the two workbooks.

- Leave the workspace file open ready for the next exercise

LINKING WORKBOOKS

You are now going to link two workbooks to create a summary page. This is similar to using figures from separate worksheets in a calculation but this time you will use different workbooks.

First you will prepare the summary sheet.

Both the Hotel Bookings and the Payroll workbooks should still be displayed in your workspace

- Click the **Payroll** workbook to select it
- Insert a new worksheet and rename it **Summary**
- Copy the names from the **July** sheet (**B2:B14**) into column A of the **Summary** sheet, starting at **A2**
- In cell **C1** type **Total Pay**
- In **D1** type **Out of Pocket Expenses**
- In **E1** type **Total Payable**
- Ensure that the columns are wide enough to display all the data

	A	B	C	D	E
1			Total Pay	Out of Pocket Expenses	Total Payable
2	John Markshaw				
3	Susan Jones				
4	Nita Sonhil				
5	Roy Barker				
6	Tony Bare				
7	Belinda Miles				
8	Penelope East				
9	Rupert Marks				
10	James Colins				
11	Sophie Doige				
12	Mike Burns				
13	Jasbir Bonsal				
14	Marie Kaur				

You will now add the figures for the Total Pay to the Summary sheet.

- In cell **C2** type =
- Click the **July** sheet
- Select cell **K2** (Total pay for John Markshaw)
- Press **Enter** to complete the formula in the Summary sheet
- Click cell **C2** to check the formula

The formula in the cell reads **=July!K2**

As you have used a cell from a different worksheet, the name of the worksheet is included in the formula but is separated from the cell reference by an exclamation mark.

- Copy this formula for the other people on the payroll

Column G of the Hotel Bookings workbook shows that while some employees paid for their accommodation on account, others did not. Those who paid themselves need to be reimbursed by the company.

The first employee on the Bookings sheet who did not pay on account is Sophie Doige. Her hotel booking expenses need to be copied to cell D11 on the Summary sheet.

- Select **D11** on the Summary sheet (Out of Pocket Expenses for Sophie Doige)
- Type =
- Switch to the Hotel Bookings workbook
- Select cell **M2** (Total expenses for Sophie Doige)
- Press **Enter** to complete the formula in the Summary sheet of the Payroll workbook
- Click cell **D11** to check the formula

The formula in the cell is: **='[Hotel Bookings.xlsx]Bookings'!$M$2**

Notice that to specify the cell, first the workbook is identified, then the worksheet, then the cell within the sheet. Notice also the use of square brackets around the workbook name.

- On your own, add the expenses of the other members of staff to the summary sheet. Remember to copy only those who did not pay on account.
- In cell **E2** on the Summary sheet, calculate the **Total payable** to John Markshaw, by adding the Total Pay and the Out of Pocket Expenses
- Copy this formula down for all the others on the payroll
- Ensure that the values in columns D and E are formatted as currency
- Save the Payroll worksheet

IMPORTANT TO REMEMBER

If you have formulas that reference other workbooks you should not delete, move, or rename the workbooks as Excel will not be able to find them and any links will be broken.

Alternative method

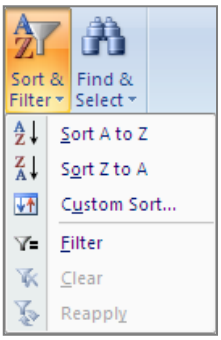
In the previous exercise you searched for the staff who did not pay on account by looking through the records. This method can lead to errors, especially when the worksheet is large or when the data has been updated.

You will repeat the exercise, but this time using the IF function to check whether or not each member of staff has paid on account.

- Delete the contents of the range **D2:E14** on the **Summary** sheet of the Payroll workbook

The employee names need to be sorted in the same order in both sheets.

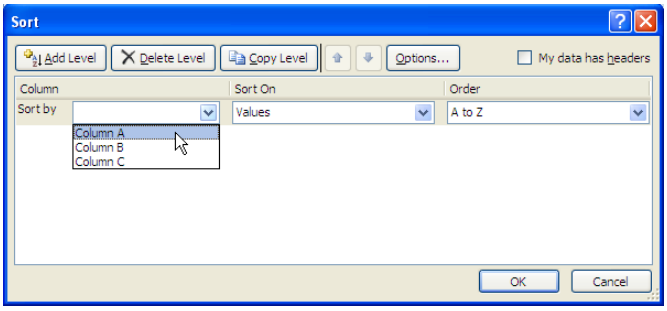
- Select the cells **A2:C14** on the **Summary** sheet
- Click the **Sort & Filter** button in the **Editing** group on the **Home** tab



- Select **Sort A to Z** from the list of options

The **Sort A to Z** option reorders the highlighted region by putting the first column in ascending order alphabetically.

If you want to sort the data on any other column you will need to use the **Custom Sort** option.



Then choose the column to sort on.

- Click any cell in the **Employee Name** column on the **Bookings** sheet

The data on the Bookings sheet is recognised as a table, so Excel will automatically rearrange the data in the whole table when you do a sort in any column.

- Click **Sort & Filter** button on the **Home** tab
- Select **Sort A to Z**

Both sheets should now have the names in the same order.

Hotel Bookings

	A	B	C	D	E
1	Employee Name	Hotel Name	Town	Start Date	End Date
2	Belinda Miles	Courtyard	Hounslow	27/07/2008	29/07/2008
3	James Colins	Forte Posthouse	Edinburgh	27/07/2008	29/07/2008
4	Jasbir Bonsal	Hilton Hotel	Northampton	28/07/2008	30/07/2008
5	John Markshaw	Holiday Inn	Leeds	25/07/2008	29/07/2008
6	Marie Kaur	Marriot	Glasgow	29/07/2008	30/07/2008
7	Mike Burns	Marriot	Glasgow	22/07/2008	25/07/2008
8	Nita Sonhil	Hilton Resort	London	25/07/2008	26/07/2008
9	Penelope East	Sheraton	Birmingham	13/07/2008	15/07/2008
10	Roy Barker	Courtyard	Hounslow	07/07/2008	09/07/2008

Bookings | Sheet2 | Sheet3

Payroll

	A	B	C	D	E	F
1			Total Pay	Out of Pocket Expenses	Total Payable	
2	Belinda Miles		£200.00			
3	James Colins		£268.50			
4	Jasbir Bonsal		£75.00			
5	John Markshaw		£251.25			
6	Marie Kaur		£90.00			
7	Mike Burns		£143.25			
8	Nita Sonhil		£387.00			
9	Penelope East		£137.50			
10	Roy Barker		£795.00			
11	Rupert Marks		£376.25			
12	Sophie Doige		£150.00			

July | December Sales | Hotels | Summary

- Click cell **D2** on the **Summary** sheet

This cell will hold the Out of Pocket Expenses for Belinda Miles if she did not pay the Hotel fees on account. If she paid on account, then D2 must have a zero.

- Create a formula using the **IF** function that will show the total hotel cost for Belinda in D2 if she did not pay on account, or otherwise show 0

One possible formula is given in the note at the bottom of this page. Compare it with the formula that you created.

- Copy the formula in **D2** to the cells **D3:D14**
- In **E2**, calculate the total payable to Belinda Miles (Total Pay + Out of Pocket Expenses)
- Copy the formula in **E2** to **E3:E14**

Payroll

	A	B	C	D	E
1			Total Pay	Out of Pocket Expenses	Total Payable
2	Belinda Miles		£200.00	£157.00	£357.00
3	James Colins		£268.50	£155.20	£423.70
4	Jasbir Bonsal		£75.00	£0.00	£75.00
5	John Markshaw		£251.25	£370.72	£621.97
6	Marie Kaur		£90.00	£0.00	£90.00
7	Mike Burns		£143.25	£0.00	£143.25
8	Nita Sonhil		£387.00	£0.00	£387.00
9	Penelope East		£137.50	£0.00	£137.50
10	Roy Barker		£795.00	£143.27	£938.27
11	Rupert Marks		£376.25	£71.24	£447.49
12	Sophie Doige		£150.00	£255.41	£405.41
13	Susan Jones		£162.50	£0.00	£162.50
14	Tony Bare		£107.50	£0.00	£107.50

July | December Sales | Hotels | **Summary**

- Save the workbook

One possible formula for the cell D2 on the Summary sheet is:

=IF('[Hotel Bookings.xlsx]Bookings'!G2="No",'[Hotel Bookings.xlsx]Bookings'!M2,0)

Interpretation:

The formula could be read as saying: If G2 in the Bookings sheet has the value "No", then use the value of M2 in the Bookings sheet, otherwise use 0.

Converting a Formula to Values

The data in column D is linked to the Bookings worksheet. Any changes made in the Bookings sheet will be reflected in the Summary sheet.

There may be times when you do not wish to retain this link. Instead, you want the present values to remain as they are, even if changes are made to the other sheet.

You will now edit the contents of column D on the Summary sheet so that the current values are kept but the link to the Bookings sheet is removed.

- Select **D2:D14** on the Summary sheet
- Click **Copy**
- Click the down arrow on the **Paste** button
- Select **Values** (see page 63)
- Select any cell in the range D2:D14 and observe that the formula linking the cell to the Hotel Bookings workbook has been replaced by a constant value

'Marching Ants'

The 'marching ants' that surround the copied cells will disappear as soon as you continue to work on your worksheet.

Alternatively, press the Esc key.

- Save and close the **Payroll** workbook
- Maximise the **Hotel Bookings** workbook ready for the next exercise

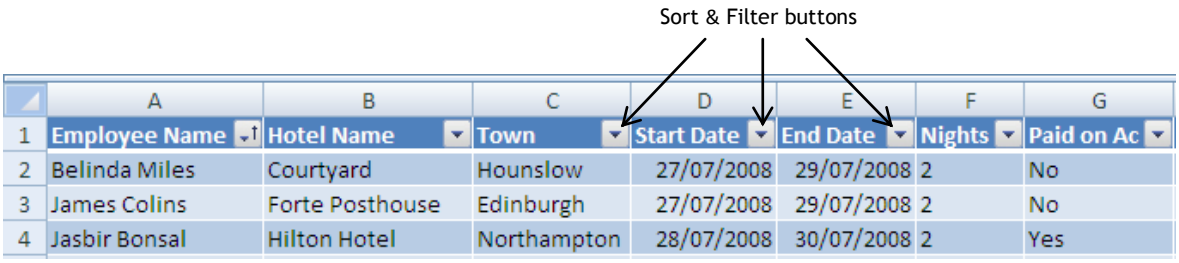
EXCEL TABLES

The data on the Bookings worksheet was formatted automatically as a table because it was imported from an Access table.

You saw on page 104 how easy it is to sort a table on any given column. You will now look at filtering the data in a table.

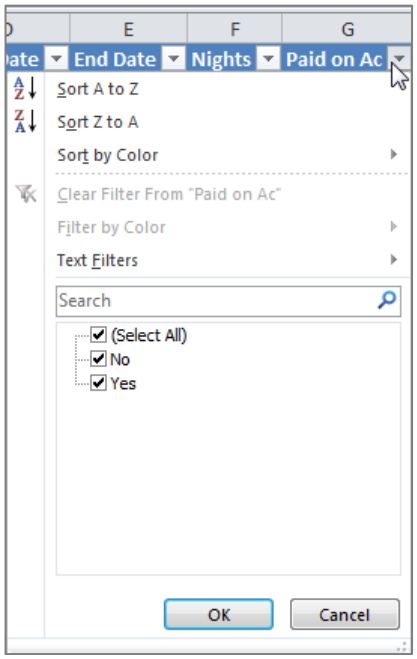
FILTERING DATA

When data is formatted as a table, a sort & filter button is included automatically in the first row of each column.



To filter the data and see only the employees who paid for the hotel expenses on account:

- Click the **Paid on Account** Sort & Filter button in **G1**



A box is displayed showing a list, in the bottom section, of all the values that exist in this column of the table.

A tick appears next to each value since no filter is set on this column as yet.

- Click the **No** check box to deselect this value
- Click **OK**

The data is filtered, showing only the records for those who paid on account.

	A	B	C	D	E	F	G	H	I	J	K
1	Employee Name	Hotel Name	Town	Start Date	End Date	Nights	Paid on Ac	Room Per Night	Breakfast	Lunch	Dinner
4	Jasbir Bonsal	Hilton Hotel	Northampton	28/07/2008	30/07/2008	2	Yes	£45.00	£7.00	£10.00	£15.00
6	Marie Kaur	Marriot	Glasgow	29/07/2008	30/07/2008	1	Yes	£49.00	£24.00	£0.00	£75.00
7	Mike Burns	Marriot	Glasgow	22/07/2008	25/07/2008	2	Yes	£49.00	£24.00	£30.00	£75.00
8	Nita Sonhil	Hilton Resort	London	25/07/2008	26/07/2008	1	Yes	£45.00	£7.00	£0.00	£15.00
9	Penelope East	Sheraton	Birmingham	13/07/2008	15/07/2008	2	Yes	£35.00	£12.00	£10.00	£30.00
13	Susan Jones	The Garden House	Coventry	17/07/2008	19/07/2008	2	Yes	£35.00	£15.00	£0.00	£40.00
14	Tony Bare	Ramada	Reading	27/07/2008	28/07/2008	1	Yes	£55.00	£18.00	£10.00	£55.00
15											

To filter the data further and show only those who paid on account and stayed in the hotel for two nights:

- Click the **Nights** Sort & Filter button in **F1**
- Ensure that only the value **2** is ticked
- Click **OK**

The data is filtered further.

	A	B	C	D	E	F	G	H	I	J	K
1	Employee Name	Hotel Name	Town	Start Date	End Date	Nights	Paid on Ac	Room Per Night	Breakfast	Lunch	Dinner
4	Jasbir Bonsal	Hilton Hotel	Northampton	28/07/2008	30/07/2008	2	Yes	£45.00	£7.00	£10.00	£15.00
7	Mike Burns	Marriot	Glasgow	22/07/2008	25/07/2008	2	Yes	£49.00	£24.00	£30.00	£75.00
9	Penelope East	Sheraton	Birmingham	13/07/2008	15/07/2008	2	Yes	£35.00	£12.00	£10.00	£30.00
13	Susan Jones	The Garden House	Coventry	17/07/2008	19/07/2008	2	Yes	£35.00	£15.00	£0.00	£40.00
15											

Filters can be removed either individually or all at the same time.

To remove the **Paid on Account** filter:

- Click the **Paid on Account** Sort & Filter button in **G1**
- Click the **Clear Filter From "Paid on Ac"** option

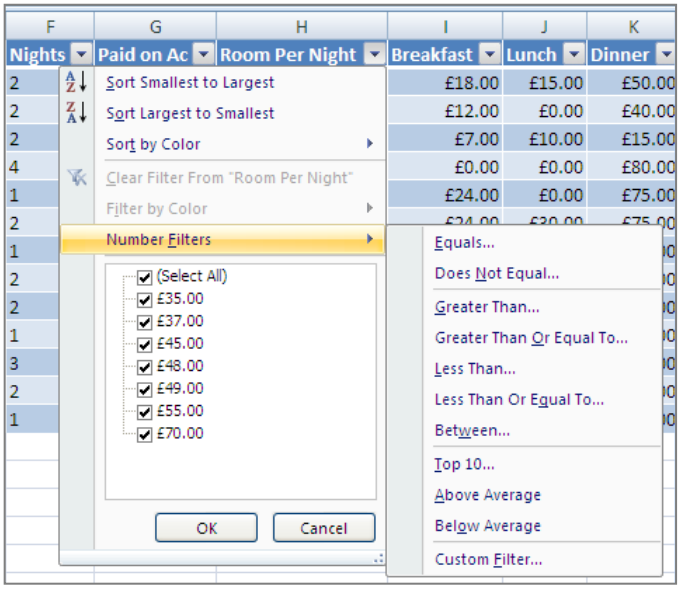
To remove all remaining filters and sorts:

- Ensure that you click on a cell within the table
- Click the **Sort & Filter** button in the **Editing** group on the **Home** tab
- Select **Clear**

A variety of Number Filters and Text Filters are available. The following examples illustrate how these can be used.

To display the records in which the cost of a room per night is between £40 and £50:

- Click the **Room Per Night** Sort & Filter button in **H1**
- Point to **Number Filters**



- Select **Between…**

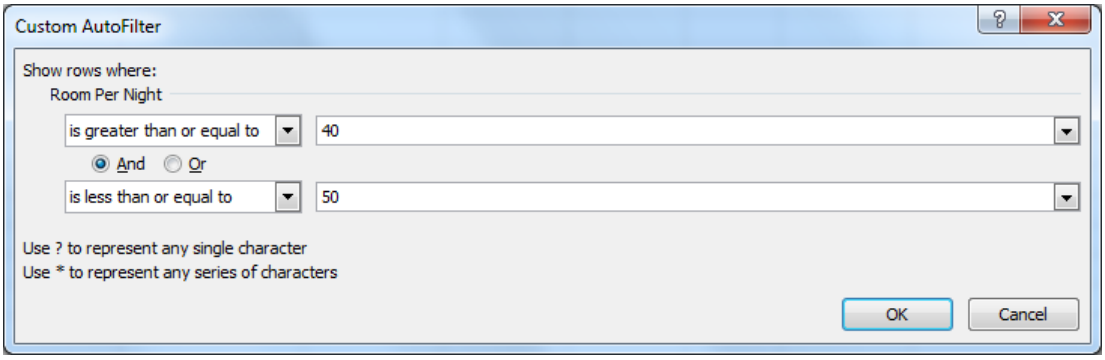
The **Custom AutoFilter** dialog box is displayed.

The Room Per Night **is greater than or equal to** value must be **40**

- Key in **40** in the second column of the first row

The Room Per Night **is less than or equal to** value must be **50**

- Key in **50** in the second column of the second row



- Click **OK**

	A	B	C	D	E	F	G	H	I	J	K
1	Employee Name	Hotel Name	Town	Start Date	End Date	Nights	Paid on Ac	Room Per Night	Breakfast	Lunch	Dinner
3	James Colins	Forte Posthouse	Edinburgh	27/07/2008	29/07/2008	2	No	£48.00	£12.00	£0.00	£40.00
4	Jasbir Bonsal	Hilton Hotel	Northampton	28/07/2008	30/07/2008	2	Yes	£45.00	£7.00	£10.00	£15.00
6	Marie Kaur	Marriot	Glasgow	29/07/2008	30/07/2008	1	Yes	£49.00	£24.00	£0.00	£75.00
7	Mike Burns	Marriot	Glasgow	22/07/2008	25/07/2008	2	Yes	£49.00	£24.00	£30.00	£75.00
8	Nita Sonhil	Hilton Resort	London	25/07/2008	26/07/2008	1	Yes	£45.00	£7.00	£0.00	£15.00
11	Rupert Marks	Hilton Hotel	Northampton	22/07/2008	23/07/2008	1	No	£45.00	£7.00	£0.00	£15.00

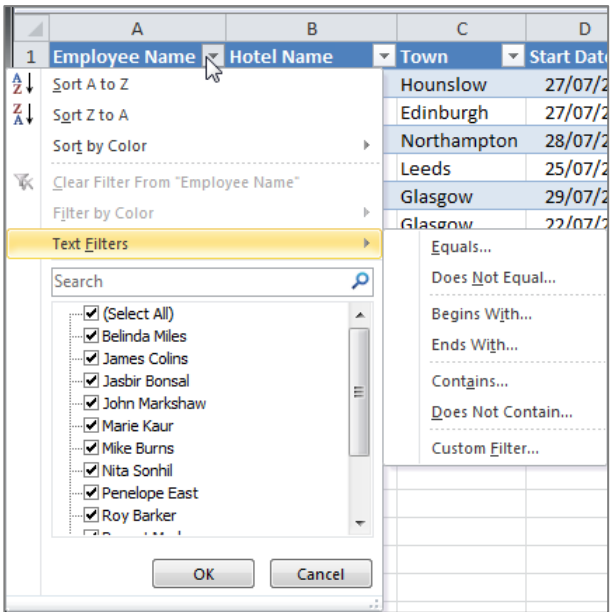
- Check that all the records displayed do satisfy the condition of between £40 and £50 per night

- Clear the filter

Next you will use Text Filters to display only the records of employees whose names begin with 'Ja' or 'S'.

- Click the **Employee Name** Sort & Filter button in **A1**

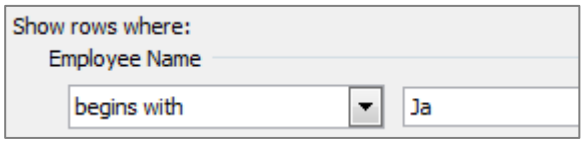
- Point to **Text Filters**



- Select **Begins With…**

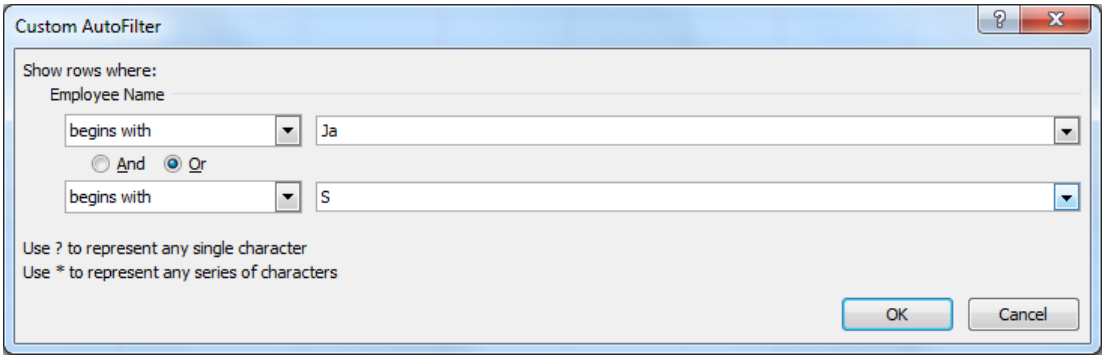
The **Custom AutoFilter** dialog box is displayed, with **begins with** already selected in the first option box.

- Key in **Ja** as the **begins with** value



- Click the **Or** radio button to add the second condition

- Click the down arrow for the second Employee Name condition and select **begins with**
- Key in **S** as the **begins with** value



- Click **OK**

	A	B	C	D	E	F	G	H	I	J	K
1	Employee Name	Hotel Name	Town	Start Date	End Date	Nights	Paid on Ac	Room Per Night	Breakfast	Lunch	Dinner
3	James Colins	Forte Posthouse	Edinburgh	27/07/2008	29/07/2008	2	No	£48.00	£12.00	£0.00	£40.00
4	Jasbir Bonsal	Hilton Hotel	Northampton	28/07/2008	30/07/2008	2	Yes	£45.00	£7.00	£10.00	£15.00
12	Sophie Doige	Ramada	Reading	13/07/2008	16/07/2008	3	No	£55.00	£18.00	£10.00	£55.00
13	Susan Jones	The Garden House	Coventry	17/07/2008	19/07/2008	2	Yes	£35.00	£15.00	£0.00	£40.00

- Check that all the displayed records satisfy the specified conditions
- Clear the filter
- Close the workbook without saving

Another useful feature of Excel tables is that it enables you to insert or delete rows or columns in the table without affecting the data around the table.

- Open the **Sales** workbook
- Select the **Qtr2** worksheet

This worksheet has two distinct but related sets of data.

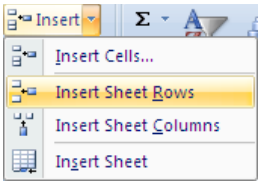
On the left you have a summary of the monthly sales of each item sold by the company, and on the right is a breakdown of the number of items sold by each member of the sales team over the quarter.

There is an error in the data, however, that needs to be corrected.

Notice that column M indicates that skirts were sold during the quarter, but this was omitted from the summary of monthly sales.

You need to insert this missing information, but are told that it cannot be added at the end of the existing list; it must be inserted into the list between trousers and jackets to maintain the correct order.

- Click cell **A9**
- Ensure that the **Home** tab is selected
- Click the down-arrow on the **Insert** button in the **Cells** group of commands
- Select **Insert Sheet Rows**



This creates the space in which to put the missing item, but it also splits the data in the Individual Sales section on the right of the sheet.

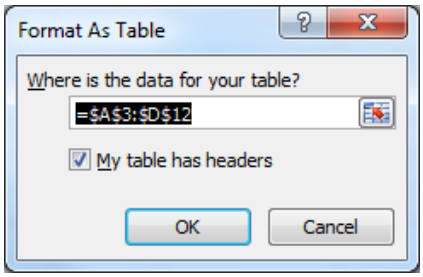
This is not what you want.

- Click the **Undo** button on the Quick Access Toolbar to remove the blank row

One possible solution to the problem is to format the summary data as a table and insert a table row.

- Select the range **A3:D12**
- Click the **Format as Table** button in the **Styles** group of commands
- Select one of the table styles

The **Format As Table** dialog box is displayed, showing the range that you selected.



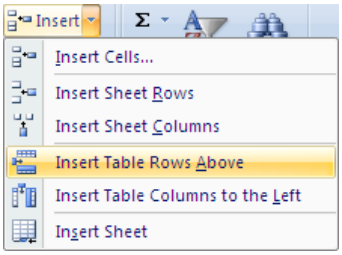
- Ensure that there is a tick in the **My table has headers** check box
- Click **OK**

The data is now recognised as a table.

- Select cell **A9**
- Select the **Home** tab
- Click the down-arrow on the **Insert** button in the **Cells** group of commands

Your selected cell is within an Excel table, so you now have table options in the list of choices.

- Select **Insert Table Rows Above**



A blank row is inserted in the table without affecting the other data.

	A	B	C	D	E	F	G	H	I	J
1	Sales for the Second Quarter 2008									
2							Name	socks	hats	gloves
3	Item	Apr	May	Jun			John Markshaw	5	6	5
4	socks	25	30	15			Susan Jones	6	6	7
5	hats	20	18	26			Nita Sonhil	2	4	5
6	gloves	31	36	14			Roy Barker	7	5	6
7	shirts	25	20	12			Tony Bare	1	3	4
8	trousers	30	23	15			Belinda Miles	6	5	7
9							Penelope East	5	6	8
10	jackets	45	52	34			Rupert Marks	4	2	4
11	sweaters	22	36	44			James Colins	8	5	6
12	t-shirts	24	15	12			Sophie Doige	7	4	5
13	ties	20	24	13			Mike Burns	5	7	9
14							Jasbir Bonsal	6	5	7
15							Marie Kaur	8	6	8
16										

- Enter the following data in the new table row:

skirts	**18**	**25**	**21**

- Save the workbook
- Close Excel