

ICT

Chapter 6

Entering, developing and combining information (Part B)

Section A Entering and formatting numerical information

Section B Creating and developing charts

- | | |
|---------------------------------------|---|
| 1 Which type of chart should you use? | 6 |
| 2 Creating a chart | 7 |

Section C Ordering information

- | | |
|------------------|----|
| 1 Sorting data | 9 |
| 2 Filtering data | 10 |

Section D Bringing together information to suit a purpose

- | | |
|-------------------------|----|
| 1 Types of publication | 12 |
| 2 Combining information | 14 |
| 3 Grouping information | 14 |

Picture Credits

The publisher would like to thank the following for their kind permission to reproduce their photographs:
(Key: b-bottom; c-centre; l-left; r-right; t-top)

The National Youth Agency 12; Abode 13tr; Punchstock Royalty Free Images 13cr; The National Trust 13br; adaultlearning.co.uk 14; Dorling Kindersley 15

Every effort has been made to trace the copyright holders and we apologise in advance for any unintentional omissions. We would be pleased to insert the appropriate acknowledgement in any subsequent edition of this electronic product.

ICT

Keith Jeram, Alan Meechan and Alison Meechan

Chapter 6: Entering, developing and combining information (Part B)

- Chapter 1: Using ICT systems
- Chapter 2: Safety and security
- Chapter 3: Find and select information
- Chapter 4: Using ICT-based information
- Chapter 5: Entering, developing and combining information (Part A)
- Chapter 6: Entering, developing and combining information (Part B)
- Chapter 7: Presenting information
- Chapter 8: Communicating using ICT
- Chapter 9: Test preparation and progress track

How to use the Functional ICT materials

These materials have been developed to help you learn the skills that are listed in the Functional Skills Standards for ICT, which the Qualifications and Curriculum Authority (QCA) produced in 2007.

How have these materials been structured?

The chapters follow the standards, and each chapter is divided into sections that cover the individual standards in sequence. You will find the standards at the start of each chapter, although we have adapted the language slightly to make it clear what you are expected to learn.

Just because the materials follow the standards in this way, it does not mean that your teacher will necessarily teach them in this order. They will organise your learning sessions to suit your individual needs.

Who are these materials aimed at?

These materials are for learners working at both Level 1 and Level 2. The content and activities have been written to be accessible to learners at both levels. Your teacher will know which activities are most suitable for you.


In functional skills, the difference between levels is more to do with what you produce than with the activities you are asked to do. The differences are measured by the **complexity** of the activities, your **familiarity** with the context you are working in and the task you've been asked to perform, how **technically demanding** the task is and how good you are at working **independently**. The materials, and their activities, have been developed with this in mind.


We hope that the materials will engage you in the learning process, and give you the opportunity to discuss what you have learned and to see how other learners approach the same tasks.

What will you find in each chapter?

The chapters follow the standards and are divided into sections that cover what is laid out in the standards. Within each section you are asked to 'Learn the skill', which gives you information and facts for discussion and exploration; and you are asked to 'Develop the skill', with activities that let you practise the skills, test your understanding and take your knowledge further.

You will also find two other features on the pages that are designed to increase your understanding. These are electronic resources in the form of 'skills demonstrations' and 'assets'.

 Skills demonstrations are screen-based demonstrations of points made in the text, which you can click on for instruction or information.

 Assets are files of information provided or stored digitally, which may include photographs, sound clips, databases, spreadsheets, etc. These may also include material you will need to perform the activities (e.g. tables to complete).

We hope you find it easy to learn from these materials and that you enjoy using them.

Published by Pearson Education, Edinburgh Gate, Harlow CM20 2JE © Pearson Education 2008

This material may be used only within the Edexcel pilot centre that has retrieved it. It may be desk printed and/or photocopied for use by learners within that institution. All rights are otherwise reserved and no part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanic, photocopying, recording or otherwise without either the prior written permission of the Publishers or a licence permitting restricted copying in the United Kingdom issued by the Copyright Licensing Agency Ltd, Saffron House, 6–10 Kirby Street, London EC1N 8TS.

First published 2008.

Typeset by Oxford Designers & Illustrators, Oxford

6 Entering, developing and combining information (Part B)

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

- enter, develop and organise numerical information that is fit for purpose
- format numerical information appropriately
- create and develop charts and graphs to suit requirements, using suitable labels
- enter, organise and sort structured information in ascending and descending order
- bring together and organise components of images and text

You will learn to:

- record information on a spreadsheet, structure a worksheet and use the SUM function
- format currency, percent and number of decimal places on a spreadsheet
- create pie charts, bar charts and single-line graphs to present information with appropriate format, title and legend
- sort data into alphabetical and numerical order
- organise images and texts for posters, newsletters, web pages and multimedia presentation

A Entering and formatting numerical information

For a simple analysis that involves only calculations, a spreadsheet is very effective and allows you to use charts and graphs to present results.

Learn the skill

A spreadsheet application provides a grid of cells organised in **rows** and **columns**. Each cell has a reference formed from its column letter and row number, so the cell that is in the second row of the third column has the reference C2.



A cell can contain two basic types of information: **text** or **numeric**. Textual information is anything that is treated as 'words'. Numerical information is anything that can be treated as a number; this includes dates and times.

A cell can also contain a **formula**. Formulas are used mainly to do calculations on numerical information. Formulas can also be used to do things like count the number of cells in a block that contain the same text.

This picture shows a small section of a sheet.

Cell A1 contains the word Text.
 Cells B2 and C3 contain the number 45.27.
 Cell D4 contains the number 0.4527.
 Cell A5 contains the date 04/05/2008.
 Cell B7 contains the formula =2*B2

	A	B	C	D
1	Text			
2		45.3		
3			£45.27	
4				45%
5	04 May 2008			
6				
7		90.54		
8				

This picture shows that there can be important differences between what a cell contains and what it displays.

Data types

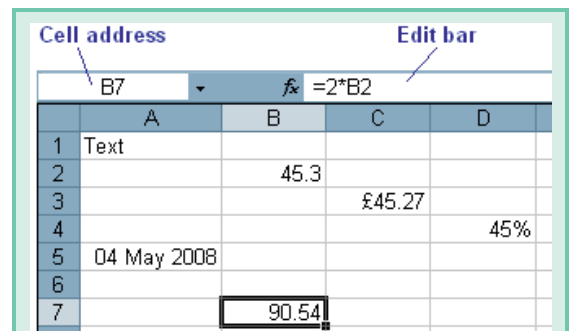
Cell B2 has the value 45.27, but displays 45.3. The cell format has been set to show one decimal place, so the number is rounded up to 45.3. The data type of information in this cell is **number**.

Cell C3 contains the value 45.27, but displays £45.27. The format has been set to currency with two decimal places. The data type in this cell is **currency**.

Cell D4 contains the value 0.4527, but it displays 45%. The cell format has been set to percentage with no decimal places. The data type of the information in this cell is **percentage**.

Cell A5 contains the value 04/05/2008, but displays 04 May 2008. The cell format has been set to date, using one of the built-in date formats that show the month as a word. The data type in this cell is **date**.

Cell B7 contains the formula =2*B2, but displays the result of the calculation. This formula multiplies the value in cell B2 (45.27) by 2. The data type of the information in this cell is **number**.



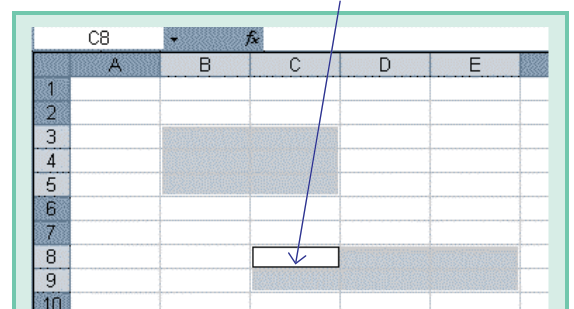
When a cell contains a formula, clicking in the cell will display the formula in the edit bar. Notice that cell B7 is selected.

Note the different background colour of the active cell, which is the one you click on first when selecting a range.

Cell ranges

To apply a cell format to a cell, select the cell by clicking in the cell. To apply a cell format to more than one cell at a time, a **cell range** (a block of cells) must be selected. This picture shows two ranges selected.

The first range is from cell B3 to cell C5. This range is written as B3:C5. The second range is from cell C8 to cell E9. This range is written as C8:E9. A cell range always goes from the top-left cell to the bottom-right cell.



A range is selected by clicking and dragging the mouse through the cells required in the range. More than one range can be selected by holding down the Ctrl key while dragging.

Look through these skill demonstrations.

Enter and edit data

Use SUM and AVERAGE

Format cells

Use absolute cell references

Insert rows and columns

Use colours, borders, shading

Use formulae

Use headers and footers

Testing a spreadsheet

Just because you get results from a spreadsheet, it does not mean they are correct. Use a calculator to check that all the calculations are correct. If you get a different answer from the one on the spreadsheet, check the formula.



Develop the skill

A1 In your spreadsheet application, open the file *Car travel costs.xls*. This is a very simple worksheet that can be used to calculate the cost of a car journey from the distance to travel, how many miles the car can travel on a litre of petrol, and the cost of petrol. We will develop the worksheet in several stages. Follow these steps:

	A	B	C
1	Car travel costs		
2			
3	Miles per litre		7
4	Petrol cost per litre	£1.08	
5			

- Select cell A1. Use the Format/Cell menu to set bold font style. Note that this does not affect the data type of the cell in any way, just the way the information in it is displayed.
- In cell B7, enter the formula $=A7/6$. This formula divides the journey distance (in cell A7) by the miles-per-litre (6). The result is how many miles the car will travel on a litre of petrol.
- In cell C7, enter the formula $=B7*1.07$. This formula multiplies the number of litres of petrol required for the journey (in cell B7) by the cost of one litre of petrol. The result is the cost of the journey.
- The results in cell B7 and C7 show too many decimal places. Click in cell B7 and drag into cell C7 to select the range B7:C7. Now use the Format/Cell menu to set number data type with two decimal places for this range.
- The cost in cell C7 can be shown with a currency symbol. Using the Format/Cell menu, set currency data type with two decimal places for this cell.
- The miles-per-litre value and petrol cost are shown as part of the information in cells A3 and A4 and we had to enter the values directly into the formulas. This is not a good way of working because if we need to change these values then every formula that contains them will need editing.
 - a Edit the text in A3 to be 'Miles per litre'.
 - b Enter the value 6 into cell B3.

- c Edit the text in A4 to be 'Petrol cost per litre'.
 - d Enter the value 1.07 into cell B4.
 - e Format cell B4 to currency with two decimal places.
- Now we can edit the formulas so they refer to the cells containing the miles-per-litre and petrol cost values.
 - a Edit the formula in cell B7 to be =A7/B3. The result shown in B7 should not change.
 - b Edit the formula in cell C7 to be =B7*B4. The result shown in C7 should not change.
 - Now, if we change the values in cells B3 and B4, the values calculated by **all** formulas that refer to these cells will be automatically recalculated by the spreadsheet.
 - Change the value in cell B3 to 7. Change the value in cell B4 to 1.08. What happens to the values in cells B7 and C7? Is the journey more or less expensive? And can you say why?
 - Save the file as **Car travel costs 2.xls**.
 - Enter the value 50 into cell A8 and the value 75 into cell A9. Enter formulas into cells B8, C8, B9 and C9 to calculate petrol used and cost for these journeys.
 - Enter the formula =SUM(A7:A9) into cell A10. Enter equivalent formulas into cells B10 and C10. What do the results of these formulas tell you?
 - Experiment with different values in cells B3 and B4. You should see that all the values calculated by formulas change in response.
 - Use the formula =AVERAGE(A7:A13) to find the average distance in the table.
 - How can you find the cost of a journey of this distance without calculating the petrol that would be used?
 - Save the file as **Car travel costs 3.xls**.



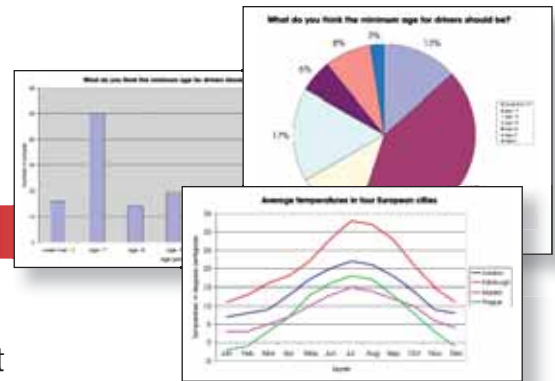
B Creating and developing charts

A chart gives a 'picture' of numerical information from a worksheet. It can show at a glance how things change over a period of time, or it can compare different sets of data.

Learn the skill

Which type of chart should you use?

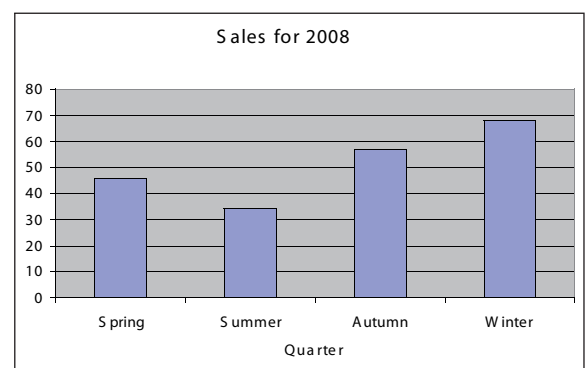
Pie charts, column/bar charts and line graphs are the most common types of chart. The type you choose will depend on the purpose – what information you want to present, who it is for and how it will be presented.



Bar charts

Column and bar charts are useful if you want to compare different values, such as sales each month or different answers to a survey question.

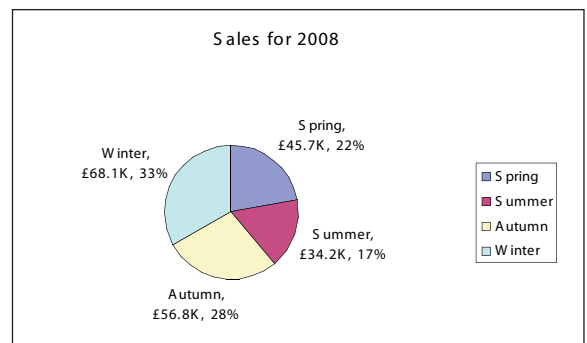
This is a bar chart. This example shows income from sales for the four quarters of the year. The sales value for a quarter can be found by 'reading' the height of the bar off the y-axis (Sales). The dotted line shows that sales in the autumn quarter were about £57,000.



Pie charts

Pie charts are good for showing proportions or percentages, but they do not work well if there are too many items. Here is the same information that you saw in the bar chart shown now in a pie chart.

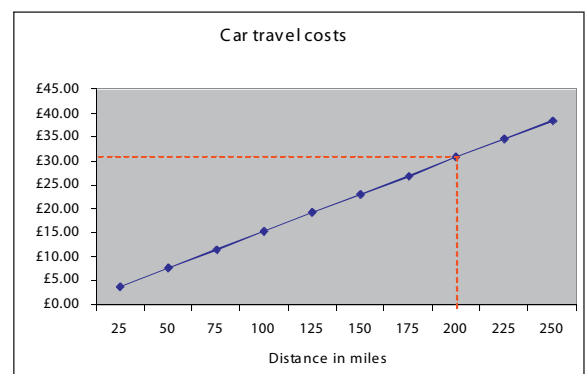
A pie chart is used when you want to show each data value as a percentage of the total. This chart shows that the autumn quarter sales were £56,800 and that the quarter's sales are 28% of the total.



Line graphs

Line graphs are used to show values that are always changing. For example, you could use a line graph to show the temperature over a year.

Here is a chart of petrol costs for car journeys of different distances. This type of chart is also known as a 'straight line graph'. The two red lines that have been drawn on the chart show that a journey of 200 miles costs about £31. Approximately how much would a journey of 120 miles cost?



Creating a chart

When creating a chart you need to ask yourself the following questions:

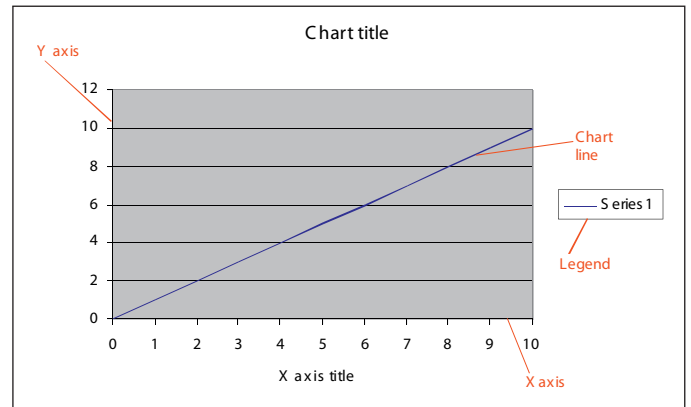
- Which type of chart is most appropriate?
- Is the scale sensible?
- Is it easy to read the values from the chart?
- Are the headings and labels clear? Do they give enough information to the reader?
- Are the colours clear?

A meaningful title

The title is the most important item; it should clearly say what the chart shows or what questions the chart answers.

Axis labels

Make sure you label what each axis shows. Labels help the audience to understand the chart.



Gridlines and values

You should be able to read off the exact values of each part of the chart. You can insert gridlines and values to make this easier.

Legend and data labels

Your chart will include the row and column headings from your spreadsheet. These may be too long to use as horizontal data labels. Sometimes you can change the angle. Alternatively, you can use a legend.

Develop the skill

B1 A spreadsheet application will provide some means of choosing the type of chart to plot and ways of formatting the chart to suit the data. In Excel, the Insert/Chart menu option will open the Chart Wizard.



Watch the skill demonstration on [creating charts](#).

B2 Here are the results of a survey of 335 people who were asked about their favourite type of film.

a Plot this information as a vertical bar chart and set the chart titles as follows:

- Chart title – ‘Favourite film categories’.
- X-axis title – ‘Film category’.
- Y-axis title – ‘Percentage’.
- Make sure the x-axis labels are all shown. You may need to set them at an angle.
- Do not show a chart legend.

Favourite type of film	Number of responses
Comedy	92
Action	63
Romance	48
Drama	50
Horror	37
Foreign	27
Sci-fi	29

- b Plot the same data as a pie chart.
 - Make sure a chart legend is shown that clearly identifies each 'slice' of the pie.
 - Show the percent value with zero decimal places against each slice.
- c Can you explain why this data is not suitable for plotting as a line graph?

B3 Obtain data for something that varies continuously, such as daytime temperature, average sea level over time, sunrise or sunset time over a month.

Plot your data as a line chart. If it is available, use the 'smooth line' chart type.

Make sure you choose something for your data that varies continuously and not something, such as prices, that's controlled by people. Prices do not usually change continuously but have sudden rises and falls from one moment to the next and are not really suitable for line charts.

C

Ordering information

Information that is organised in rows and columns appears in word-processing, spreadsheet and database applications. Word processing and databases use tables for this type of information. A spreadsheet is a grid of rows and columns, which can be thought of as a very large table.



Learn the skill

Sorting data

A common example of information that is organised in a table is a group of names and addresses, with each name and address in its own row.

Information in a table can be automatically sorted into order. Sorting a table puts the rows into either alphabetical or number order.

The main reason for sorting data in a table is to make it easier to read and understand. It also makes entries easier to find.

Number order

Here is a simple table that lists different types of street. It is sorted in **ascending number order** on the first column. This just means that the order of the rows starts with 1 and goes in sequence up to 5.

Here is the same table sorted in **descending number order** on the first column.

The rows are now in the reverse order. Notice that the position of whole rows has changed, not just the numbers in the first column. This is very important; when information in a table is sorted, each row is treated as a unit and the whole row is moved up or down. This is 'record-structured information'; in a database each row is referred to as a record.

Alphabetical order

Information can be sorted to follow the order of the letters in the alphabet: a, b, c, d, etc (ascending order) or z, y, x, w, etc (descending order).

Here is the same table sorted in ascending alphabetical order on the second column.

Notice that the first letter of each word in the second column has been used to determine the order of the rows (for example, 'causeway' comes before 'lane', because 'c' comes before 'l' in the alphabet).

No	Type of way	Description
1	road	paved surface for vehicles
2	alley	narrow street
3	lane	part of a motorway
4	path	route for walkers
5	causeway	raised roadway

No	Type of way	Description
5	causeway	raised roadway
4	path	route for walkers
3	lane	part of a motorway
2	alley	narrow street
1	road	paved surface for vehicles

No	Type of way	Description
2	alley	narrow street
5	causeway	raised roadway
3	lane	part of a motorway
4	path	route for walkers
1	road	paved surface for vehicles

Here is the table sorted in ascending alphabetical order on the third column.

In the third column there are two entries that start with 'p' and two that start with 'r'. To decide on the order of these pairs it is necessary to look at the order of the following letters. So 'raised' comes before 'route' because the second letter, 'a' comes before 'o'. For 'part' and 'paved' it is necessary to look at the third letter in each case to decide the order.

No	Type of way	Description
2	alley	narrow street
3	lane	part of a motorway
1	road	paved surface for vehicles
5	causeway	raised roadway
4	path	route for walkers

Filtering data

As we have seen, database information is displayed in tables, with each row of the table being a separate unit of information (record). Database information can be displayed in a word processor, a database application or a spreadsheet.

Database tables often contain a very large number of records. A way to locate particular records quickly is to apply a filter. You tell the filter what you are looking for and it filters the records to show only those that contain the information.

Develop the skill


C1 Here are some definitions of different types of land:

desert	area where rainfall is below 250 mm in a year
tundra	cold, dry treeless plain
swamp	wetland dominated by trees
marsh	wetland dominated by grasses
grassland	open, dry area dominated by grasses
forest	area with a high density of trees

- Create a three-column table in your word processor.
- Enter the information above into the second and third columns.
- Enter the numbers 1 to 6 into the first column.
- Add a row to the top of the table and enter column headings No, Land type and Description
- Use the Table/Sort dialog to sort your table on each of the three columns, first in ascending order, and then in descending order. Does it behave as you expect?
- Can you explain the order of the 'swamp' and 'marsh' entries when the table is sorted on the Description column?

C2 Copy and paste your table into a spreadsheet. Repeat the sorting tasks in the spreadsheet. What happens if you do not select all the cells in the table when sorting?

Hint Sort is in the Data menu.

 **C3** Open the file *filter.xls* in your spreadsheet application. This file contains 100 fake names, addresses and telephone numbers.

- Select any cell in the data. Click the Data menu and drag down to the Filter option. In the sub-menu that opens, click the AutoFilter option.
- Click on the filter arrow in the Number column. The drop down will list all the numbers in this column. What happens when you click on one of them?
- Open the filter on the GivenName column. Click on (Custom...) in the list. Enter Peter into the dialog and click OK. How many records contain the given name 'Peter'?

Hint To remove the filter, click the filter arrow, scroll to the top of the list and click (All).

D Bringing together information to suit a purpose

Sometimes you know exactly who will read your publication, why it is needed and how it must be presented. Knowing all this can make things easier for you. However, when you know who the audience is, you must make the publication really suitable for them, because they will expect you to get it right. So what type of publication do you need?

Learn the skill

Types of publication

Posters

Posters aim to do three things:

- Attract attention
- Persuade people to read the content
- Get a message across

You cannot be sure who will see a poster but you can try to select your audience by choosing where to display it.

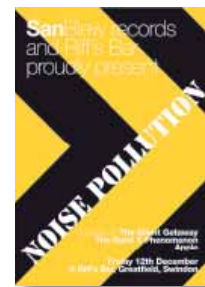
Your poster must be eye catching and must convey the information in a style that is appropriate.



Flyers

Flyers are intended for individual people. Sometimes they are delivered to people's homes, so you know who has received them.

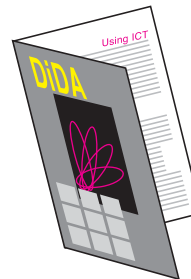
Flyers are for people to have their own information. They are generally smaller than posters. A5 is a popular size for flyers, as it can fit through letter boxes.



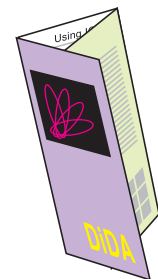
Leaflets

Sometimes an organisation will use a poster or flyer to attract attention and will then make further information available in a leaflet.

Most leaflets are printed on A4 paper then folded. You need to decide how you will fold the paper once it is printed because this will affect which way up you place blocks of text and images.



A4 can be folded to make A5 leaflets like this

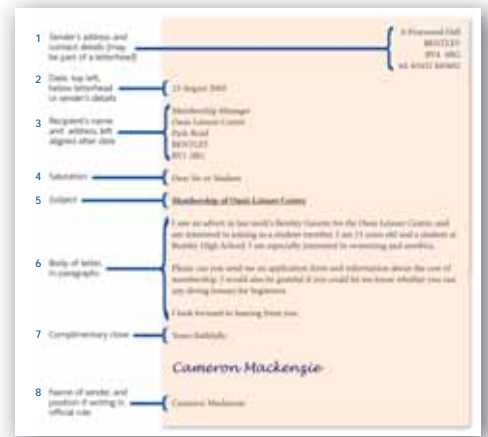


A4 can be folded twice to produce a leaflet like this

Formal letters

Letters are sent to individuals for particular reasons. It is quite easy to decide who, why, where and what a letter is for. It is the content of a letter – and how it is written and laid out – that will create an impression of the person sending it and on the person receiving it.

You must make sure that a formal letter includes certain standard components. Open the example. How is it laid out?



Reports

Reports provide detailed information for people who need it. It's very easy to make a report boring for the reader; your challenge is to create reports that are attractive, useful and easy to read.

Before you even think about designing a report, you need to know:

- how the report will be distributed – by post, at a meeting, etc
- whether there are other publications to go with it, such as a presentation
- what content must go in the report
- how many pages the report will be
- how it will be produced and what software will be used

Open up these skills demonstrations.



Which text has been spoiled by a badly placed image?

Can you do these using database tools?

- ➡ Create a report
- ➡ Customise a report

Presentations

Creating a series of slides that can be displayed on a large screen is a good way of presenting information to a large audience. Slides can include text, images, graphs and multimedia elements.

Presentations are made up of two distinct parts: the slides and the notes to help the speaker remember what to say.

A good presentation always has a key message. The audience should know what the key message is within the first 15 seconds.



Newsletters

A report is likely to be read by the audience, even if it is not very exciting; there's no guarantee a newsletter will be read. If it is not designed well, people probably won't bother to read it.

A newsletter is likely to have at least four sides. Every page should give the reader a clear reason to stop and look. The front page needs to be particularly appealing.



Build a page around a focus for the reader's attention; this focus could be a catchy title or an image. If you use columns, make sure they are balanced – roughly the same amount in each.

Look at the following newsletters. What catches your attention? What is the focus on each page?



Combining information

ICT can be used effectively to bring together images and text. But how are these elements combined?

Many desktop applications can display information held in an external file: a picture file inserted into a word-processed document is a common example. There are two ways in which the information held in the external file can be made available to the document: by linking the file to the document, or by embedding the information held in the file directly into the document.



Linked files

If you link a file to the document, the document stores the pathname as part of the document information. Each time the document is opened, it reads the information from the file and displays it in the document.

An advantage of this is that, if the linked file is changed, these changes automatically appear in any documents to which it is linked.

A disadvantage is that, if the linked file is moved or deleted, the information no longer appears in the document. Another is that, if the document is sent to someone else, the linked file must be included separately.

Embedded files

If you embed the information directly in the document, the information in the external file is read and included as part of the document file.

An advantage of this is that the document is independent of the external file. Moving or deleting it does not alter the document because the document is completely self-contained.

A disadvantage is that the size of the document file is increased by approximately the size of the embedded file. This can be an important consideration if the document contains many embedded files.

Grouping information

Grouping applies most commonly to the sections of a vector drawing, where each part is a separate object that can be moved and sized independently of other parts. Grouping



combines selected objects into a single object that can be moved and sized as one.

Grouping is not permanent: grouped objects can be changed, and then ungrouped to restore them as individual objects.

In Word, the Group/Ungroup commands are available on the Draw pop-up menu on the Drawing toolbar. The commands can be used to group various objects in addition to drawing objects: tables, charts, graphics, equations and linked or embedded objects.



When objects are grouped, you can work with them as though they were a single object. You can flip, rotate, and resize or scale all objects in a group as a single unit. You can also change the attributes (an attribute is an object or text feature, such as line fill or text colour) of all objects in a group at one time.

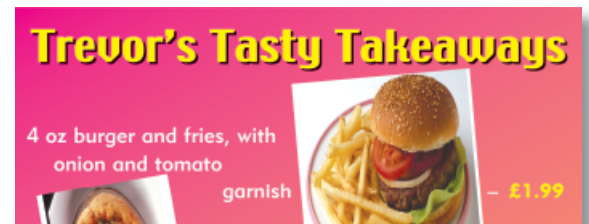
Develop the skill

D1 Create a formal letter using the components shown in the table.

Yours sincerely	25 February 2005
I have enclosed a copy of my updated CV as requested and I look forward to seeing you on 8 March.	Dear Mr Bluestone
Enc	Further to our meeting last Thursday, I am writing to accept your offer of a work

D2 Using database tools make sure you can **create** and **customise a report**. Open the skills demonstrations on these, and complete the Test me sections.

D3 Look at this poster. The various items have been scattered about in a random way. Organise the items into an effective layout. Change the font style and size if necessary.



D4 Using presentation software, make sure you can:

<ul style="list-style-type: none"> » Create slides » Create and use a master slide » Include sound » Insert links » Include animation » Create transitions 	<ul style="list-style-type: none"> » Change colours » Use lines and borders » Import and position images » Align text and images » Crop and resize images
--	--

After looking at the skills demonstrations, try the *Test me* sections for each skill.

D5 Create a slide for a presentation with simple text. Try out different colour combinations for text and background using presentation software. When you have found a good combination, use a projector to test it, if possible.