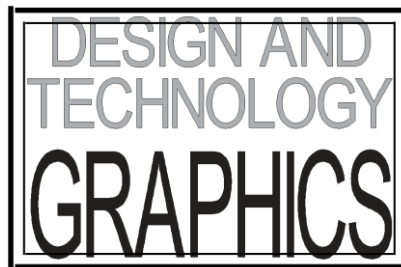


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By Harry Jivenmukta

# INTRODUCTION

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Graphics is a subject which is best learned through doing rather than through reading about the ideas and concepts. This pack concentrates on practical exercises to illustrate the uses of graphics and the implications, difficulties, and problems which might be faced.

Graphics cuts across many subject and skills areas and should be seen both in these terms as well as a separate skills area. The value of graphics is seen mainly in the way that it can be used in all aspects of everyday life.

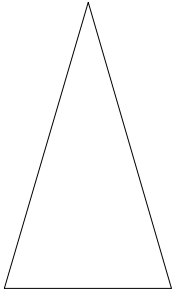
This pack is divided into three sections:

- z Consideration of the various uses of graphics and type of illustrations,
- z Introduction to Desk Top Publishing,
- z Projects and suggestions for project work which make use of various graphics and DTP skills.

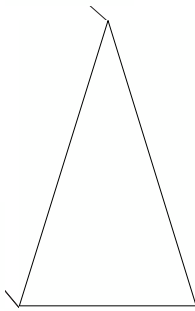
This pack is not meant to be a comprehensive introduction to graphics but rather it is a complementary resource to be used in conjunction with your existing provision. The emphasis is always on practical exercises and examples and encourages students to learn through activity.

Teachers should note that graphics skills can be used in schools projects and students who can see the benefit of their work are more likely to understand and continue with graphics and related subjects. Graphics also overlaps with many subject areas and projects can include:

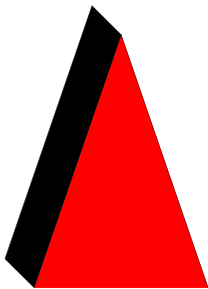
- z The school magazine,
- z Advertising for open days,
- z Advertising the school play or sports day etc.



There are many ways to draw an illustration and the level of detail depends on what you are trying to express. The easiest type of illustration is the flat line drawing. This is like the picture opposite. Sometimes this is all you need to do to show someone your idea.



The second picture shows more because it suggests depth to the object you have drawn. Remember, if you are drawing several illustrations you must draw the depth into all of them. In this way it is possible to distinguish the qualities and depth of each object.



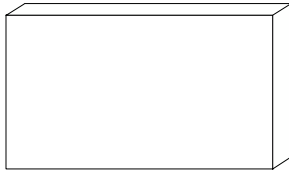
The third picture shows a solid, three dimensional shape. This type of illustration shows the exact depth in proportion to the whole picture and can be used in accurate drawings. By changing the colour of the depth representation you can also emphasise the 'block' or the 'solidity' of the shape.

## Questions...

1. When might you use the simple flat type of drawing as shown in the first picture?
2. What are the benefits of using depth or three dimensional drawings?
3. Select an object and draw three illustrations of it in the way shown above.
  - z How much harder is it to add depth?
  - z How is the object enhanced by the use of three dimensional representation?

# FLAT REPRESENTATIONS

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Three-dimensional objects are depicted through a series of two-dimensional views. The object is drawn as seen from directly in front, from the side, and from the top. Each of these views shows two dimensions that are true.



TOP VIEW



FRONT VIEW

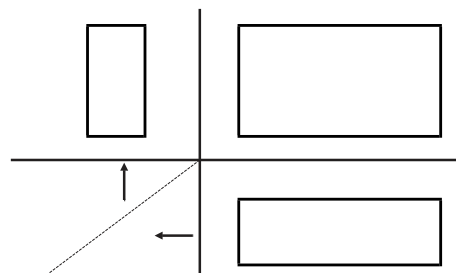


SIDE VIEW

Sometimes it is useful to 'take the object apart' by showing it in its various flat representations; top, front and side views. This type of illustration is very useful if you want other people to understand the shape or idea in detail, or if you want to work out the details of the shape. Often, building plans are shown like this, and technical drawings are represented in this way.

The example above is very simple but you might see the use of this type of illustration if you apply it to a more complicated shape. Often the drawing is shown as in the example below.

People usually use a drawing board, set squares, and tee square to draw these pictures but you can also do them freehand if you need a quick rough idea of the properties of a shape.

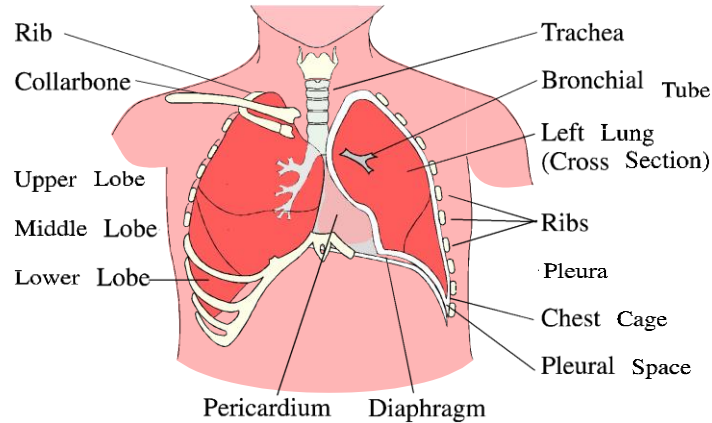


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## Questions...

1. Select an object and draw a flat representation of it in the way shown above.
2. Make a list of when this type of illustration would be useful.
3. What can you learn about an object by showing it in this way?

## The Lungs and Chest Cavity



Labelling is a very useful way of showing a complicated representation in detail to others. Often the object in view is so complicated that it cannot simply be put into perspective by adding depth, or represented by drawing it in flat front, side and end views. Labelling also allows for easy referencing; you can go back and look again to make sure or check on a particular detail.

There can sometimes be problems with labelling because the level of detail that some people require may differ from the requirements of others. Ideally the object should not be over labelled because that might defeat the exercise; if there are so many points labelled that you cannot make sense of which word relates to what part etc. Sometimes you can have an overview and then smaller labelled parts. The example above is a good case in point. You could start by having a whole human body illustration and show parts like arms, legs, head, stomach, etc. The example above would serve to give details of the chest and lungs. Other pictures would illustrate other parts of the body.

---

## Questions...

1. Make a list of the types of objects which could be best represented by labelling.
2. Find a picture of a person, or parts of the body, (similar to that shown above), and label it.
3. How does labelling differ from flat representations, and what are the advantages of labelled drawings?



Sequence diagrams are used to show a process:

- z Take a video camera,
- z put it on a tripod,
- z make the film.

This type of representation allows something to happen, or tells others what to do. Think of Do It Yourself, (DIY), kits. The guidance notes lead the person putting the kit together through a step by step process, with added detail at stages which are complicated. Sequence diagrams are very useful for explaining difficult, complicated, or several stage processes.

Sequence diagrams are also used in design, television and film making. The designer will show the idea of a programme to the producer and director in a series of sequences. The use of pictures and words together makes it easier for people to quickly grasp an idea. Taking people through a process also lets them imagine to real thing better.

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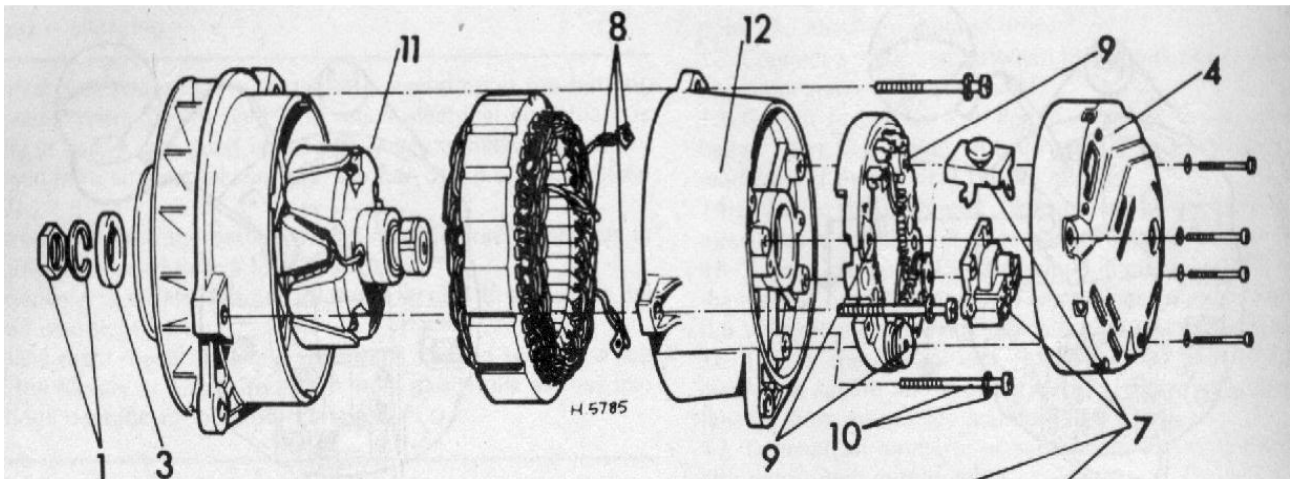
## Questions...

1. When are sequence diagrams the best way of expressing an idea?
2. Imagine you have been asked to design a new cartoon character. Draw a sequence diagram showing clearly how the character will behave. Draw up a sequence diagram of the first episode, highlighting each important part of the cartoon.

# EXPLODED VIEWS

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6



Exploded illustrations are useful for showing how things work, or what things look like inside an object which otherwise cannot be seen. This type of illustration is particularly useful in technical and mechanical drawings. Sometimes the illustration can be labelled as well, numbers representing different components.

Exploded illustrations are just that; they are drawn as if the object was exploding outwards but keeping the shapes, position and sizes of components in relation to each other as they would be in the original compact object.

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## Questions...

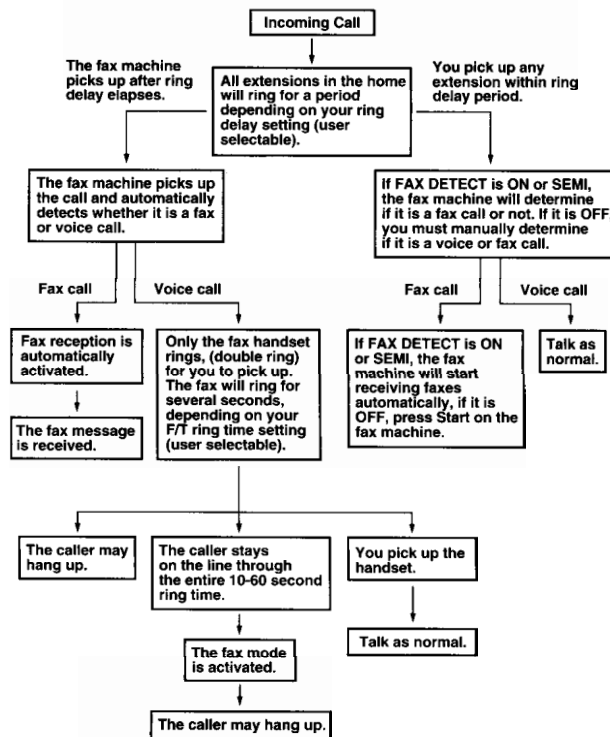
1. Make a list of everyday objects which could best be shown by the use of an exploded diagram.
2. What features do these objects share which make them appropriate for this type of illustration?
3. Select one object and draw it in an exploded illustration form.

# FLOW CHARTS

7

Flow charts are a graphical representation of a process, such as a manufacturing operation or computer operation, indicating the various steps that are taken as the product moves along the production line or the problem moves through the computer. Individual operations can be represented by closed boxes on the flowchart, with arrows between boxes indicating the order in which the steps are taken.

On the next page you will find the officially accepted shapes and types of information boxes and lines which should be used in flow charts. However, many flow charts do not follow the official rules and you can see many examples of flow chart type representations like the one below:



## Questions...

1. What is a flow chart?
2. What is the purpose of a flow chart?
3. Make a list of operations which could be best described and understood through the use of a flow chart.



# FLOW CHARTS

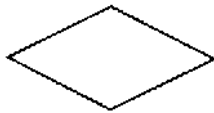
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This is usually used at the start or end of a flow chart.



These boxes include information which are part of the agreed process and include details which are already agreed upon.



This is a decision box; asking a yes or no type question.



This is used when something is added or removed from the diagram; input or output.



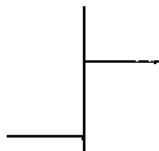
This is a preparation box, often following a 'no' decision.



This plain line joins the boxes together.



This line shows direction of flow of the diagram.



These are junctions where lines meet or depart.

---

## Questions...

1. Why should people try to use the same type of boxes and lines when drawing flow charts?
2. Are flow charts which use different styles of boxes and lines acceptable? Why?

Desk Top Publishing, (DTP), is the use of a personal computer to perform publishing tasks that would otherwise require much more complicated equipment and human effort. DTP allows an individual to combine text, numerical data, photographs, charts, and other visual elements in a document that can be printed on a laser printer or more advanced typesetting machine. The primary advantages of DTP over conventional publishing apparatus are low cost and ease of use.

A typical DTP system comprises:

- z A personal computer,
- z A video monitor,
- z A high-resolution printer,
- z Various input devices, such as a keyboard, mouse, or digital scanner.

Some systems also integrate advanced memory storage units, communication devices, and other peripheral equipment. One of a number of different combinations of software applications is necessary to operate the system. Text and graphic elements are commonly created or manipulated with several separate software programs and then combined with, or copied into, a page make-up program that allows the user to arrange them onto a page. More powerful DTP software programs offer full-featured word processing and graphics capabilities.

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## Questions...

1. What is Desk Top Publishing, (DTP)?
2. What type of hardware and software is required in order to undertake DTP work?
3. Make a list of DTP software commonly available in high street stores.

## LETTERING

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10

The size of lettering used in most publications is between 10 and 12 points. The main text in this publication is written in 12 points size. The following samples of sizes will give you an indication of the differences between sizes;

This is size 8

This is size 10

This is size 12

This is size 18

This is size 24

This is size 36

This is size 72

As a rule you should not use more than three sizes of text in any one page, and the whole document should be written in a consistent sized text. Use one size for the heading, one for a sub heading, (if applicable), and one size for the main body of the text. Below is a good example of proportions.

UFOs LAND IN THE UK ← This is size 24

THE TRUTH IS OUT THERE ← Sub Heading size 16

We can confirm that unidentified flying objects landed in Coventry yesterday and aliens were seen to come out of the disk shaped spacecraft. Two aliens were later seen reading a leading daily newspaper and others went shopping, presumably for souvenirs to take home with them... ← Text size 12

Try out several sizes to determine which two or three are complimentary. It is not advisable to choose a size larger than 40 or smaller than 8.

Fonts are style of lettering. There are many types of letter style and you should choose one which is;

- z Easy to read,
- z Relevant to the occasion,
- z Visually acceptable.

When you design with DTP do not use more than two fonts in the whole text. You can use bold, underline, size and italic to emphasise or develop the text if you wish. Even use of these features should be limited.

Samples of fonts are;

This is Times New Roman Font

This is futuristic bangle font

This is Dolphin font

This is Courier Font

This is Bright Font

If this pack had been written in **marigold** or **liberate** would you have taken it seriously? If you were writing a fictional or historical story, however, you might be tempted. But even then you should not really choose these fonts because although they may be relevant to the story, they are hard to read.

The publishers of this pack have about 1000 fonts available yet use only about five different ones. Often software suppliers offer many fonts as an inducement for customers to buy their product. In reality most of these fonts are unusable. You should find out which fonts are available on your computer and print out a line of text in each of the most popular ten. Then choose two or three which seem to be the best.

---

## Questions...

1. What is a font?
2. Find out how many different fonts are available on school computers.
3. Which fonts are most popular? Why?
4. Experiment with fonts and list your favourite 3. Explain why you like them.

If you have a drawing package you can draw your own pictures, or change existing pictures to put in a publication. The main features of a drawing programme are;

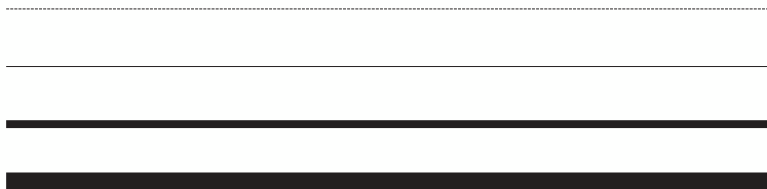
- z The ability to draw squares, rectangles, circles, ellipses or freehand,
- z Delete or add features to an existing drawing or picture,
- z Draw a new picture,
- z Add text to a drawing or picture.

If the existing drawings or pictures you have are not quite what you want, you can change or customise them exactly. You need to open the picture into your drawing programme and then export the finished one into your publication.

You can use various effects when you use the tools. These include;

- z Paintbrush,
- z Spray Effect,
- z Line Drawing.

When you select a tool you can also determine the thickness and colour, (shades of grey for black and white images). They can be round or square and sometimes triangular;



The shapes include;



And freehand;



Paper can be classified on the basis of use and weight into two general categories: printing grades and industrial grades.

**Printing grades** are newsprint, catalogue, and magazine papers made from mechanical and thermomechanical pulps. They often contain from 1 to 15 percent chemical pulps. Most of the mechanical pulp is unbleached, though bleached pulps are used. Magazine papers frequently are coated on one or both sides with clay or calcium carbonate. These papers are used for such printed items as:

- z Business reports,
- z Advertising brochures,
- z Quality magazines in which the quality of colour reproduction is important.

Another class of printing papers includes stationery and copying and computer papers. These are made from bleached softwood and hardwood pulps. Fillers, either clay or calcium carbonate, are added to improve the printing quality of their surfaces. More expensive grades often contain cotton, linen, or other rag fibres.

Book paper is made from a variety of fibres. Paperback books are printed on papers containing mechanical pulp, which deteriorates rapidly when exposed to light and heat. Papers for softcover or hardcover books can be long lasting if they are made from fully bleached fibres and sized under alkaline conditions. Hardcover books are made with less acidic pulps, and finer-quality book paper contains rag fibres.

**Industrial grades** include bag paper, linerboard, corrugated cardboard, and papers used in consumer products. Bag paper and glassine (dense transparent or semi-transparent) paper are gradually being replaced by plastic materials. Production of other industrial paper grades is increasing, however, particularly for boxes and construction use and for such consumer products as tissues and food packaging.

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## Questions...

1. How is paper made?
2. What are the difference between printing grades and industrial grades of paper?
3. List the products which can be made from industrial grade paper.
4. How many types of printing grade paper can you think of? Make a list.

The type and quality of paper which you use is very important. Often, people ignore this factor. Talk to any printing company and you will find that paper is a major issue in printing and there are hundreds of different types of paper available.

When you are writing the draft copies of your publication it is best to print the documents out on cheap photocopying type paper. This is 80 gsm, (Grams Per Square Metre). When you are happy with your draft publication you should assess what quality of paper you need to print out on. Consider:

- z How much you can afford,
- z The target audience's quality expectations,
- z The nature of your publication,
- z The printer quality.

If you have a limited budget, (which is probable), it is worth finding out from a paper supplier if there are any special offers or end of line papers which you can obtain cheaply. A good quality paper should be about 100 gsm, and for DTP, ultra white colours are recommended.

If your target audience expects quality then it is essential to provide it in order to gain maximum benefit. If your audience is not that interested in the quality opt for a lighter but bright white paper. This will be cheaper but will give a better effect than photocopying type paper.

If the quality of your printer is very high, then you should always choose a good 100gsm paper. There is no point having access to a good printer just to go and spoil it by using poor paper. Remember that if you're using a laser printer that the maximum recommended paper weight is 105gsm. You could damage the printer if you use a much heavier paper.

Telephone a paper merchant and ask for samples. They will be happy to send you a range of papers free. Always feel the paper for quality as well as comparing brightness with other sheets. You may want a shiny or matt finish. Always check whether these are compatible for use with your printer. Often you can print without any worries until one day you are faced with a large repair bill. Be particularly careful with 'coated' papers. Your paper supplier will be able to give you a detailed explanation.

## **Good Paper Is Essential For A Quality Finish.**

---

### Questions...

1. Why is paper important in the presentation of a publication?
2. When would you need to use:
  - z a good quality paper,
  - z the cheapest paper?

It doesn't matter what kind of printer you use for draft copies of your publication, but you should always try to print the final copy on a good printer. There are three types of printer to consider;

- z Dot Matrix,
- z Ink Jet,
- z Laser.

A **Dot Matrix** printer is only good for printing text. Do not try to use it for anything which is beyond the most basic. The quality is only fair and so any fancy work you do will not look out of the ordinary if printed on a dot matrix. Some printers are better than others ranging from 9 dot to 24 dot, but compared with a laser which prints 600 dots per inch (DPI) you can see that the dot matrix is way behind in the quality stakes. If you have only a dot matrix then you should try to borrow a better printer for your final copy or go to a printing company.

An **Ink Jet** printer is good quality but expensive. The printer head sprays ink in a jet onto the page. The quality is similar to laser and you could get quite a good result by using one of these.

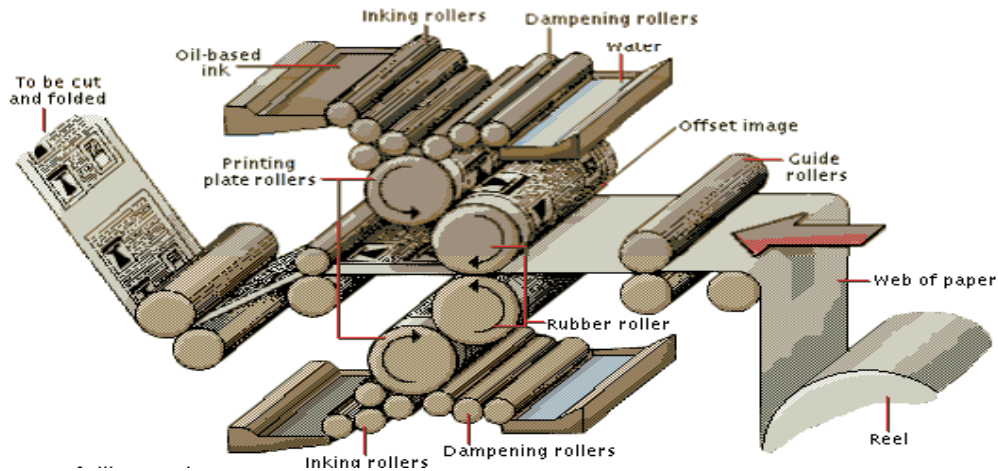
A **Laser Printer** is the ideal printer for DTP because it is very high quality, printing typically at 600 dots per inch. The laser is also cheaper to run than an Inkjet and a good laser will happily print out 2000 pages a day, day after day, with very little maintenance. If you are thinking of buying a laser printer the main feature to look out for is how many pages it will print each minute. This is usually displayed as PPM, (Pages Per Minute). You can get a 3PPM up to a 24PPM. A good compromise is to try to get a 6PPM or 12PPM printer.

The fourth printing option is to go to a **Commercial Printing** company. If you're not brilliant at maths take a calculator. Printers can be very confusing and often quote prices per sheet or per publication. You need to calculate the total price. Make sure you include the printing cost, the collation cost, the packing and deliver costs. And don't forget to add 17.5% VAT. Get the printer to quote you a final price inclusive of all these things and ask for it in writing. Also get a delivery date. Printers are the worst timekeepers ever. It is a very rare printer indeed who will meet your deadline.

## Questions...

1. List the main advantages of a dot matrix printer.
2. Which type of printer is the most expensive:
  - z to buy,
  - z per page printed?
3. What are the advantages of a laser printer over commercial printing?





In the past, all printing was undertaken on large commercial printers like the one shown above. Using such printers meant that only some people could afford to print because of the huge costs involved. Typically, large printing machines are only cost effective if the print run is in thousands of copies rather than hundreds or tens.

Example.

To print 100 twenty page booklets costs £250. This means £2.50 per booklet.

To print 500 twenty page booklets costs £500. This means £1.00 per booklet.

To print 1000 twenty page booklets costs £700. This means £0.70 per booklet.

The larger the print run, the lower the unit cost of each item will be. This is because the cost of running a large printer is measured by the time it takes to prepare the printer and the plates needed to print a publication rather than simply the price of the paper.

Modern DTP work was impossible only twenty or so years ago because personal computers were not powerful enough to handle the complex work required to produce a publication. The huge increase in the number of publications today is largely due to reduced cost of production with printing done by large laser printers, printing directly from the computer without the need to first make plates or mix inks and colours.

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## Questions...

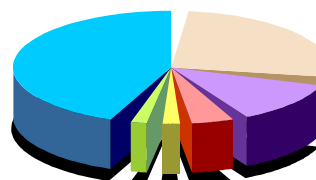
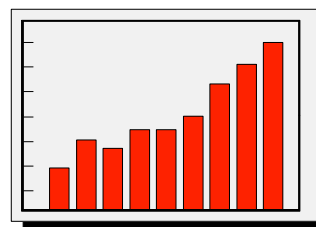
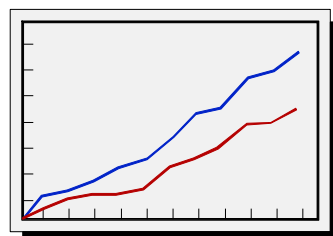
1. How does commercial printing differ from printing straight from a personal computer?
2. What are the advantages of commercial printing?
3. What are the main cost areas associated with commercial printing, and why does the unit cost of printing reduce with larger quantities?

Graphics are very important for showing information and can be used to make boring reports more interesting. It is also easier to read information in picture form than just to read line after line of statistics. The examples opposite show three ways of presenting information.

This type of graphical representation of facts and figures are used in many types of situations; from a school attendance sheet, to General Election results in the national newspapers. This 'at a glance' type of information helps people to quickly assess what is going on. It is possible to make more complicated graphical representations but if there is too much detail on show then it can become confusing and the advantage of this type of illustration is lost.

On the following pages there are some project suggestions which you can undertake. Remember that you have to present your findings in an interesting way so that others can easily understand what you did and why you completed your project in the way you did. You should study the advantages of using graphs to express yourself and decide which types of graph is best for the type of information you want to share with others.

Along with the types shown opposite find out about other types of graphs and pictorial representation of statistics.



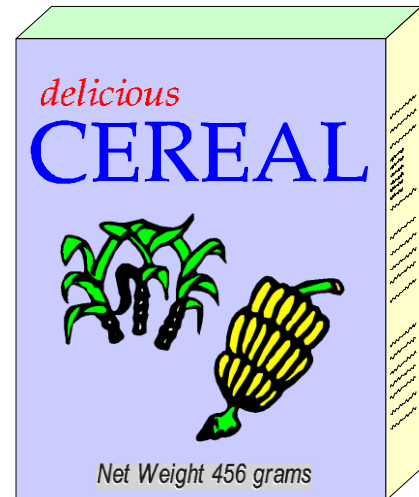
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## Questions...

1. What advantages are there in presenting information and statistics in graph or picture form?
2. Find out the names of the types of graphs shown above.
3. Which of the three types of graph presentation do you prefer? Why?

The design of this breakfast cereal box is very poor for several reasons:

- z There is no interesting name,
- z The use of pictures is not exciting or attractive,
- z There is nothing out of the ordinary about the presentation,
- z There is little written information on the front of the box; on the shelf the front of the box is all you are likely to see.



You must remember that the cereal box is likely to be placed near other cereal boxes on the shop shelf. In design terms you must ask yourself what it is about your cereal box which will attract the eye of the consumer.

Design is all about making your product the most attractive. There are many factors which you must consider when designing a product including:

- z Who are you trying to sell to; is your customer base young people, older people, women, men, etc.?
- z What is the price range of your product? Simple packaging is vital if the product is very cheap.
- z What is the quality range of the product? Do people expect quality both in the product and its packaging?

---

## Questions...

1. Design a cereal box yourself.
2. What makes your box more interesting than the example above?
3. How do you think your box would compare to real cereal boxes in you local supermarket?

Sometimes you can draw simple graphics which say a lot. This graphic is very simple and yet attracts the eye and tells us information which we all want to hear. You can imagine the effect this sign would have if it was in the window of your favourite high street store. In graphics terms this sign succeeds because:

- z It is simple,
- z It conveys a clear message,
- z It is effective.



---

## Questions...

1. In the boxes below create simple yet effective designs for:

Happy Birthday

Help!

Urgent

Top Secret

When you undertake a project you should make sure that everyone understands the processes involved. You should keep everyone who is involved with you in the project informed and use a plan like the one below. You should be clear as to what exactly your design is for and why you are doing it. If the design is for the use or benefit of a large number of other people you should investigate, research and explain your decisions clearly. Test your ideas on people before you proceed and review your designs after the first and second drafts. Finally, present the finished product and explain why you designed it in the way you did and the main features of the design.

An example of a basic plan is:

<b>SUBJECT</b>	Design a web page
<b>REASONS</b>	To advertise the school and its features; courses etc.
<b>RESEARCH</b>	Ask people, surveys, list the main requirements
<b>PRESENT FINDINGS</b>	In the form of graphs, pictorial representations
<b>PLAN AND PROCESS</b>	Present plan in form of sequence diagrams, visual, etc.
<b>1ST DRAFT</b>	Words and pictures
<b>2ND DRAFT</b>	Words and pictures, detail and colours, etc.
<b>FINISHED PRODUCT</b>	Present final copy to a group and explain design details
<b>MAIN ORIGINAL FEATURES</b>	List the main features; logo, colours, etc.

---

## Questions...

1. Why is it important to have a plan before you begin to design something?
2. What is the purpose of a survey or 1st and 2nd drafts in the design process?
3. How can people who are working together on a design make sure that they understand each other and the design properly?

## PROJECT TOPICS

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21

- z A WEB PAGE FOR YOUR SCHOOL
  - z THE COVER OF A NEW TEEN MAGAZINE
  - z A NEW CHOCOLATE BAR
  - z A PERFUME BOX
  - z A BODY SPRAY FOR MEN ADVERTISEMENT
  - z A COMPUTER GAME
  - z THE COVER FOR A MUSIC CD
  - z THE FRONT PAGE OF THE SCHOOL MAGAZINE
  - z A POSTER TO ADVERTISE THE SCHOOL'S SPORTS DAY
  - z A LEAFLET TO ADVERTISE THE SCHOOL PLAY
  - z INTRODUCTORY LEAFLET FOR NEW STUDENTS
  - z A BROCHURE FOR VISITORS TO YOUR TOWN OR CITY
  - z A PROGRESS REPORT FOR YOUR FAVOURITE SPORTS TEAM
  - z A NEW BREAKFAST CEREAL BOX
  - z A POSTER TO ADVERTISE A HOLIDAY DESTINATION
  - z A POSTER FOR A THEME PARK EXCLUSIVE RIDE
  - z ADVERTISING FOR A NEW LOTTERY TICKET
  - z A NEW TV SHOW, OR SOAP OPERA
  - z DESIGN A NEW SCHOOL LOGO
  - z A TRAILER FOR A NEW MOVIE
  - z ADVERTISE A NEW BRAND OF SPORTS WEAR
-