

5 Complete these instructions for using a Bunsen burner:

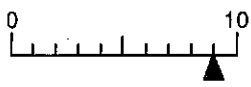
- a Light the match \_\_\_\_\_ you turn on the gas.
- b When you light the flame the air-hole should be \_\_\_\_\_.
- c When you use the flame the colour should be \_\_\_\_\_.
- d If the flame blows out \_\_\_\_\_ the gas.
- e Turn the flame to \_\_\_\_\_ when not in use.

6 What happens to a test tube heated in a yellow flame? \_\_\_\_\_

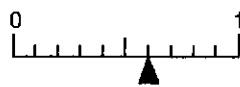
## 5 Reading scales

M \_\_\_/4

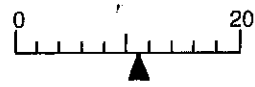
1 Fill in the readings on the scales shown.



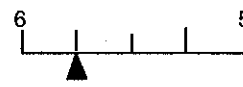
A \_\_\_\_\_



B \_\_\_\_\_



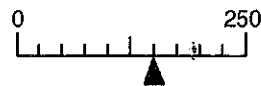
C \_\_\_\_\_



D \_\_\_\_\_



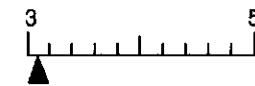
E \_\_\_\_\_



F \_\_\_\_\_

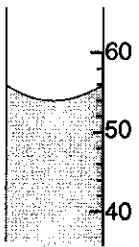


G \_\_\_\_\_

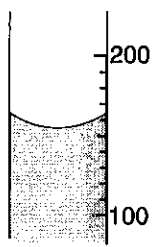


H \_\_\_\_\_

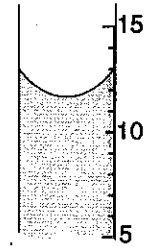
2 What do these measuring cylinders and pipettes read?



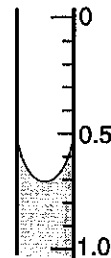
a \_\_\_\_\_



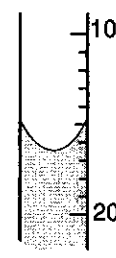
b \_\_\_\_\_



c \_\_\_\_\_

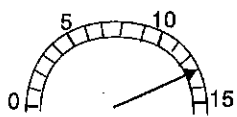


d \_\_\_\_\_

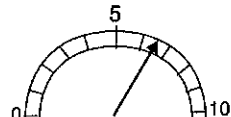


e \_\_\_\_\_

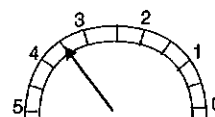
3 What amounts do these meters read?



a \_\_\_\_\_



b \_\_\_\_\_



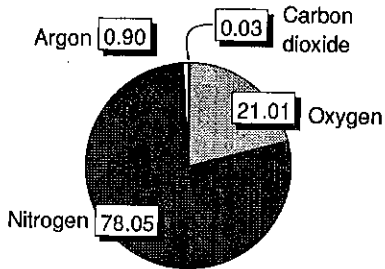
c \_\_\_\_\_

# 6 Graph types

Scientists use different types of graphs to show different sorts of information.

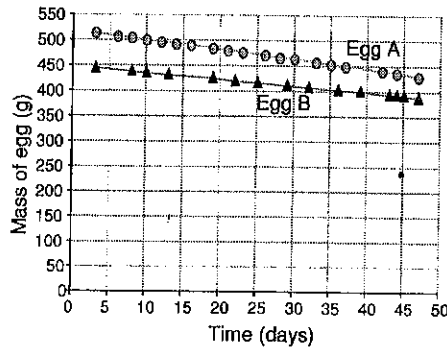
A pie graph is used to show the parts of a whole.

Composition of the Earth's atmosphere (%)



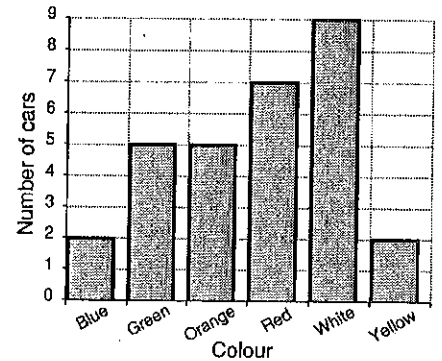
A line graph is used to show changes in a continuous variable.

Change of mass of emu eggs during incubation

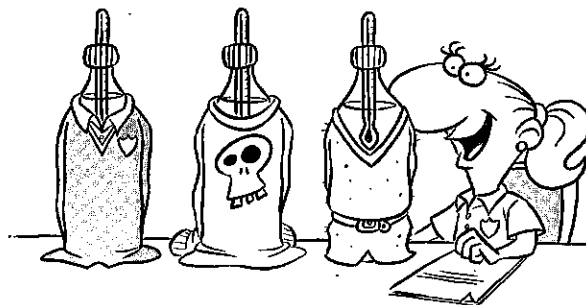


A bar graph is used to show changes in a discrete variable.

Numbers of cars of each colour in staff car park



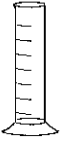
- Choose best sort of graph for the following data.
  - The average yield per hectare for different types of wheat \_\_\_\_\_
  - The moisture content of the soil in a particular paddock each week \_\_\_\_\_
  - The skylark population in different fields \_\_\_\_\_
  - The proportion of land planted in each crop on a particular farm \_\_\_\_\_
  - The amount of milk produced by a particular cow on the first day of each month this year \_\_\_\_\_
  
- Allison is doing a Science Fair project looking at different types of jerseys and sweatshirts. First she did a survey of the types of material used in the jerseys and sweatshirts worn by 50 people at her local cinema. Then she took soft-drink bottles filled with hot water, wrapped them in the different materials, and measured the temperature of the water as it cooled down.
  - What type of graph should she use to display the results of her survey? \_\_\_\_\_
  - What type of graph should she use to show how one bottle cooled down over a 90-minute period? \_\_\_\_\_
  - What type of graph should she use to show how long it took bottles wrapped in each material to reach room temperature? \_\_\_\_\_



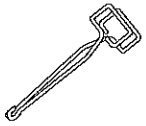
## 7 Tools for the job

K\_\_/2

Name the following pieces of equipment, and explain what each one is used for.



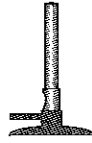
a \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



b \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



c \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



d \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



e \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



f \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

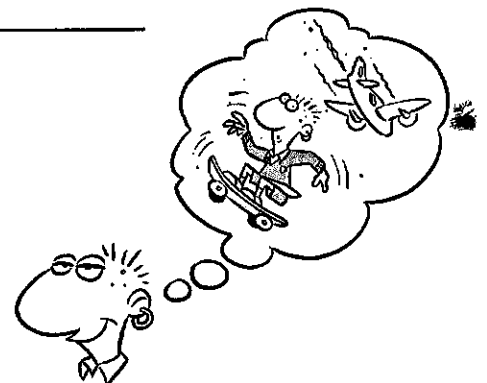
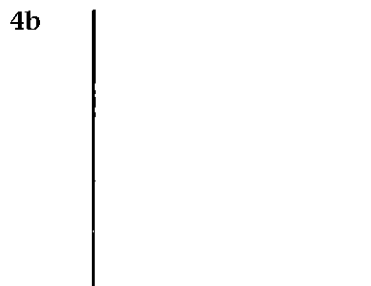
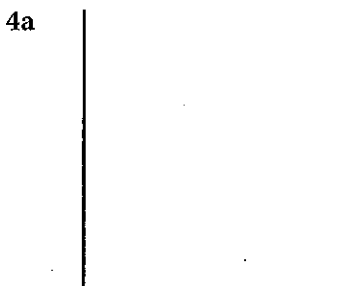
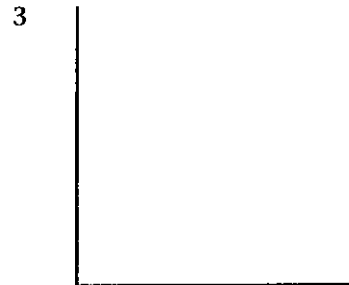
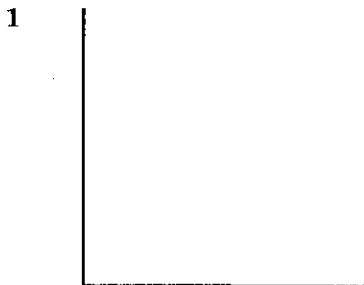
## 8 Sketching graphs

M\_\_/4 T\_\_/2

Many of the graphs you have drawn are from data tables, but sometimes it is useful to sketch a graph. A sketch graph has labels on the axes but no numbers.

Sketch the following graphs on the axes below. (Remember that time always goes on the horizontal axis.)

- 1 You are riding your bike at a steady speed along the cycle path. Sketch a graph of speed against time.
- 2 You are filling a beaker of water from a tap at a steady rate. Sketch a graph of water height against time.
- 3 The beaker in 2 is exchanged for a conical flask. Sketch the new graph.
- 4 You jump out of an aircraft. Sketch graphs of speed against time if:
  - a you had no parachute
  - b you opened a parachute some time after leaving the aircraft.



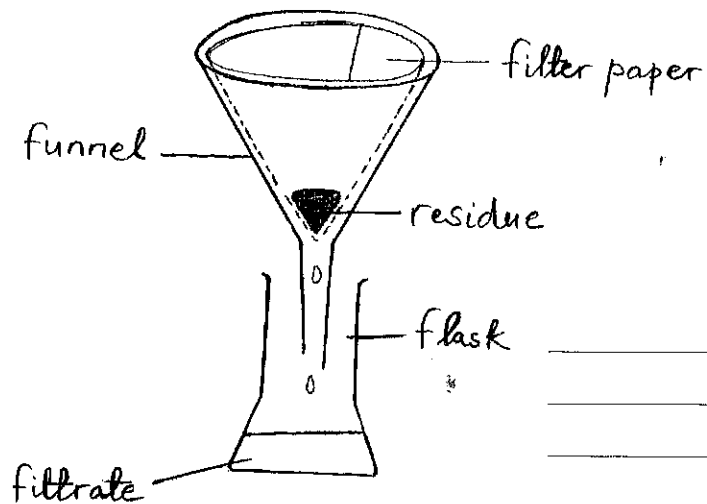
## 9 Scientific drawings

Aidan's teacher has given him these rules for drawing scientific diagrams:

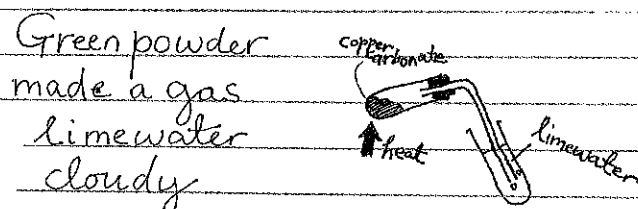
- use a pencil
- rule straight lines
- do outline drawings
- label objects clearly
- make the drawing big enough so that it can be read easily
- keep the scale consistent

1 Here are two drawings from Aidan's book. List the mistakes he has made with each one.

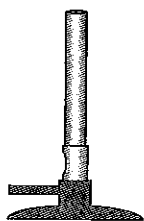
Drawing 1



Drawing 2

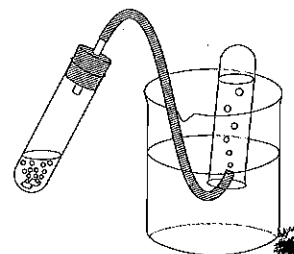


2 Complete this diagram showing a 250 mL beaker containing about 200 mL of water being heated on a tripod and gauze mat by a Bunsen burner.



3 Dhiraj made oxygen gas by adding a small amount of manganese dioxide powder to hydrogen peroxide solution. He collected the gas over water as shown in the picture.

Draw a labelled scientific diagram of Dhiraj's experiment.



**10** Scientific reports

T \_\_\_/6

Science experiments should be written up in a brief, formal report. Use headings such as **Aim**, **Method**, **Results** and **Conclusion** where appropriate.

Write formal reports on the following experiments using the headings above.

- 1 Tony used a ball-point pen to write the *wrong* address on a plastic envelope. He tried to remove the writing using water, then bleach, and finally methylated spirits. He found that only the methylated spirits would remove the writing.

**Aim** \_\_\_\_\_

**Method** \_\_\_\_\_

**Results** \_\_\_\_\_

**Conclusion** \_\_\_\_\_

- 2 Carol is a dog breeder. An advert for a new brand of puppy food claims that puppies fed on this food for the first 3 months of their life will grow faster than other puppies. Carol decided to test this claim. She fed 4 of the puppies from a litter with the new food, and the other 4 puppies with their usual food. After 3 months she weighed all the puppies. She found the average weight of the puppies in each group was the same.

**Aim** \_\_\_\_\_

**Method** \_\_\_\_\_

**Results** \_\_\_\_\_

**Conclusion** \_\_\_\_\_

- 3 Isobelle is in charge of the school photocopier. She recently changed to a new brand of paper, but found that the machine jammed 17 times in 2000 copies. She changed back to the old brand of paper, and found the machine jammed 2 times in 2000 copies. She decided that the new paper was not suitable for her photocopier.

**Aim** \_\_\_\_\_

**Method** \_\_\_\_\_

**Results** \_\_\_\_\_

**Conclusion** \_\_\_\_\_



