Caribbean Primary Science

Level 4

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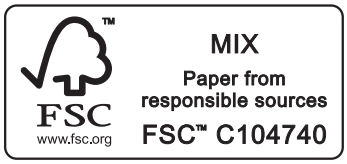

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Contents

Topic 1

Being a scientist

Last year you learnt a number of different scientific skills. You learnt how to observe, measure, record, classify, infer, predict, experiment, design and interpret data. You will use these skills again this year. You will also learn about:

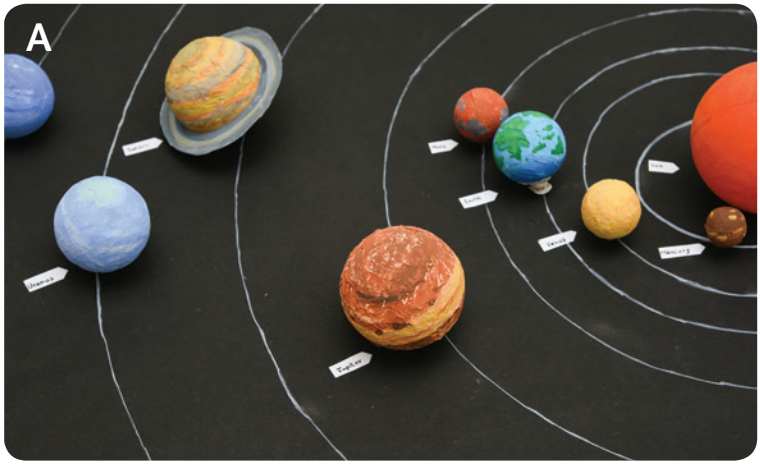
* using models in science,
* measuring temperature, mass and volume,
* drawing timelines and flow diagrams.

Using models in science

A model is something that represents a real thing. We use models when the real thing is too big, too small, too far away or too complicated to study directly. Models allow scientists to find out how things work. Models also allow scientists to predict what might happen in different situations.

Work in pairs to look at the following models. Read the information and answer the questions about each model.

1 Look at Model A.



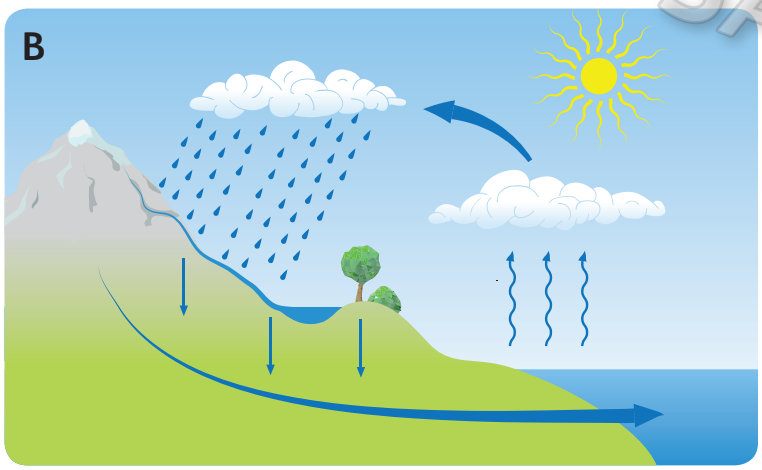
This is a three-dimensional model of the solar system showing the Sun and the planets.

a What does three-dimensional mean?

b What do the white lines on the model show?

c How can a model like this help you learn about the solar system?

2 Look at Model B.



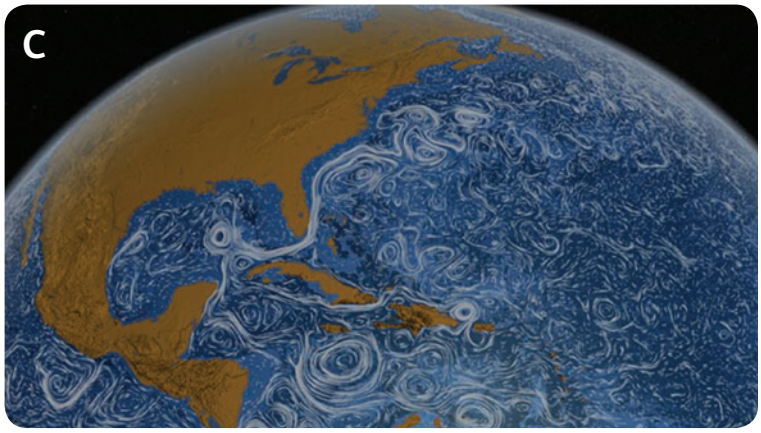
This is a two-dimensional model of the water cycle showing how it works.

a What does two-dimensional mean?

b What can you learn about the water cycle from this model?

c How would you make a working model of the water cycle?

3 Look at Model C.



This is a computer model that shows how water moves in currents in the Earth's oceans.

a What do the white lines show?

b How do you think scientists collect the information for this model?

c How could this model be useful?

4 Look at Model D that the doctor is holding.

The doctor is using this model to show a patient what is wrong with her.

a What is the model the doctor is using?

b Why can the doctor not use the real thing in this situation?

c What other models do you think a doctor or dentist would find useful? Why?

5 Car-makers use special models called crash-test dummies. These models are used to predict what will happen to people if the car they are in crashes.

a Why do you think car-makers use models and not real people?

b Why is it important for car-makers to know what happens when a car crashes?

Measuring temperature

Temperature is a measure of how hot or cold it is. We use a thermometer to measure temperature in degrees Celsius (°C) or degrees Fahrenheit (°F).
Do you remember how to use a thermometer to measure temperature?

1 Look at the picture carefully. Answer the questions in your book.

a What scale is shown on this thermometer?

b How does the thermometer work?

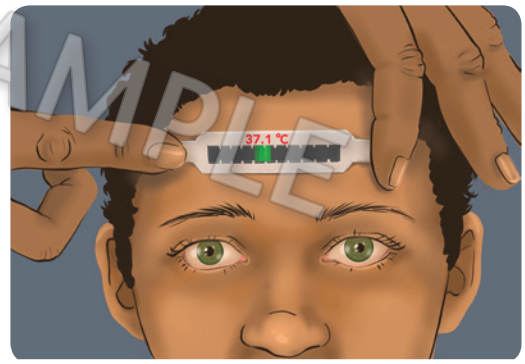
c What temperature is shown?

d What would the thermometer show if the temperature:

i increased by 7 degrees?

ii dropped by 6 degrees?

2 This forehead strip thermometer is made of special heat sensitive material. (You will learn more about these materials in Topic 10.)



- **a** How do you use this thermometer?
- **b** How do you think it works?
- **c** What is this child's temperature?
- **d** What are the advantages of this type of thermometer?

Measuring mass

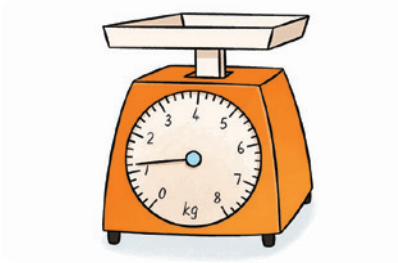
In science you often need to measure the mass of different objects. You use a scale or balance to measure mass in milligrams, grams and kilograms.

When you measure mass, you need to work out what the markings and divisions on the scale mean. You also need to make sure the scale shows zero before you start measuring.

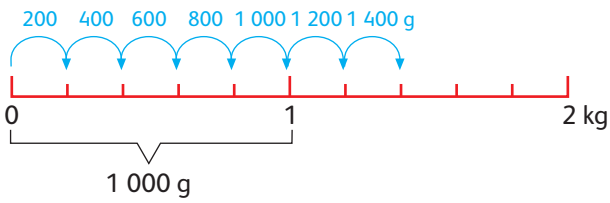
Look at this bathroom scale. It measures mass in kilograms.

- The scale is marked in intervals of ten.
- There are five divisions between each ten, so each division shows 2 kilograms (10 ÷ 5 = 2).
- The needle is on the third small division, so the mass is 46 kilograms.

Look at this kitchen scale. It measures mass in kilograms and grams.

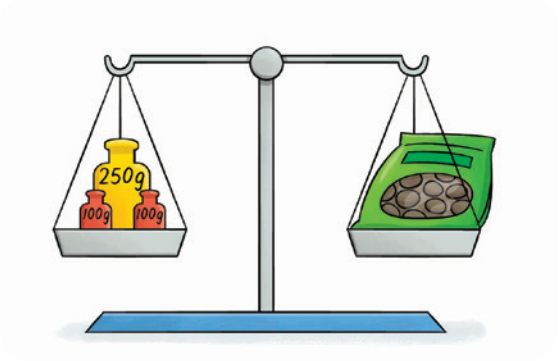


- The round dial on this scale is marked in kilograms. You can think of the round dial as a number line.
- There are five divisions between every kilogram. One kilogram is 1 000 grams, so each division represents 200 grams.
- The needle is on the second division, so the mass is 1 kilogram and 400 grams or 1.4 kilograms.



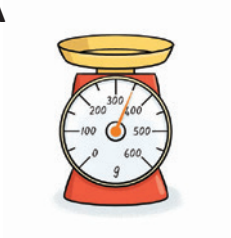
Look at this balance scale. It measures mass in grams (g).

* You put mass pieces into one pan till the two pans balance.
* This bag of nutmeg has a mass of:
  250 g + 100 g + 100 g = 450 grams.



1 Look at the four scales (A–D) below. Write down the mass shown on each scale.

A



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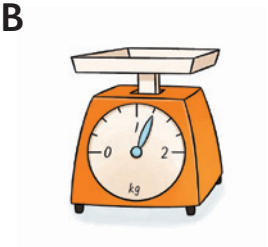
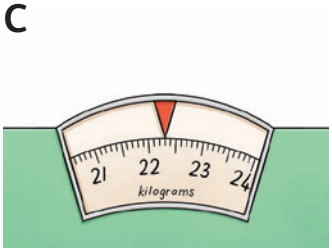
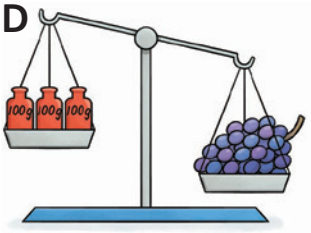


C



D



2 Measure the mass of five objects in the classroom.

a Write down the mass of each object. Remember to include the units.

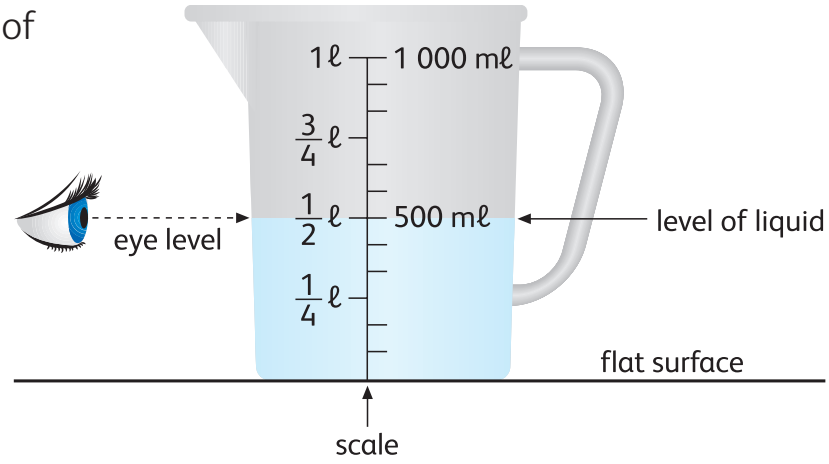
b Write the masses in order from lightest to heaviest.

Measuring volume

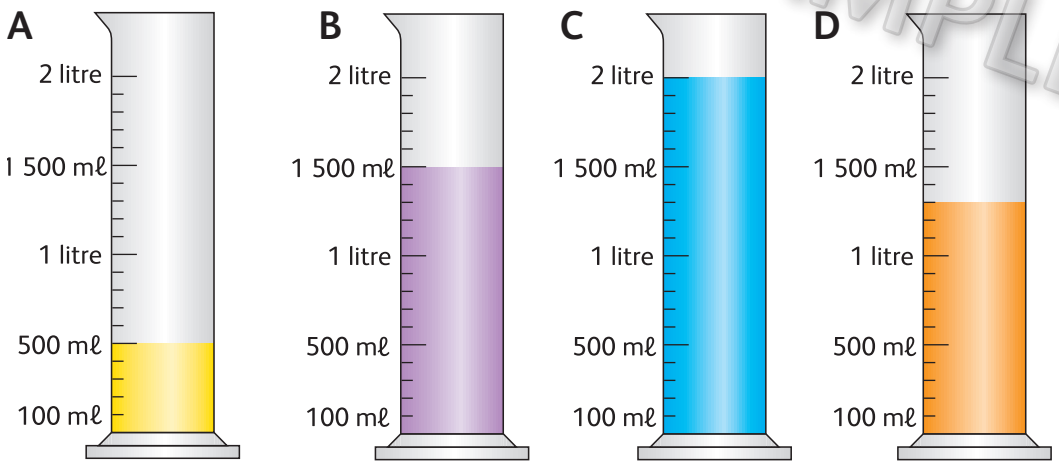
Volume is a measure of how much space something occupies. You use a measuring jug or a measuring cylinder to measure the volume of liquids in millilitres or litres. Remember 1 litre = 1 000 millilitres.

This is how to read the volume of liquid in a measuring cylinder or jug.

* Put the container on a flat surface.
* Put your eye level with the top of the liquid in the container.
* Read the volume carefully. Make sure you know what the divisions stand for before you start.
* The volume of liquid in this container is 500 millilitres.

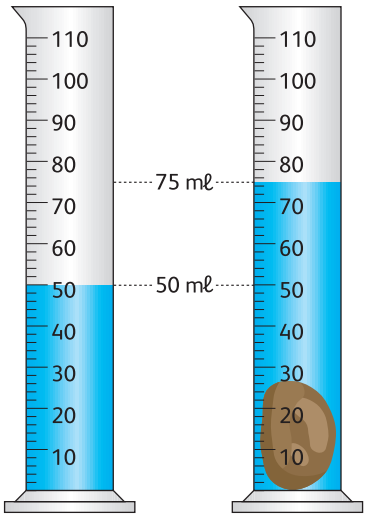


1 Look at the four containers (A–D) below. What is the volume of liquid in each container? Give your answers in millilitres.

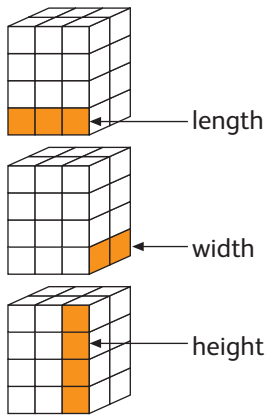


This is how to measure the volume of a solid object by putting it into liquid.

- Measure the volume of liquid in the container. The volume in the container below is 50 millilitres (mℓ).
- Put the solid object in the liquid and measure the volume of liquid again. The volume is now 75 mℓ.
- Calculate how much the volume of the liquid increases. (75 mℓ – 50 mℓ = 25 mℓ)
- The difference in the volumes of liquid is the volume of the solid object. The volume of this stone is 25 millilitres.



The measurement of 25 millilitres is the same as 25 centimetres cubed (25 cm^3). A centimetre cubed is a solid cube that is 1 cm long, 1 cm wide and 1 cm high.

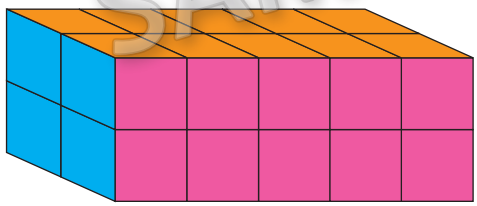


This is how to find the volume of solid cubes or cuboids.

- Multiply the length by the width by the height. The answer is always a cubed unit.
- This solid is 3 × 2 × 4 = 24 cubed units.

2 Work out the volume of each solid. Each block is 1 centimetre cubed.

A



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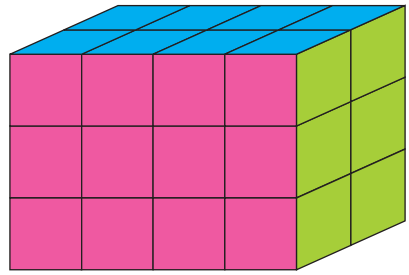
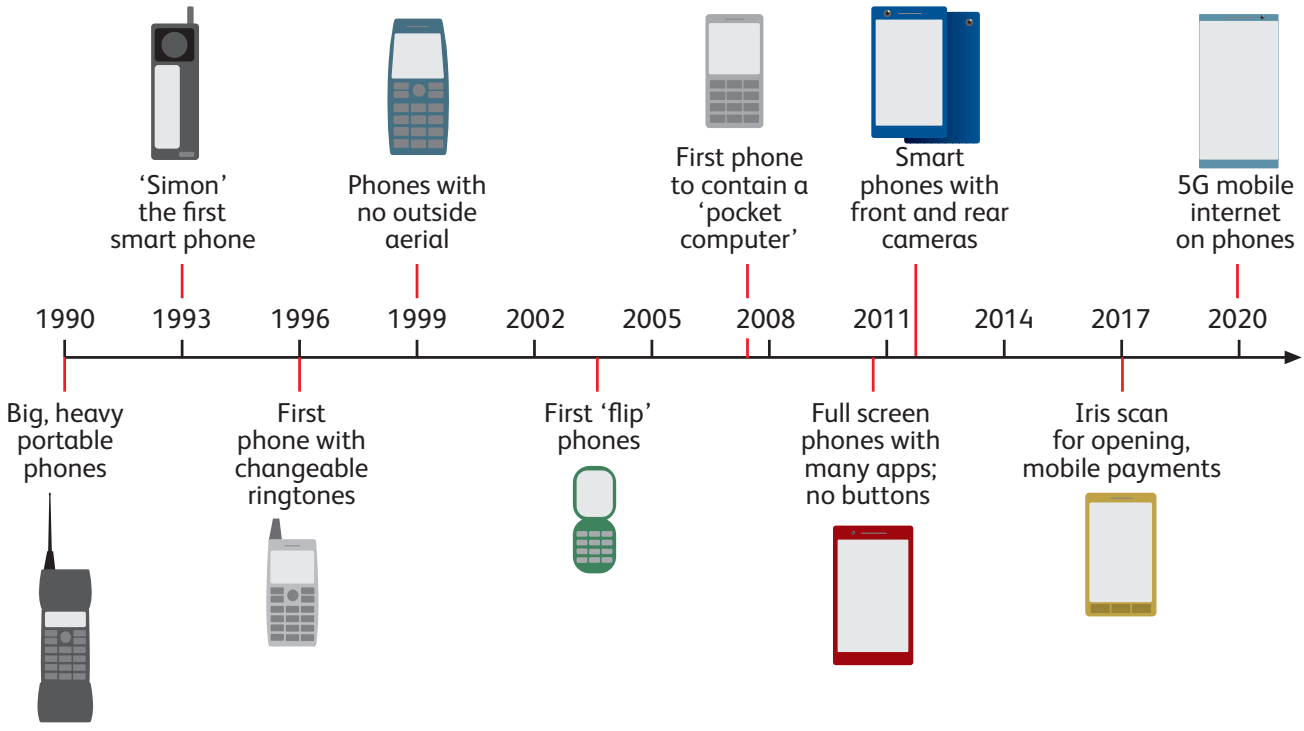


Drawing timelines and flow diagrams

A timeline is a type of number line that shows dates (often in years) and gives information about what happened at each date.

1 Look at this timeline that shows some of the important dates in the history of mobile phones.



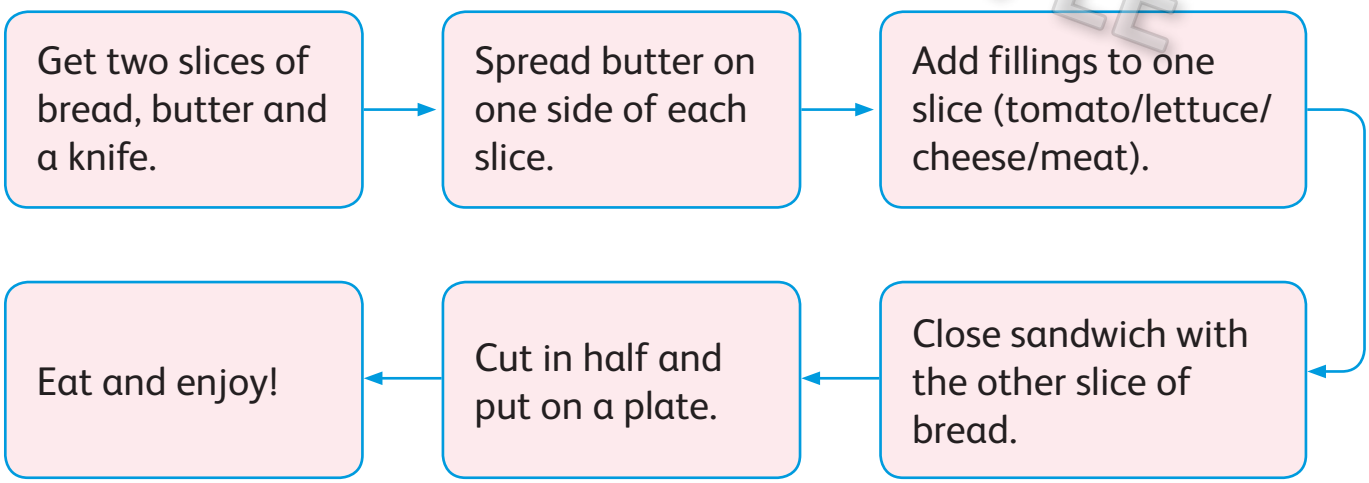
a When was the first portable phone available?

b How have phones changed since then?

c When was the first proper smartphone with a computer available?

A flow diagram shows the steps that you follow to do something.

2 Look at this flow diagram showing how to make a sandwich.



a What do you do first when you make a sandwich according to this flow diagram?

b What do you do last?

c How is a flow diagram different from a timeline?

d Choose one of the following tasks. Make a flow diagram to show the steps to follow to do the task.

Measure the temperature of a glass of water in degrees Celsius.

Use a kitchen scale to find the mass of a banana.

Use a balance to find the mass of a beaker of water.

Measure the volume of liquid in a measuring cylinder.

Caribbean Primary Science

SAMPLE PAGES

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