Cambridge Assessment International Education

Science

Stage 8

Paper 1

2025

Cambridge Lower Secondary Progression Test

Name

Class

Date

45 minutes

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Write your answer to each question in the space provided.
- You should show all your working on the question paper.

INFORMATION

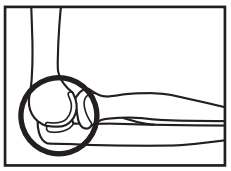
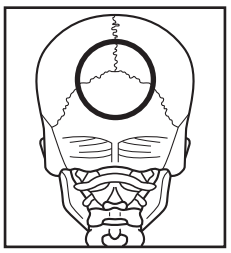
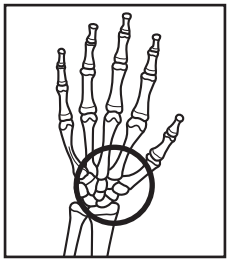
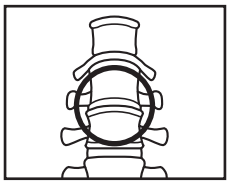
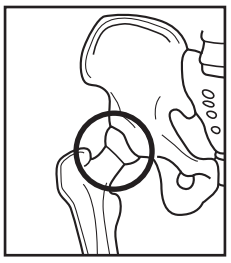
- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [ ].

1 **(a)** Look at the diagrams of joints in the human body.

Each joint is circled.

Draw a straight line from each **type of joint** to match the **joint in the human body**.

Draw only **two** lines.

type of joint	**joint in the human body**
ball and socket joint	
	
	
hinge joint	
	

[2]

(b) Write down the name for the pair of muscles used to move a hinge joint.

.....

[1]

2 Atoms are made of protons, neutrons and electrons.

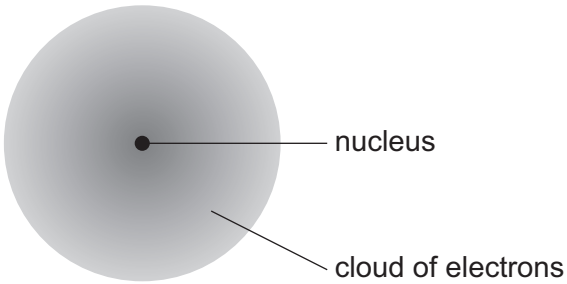
(a) Write down the charge on a proton.

.....[1]

(b) Write down the charge on an electron.

.....[1]

(c) Atoms consist of a nucleus surrounded by a cloud of electrons.



Explain what holds the particles in an atom together.

.....

.....

.....[2]

3 Mike is flying on a plane from Australia to Canada.

The two airports are 15 000 km apart.

The flight takes 20 hours.

Calculate the average speed of the plane.

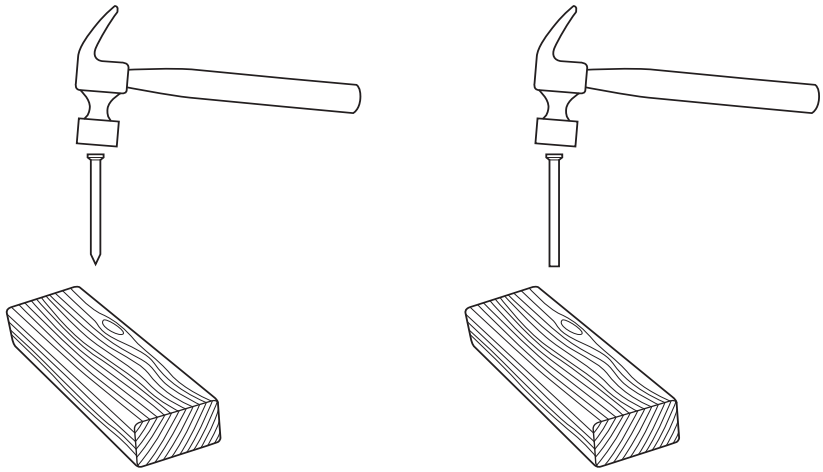
Include the units for speed in your answer.

Show your working.

average speed = ... units .....

[3]

4 Aiko hammers different nails into blocks of wood.



block **A** block **B**

Aiko uses the same hammer, the same force and identical blocks of wood.

Explain why she finds it easier to hammer the nail into block **A** instead of block **B**.

.....

.....

..... [2]

5 There are millions of asteroids in the Solar System.

(a) The table shows information about four objects in space.

object	distance from the Sun in km	diameter in km	year of discovery
A	57 909 000	4 879	1631
B	353 000 000	530	1807
C	413 690 000	952	1801
D	4 473 600 000	49 244	1846

Two of the objects are planets and two of the objects are asteroids.

Which **two** objects are asteroids?

..... and .....

Explain your answer.

Use information from the table.

.....

.....

[2]

(b) Blessy looks at descriptions of some objects in the Solar System.

object	description
Bennu	a collection of stones connected by gravity
Ceres	three quarters rock, one quarter water
Hale-Bopp	ice, dust and gas
Ida	silica rock
Kleopatra	nickel and iron centre, surrounded by rock

Blessy knows that **four** of the objects are asteroids because of their descriptions.

Which object is **not** an asteroid?

.....

Explain your answer.

Use information from the table.

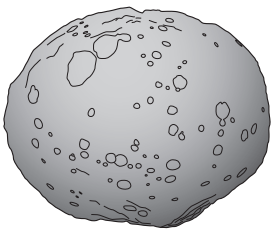
.....

.....

[2]

(c) Vesta is one of the largest asteroids in the Solar System.

Vesta orbits around the Sun between the orbits of Mars and Jupiter.



Describe how Vesta was formed.

.....

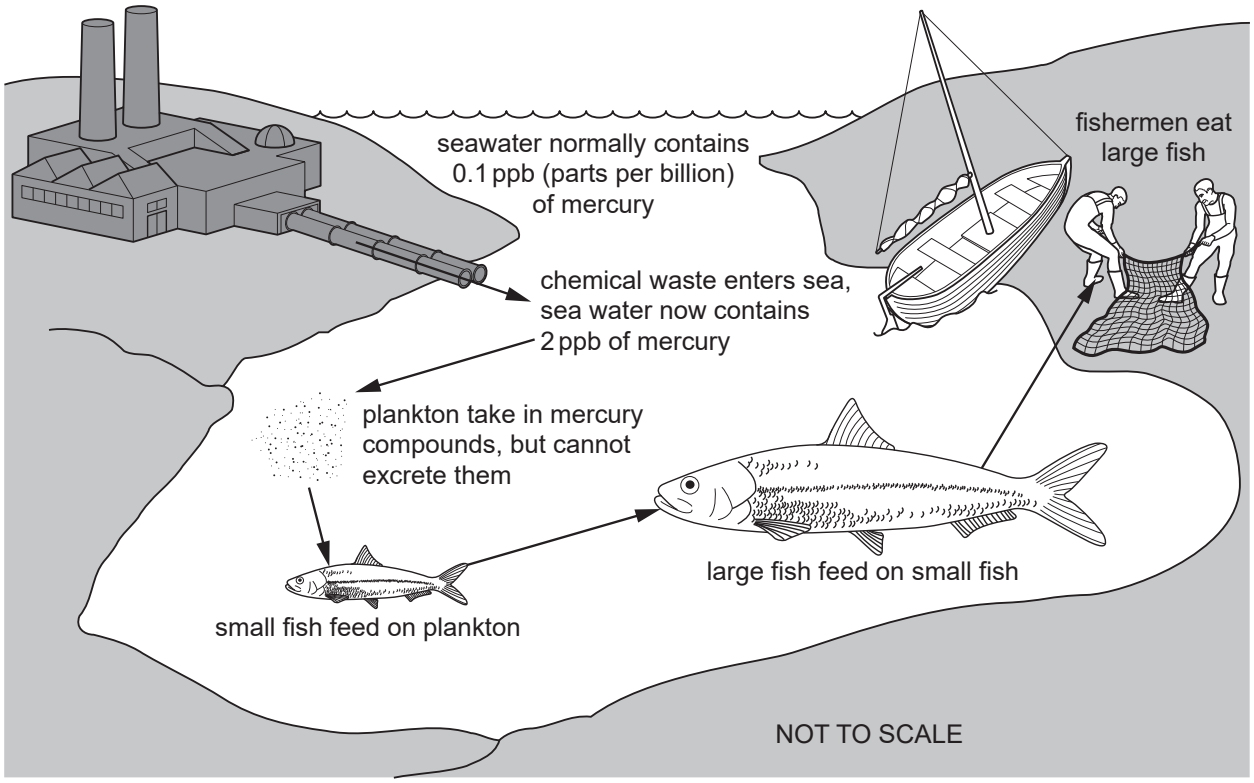
.....

.....

..... [2]

6 This question is about pollution in ecosystems.

The diagram shows the impact of releasing chemical waste into the sea.



Minamata disease affects the nervous system.

The disease is caused by levels above 20 000 ppb (parts per billion) of mercury in the body.

Explain why the fishermen develop Minamata disease.

.....

.....

.....

.....

.....

.....

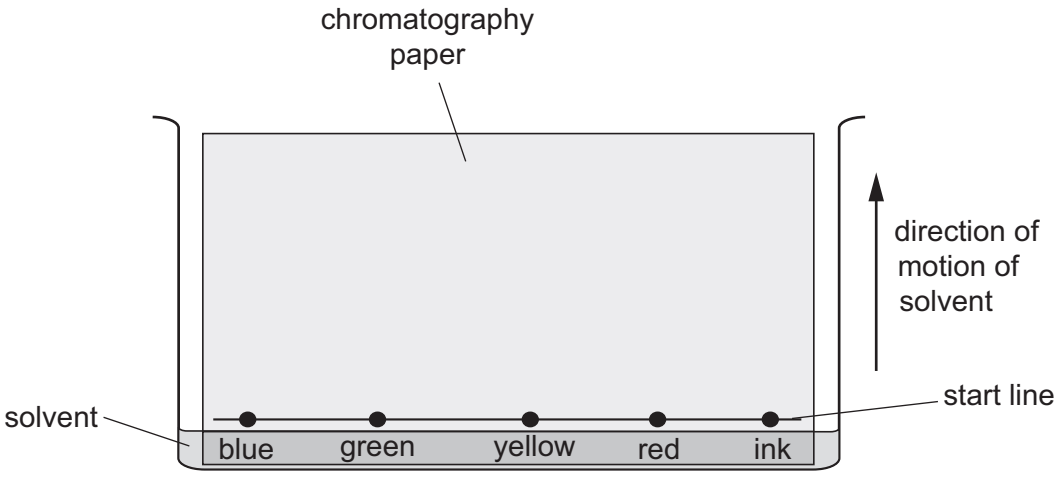
.....

..... [3]

7 Jamila investigates the coloured dyes used to make an ink.

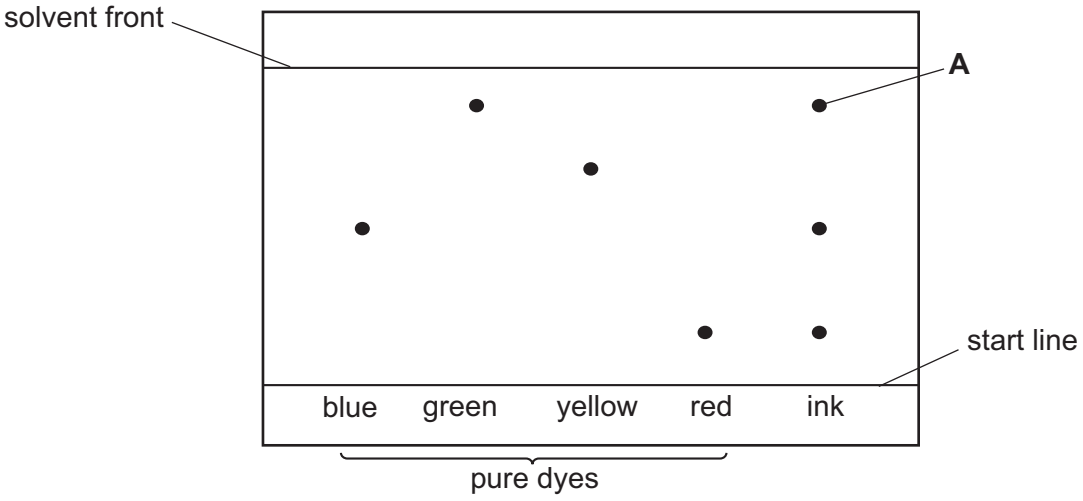
Jamila:

- uses paper chromatography
- draws a start line in **pencil** on the chromatography paper
- places a dot of the ink on the start line
- places dots of pure dyes on the start line
- puts the chromatography paper in a solvent as shown in the diagram



- waits until the solvent has moved up the chromatography paper.

Look at Jamila's chromatogram.



(a) Jamila puts her ink and pure dyes on a pencil line rather than a line drawn with an ink pen.

Explain why.

.....

..... [1]

(b) **(i)** Measure the distance in mm from the start line to:

- dot **A**
- the solvent front.

distance to dot **A** = ... mm

distance to solvent front = ... mm

[1]

(ii) Calculate the R_f value for dot **A**.

Use the equation shown.

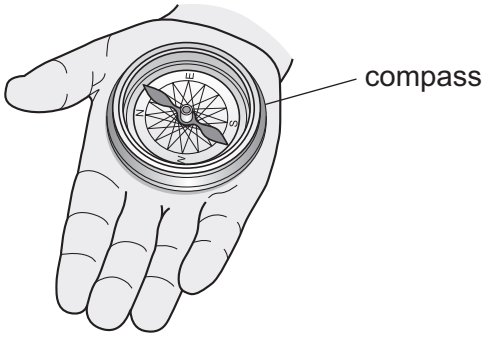
$$R_f = \frac{\text{distance from start line to dot } \mathbf{A}}{\text{distance from start line to solvent front}}$$

R_f = ... [1]

(c) Which coloured dyes are present in the ink?

..... [1]

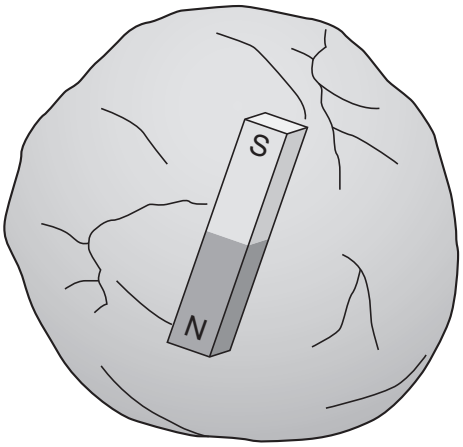
8 Oliver uses a compass to help him find his way when he is out walking.



He asks his teacher to explain why the compass helps him find his way.

The teacher:

- uses modelling clay to make a large ball
- pushes a magnet into the centre of the ball of modelling clay.



(a) The teacher uses an analogy.

Tick (✓) the correct sentence about the analogy.

The teacher models the Earth, by using a magnet to help Oliver find his way. ☐

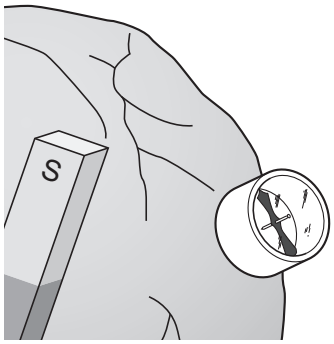
The teacher models the Earth, by putting a bar magnet at the centre of the Earth. ☐

The teacher models the Earth, with the core of the Earth behaving as a magnet. ☐

The teacher models the Earth's magnetic field pattern. ☐

[1]

(b) The teacher puts a small plotting compass onto the surface of the ball of modelling clay.

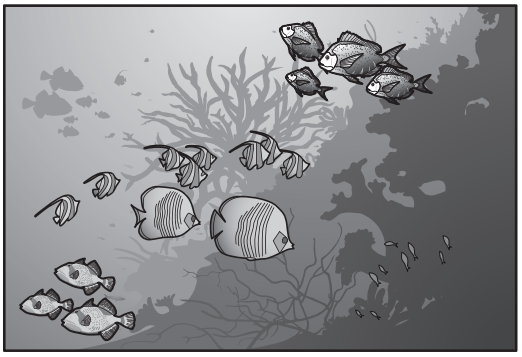


What does the plotting compass represent in the teacher's model of Oliver finding his way?

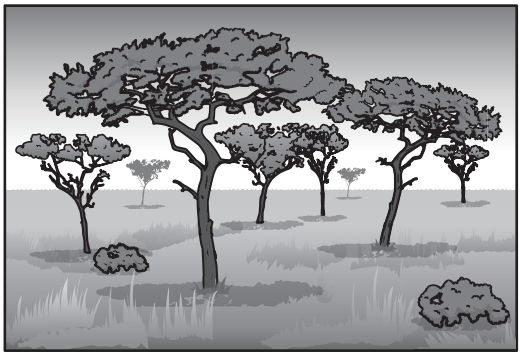
..... [1]

9 This question is about ecosystems.

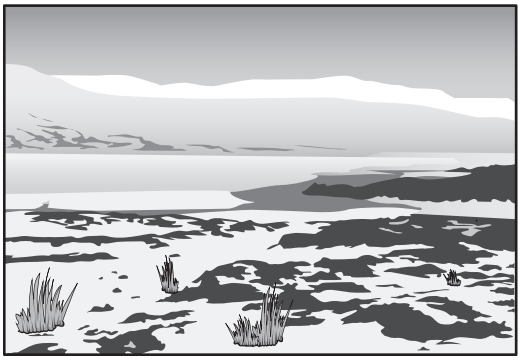
(a) Look at the pictures of four different ecosystems.



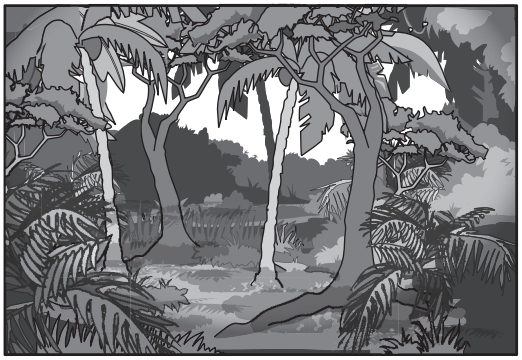
marine



bushland



tundra



rainforest

Safia writes this dichotomous key to identify the four ecosystems.

	question	answer
1	.....	**yes** the ecosystem is **marine**
	.....	**no** go to **2**
2	.....	**yes** go to **3**
	.....	**no** the ecosystem is **tundra**
3	Is the ground around the trees very dark?	**yes** the ecosystem is **rainforest**
		no the ecosystem is **bushland**

The key is **not** complete.

(i) Complete the key by suggesting question **1** and question **2**.

Use information from the pictures of the ecosystems.

Write your answers in the key.

[2]

(ii) Look at question **3** in the key.

Suggest **one other** question that distinguishes between the bushland and the rainforest ecosystems.

Use information from the pictures of the ecosystems.

.....

..... [1]

(b) Hornbills are birds that live in rainforests.

The main predators of hornbills are snakes.

(i) The snake population rapidly increases.

Describe the effect on the hornbill population.

..... [1]

(ii) Eagles are predators of monkeys and some farm animals.

Monkeys often feed on fruits, nuts and seeds.

Farmers who keep animals sometimes kill eagles.

Farmers who grow fruit encourage the protection of eagles.

Suggest why farmers use different evidence to support their attitude to eagles.

.....

.....

..... [1]

10 Ahmed dissolves different masses of glucose in water to make different volumes of solution.

Look at his results.

solution	mass of glucose in g	volume of solution in cm^3	concentration of glucose in g / 100 cm^3 of solution
A	0.5	20	2.5
B	1.0	10	10.0
C	2.0	50	
D	5.0	20	25.0
E	6.0	50	12.0

(a) Calculate the concentration of glucose in solution **C** in g / 100 cm^3.

concentration = ... g / 100 cm^3 [1]

(b) Look at the results for solution **A**, solution **B**, solution **D** and solution **E**.

Which solution has the most glucose particles in 100 cm^3 of solution?

Circle the correct answer.

A **B** **D** **E**

Explain your answer using information from the table.

.....

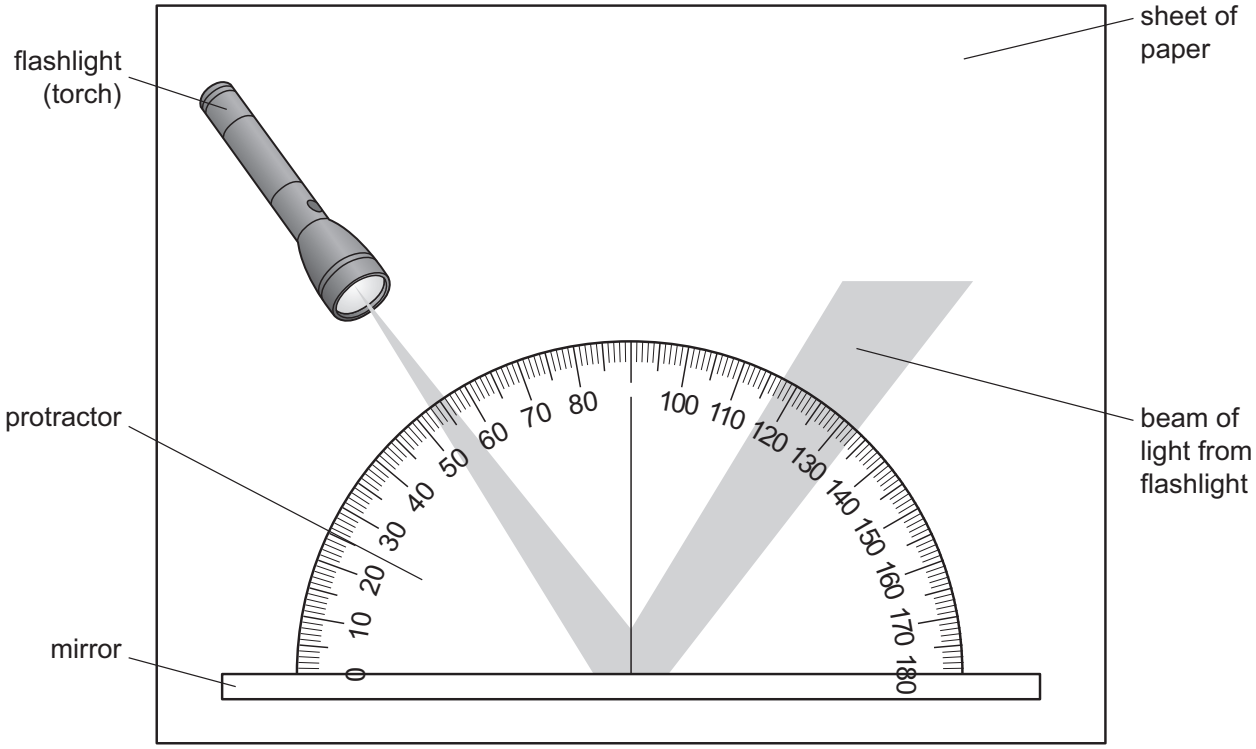
.....

[2]

11 Rajiv investigates the reflection of light.

Rajiv:

- places a mirror on a sheet of paper against the edge of a protractor
- shines a beam of light towards the mirror.



(a) Suggest a value for the angle of incidence.

..... ° [1]

(b) Write down the law of reflection.

.....

..... [1]

(c) Explain why it is difficult for Rajiv to measure the angle of reflection accurately.

Suggest how Rajiv improves his investigation to measure this angle more accurately.

explanation .....

.....

improvement .....

.....

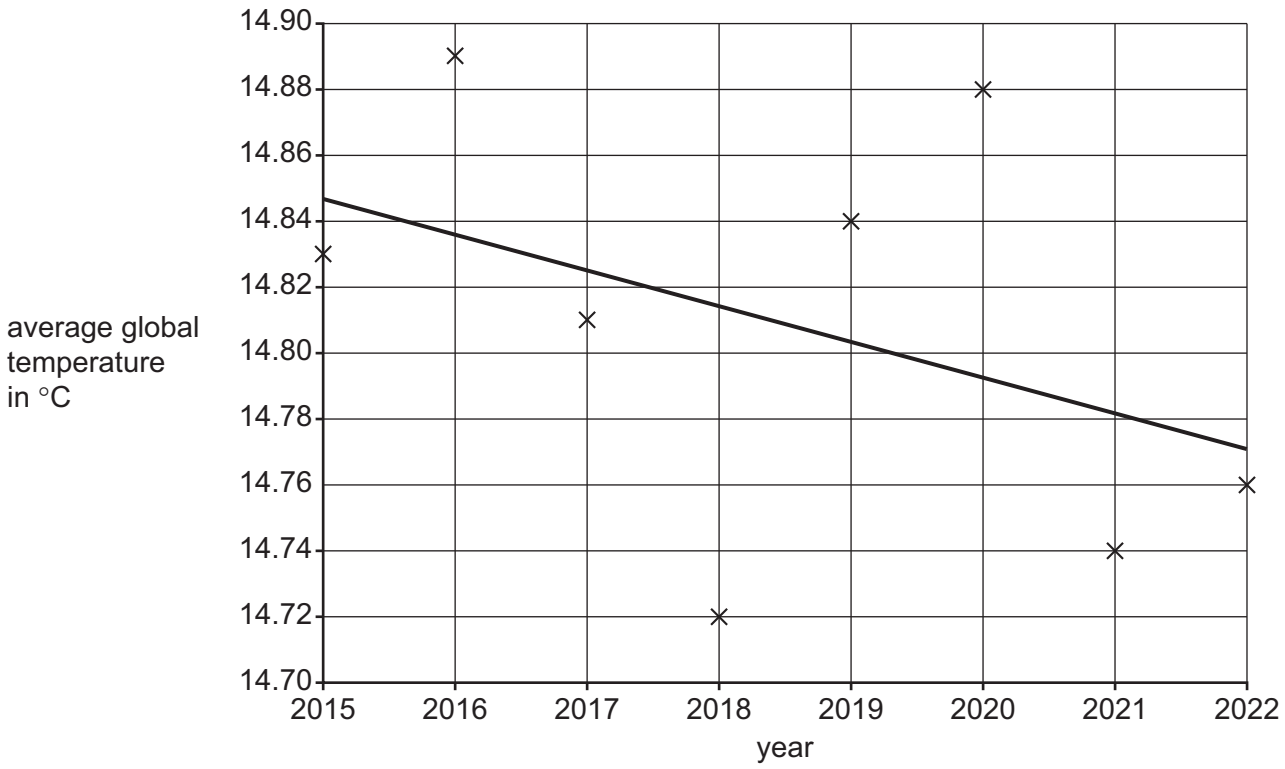
[2]

12 Angelique learns about climate change and how temperatures around the world are changing.

She finds a graph on the internet that appears to show average global temperatures are falling.

This is **not** what she has been taught.

Look at the graph.



(a) Complete the sentence.

Choose from the list.

appropriate **biased** **fair** **reliable**

The data has been chosen to show a trend that is different from that which is accepted.

This source of information is ..... . [1]

(b) Angelique knows that the Earth's climate changes over time.

Which is the **best** way for her to show how climate changes happen over time?

Tick (✓) the correct statement.

look at how global temperatures change every month for ten years ☐

look at how global temperatures change every year for ten years ☐

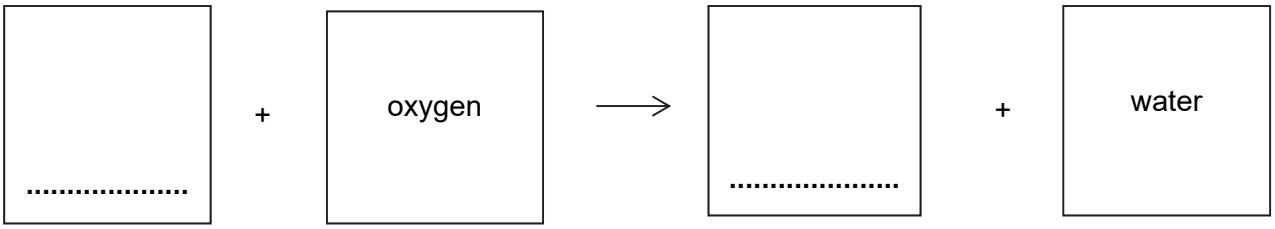
look at how global temperatures change over a period of one hundred years ☐

look at how global temperatures change over a period of thousands of years ☐

[1]

13 This question is about aerobic respiration.

(a) Complete the **word** equation for aerobic respiration.



[1]

(b) Name the part of a cell where aerobic respiration takes place.

..... [1]

14 Lily investigates the reactivity of some metals with dilute hydrochloric acid.

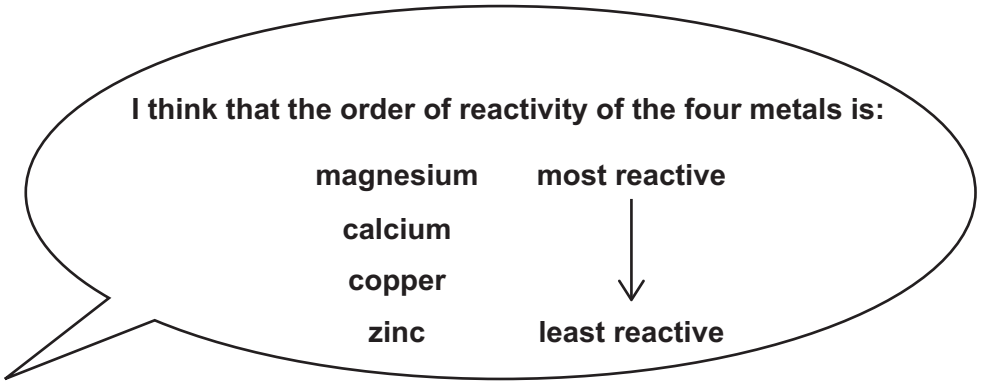
She investigates zinc, copper, magnesium and calcium.

In her first experiment, Lily:

- puts 25 cm^3 of dilute hydrochloric acid into a beaker
- adds 0.5 g of zinc to the beaker
- records the time it takes for the reaction to finish.

She repeats the experiment three more times, each time using a different metal.

Lily writes this hypothesis.



Look at her results.

metal	time for reaction to finish in seconds
zinc	125
copper	does **not** react
magnesium	42
calcium	25

Do the results support her hypothesis?

Tick (✓) the correct answer.

yes ☐ no ☐

Explain your answer.

Use information from the table.

.....

.....

.....

.....

[3]

15 Yuri makes an electromagnet.

Write down a list of the equipment he needs.

Describe how he uses this equipment to make the electromagnet.

You may wish to draw a labelled diagram to help you answer the question.

equipment .....

.....

.....

method .....

.....

.....

.....

.....

[4]