Cambridge Assessment International Education

# Science

Stage 9

Paper 2

**2025**

## Cambridge Lower Secondary Progression Test

Name

Class

Date

**45 minutes**

No additional materials are needed.

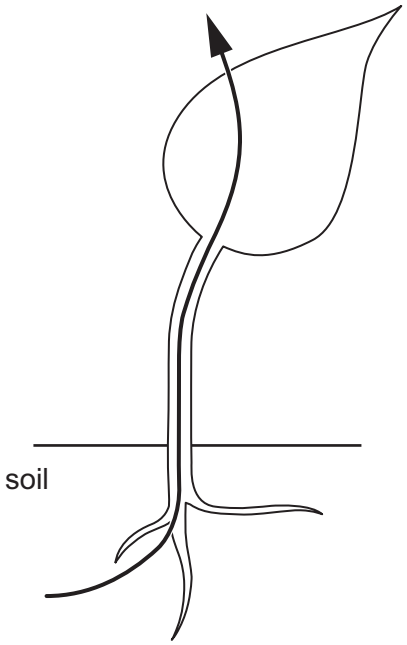
**INSTRUCTIONS**

- 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** The diagram shows the pathway of water through a plant.




**(a)** Name the **type** of cell where water enters the plant.

.....[1]

**(b)** Water from the soil enters a plant.

Write down the name of this process.

.....[1]

**(c)** Water passes from the root, through the stem to the leaf.

Name the vessel in the stem that the water passes through.

.....[1]

**(d)** Water moves from the leaf to the air.

Write down the name of this process.

.....[1]

**2** **(a)** Complete the sentences about chemical bonding.

**(i)** The **type** of bond made when a pair of electrons is shared by two atoms is called a ..... bond. [1]

**(ii)** When an atom ..... an electron, a positive ion is made. [1]

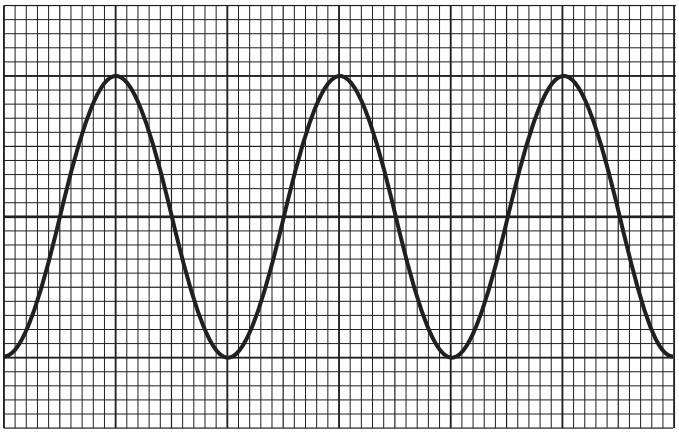
**(b)** What is an ionic bond?

.....

.....

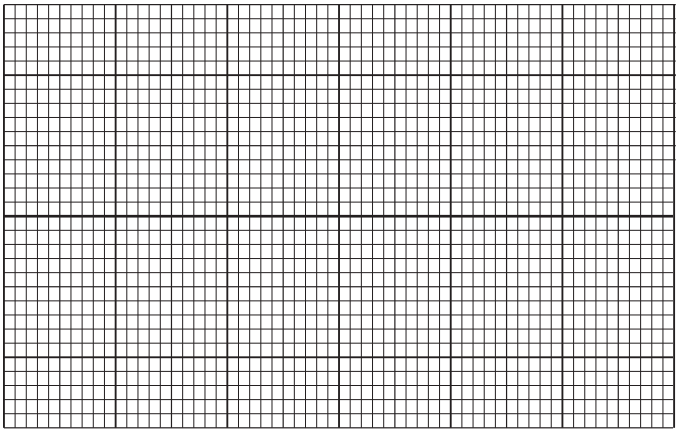
..... [1]

**3** Look at the diagram of sound waveform **A**.



sound waveform **A**

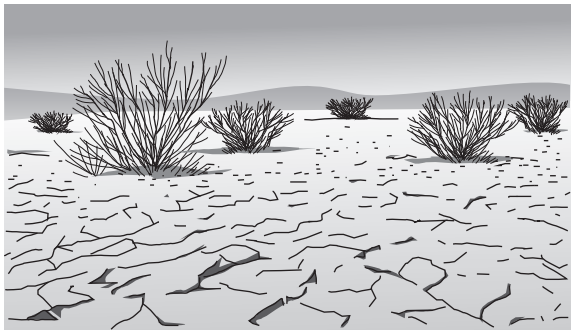
Draw on the grid a sound waveform **B** that completely cancels out sound waveform **A**.



sound waveform **B**

[1]

**4** Aiko finds a drawing of a desert.



She draws a diagram to show the different causes of desertification.

**(a)** Climate change causes desertification.

Circle the cause of desertification due to climate change.

**grassland with too many animals**

**land over used for crops**

**trees cut down by humans**

**less rain**

[1]

**(b)** Suggest **two** future impacts of desertification.

1 .....

.....

2 .....

.....

[2]

**5** Complete these sentences about how plants make glucose.

**(a)** Plants use energy from light, ..... and

..... to make glucose and ..... .

[3]

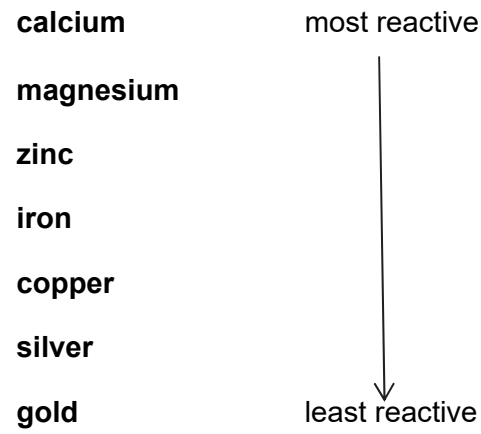
**(b)** Plants make glucose using the process of .....

This process takes place in structures in some leaf cells.

These structures are called .....

[2]

**6** Look at part of the reactivity series.




**(a)** Zinc, Zn, reacts with copper sulfate solution, $CuSO_4$.

Zinc sulfate solution, $ZnSO_4$ and copper, Cu, are made.

Write the **symbol** equation for this reaction.

.....

[1]

**(b)** Predict if copper reacts with magnesium sulfate solution.

Tick (✓) the correct answer.

yes ☐ no ☐

Explain your answer.

.....

.....

[1]

**(c)** Predict if iron reacts with silver nitrate solution.

Tick (✓) the correct answer.

yes ☐ no ☐

Explain your answer.

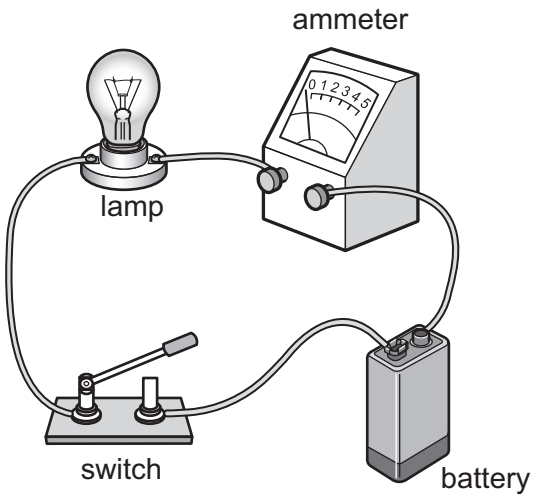
.....

.....

[1]

**7** Oliver makes a series electrical circuit.

Here is a diagram of his electrical circuit.




**(a)** **(i)** Oliver wants to measure the voltage across the lamp.

Write down the name of the meter that measures voltage.

..... [1]

**(ii)** Oliver uses this meter to measure the voltage across the lamp.

Draw on the diagram to show where and how the meter is connected.

Use this shape ◯ for the meter.

Use lines for wires.

[1]

**(b)** Oliver writes down the readings from the meters in his electrical circuit.

voltage = 1.5 V

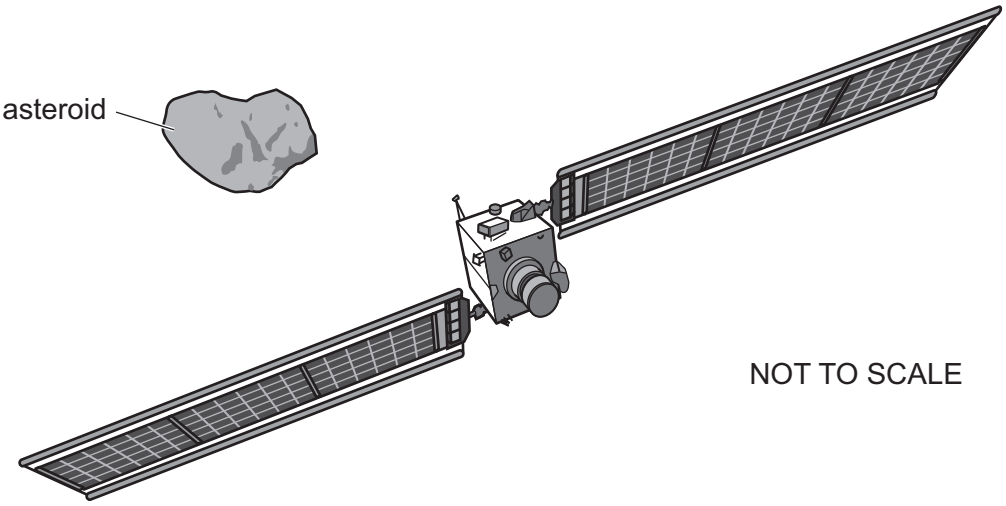
current = 0.6 A

Calculate the resistance of the lamp.

resistance = ..... Ω [2]

**8** Scientists are concerned that some asteroids may collide with the Earth.

NASA sent a spacecraft to collide with a small asteroid.




The small asteroid was destroyed.

**(a)** Suggest why NASA destroyed the small asteroid.

.....

..... [1]

**(b)** One consequence of a large asteroid hitting the Earth is climate change.

Describe **one other** consequence of a large asteroid hitting the Earth.

..... [1]

**9** These varieties of lettuce are from the same species.

Look at the diagram of one leaf from each variety of lettuce.

**A**

**B**

**C**

**D**

**E**

DRAWN TO SCALE

| **Key** | |
|---|---|
| **1** Does the leaf have a rounded end? | **Yes**: go to question **3**<br>**No**: go to question **2** |
| **2** Is the leaf longer than it is wide? | **Yes**: mizuna<br>**No**: endive |
| **3** Is the rounded end of the leaf dark in colour? | **Yes**: oak leaf<br>**No**: go to question **4** |
| **4** Is the leaf small and oval in shape? | **Yes**: purslane<br>**No**: romaine |

Use the key to identify each variety of lettuce.

**A** .....

**B** .....

**C** .....

**D** .....

**E** .....

[2]

**10** **(a)** A sample of substance **X** has a mass of 150 g and a volume of 25 $cm^3$.

Calculate the density of substance **X**.

Include the unit of density.

density of substance **X** = ..... unit ..... [3]

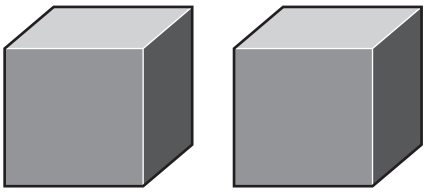
**(b)** Substance **X** has a melting point of 1852 °C and a boiling point of 4377 °C.

Suggest the **type** of structure in substance **X**.

..... [1]

**11** This question is about heat and temperature.

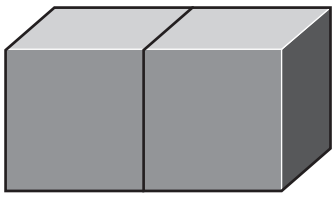
Lily has two blocks of metal.



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

Block **A** has a higher temperature than block **B**.

Lily puts the blocks together.



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

**(a)** Describe what happens when the two blocks touch each other.

.....

..... [1]

**(b)** Describe what happens when the two blocks are together for 10 minutes.

.....

..... [1]

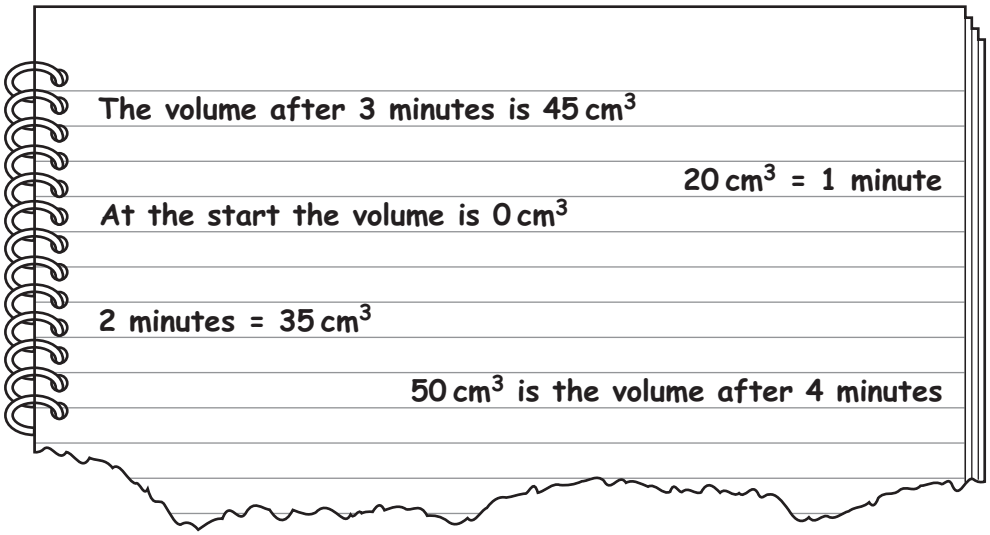
**12** Hassan investigates the reaction between magnesium and dilute hydrochloric acid.

The reaction makes hydrogen gas.

Hassan adds 0.5 g of magnesium to 25 $cm^3$ of dilute hydrochloric acid.

He measures the total volume of hydrogen gas made every minute for 4 minutes.

Look at his results.




Hassan presents his results in a table.

Complete the table of results.

| | |
|---|---|
| | |
| | |
| | |
| | |
| | |

[3]

**13** Chen runs for 20 minutes.

He is hot.

Chen has liquid water on his skin.

Explain how the evaporation of the liquid water cools his skin.

.....

.....

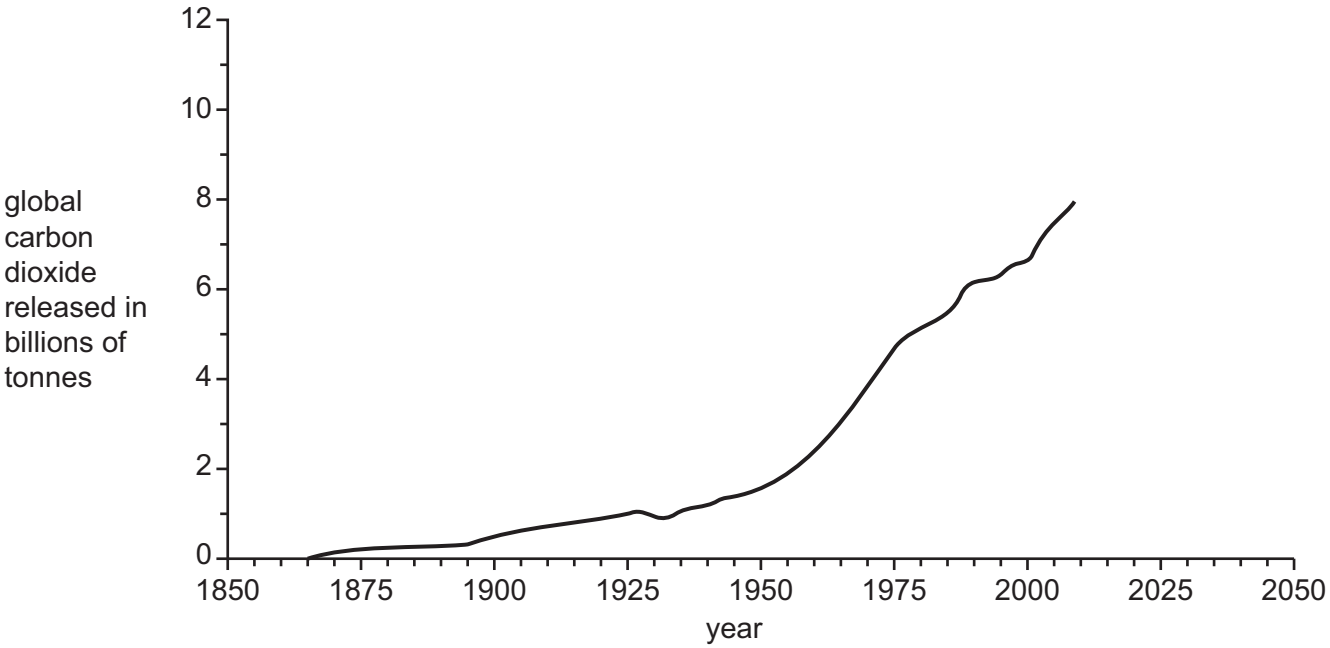
..... [2]

**14** Rajiv uses the internet to find out about the carbon cycle.

He finds out that there are **two** types of carbon cycle.

- **slow carbon cycle**
  Carbon in fossil fuels leaks slowly into the atmosphere as carbon dioxide through volcanic activity.
  This takes millions of years.
- **fast carbon cycle**
  Humans burn fossil fuels such as oil to release very large amounts of carbon dioxide into the atmosphere every year.

Rajiv also finds this graph.




**(a)** There are **no** values of carbon dioxide released shown on the graph between 1850 and 1865.

Suggest why.

.....

..... [1]

**(b)** Describe the trend in the amount of carbon dioxide released from the year 1850 to the year 2000.

Explain the trend.

Use ideas about the slow carbon cycle and the fast carbon cycle.

description of trend .....

.....

explanation .....

.....

.....

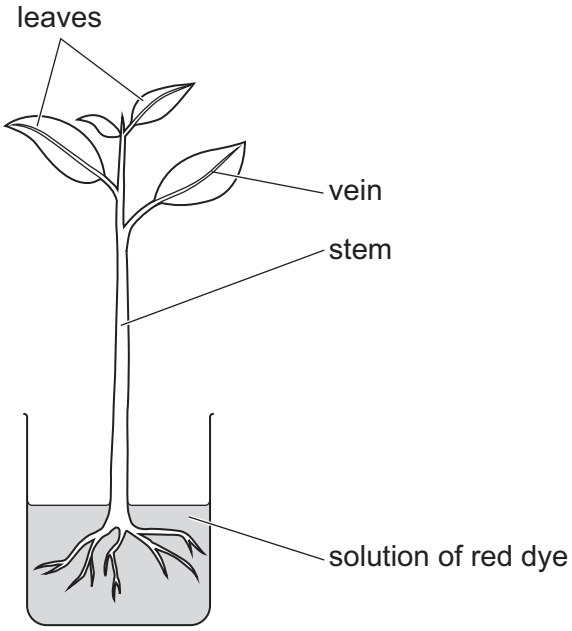
[2]

**(c)** Suggest a value for the amount of global carbon dioxide released in 2025.

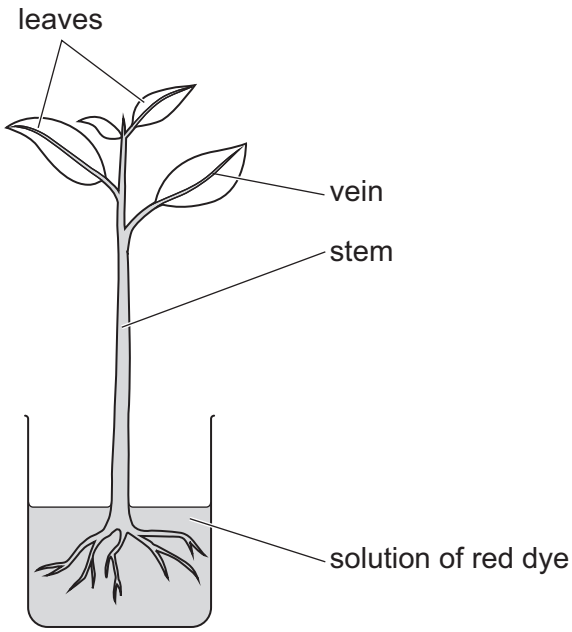
..... billions of tonnes [1]

**15** Mike investigates the rate water is absorbed by a plant.

The diagram shows some of the equipment he uses.



**(a)** Mike waits until the veins of the leaves are red in colour.




Write down **two** measurements he takes to measure the rate water is absorbed by the plant.

Name the **two** pieces of equipment he uses to take these measurements.

measurement 1 .....

equipment 1 .....

measurement 2 .....

equipment 2 .....

[2]

**(b)** Mike decides to repeat the experiment three times.

Explain why.

.....

..... [1]

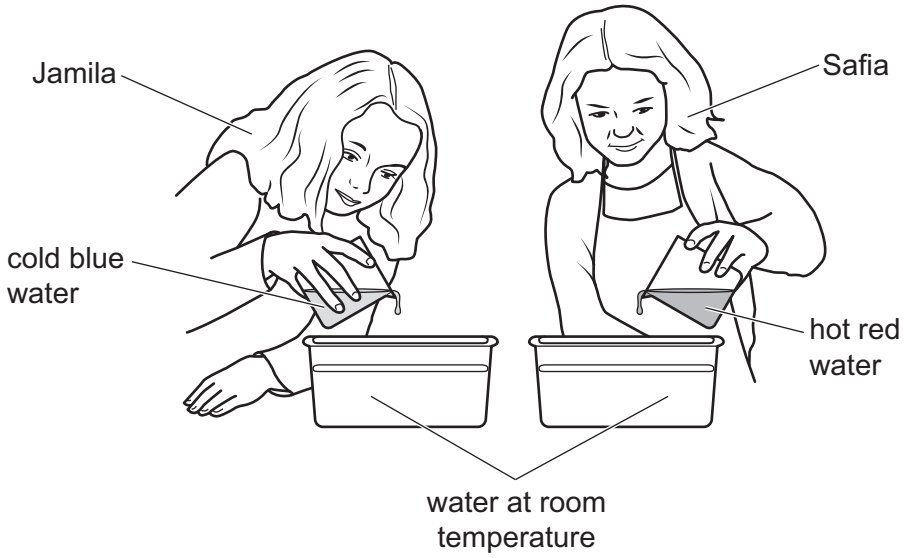
**16** Jamila and Safia investigate convection.

Jamila:

- adds blue dye to cold water
- pours the cold blue water into water at room temperature.

Safia:

- adds red dye to hot water
- pours the hot red water into water at room temperature.



**(a)** Look at Safia in the picture.

She has **not** made a risk assessment.

Complete the table to identify **two** risks and describe how to control these risks.

| risk | how to control the risk |
|---|---|
| ……<br>…… | ……<br>…… |
| ……<br>…… | ……<br>…… |

[2]

**(b)** Predict what happens to the **cold blue water** and the **hot red water**.

Explain your answers.

Use ideas about density and convection.

prediction for **cold blue** water .....

.....

explanation .....

.....

prediction for **hot red** water .....

.....

explanation .....

.....

[3]