Cambridge Assessment International Education

Science

Stage 7

Paper 2

2024

Cambridge Lower Secondary Progression Test

Name

Class

Date

45 minutes

No additional materials are needed.

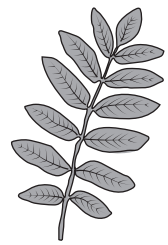
INSTRUCTIONS

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

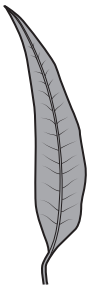
INFORMATION

- 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 leaves from six different species of tree.



species **A**



species **B**

species **C**

species **D**

species **E**

species **F**

(a) Write down the meaning of the term **species**.

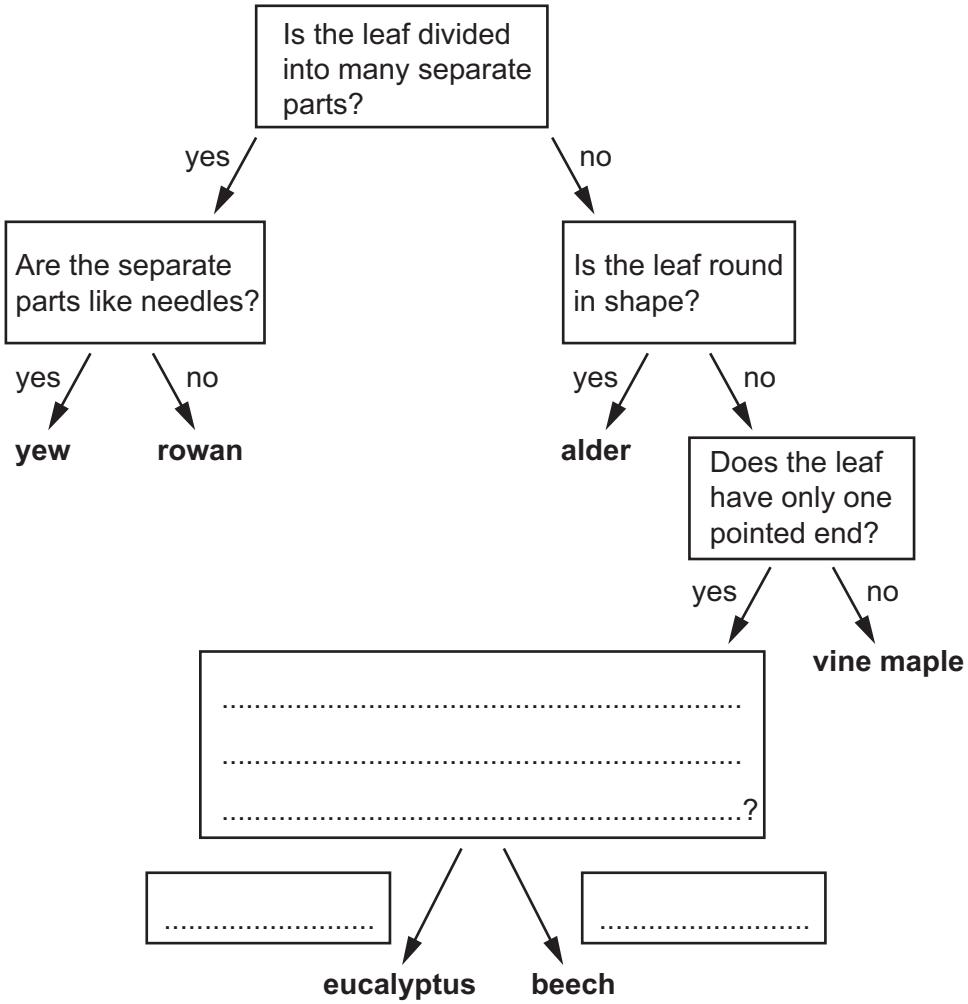
.....

.....

.....

..... [2]

(b) Look at the dichotomous key used to identify different species of tree.



(i) Use the key to identify species **A**.

Species **A** is **.....**. [1]

(ii) The dichotomous key is incomplete.

Species **B** is a eucalyptus tree.

Species **C** is a beech tree.

Complete the **three** empty boxes in the key.

[2]

2 Metals and non-metals have different physical properties.

K

Complete the table about metals and non-metals.

physical property	metal	non-metal
electrical conductivity	.....	low
thermal conductivity	high	.....
melting point	.....	low
density	high	.....

[2]

3 Gravity is a force.

K

(a) Mike wants to find out if the total mass of two objects affects the force between the objects.

Mike collects information from the internet about the:

- mass of two objects, **A** and **B**
- distance between these two objects
- force between these two objects.

He puts the information in a table.

mass of object A in kg	mass of object B in kg	distance between object A and object B in m	force between object A and object B in N
1	1	1	1
2	1	1	2
2	2	1	3
2	3	1	6
3	3	1	9

(i) Mike says,

'This is a fair test.'

Explain why this is a fair test.

Use information from the table.

.....

..... [1]

(ii) Mike notices a mistake with one of the values for the force between objects in N.

This measurement should be 4 N.

Identify the incorrect value.

Explain your answer.

incorrect force between objects in N ..... N

explanation .....

.....

[2]

(b) Complete the sentence to describe gravity.

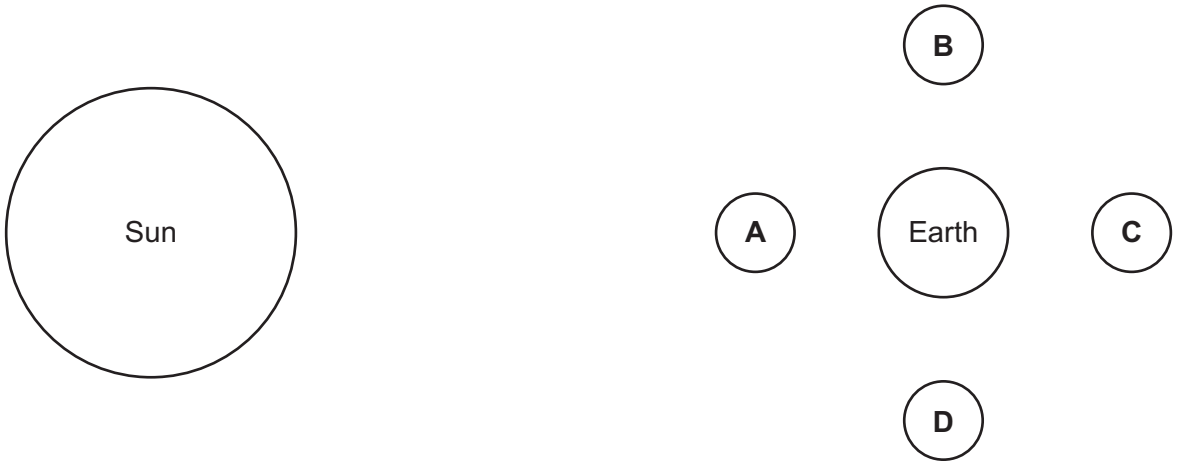
Choose from the list.

attraction **mass** **repulsion** **weight**

Gravity is the force of ..... between two objects.

[1]

4 Several times a year there are solar eclipses on Earth.



NOT TO SCALE

Which position of the Moon causes a solar eclipse?

Circle the correct answer.

A **B** **C** **D**

[1]

5 The diagram shows part of an ocean food chain.

plankton ⟶ small fish ⟶ squid ⟶ whale

(a) Name a herbivore from the food chain.

.....[1]

(b) Penguins eat small fish.

Whales eat penguins.

Adding penguins to the food chain makes a food web.

Complete the diagram to make this food web.

plankton ⟶ small fish ⟶ squid ⟶ whale

[2]

(c) Microorganisms are also present in the ocean.

Some microorganisms are decomposers.

What is the function of a decomposer in a food web?

.....

..... [1]

6 Safia reacts some white solid calcium carbonate with dilute hydrochloric acid.

Carbon dioxide, water and a colourless solution of calcium chloride are made in the reaction.

(a) Suggest **two** observations Safia makes to confirm a chemical reaction takes place.

1 .....

2 .....

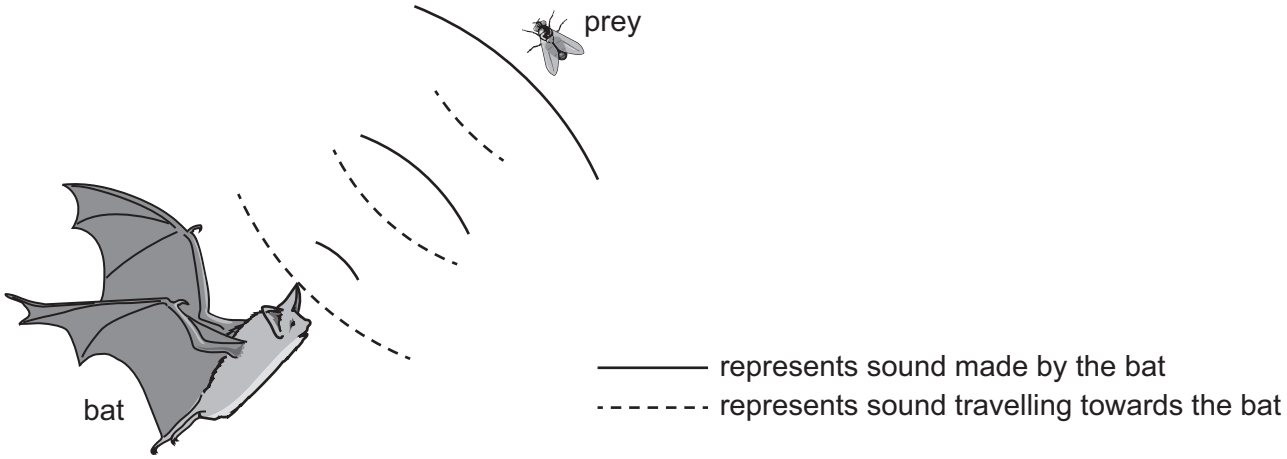
[2]

(b) During the reaction the dilute hydrochloric acid is neutralised.

Describe what happens to the pH of the dilute hydrochloric acid.

..... [1]

7 Echolocation is used by bats to find their prey.



(a) Explain how the bat uses echoes to find the prey.

.....

.....

.....

..... [2]

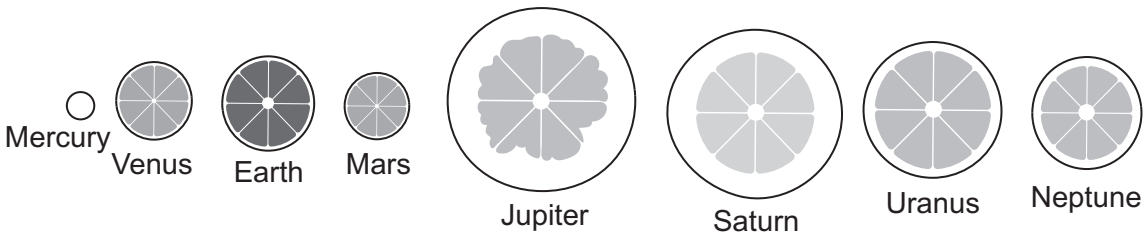
(b) The prey moves closer to the bat.

Describe how the bat knows, using echoes, that the prey is closer.

.....

..... [1]

8 Rajiv uses fruits to model the Solar System.



(a) Write down **two** strengths of this model of the Solar System.

1 .....

.....

2 .....

.....

[2]

(b) Write down **two** limitations of this model of the Solar System.

1 .....

.....

2 .....

.....

[2]

9 Three of the characteristics of living organisms are sensitivity, nutrition and movement.

(a) Draw a straight line to match each **characteristic** to its correct **description**.

characteristic	description
	organisms take in and use nutrients
sensitivity	organisms increase in number
	organisms detect changes and respond to them
nutrition	organisms break down nutrients to release energy
	organisms remove nutrients from their bodies
movement	organisms change their position

[3]

(b) Viruses cause disease.

(i) Write down **one** reason why some scientists think viruses are **living**.

.....

..... [1]

(ii) Write down **one** reason why some scientists think viruses are **non-living**.

.....

..... [1]

10 Some chemical reactions make a precipitate.

Complete the sentence about reactions that make a precipitate.

A precipitate is made when two ..... reactants make at least one ..... product.

[2]

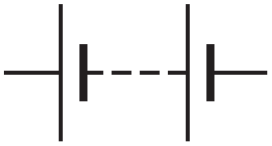
11 Blessy describes her electrical circuit.

My circuit is a complete **series** circuit with:

- a battery of cells
- two lamps
- one closed switch
- one buzzer
- a meter to measure the current in the whole circuit.

Draw her circuit using standard electrical symbols.

The battery of cells has been drawn for you.



[4]

12 The atmosphere contains a mixture of gases.

(a) What is the percentage by volume of nitrogen in clean dry air?

..... % [1]

(b) What is the meaning of the word **mixture**?

.....

.....

..... [2]

13 Carlos investigates the neutralisation reaction between an acid and an alkali.

In his first experiment Carlos:

- adds 50 cm^3 of acid to a beaker
- measures the temperature of the acid
- adds 10 cm^3 of alkali to the acid
- stirs the mixture
- measures the highest temperature reached by the mixture.

Carlos repeats the first experiment four more times but uses different volumes of alkali.

Look at his results table.

volume of alkali added in cm^3	temperature of acid in °C	highest temperature of mixture in °C	change in temperature in °C
10	21	26	5
20	21	31	10
30	22	37	15
40	21	40	19
50	23	47	.....

(a) Name the equipment he uses to measure the temperature of the acid and the volume of the acid.

temperature .....

volume .....

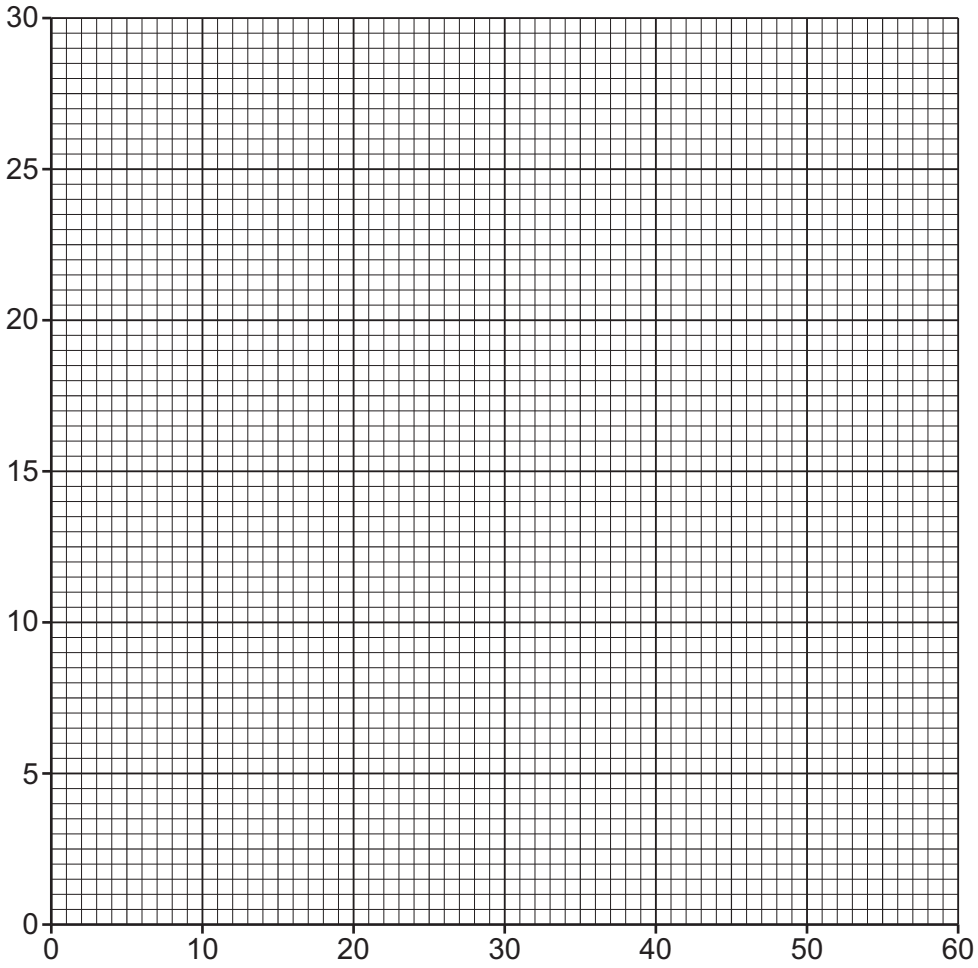
[2]

(b) Calculate the change in temperature when Carlos uses 50 cm^3 of alkali.

Write your answer in the table. [1]

(c) Plot the results on the grid.

Include labels for the axes.



.....

.....

.....

.....

.....

[2]

(d) Draw a straight line of best fit. [1]

(e) Describe the pattern between the volume of alkali added and the change in temperature.

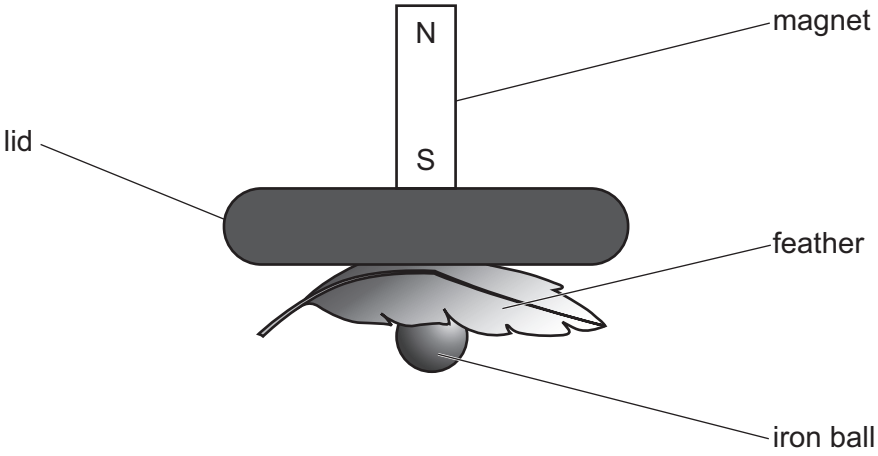
.....

..... [1]

14 Angelique investigates how objects fall.

Angelique:

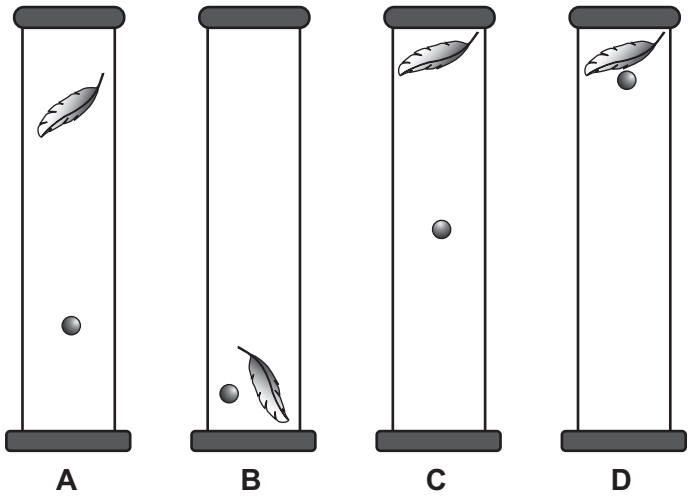
- uses a magnet to attach an iron ball and a feather to the bottom of a lid



- puts the lid on top of a tube to seal the tube
- removes the magnet so the ball and feather fall at the same time
- repeats this with different contents inside the sealed tube.

Angelique takes a photograph of each tube 0.5 s after the magnet is removed.

The position of the ball and feather in the photographs are shown in the diagrams.



(a) One tube is a vacuum, the other tubes contain either **air** or **thick oil** or **water**.

Complete the sentences.

Choose from the list.

air **thick oil** **water**

One has been done for you.

Tube **A** contains .....air.....

Tube **B** is a vacuum.

Tube **C** contains .....thick oil.....

Tube **D** contains .....water.....

[1]

(b) Explain the results for diagram **B** (the vacuum).

.....

.....

..... [2]