Cambridge Assessment International Education

Cambridge Lower Secondary Progression Test

Science paper 2

Stage 8

7631031431

45 minutes

Name .....

Additional materials: Calculator
Ruler

READ THESE INSTRUCTIONS FIRST

Answer **all** questions in the spaces provided on the question paper.

You should show all your working on the question paper.

The number of marks is given in brackets [ ] at the end of each question or part question.

The total number of marks for this paper is 50.

For Teacher's Use	
Page	**Mark**
1	
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16	
Total	

1 Foods contain a mixture of different constituents.

The table shows the masses of different constituents and the energy content in 100 g of some foods.

food	mass of carbohydrate in g	mass of fat in g	mass of vitamin C in mg	energy content in kJ
bread	47	3	0	1030
butter	0	81	0	3010
raw potato	18	0	20	340

(a) The masses of the constituents in each food do **not** add up to 100 g.

Name one **other** constituent present in each of the foods.

.....[1]

(b) Use the information from the table to answer these questions.

(i) Which **constituent** in butter provides the **most** energy?

.....[1]

(ii) Which **constituent** in bread provides the **most** energy?

.....[1]

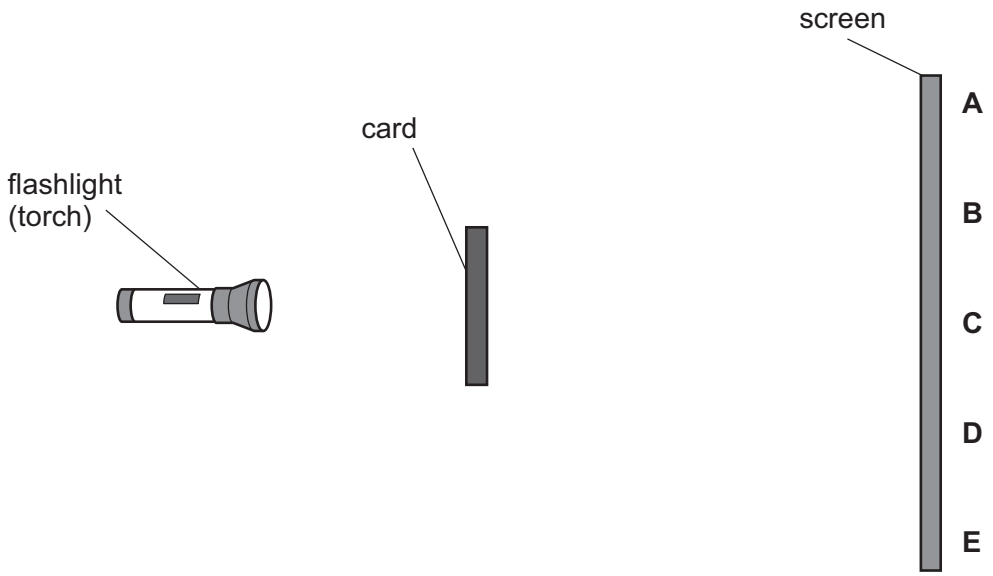
(c) Cooked potato contains much **less** vitamin C than raw potato.

Suggest why.

.....[1]

2 Mia investigates shadows.

She puts a piece of card between a flashlight and a screen.



A shadow forms on the screen.

Which answer shows the size of the shadow?

Circle the correct answer.

A to B **A to C** **A to E** **B to C** **B to D**

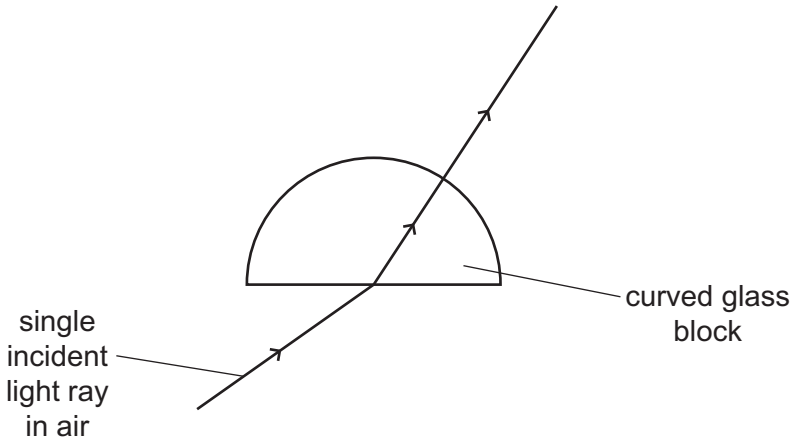
[1]

[Turn over

For Teacher's Use

3 Blessy does an experiment with light.

She uses a single incident light ray and a curved glass block.



What is happening to the ray of light as it goes from the air into the glass block?

.....

.....

Why does this happen?

.....

.....

[2]

4 Priya notices that the pressure inside one of her car tyres is too low.

She pumps up the tyre to a higher pressure.

(a) What happens to the **number of particles** in the car tyre?

..... [1]

(b) What happens to the **distance** between particles as the pressure increases?

..... [1]

(c) One of the tyres gets a puncture (small hole).

What happens to the **pressure** inside the tyre?

..... [1]

5 Class 8 have a quiz about sound.

Their teacher gives them six sentences.

Decide if each sentence is **true** or **false**.

Write your answers on the dotted lines.

For Teacher's Use

Sound Quiz

1 Sound causes air particles to vibrate.

.....

2 The bigger the vibrations of the air particles the quieter the sound.

.....

3 Sound waves can move through air, water and a vacuum.

.....

4 When there is no sound the particles stop moving.

.....

5 A high pitched sound is always loud.

.....

6 Air particles are closer together in a compression than a rarefaction.

.....

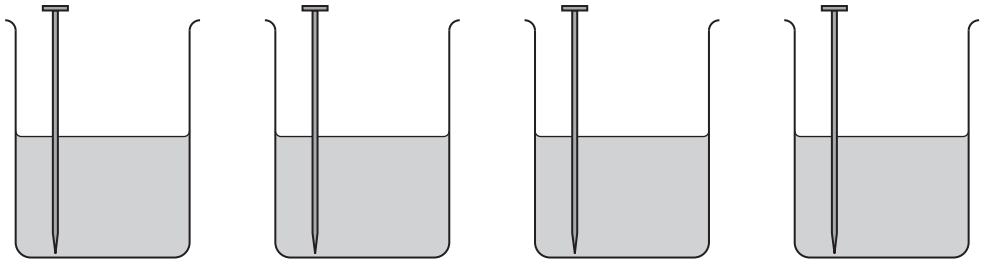
[3]

[Turn over

For Teacher's Use

6 Chen investigates rusting.

- He puts distilled water into four beakers.
- He adds different amounts of salt to three of the beakers.
- He puts one iron nail into each beaker.



iron nail with no salt | iron nail with 1 g of salt | iron nail with 2 g of salt | iron nail with 3 g of salt

After one week Chen records his observations.

amount of salt added in g	observation
0	small amount of rust
1	most of the nail in the water is rusty
2	all of the nail in the water is rusty
3	all of the nail in the water is very rusty

(a) (i) Which variable is Chen **changing** in his investigation?

.....[1]

(ii) Write down one variable Chen needs to **control**.

.....[1]

(iii) What conclusion can Chen make from his investigation?

.....

.....[1]

(b) (i) Which **element** dissolved in the water reacts with iron during rusting?

.....[1]

For Teacher's Use

(ii) Chen sets up another beaker.

This time he puts the iron nail in without any water.

He then seals the top of the beaker.

Explain why the iron nail in this beaker does **not** rust.

.....

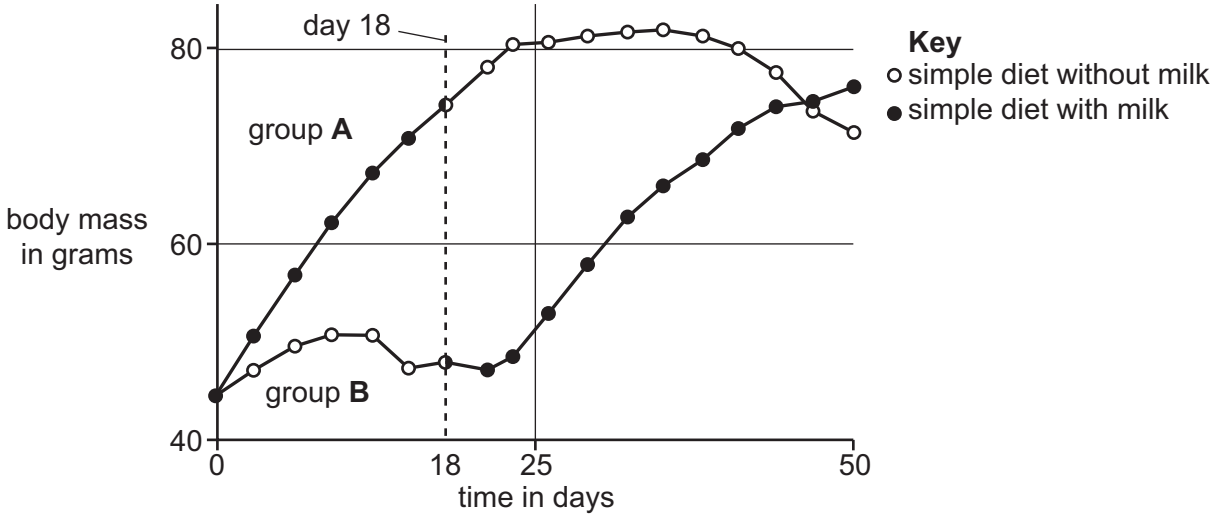
.....[1]

7 A scientist called Frederick Gowland Hopkins studied the growth of newborn rats.

He used two groups of rats, group **A** and group **B**.

- Group **A** rats were fed on a simple diet with milk.
- Group **B** rats were fed on a simple diet without milk.

After 18 days he changed the diets so only group **B** got the milk.
The results of this experiment are shown in the graph.



Describe the patterns shown by the graph between

(a) day 0 to day 18

group **A** .....

group **B** .....

[2]

(b) day 18 to day 50

group **A** .....

group **B** .....

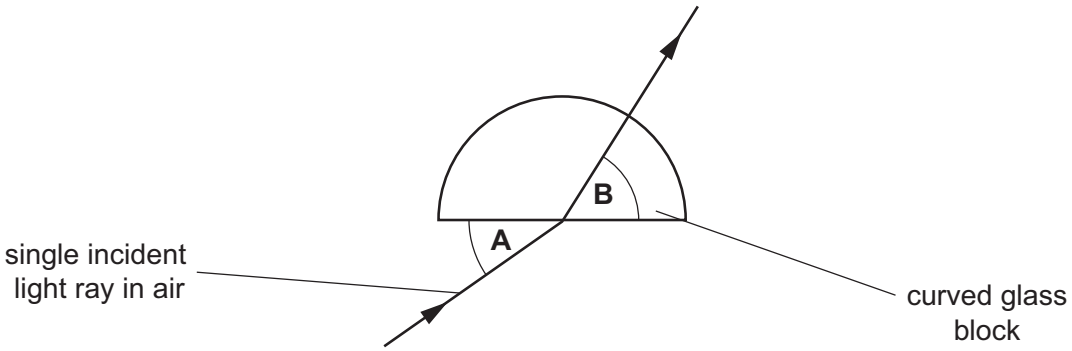
[2]

8 Youssef and Safia investigate light rays.

For Teacher's Use

They

- use a single incident ray and a curved glass block
- measure angle **A**
- measure angle **B**.



(a) What equipment do they use to **measure** angle **A**?

.....[1]

(b) They repeat the experiment to get **six** sets of readings.

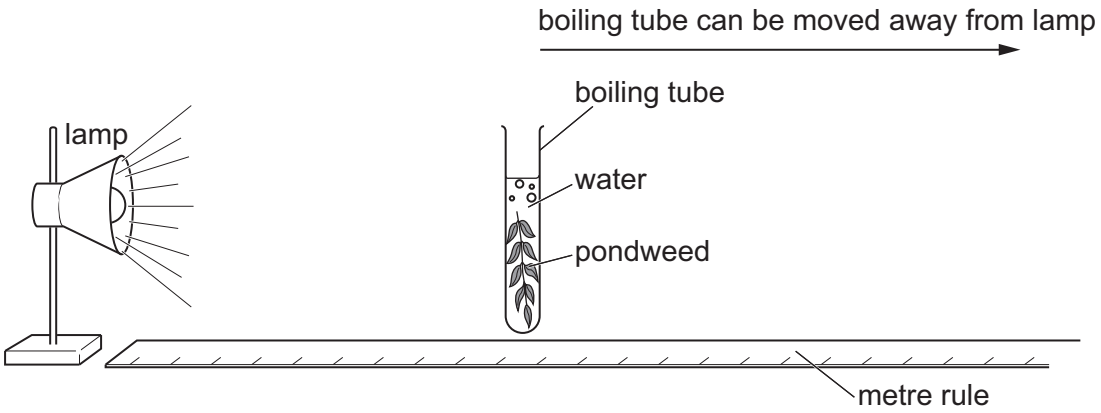
Draw a results table to record all the measurements they make.

[2]

For Teacher's Use

9 Mike investigates how light affects photosynthesis.

Here is the equipment he uses.



He counts the number of bubbles of gas the pondweed makes in one minute.

(a) Which gas is **produced** by the pondweed during photosynthesis?

Circle the correct answer.

carbon dioxide **nitrogen** **oxygen** **water vapour** [1]

(b) The boiling tube is moved away from the lamp.

Complete the sentence.

As the amount of light that reaches the pondweed .....

the rate of photosynthesis ..... . [2]

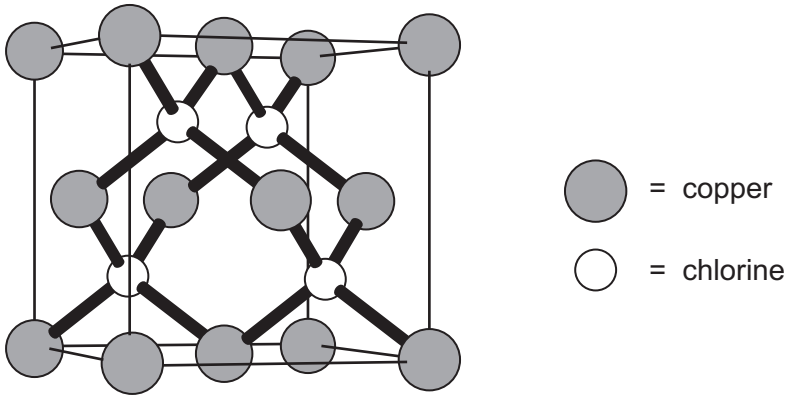
(c) Light is a factor that affects the rate of photosynthesis.

Suggest one **other** factor that affects the rate of photosynthesis.

..... [1]

10 The diagram shows the structure of copper chloride.

For Teacher's Use



(a) Describe how you can tell from the diagram that copper chloride is a compound.

.....[1]

(b) Chlorine is a non-metal.

Tick (✓) the correct sentence.

Chlorine is a solid at room temperature because it has a high melting point.	☐
Chlorine conducts electricity because its molecules are close together.	☐
Chlorine is a gas at room temperature because it has a low boiling point.	☐
Chlorine conducts heat because its molecules are far apart.	☐

[1]

(c) Copper is a metal used to make cooking pots.

Use ideas about properties to explain why.

.....

.....[1]

(d) Copper has a melting point of 1084 °C.

What does this tell you about the forces holding the particles together in solid copper?

.....[1]

[Turn over

For Teacher's Use

11 This question is about electromagnets.

(a) Here is a list of apparatus.

- a coil of copper wire
- an iron rod
- electric wires
- an electric cell

Draw a labelled diagram to show how you can use this apparatus to make an electromagnet.

[2]

(b) Suggest one **advantage** of using an electromagnet compared to a bar magnet.

..... [1]

12 When we breathe in, oxygen travels from the air to the blood.

For Teacher's Use

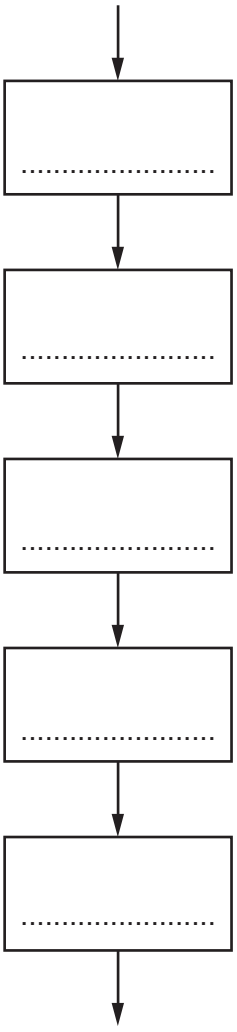
Oxygen passes through these structures.

alveolus **bronchiole** **bronchus** **nose** **trachea**

These structures are **not** in the correct order.

Complete the diagram by writing the names of each structure that oxygen passes through in the correct order.

oxygen in the air



oxygen in the blood

[3]

13 Calcium carbonate is heated strongly. Calcium oxide and carbon dioxide are formed.

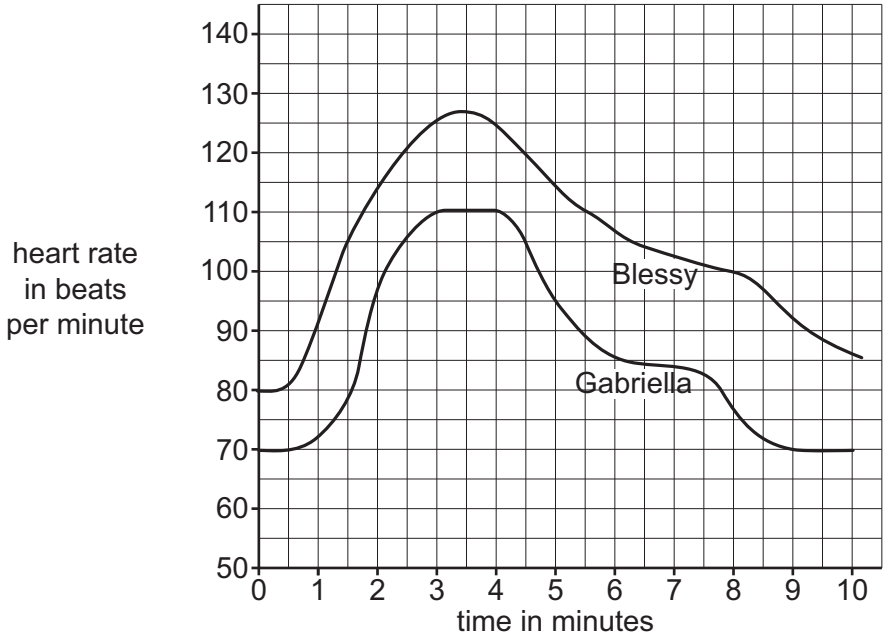
Write the word equation for this reaction.

.....[1]

14 Blessy and Gabriella go to an aerobics class to improve their fitness.

They both do the same exercises for the same time.

The graph shows how their heart rates change during the exercise.



The instructor says that the graph shows that Gabriella is fitter than Blessy.

Explain **two** ways the graph shows this.

.....

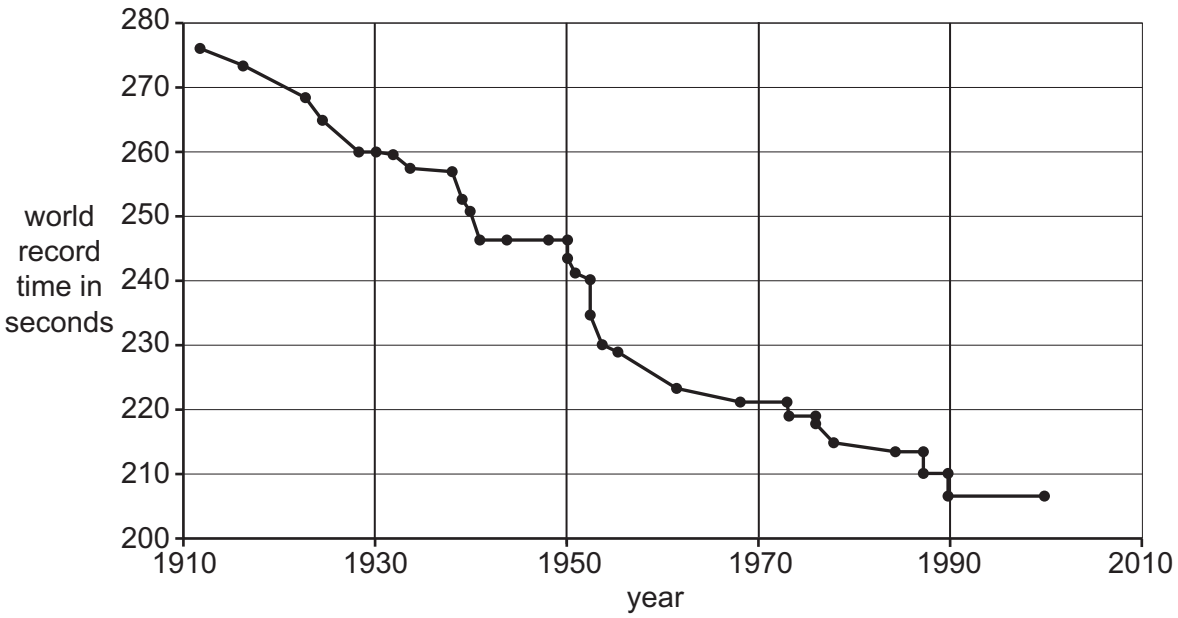
.....

.....

.....[2]

15 Mike finds this information about the world record for the 1500 m race.

For Teacher's Use



Calculate the world record **speed** for the 1500 m race in the year 1930.

Write your answer to **two** significant figures.

.....

.....

.....

.....

speed ..... m / s [3]

16 Beryllium reacts with oxygen to form a compound.

(a) Write down the **name** of this compound.

..... [1]

(b) Explain what is meant by the word **compound**.

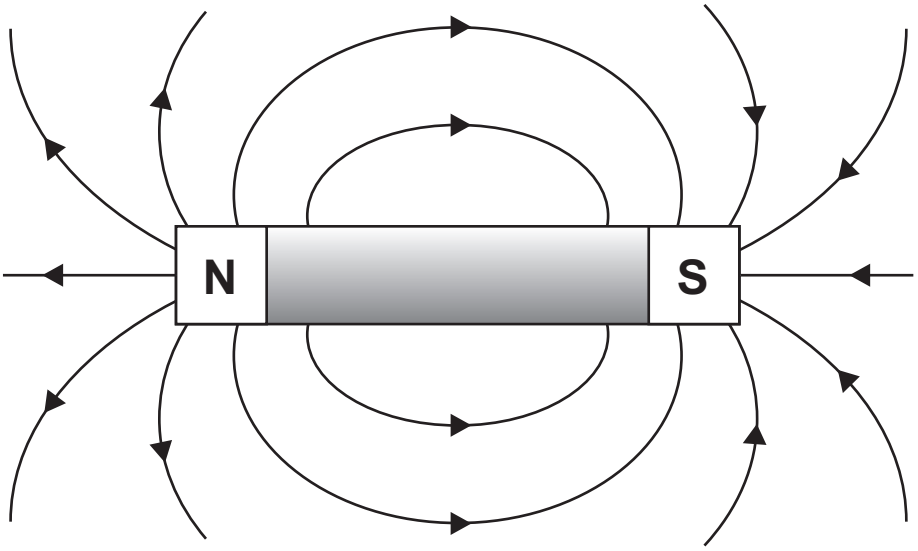
.....

.....

..... [2]

17 The diagram shows the magnetic field around a bar magnet.

For Teacher's Use



The bar magnet is turned through 180°.

Draw the magnetic field and arrows around this bar magnet.

[2]