Cambridge Lower Secondary Checkpoint

CANDIDATE NAME

SCIENCE **1113/01**

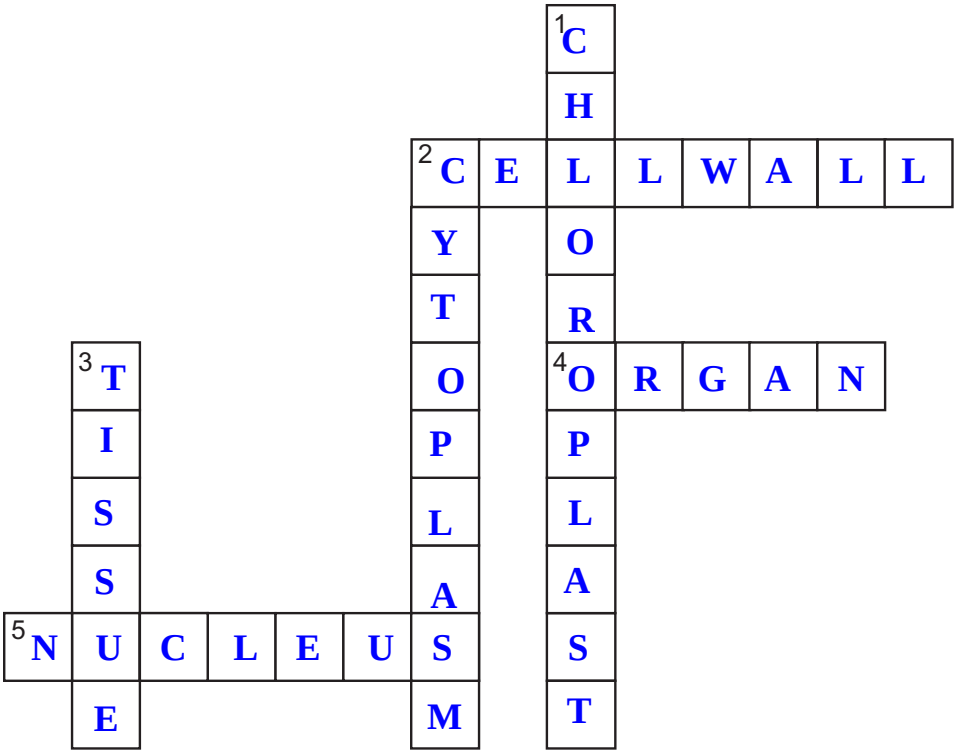
Paper 1 **October 2020**

45 minutes

Candidates answer on the Question Paper.

Additional Materials: Pen, Pencil, Ruler, Calculator

1 Complete the crossword puzzle about cells.



Across

2 Which rigid structure surrounds a plant cell?

4 What is the name of a group of different tissues working together?

5 Which structure contains the genetic material in a cell?

Down

1 What is the name of the structure inside a cell where photosynthesis happens?

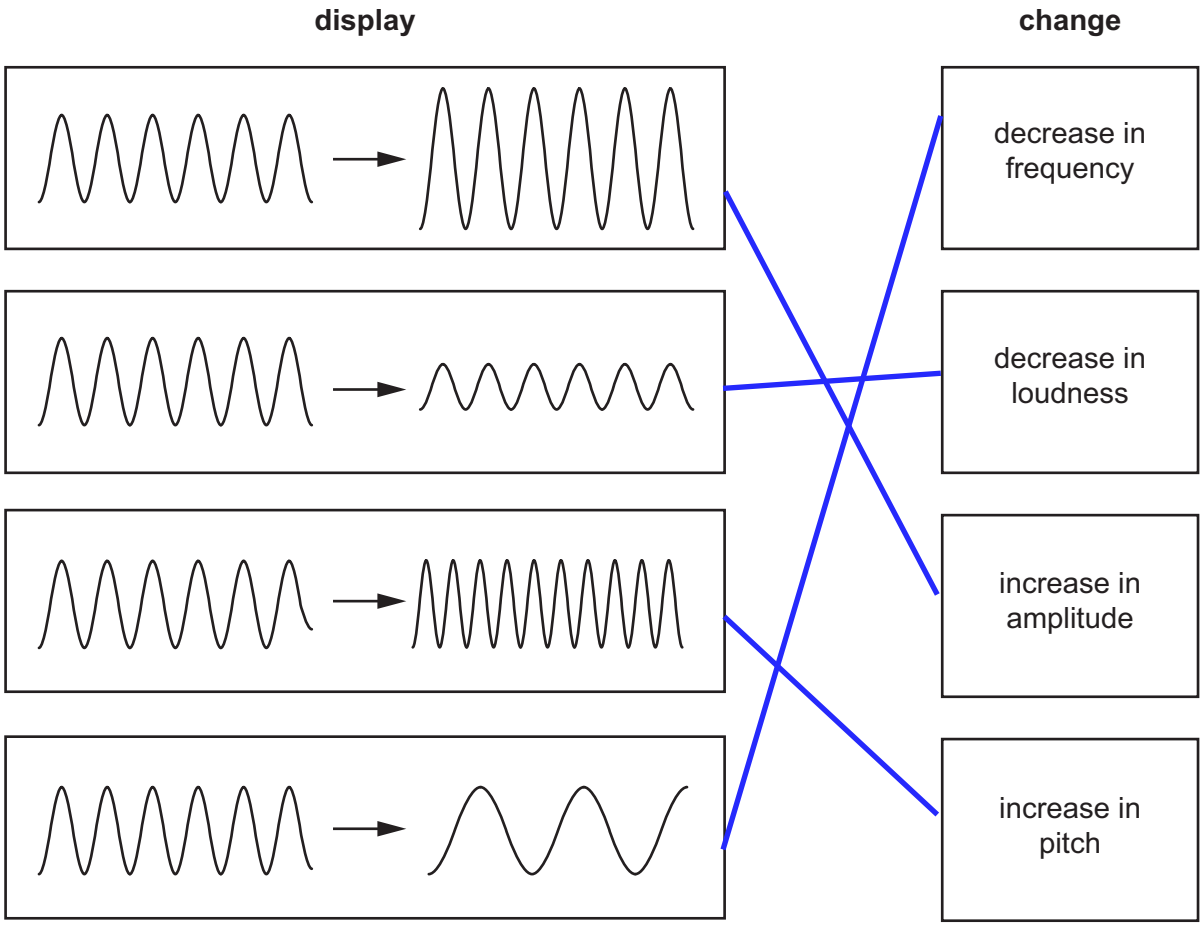
2 Where in a cell do most chemical reactions happen?

3 What is the name of a group of similar cells?

[4]

2 An oscilloscope displays sound waves.

(a) Draw a line to match each **display** to the correct **change**.



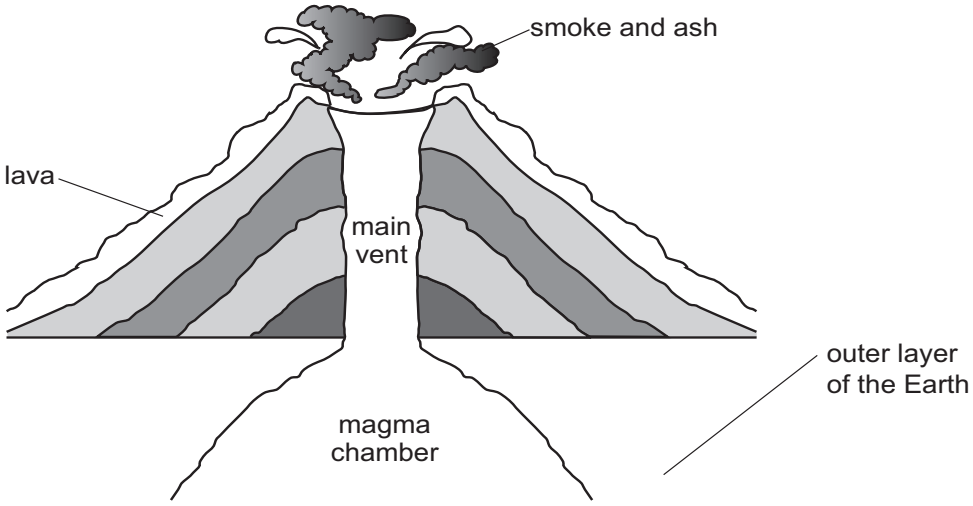
[3]

(b) Tick (✓) the correct sentence about the **amplitude** of sound.

A high-amplitude sound must be a high-frequency sound.	☐
A high-amplitude sound must be a high-pitch sound.	☐
A high-amplitude sound must be a loud sound.	✓
A high-amplitude sound must be a low-frequency sound.	☐
A high-amplitude sound must be a sound with a large wavelength.	☐

[1]

3 Look at the diagram of a volcano.



(a) Lava from the volcano cools down to make rock.

Which **type** of rock is made when lava cools down?

igneous [1]

(b) Rock that forms from lava does **not** contain fossils.

Explain why.

Fossils are destroyed by heat

[1]

(c) What is the name of the outer layer of the Earth?

Circle the correct answer.

crust **inner core** **mantle** **outer core**

[1]

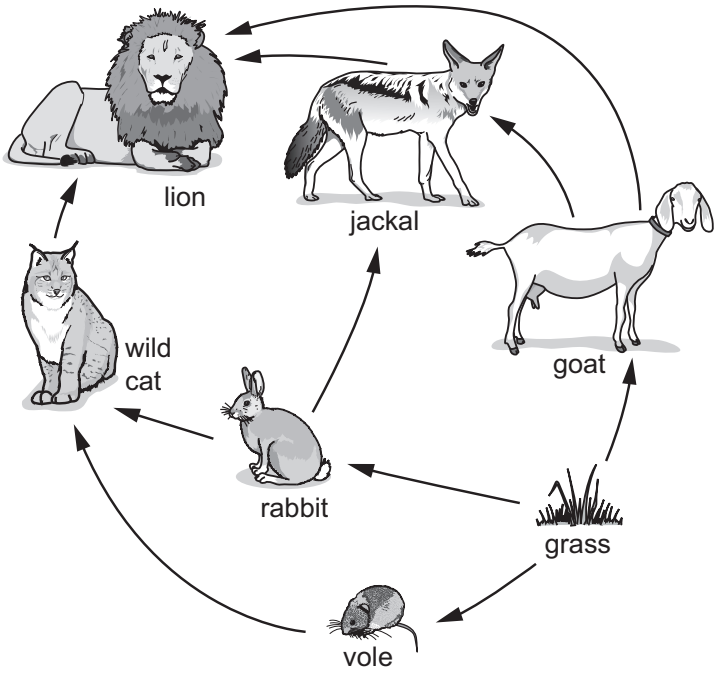
(d) The sentences are about the internal structure of the Earth.

Tick (✓) the correct sentence.

The crust floats on the outer core.	
The inner core is solid and the outer core is liquid.	✓
The mantle is the coldest part of the Earth.	
The outer core is the hottest part of the Earth.	

[1]

4 The diagram shows a food web.



(a) Which animals in this food web are eaten by the wild cat?

rabbit and vole [1]

(b) Write a complete food chain that includes the goat and **two other** animals.

grass → goat → jackal → lion

[1]

(c) The number of voles decreases.

Explain how this may affect the number of rabbits.

When the number of voles decreases, wild cat has to eat more rabbit

➡ the number of rabbit decreases

[1]

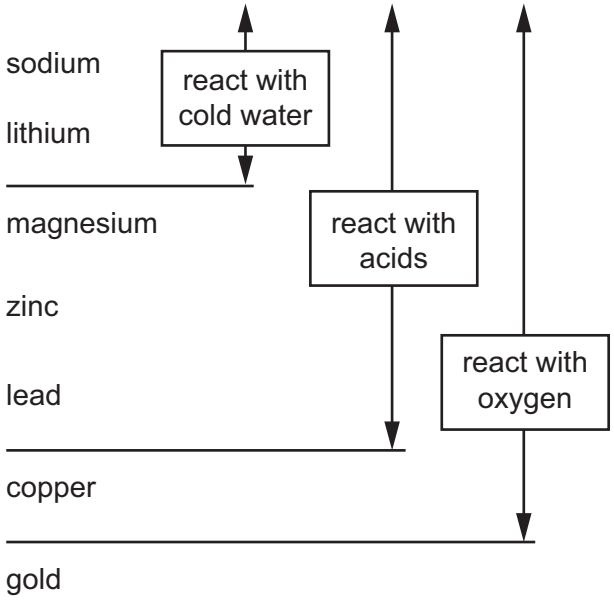
(d) Energy is lost from food webs.

Write down **one** way energy is lost from a food web.

respiration

[1]

5 The diagram shows some information about metals.



(a) Use the diagram to answer these questions.

(i) Which metal reacts with oxygen but **not** acid?

copper [1]

(ii) Describe **two** ways in which the reactions of magnesium and zinc are similar.

They both react with acids

They both react with oxygen

[2]

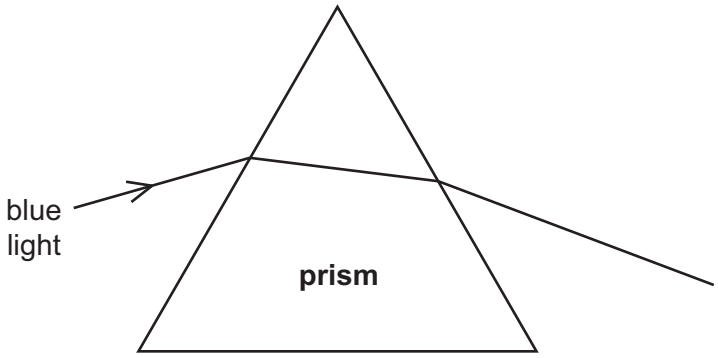
(b) Sodium is placed in cold water. It reacts to form a gas.

What is the name of this gas?

Hydrogen [1]

6 Carlos investigates light.

(a) He shines blue light into a prism.



(i) Describe **one** thing that happens to the blue light.

It is refracted

.....

..... [1]

(ii) Carlos changes the blue light to **white** light.

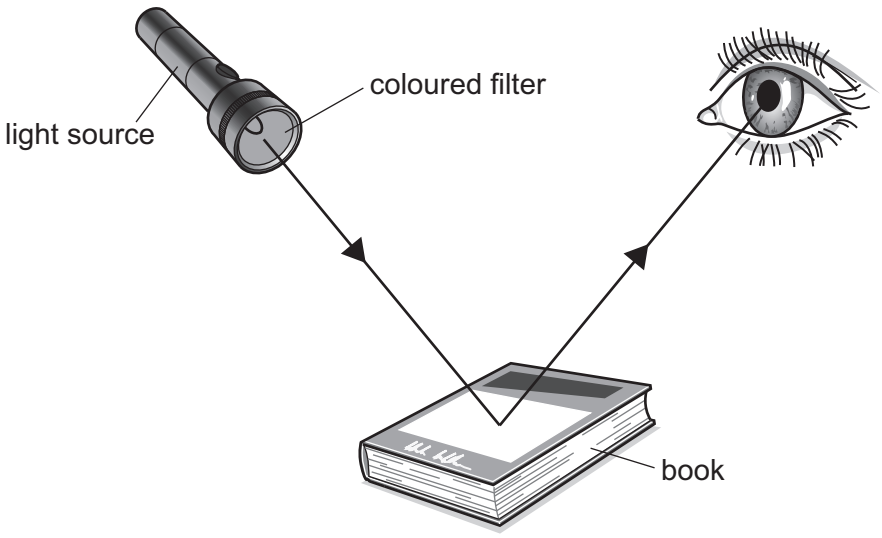
Describe **one other** thing that happens to the white light.

It is dispersed into many colors

.....

..... [1]

(b) Carlos shines light through different coloured filters onto different colours of a book.



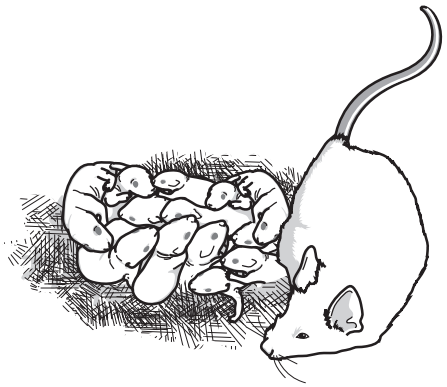
Complete his results table.

colour of light	colour of book	colour of light reflected into eye
red	red	red
blue	red	black
red	magenta	red

[2]

7 Angelique's pet mouse has baby mice.

Pierre says that grouping together helps the baby mice to keep warm.

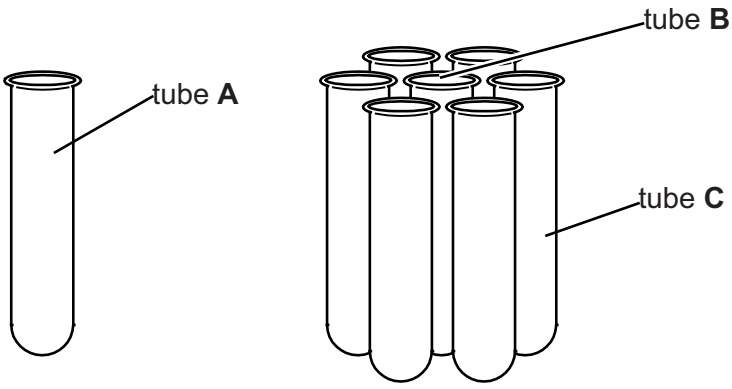


Angelique suggests that they plan an investigation to test Pierre's idea.

They use eight test-tubes filled with hot water to represent eight baby mice.

Angelique labels one tube **A** and stands it on its own.

She labels another tube **B** and places it in the middle of six other tubes all labelled **C**.



Pierre and Angelique obtain these results.

	time in minutes					
	0	1	2	3	4	5
temperature of water in tube A in °C	73	62	54	38	42	40
temperature of water in tube B in °C	73	68	65	62	58	57
temperature of water in tube C in °C	73	65	59	54	49	47

(a) Describe **two** patterns shown by these results.

1 The temperature in three tubes decreases over time

2 The rate of losing heat of tube A is fastest

The rate of losing heat of tube B is slowest

[2]

(b) Describe how these results could be displayed to make these patterns more obvious.

Plot data in a line graph [1]

(c) Angelique says that **one** result is **anomalous**.

Which result is anomalous?

tube A time 3 minutes

Explain how you know the result is anomalous.

The temperature of tube A at 3 minutes does not fit the decreasing trend

[2]

(d) Baby mice do **not** have fur.

Angelique thinks that mice lose less heat when they grow fur.

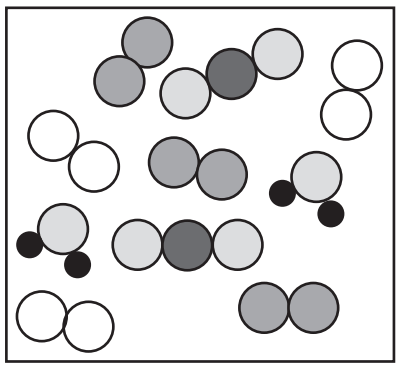
Describe an investigation, using test-tubes of hot water, to see if Angelique's idea is correct.

A test tube is covered with fur and an other test tube without fur

Measure the temperature differences before and after a certain period of time

[2]

8 The diagram shows molecules in a mixture.



(a) Tick (✓) the box next to the correct statement about the mixture.

mixture of four elements	☐
mixture of four compounds	☐
mixture of two elements and two compounds	☑
mixture of one element and three compounds	☐

[1]

(b) Molecules are made of atoms.

Atoms are made of three types of particles.

(i) Electrons are one of these types of particles.

What are the **two other** types of particles in an atom?

protons and neutrons [2]

(ii) Which scientist suggested a model for the atom?

Circle the correct answer.

Copernicus **Darwin** **Galileo** **Rutherford**

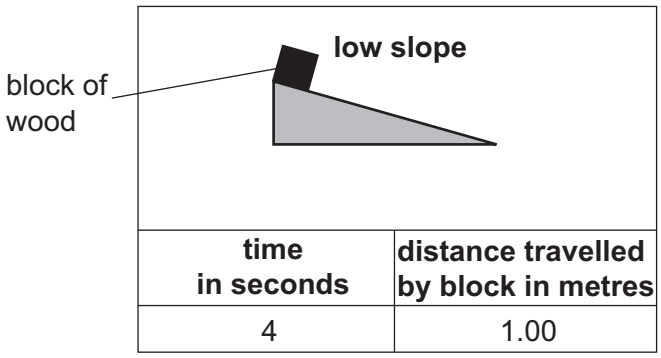
[1]

9 Rajiv investigates the speed of a block of wood moving down a slope.

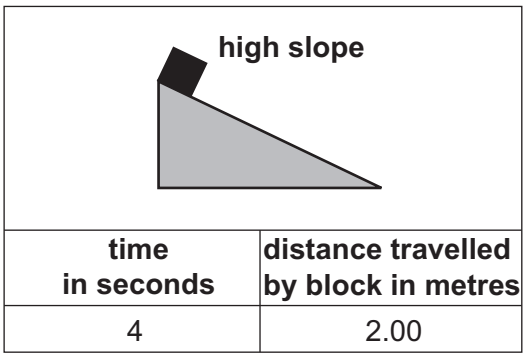
Here is his prediction.

'I predict that the higher the slope, the faster the block of wood moves.'

Here are his results.



time in seconds	distance travelled by block in metres
4	1.00



time in seconds	distance travelled by block in metres
4	2.00

(a) Is Rajiv's prediction **true**?

Yes

Use Rajiv's results to explain your answer.

In 4 seconds, the block of wood on the high slope travels longer distance than the block of wood on the low slope ➡ longer distance means less time

[2]

(b) What **two** pieces of equipment does Rajiv need for the measurements he makes?

1 stopwatch

2 ruler

[1]

(c) He uses 4 seconds for both experiments.

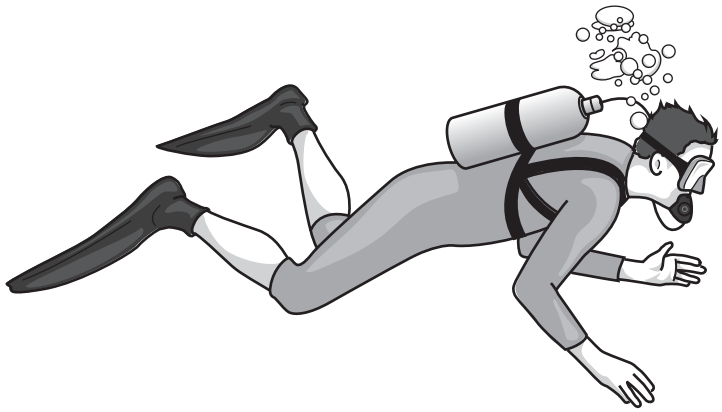
What **two other** things are kept the same in his investigation to make it a fair test?

1 The material of slope

2 The block of wood

[2]

10 The picture shows a diver wearing breathing apparatus.



(a) The cylinder on his back is filled with gas.

The gas contains an element that the diver needs to survive under water.

Name this element.

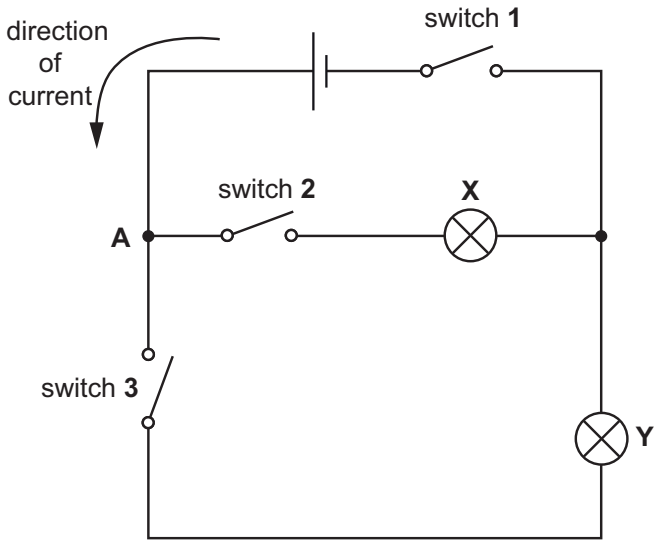
oxygen ..... [1]

(b) Gaseous exchange takes place in his lungs.

Explain what is meant by the term **gaseous exchange.**

The lungs supply oxygen to the blood and take out the carbon dioxide from blood ..... [1]

11 Jamila builds this electrical circuit.



(a) What type of electrical circuit is this?

Circle the correct answer.

electrostatic **magnetic** **parallel** **series**

[1]

(b) Jamila wants to turn lamp **X** on but leave lamp **Y** off.

What must she do?

Close the switch 2 and leave the switch 3 open [1]

(c) Jamila wants to turn lamp **Y** on but leave lamp **X** off.

What must she do?

Close the switch 3 and leave the switch 2 open [1]

(d) Jamila closes all the switches.

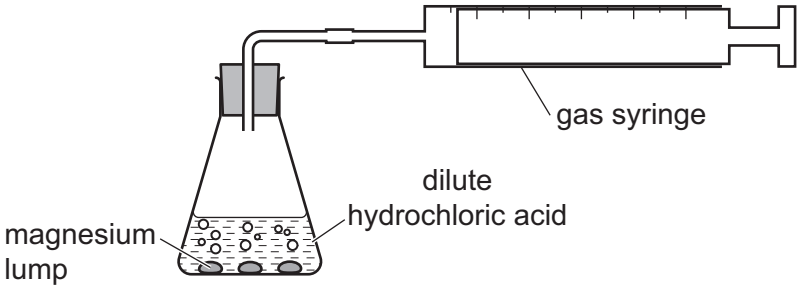
What happens to the current at point **A**?

Current at point A is distributed to lamp X and Y

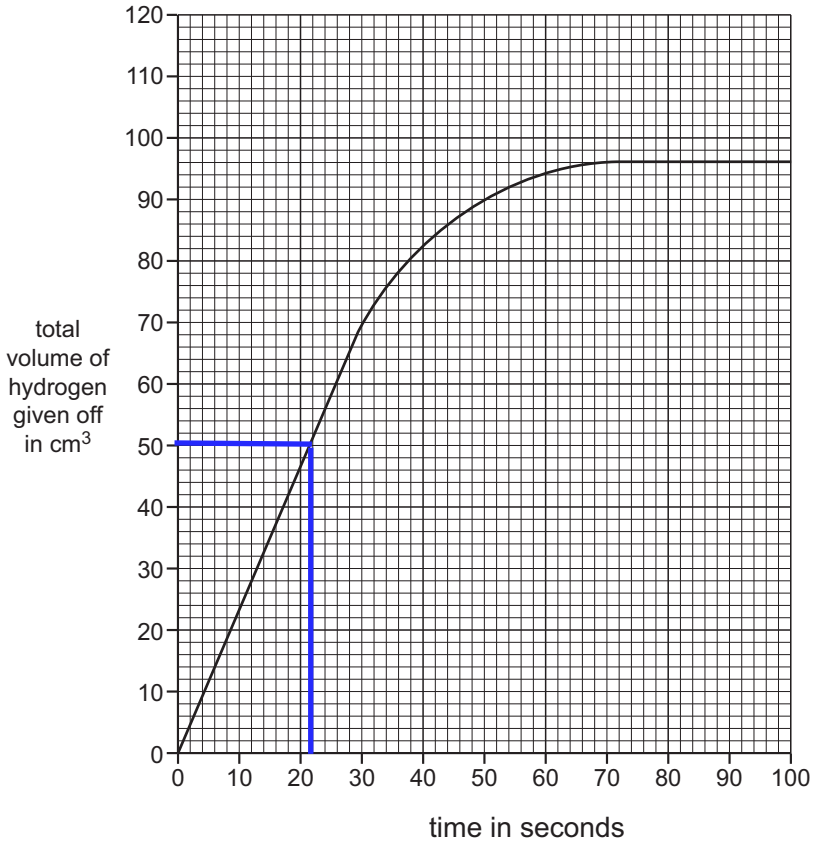
[1]

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

Look at the diagram. It shows the apparatus he uses.



Look at the graph of Ahmed's results.



(a) How long (in seconds) does it take to make 50 cm^3 of hydrogen?

22 seconds [1]

(b) Ahmed repeats the experiment with magnesium **powder**.

Predict what will happen to the rate of the reaction.

The rate of reaction is faster

Explain why.

Magnesium powder has more surface area than magnesium lumps

➡ more collisions between particles ➡ rate of reaction is faster

[3]