Cambridge Secondary 1 Progression Test

Question paper

Cambridge Secondary 1

45 minutes

Science Paper 2

Stage 8

Name .....

Additional materials: 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	
2	
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9	
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11	
12	
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14	
15	
Total	

V1

UNIVERSITY of CAMBRIDGE International Examinations

For Teacher's Use

1 **(a)** Here is a diagram of a bar magnet.
A magnet has a North pole, **N**, and a South pole, **S**.

(i) Draw the magnetic field lines for this bar magnet.
Show the direction of the field lines with arrows.

[2]

(ii) What piece of apparatus can be used to show the direction of field lines?

..... [1]

(b) Here is a diagram of a **weaker** bar magnet.

Draw field lines to show that it is a weaker bar magnet.

[1]

(c) Tick (✓) the **two** correct statements about magnets.

For Teacher's Use

Two North poles attract each other. ☐

Two South poles attract each other. ☐

Permanent magnets are always in the shape of a bar. ☐

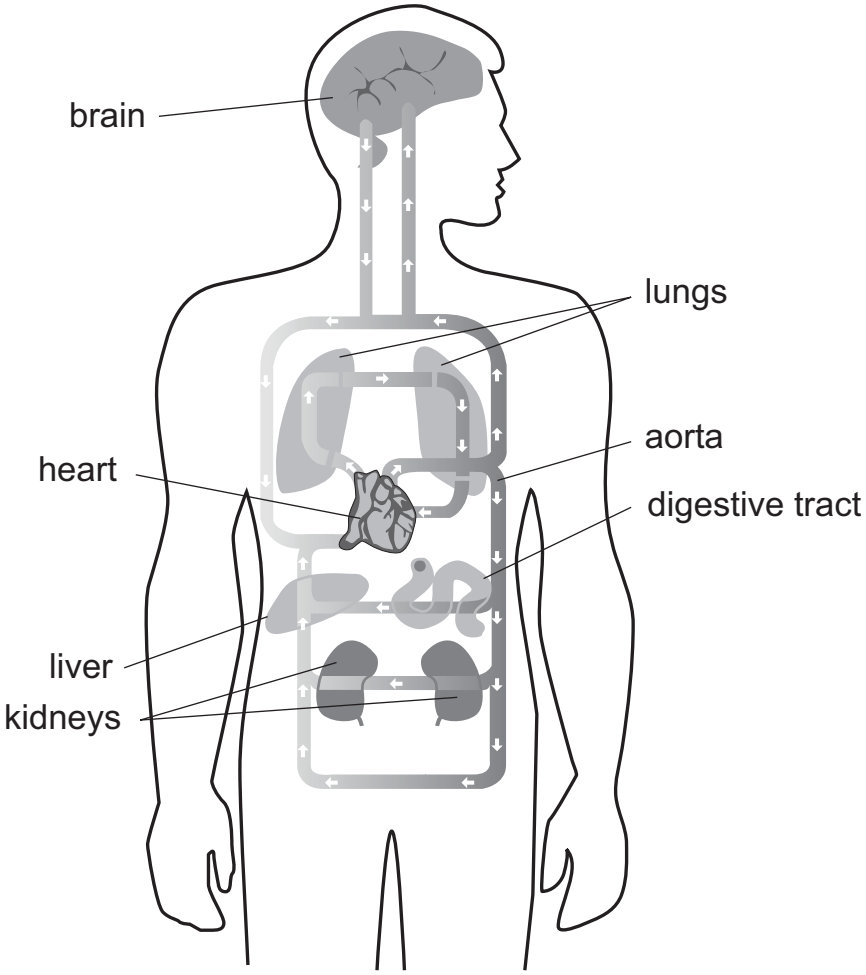
Magnetic fields cannot be seen. ☐

A North pole and South pole attract each other. ☐

[2]

For Teacher's Use

2 The diagram shows the human circulatory system.



(a) Why do humans need a heart in the circulatory system?

.....

[1]

(b) Complete the sentences about the three types of blood vessels.

The blood vessel that carries blood away from the heart is the aorta.

It is the largest ..... in the body.

The smallest blood vessels are called ..... .

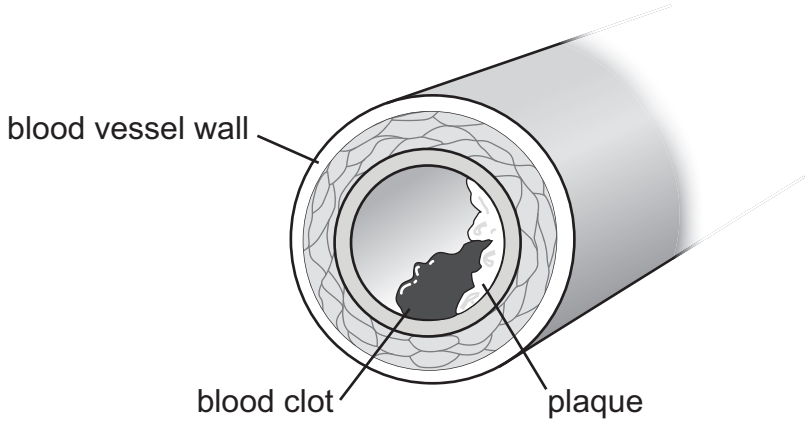
These allow substances to reach the surrounding tissues.

The blood returns to the heart in ..... .

These blood vessels have valves in them. [3]

For Teacher's Use

(c) Plaque can form on the inside of blood vessels.



(i) Why does plaque form in blood vessels?

..... [1]

(ii) What effect does plaque have on the circulatory system?

..... [1]

For Teacher's Use

3 **(a)** The three states of matter are solid, liquid and gas.

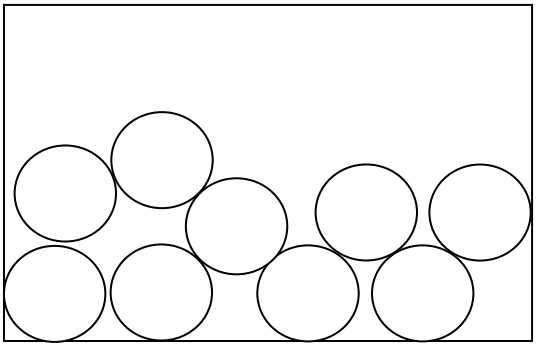
Complete the table to show their properties.

property	solid	liquid	gas
shape	fixed shape	same shape as container	
volume		fixed volume	fills the entire container
can it flow?	no		
can it be compressed?		only a little bit	

[3]

(b) The particle theory of matter can be used to explain these properties.

Circles have been used to represent the particles of a **liquid**.



liquid

(i) Draw circles to represent the particles of a **solid** and of a **gas**.

solid **gas**

[2]

For Teacher's Use

(ii) Liquids can only be compressed a little bit.

Explain why.

.....

..... [1]

(c) Gases exert a pressure on the walls of a container.

What causes this pressure?

..... [1]

4 Plants make their own biomass using photosynthesis.

Tick (✓) the boxes next to the **two** substances needed for photosynthesis.

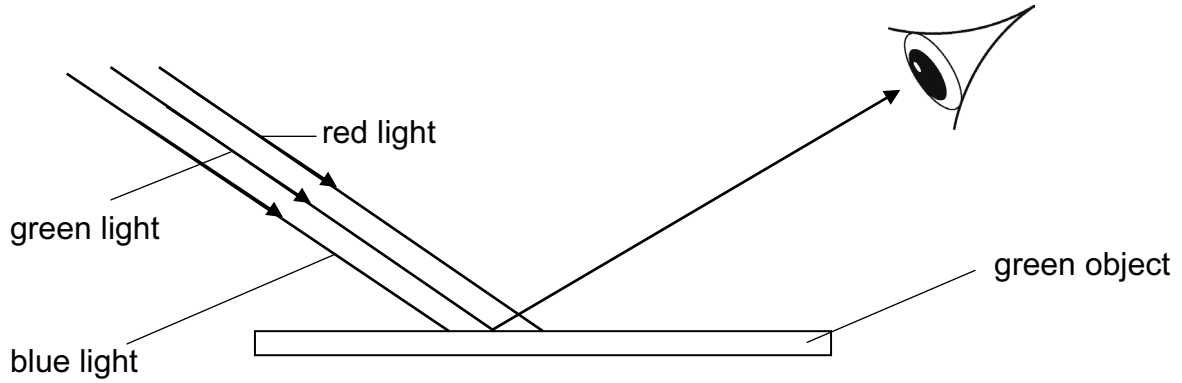
carbon dioxide	☐
oxygen	☐
water	☐
starch	☐
oil	☐
glucose	☐

[2]

For Teacher's Use

5 Tomas investigates coloured lights.

(a) Tomas shines red, green and blue light onto a green object.
He draws a diagram to help explain what happens.



(i) What colour does the object appear?

.....

[1]

(ii) Explain what happens at the surface of the green object.

.....

.....

[2]

(b) Tomas adds some coloured lights together.

(i) Draw lines to match the **colours added together** and the **colour produced**.

colours added together	**colour produced**
red and green	yellow
red and blue	cyan
blue and green	magenta

[1]

(ii) What happens if red, green and blue lights of equal intensity are added together?

.....

[1]

For Teacher's Use

6 A woman has a menstrual cycle about every 28 days.

(a) Put the statements into the correct order.
The first one has been done.

statement	order
Ovulation occurs.	
The levels of the female sex hormones drop quickly.	
Inner lining of uterus starts to be lost as menstrual blood.	
The egg cell (ovum) travels from the ovary to the uterus.	
A new egg cell (ovum) starts to develop in the ovary.	1

[2]

(b) What happens to the menstrual cycle if the egg cell (ovum) is fertilised by a sperm cell?

.....

[1]

(c) If an egg cell (ovum) is fertilised, a foetus can develop in the female reproduction system.

(i) Where does fertilisation occur?

Circle the correct answer.

ovary **oviduct** **uterus**

[1]

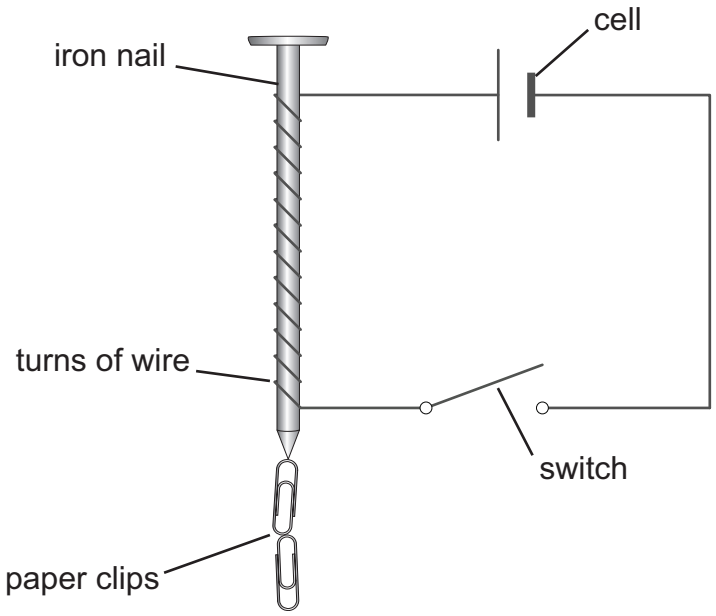
(ii) Where does the foetus develop?

.....

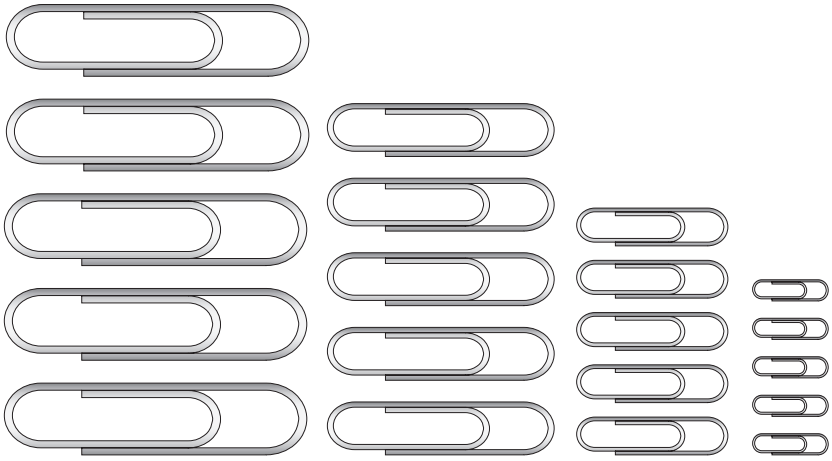
[1]

For Teacher's Use

7 Alisa makes an electromagnet.



She uses the electromagnet to attract steel paper clips.
Here are the 20 paper clips she uses.



Alisa changes the number of turns of wire around the nail.

She writes down how many paper clips are attracted together, in a chain, at the point of the nail.

(a) (i) What do you predict will happen?

As the number of turns of the wire increases, the number of paper clips attracted will ..... [1]

For Teacher's Use

(ii) Why do you think this will happen?

.....

..... [1]

(b) Here are Alisa's results.

number of turns of wire	number of paper clips attracted
8	4
12	2
16	10
20	6

(i) Describe the pattern of Alisa's results.

..... [1]

(ii) These results may not match your prediction.

Suggest why some of Alisa's results are anomalous.

.....

..... [1]

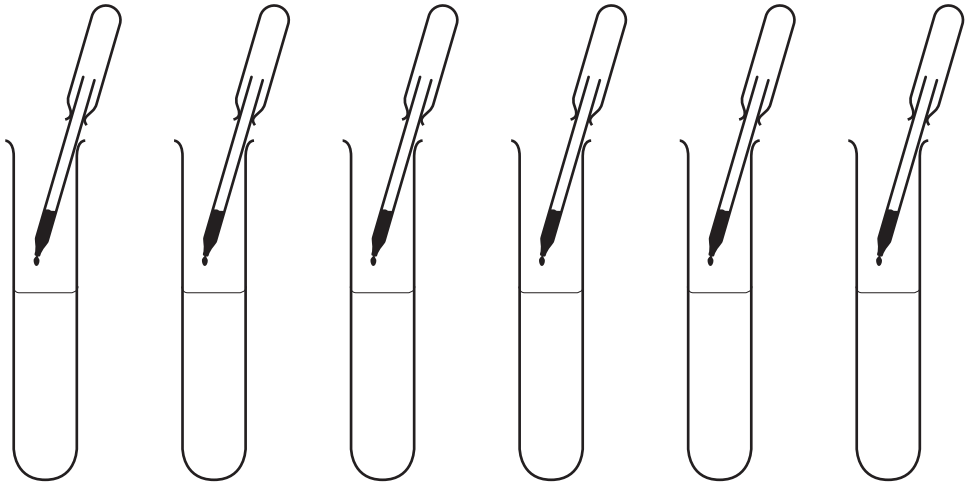
(iii) Suggest **one** way Alisa could improve the investigation.

..... [1]

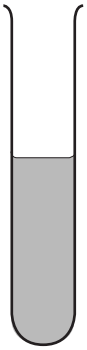
For Teacher's Use

8 Jamal investigates the diffusion of ink in water.

He uses this apparatus.



Jamal records the time it takes for the ink in each tube to diffuse evenly.



Here are his results.

temperature of water in °C	time taken to diffuse in minutes
10	24
20	23
30	16
40	12
50	8
60	4

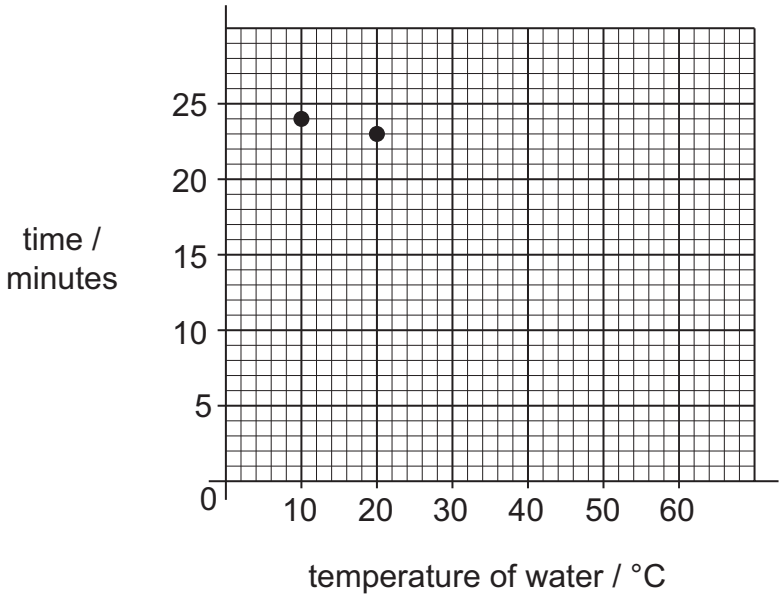
(a) The same volume of water is used in each test tube.
Why is this important?

.....

[1]

For Teacher's Use

(b) Jamal draws a graph.



(i) Finish plotting the graph using Jamal's results.

[1]

(ii) Jamal thinks that the result for one temperature is wrong.

The wrong result is at ..... °C. [1]

(iii) Draw the best straight line through the correct points.

[1]

(c) Jamal notices his results show a pattern.

Describe the pattern of his results.

.....

..... [1]

(d) Suggest **one** way Jamal could improve his investigation.

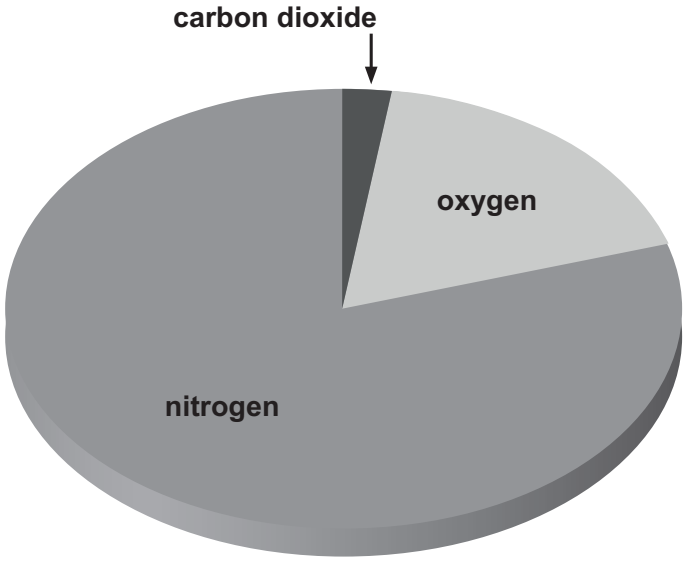
.....

..... [1]

For Teacher's Use

9 Air is made up of a mixture of different substances.

Fatima measures the amount of substances in the air on one day.



(a) (i) Which substance is there most of?

.....

[1]

(ii) Circle **one** substance from the pie chart that is a compound.

carbon dioxide **nitrogen** **oxygen**

[1]

(iii) Explain how you can tell it is a compound.

.....

.....

[1]

(b) Copper reacts with oxygen.

Tick (✓) the box next to the correct equation for this reaction.

copper + oxygen → copper oxide ☐

copper + oxygen → copper carbonate ☐

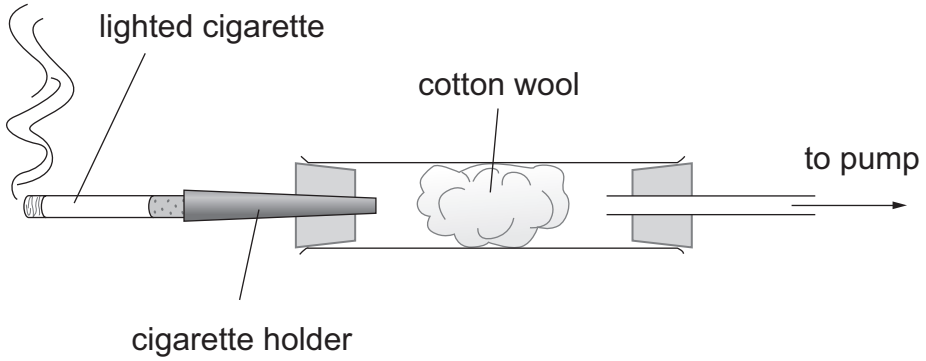
copper + oxygen → copper sulfate ☐

copper + oxygen → copper chloride ☐

[1]

For Teacher's Use

10 The effects of smoking cigarettes can be demonstrated.



(a) (i) Describe what happens to the cotton wool during the demonstration.

.....

[1]

(ii) Why does this happen?

.....

[1]

(b) What part of the body does the cotton wool represent?

.....

[1]

(c) Describe **one** effect of smoking on health.

.....

[1]

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