Cambridge Lower Secondary Checkpoint

CANDIDATE NAME

SCIENCE **1113/01**

Paper 1 **April 2020**

45 minutes

Candidates answer on the Question Paper.

Additional Materials: Pen, Pencil, Ruler, Calculator

1 The list contains the names of different parts of a cell.

cell membrane

cell wall

chloroplast

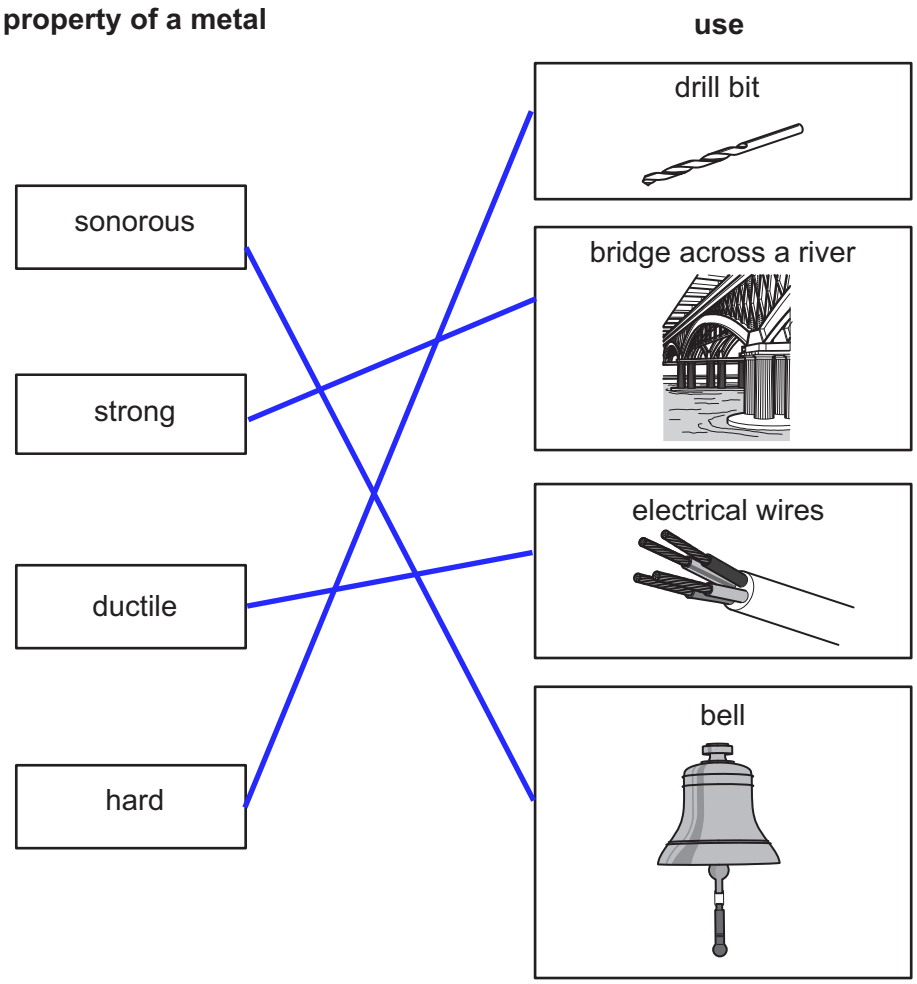
Complete the table by placing ticks (✓) in the correct boxes.

part of a cell	where the part of the cell is found		
	only in animal cells	only in plant cells	in both animal and plant cells
cell membrane			✓
cell wall		✓	
chloroplast		✓	

[2]

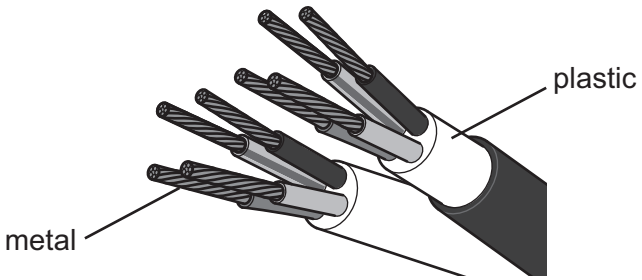
2 This question is about the properties of metals.

(a) Draw straight lines to match the **property of a metal** with its correct **use** linked to that property.



[2]

(b) Metals are used to make electrical wires because they conduct electricity.



Write down **two** reasons why plastic is put around electrical wires.

1 Plastic is a good insulator

2 Plastic is easily colored

[2]

(c) Read the sentences about the physical properties of metals.

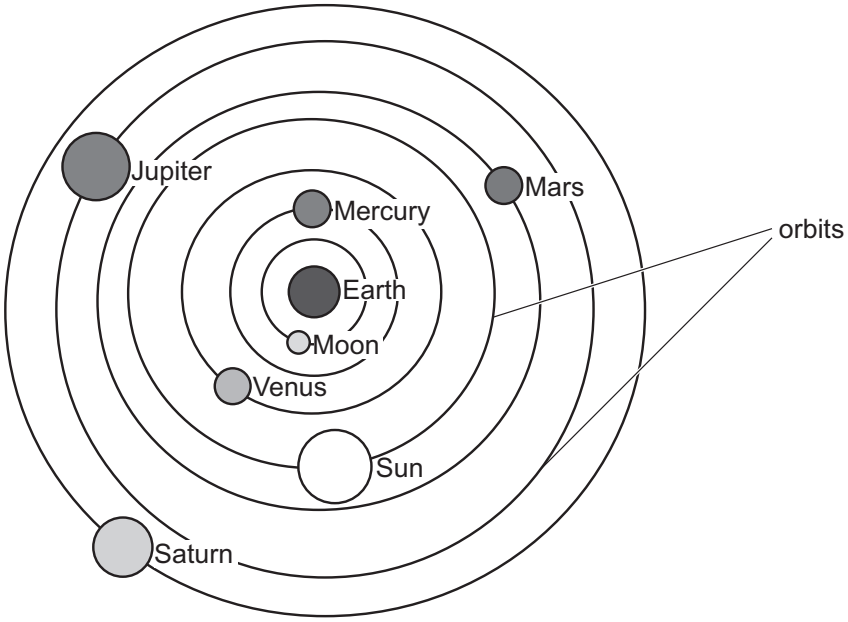
Tick (✓) the box next to the correct sentence.

All metals have low melting points.	
Some metals are gases at room temperature.	
All metals conduct heat.	✓
All metals are brittle.	

[1]

3 Blessy uses the internet to find out about our Solar System.

She finds a very old model of our Solar System.



Scientists thought that the Earth was at the centre.

The orbits in the old model show the other objects moving around the Earth.

(a) Scientists today know that the Earth is **not** at the centre of our Solar System.

What is at the centre of our Solar System?

Sun [1]

(b) Write down **two other** things that are **incorrect** in the old model.

1 The number of planets is not correct

2 The planets rotate around the Earth

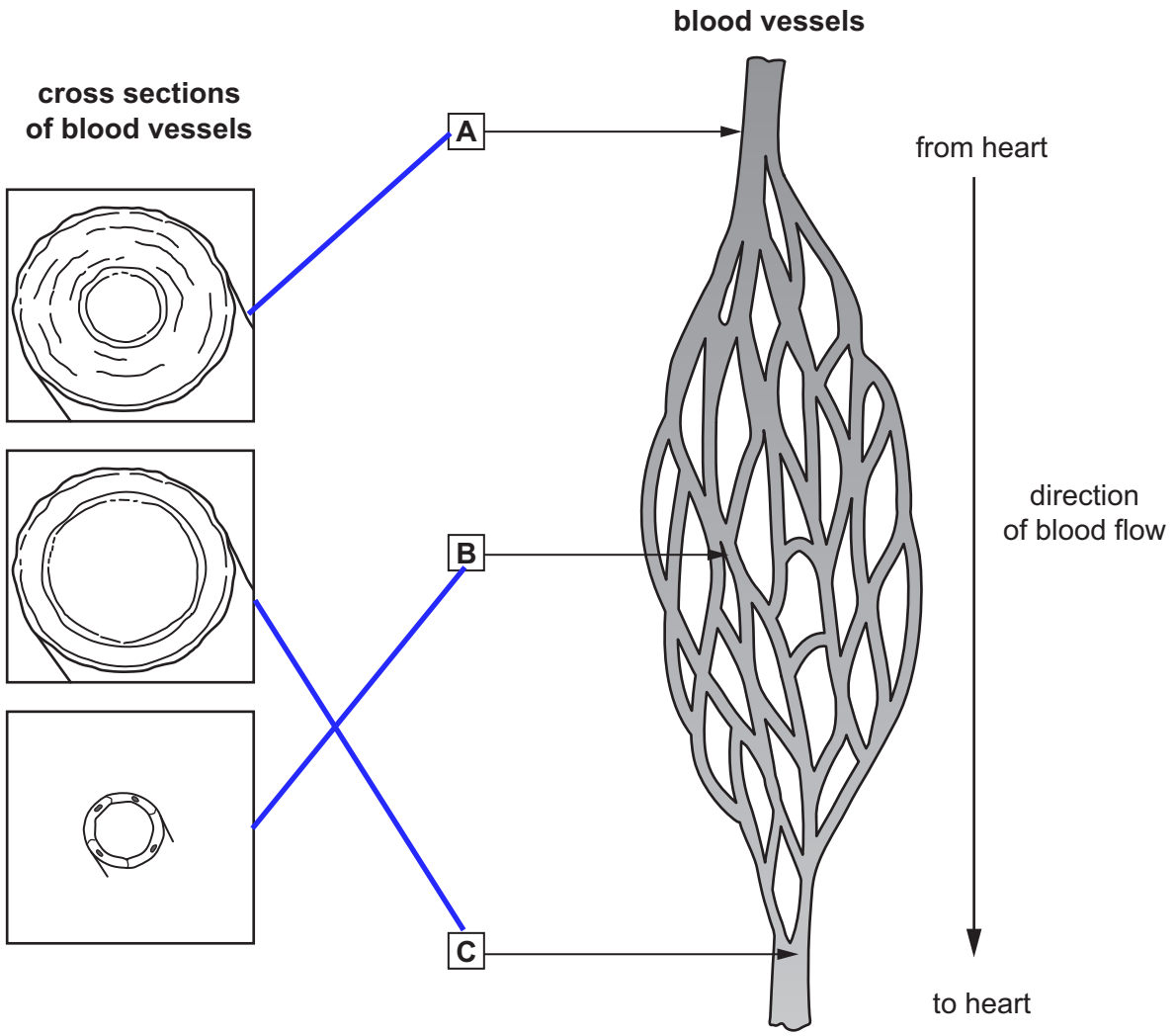
[2]

(c) Write down **one** thing that is **correct** in the old model.

The Moon rotates around the Earth [1]

4 This question is about blood vessels.

(a) Draw a straight line from each **cross section of a blood vessel** to the correct **letter** showing where the blood vessel is found.



[2]

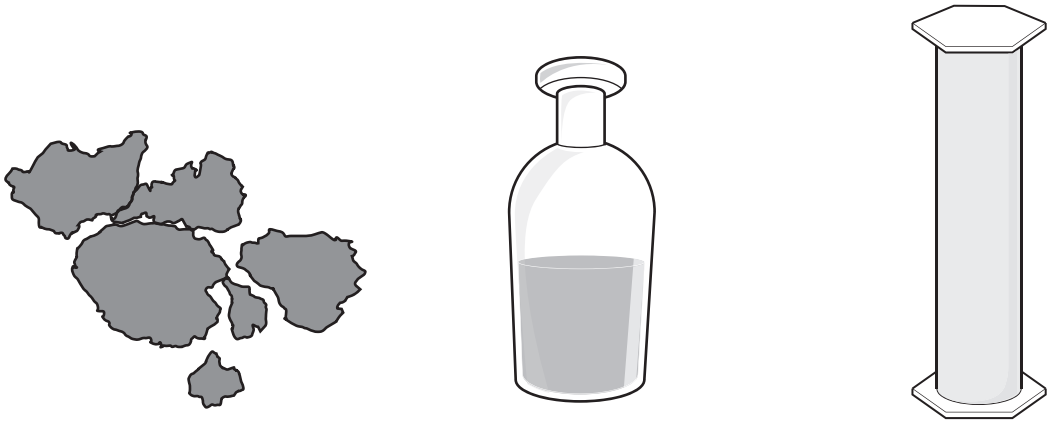
(b) Name the types of blood vessel labelled **A** and **C**.

A Artery .....

C Vein .....

[2]

5 The picture shows three different elements and their state at room temperature.



solid iodine | liquid bromine | chlorine gas

(a) Which **two** of these elements flow easily at room temperature?

liquid bromine, chlorine gas [1]

(b) What is the chemical symbol for chlorine?

Cl [1]

(c) Chlorine gas fills the jar.

Explain why a gas fills a jar.

Tick (✓) the box next to the correct explanation.

Forces between the particles push them apart.	☐
The particles are free to move.	✓
The particles can easily be squashed into a small space.	☐
The particles increase in size to fill the space.	☐

[1]

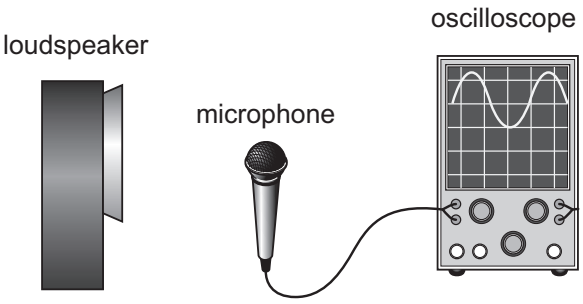
(d) Liquid bromine easily evaporates.

Explain what happens to the particles (molecules) when a liquid evaporates.

Some of the particles near the surface of liquid bromine have more kinetic energy and vibrate more. They can escape the liquid and become gas bromine particles

[2]

6 Mia investigates sound.



She makes a sound using a loudspeaker.

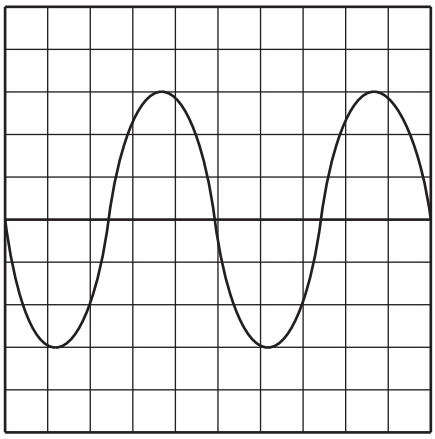
The sound is detected by the microphone.

(a) Describe how the sound travels from the loudspeaker to the microphone.

Air particles near the loudspeaker vibrate and this vibration is transferred to the air particles near the microphone

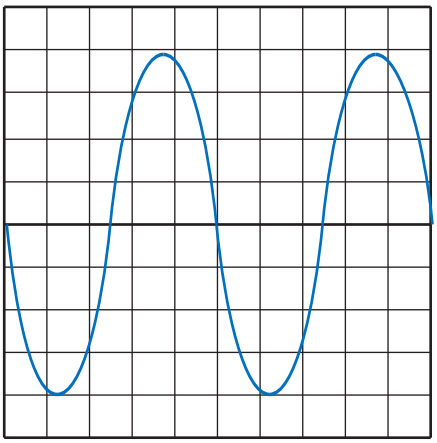
[2]

(b) Mia draws the wave she sees on the oscilloscope.



(i) She makes the sound **louder**.

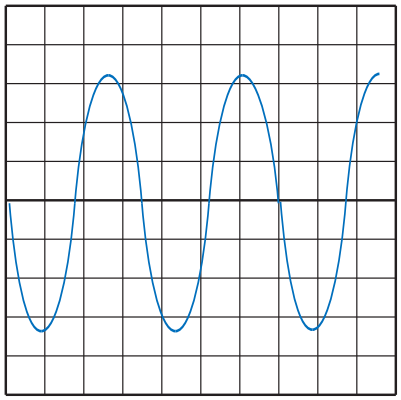
Draw this wave on the oscilloscope.



[1]

(ii) She makes the sound a **higher pitch**.

Draw this wave on the oscilloscope.



[1]

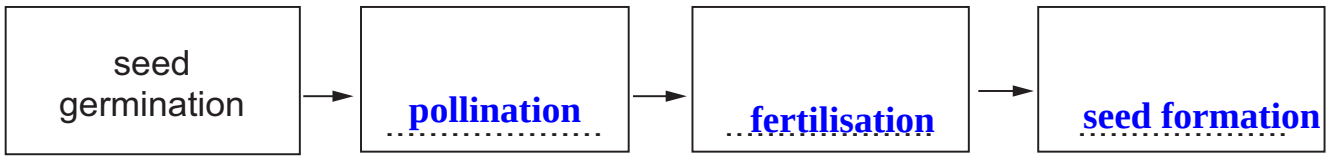
7 This question is about the life cycle of a plant.

(a) These processes take place in the life cycle of a plant.

fertilisation **pollination** **seed formation** **seed germination**

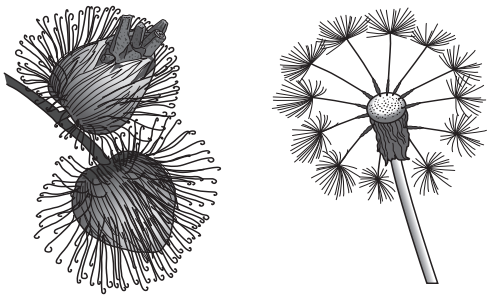
Put the processes in the order in which they occur in the life cycle of a plant.

One has been done for you.



[1]

(b) The diagrams **A** and **B** show two different types of seed.



A **B**

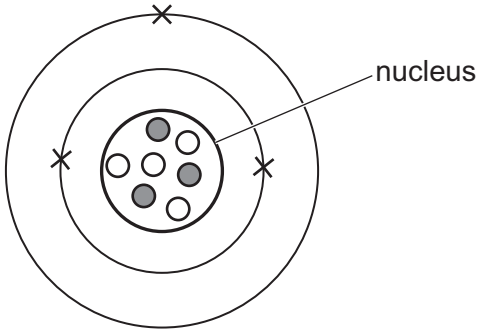
Suggest the method of dispersal for each type of seed.

Give a reason for each answer.

	method of seed dispersal	reason
A	Animal	hooks that attach to animals' fur
B	Wind	the shape similar to parachute

[2]

8 Look at the diagram of the structure of a lithium atom.



(a) There are three electrons in a lithium atom.

(i) How many protons are there in a lithium atom?

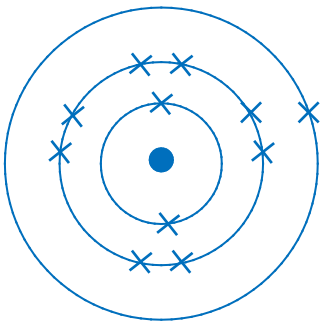
3 [1]

(ii) How many neutrons are there in a lithium atom?

4 [1]

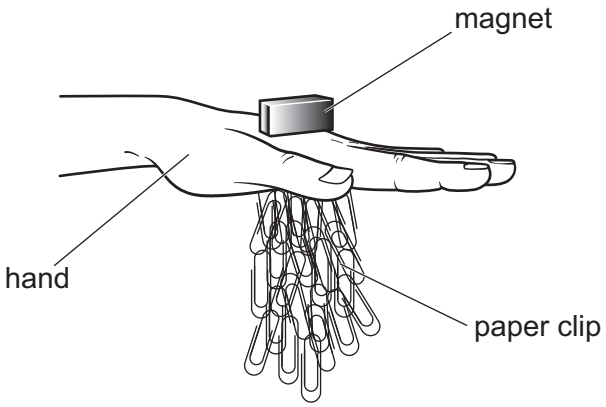
(b) A sodium atom contains 11 protons.

Draw the structure of a sodium atom.



[2]

9 Mike investigates the strength of magnets.



Mike

- puts the magnet on top of his hand
- puts the bottom of his hand onto 24 paper clips
- lifts his hand up
- counts how many paper clips have been attracted
- repeats with different magnets.

Here are his results.

magnet	number of paper clips
A	24
B	24
C	7
D	19
E	12

(a) Mike concludes that magnet **A** and magnet **B** are both strong.

He **cannot** conclude which of these two magnets is stronger.

(i) Explain why he **cannot** conclude which magnet, **A** or **B**, is stronger.

There are maximum numer of paper clips(24) attracted to both magnets A and B [1]

(ii) Describe what he could do to find out which magnet, **A** or **B**, is stronger.

Use more paper clips

[1]

(b) Pierre repeats Mike's investigation.

Here are Pierre's results.

magnet	number of paper clips
A	18
B	22
C	1
D	13
E	6

Pierre uses the same magnets as Mike.

Pierre uses the same paper clips as Mike.

The results are different.

(i) Describe **one** difference between the results.

The number of paper clips in Pierre's results are fewer than in Mike's

[1]

(ii) Suggest why the results are different.

Pierre's hand is thicker than Mike's

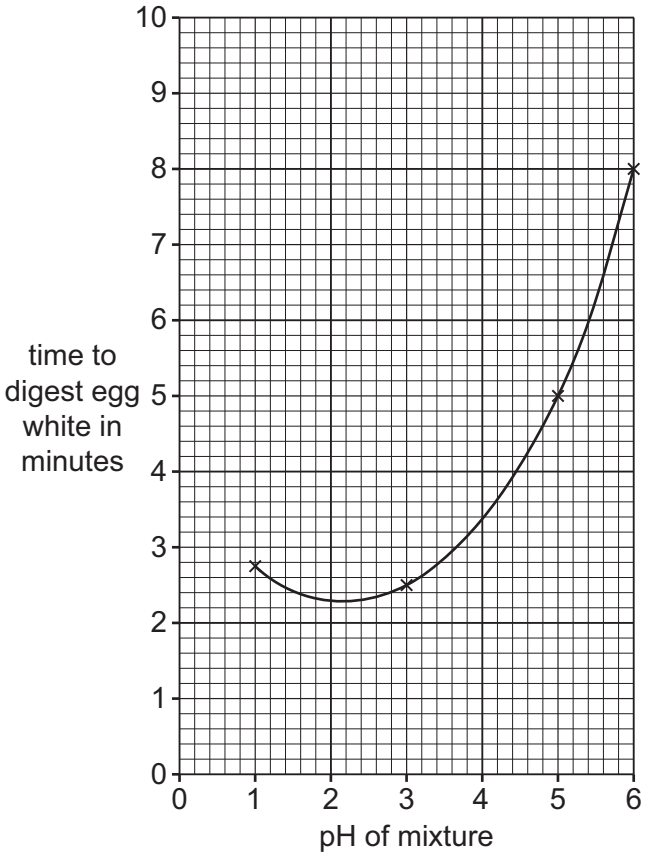
[1]

10 Egg white contains a protein.

An enzyme digests protein in the stomach.

Class 9 investigate how changing the pH affects the time it takes for the enzyme to digest egg white.

The graph shows the results of their investigation.



(a) (i) Which pH has the **shortest** time of digestion?

pH 2.2 [1]

(ii) The class want to be certain that they have found the shortest time.

Describe **two** things the class does to be certain.

1 Repeat the investigation with the same pH values

2 Carry out the investigation with more different pH values

[2]

(b) **(i)** State **one** safety risk of using liquids with a very low pH.

Skin can be burnt if exposed to very low pH liquid [1]

(ii) Describe **one** way of reducing this safety risk.

Wearing gloves [1]

(c) State one variable the students must **control** in this investigation.

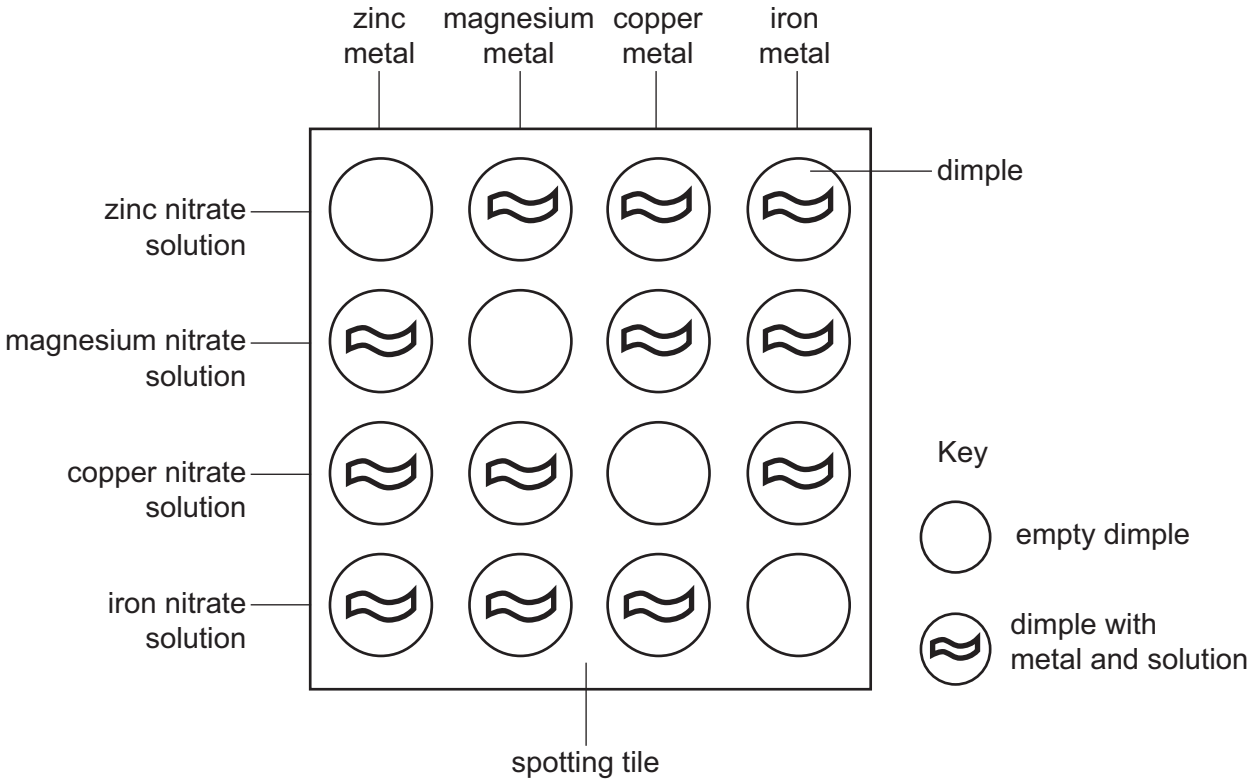
Temperature [1]

11 Jamila and Ahmed investigate displacement reactions.

They put drops of different solutions into the dimples of a spotting tile.

They then add metals to each solution.

The diagram shows their experiment.



(a) Jamila and Ahmed look to see if a reaction takes place.

Suggest what they might see if a reaction takes place.

Temperature changes [1]

(b) They record their results in a table.

They put a

- tick (✓) if there is a reaction
- cross (x) if there is no reaction.

Here are some of their results.

solution	metal			
	zinc	magnesium	copper	iron
zinc nitrate		✓	x	x
magnesium nitrate	X		X	X
copper nitrate	✓	✓		✓
iron nitrate	✓	✓	x	

(i) Complete the table to predict the results for magnesium nitrate. [1]

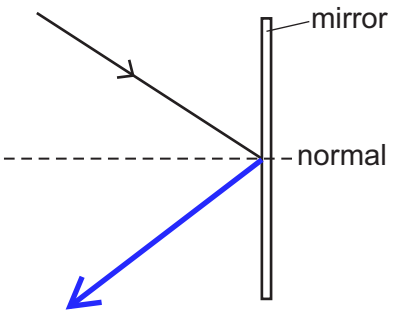
(ii) The reactivity series shows the metals in order of reactivity.

Which of the four metals is the **lowest** in the reactivity series?

Copper ..... [1]

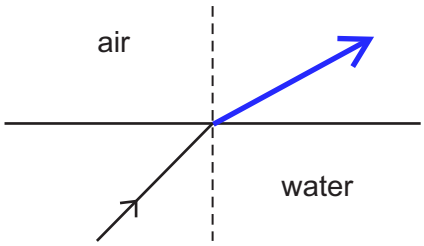
12 Complete the light rays in the **three** diagrams.

(a) **reflection**



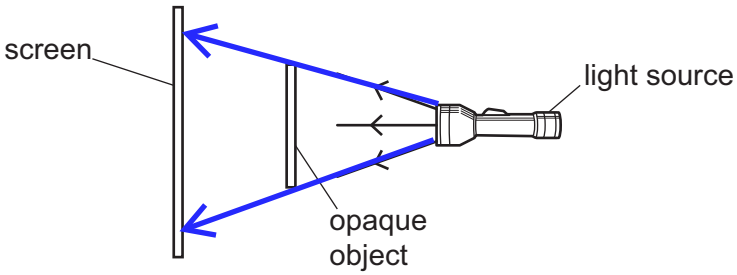
[1]

(b) **refraction**



[1]

(c) **shadow formation**



[2]

13 Complete the word equation for aerobic respiration.

glucose	+	oxygen	→	carbon dioxide	+	water

[2]