28

MARIS STELLA HIGH SCHOOL (PRIMARY)

SA2 EXAMINATION

SCIENCE

31 OCTOBER 2019

BOOKLET A

NAME: _____( )

CLASS: Primary 4 ( )

28 questions

56 marks

Total Time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet (OAS). **(56 marks)**

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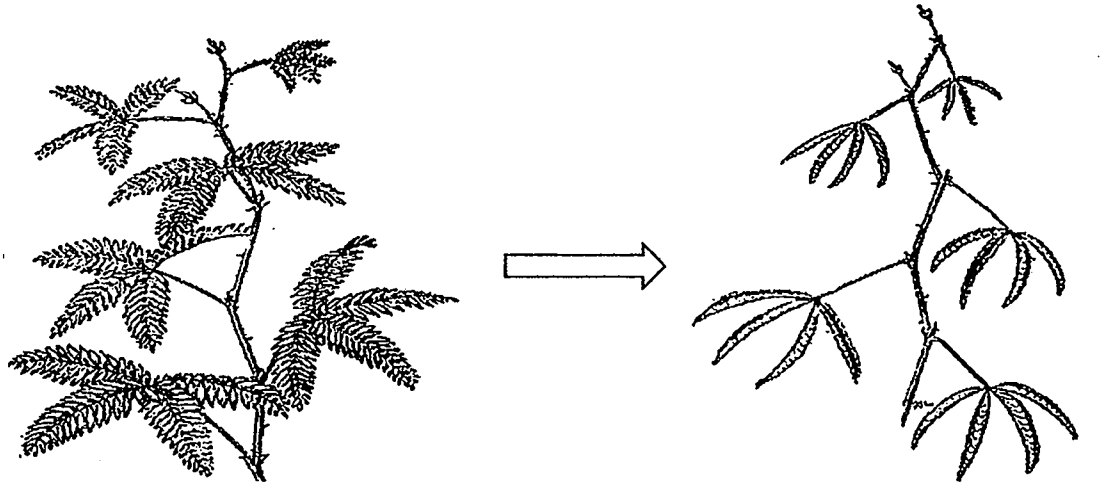
1 The pictures below show how the leaves of a mimosa plant fold up after being touched.



Before

After

This shows that the mimosa plant is a living thing because it can _____.

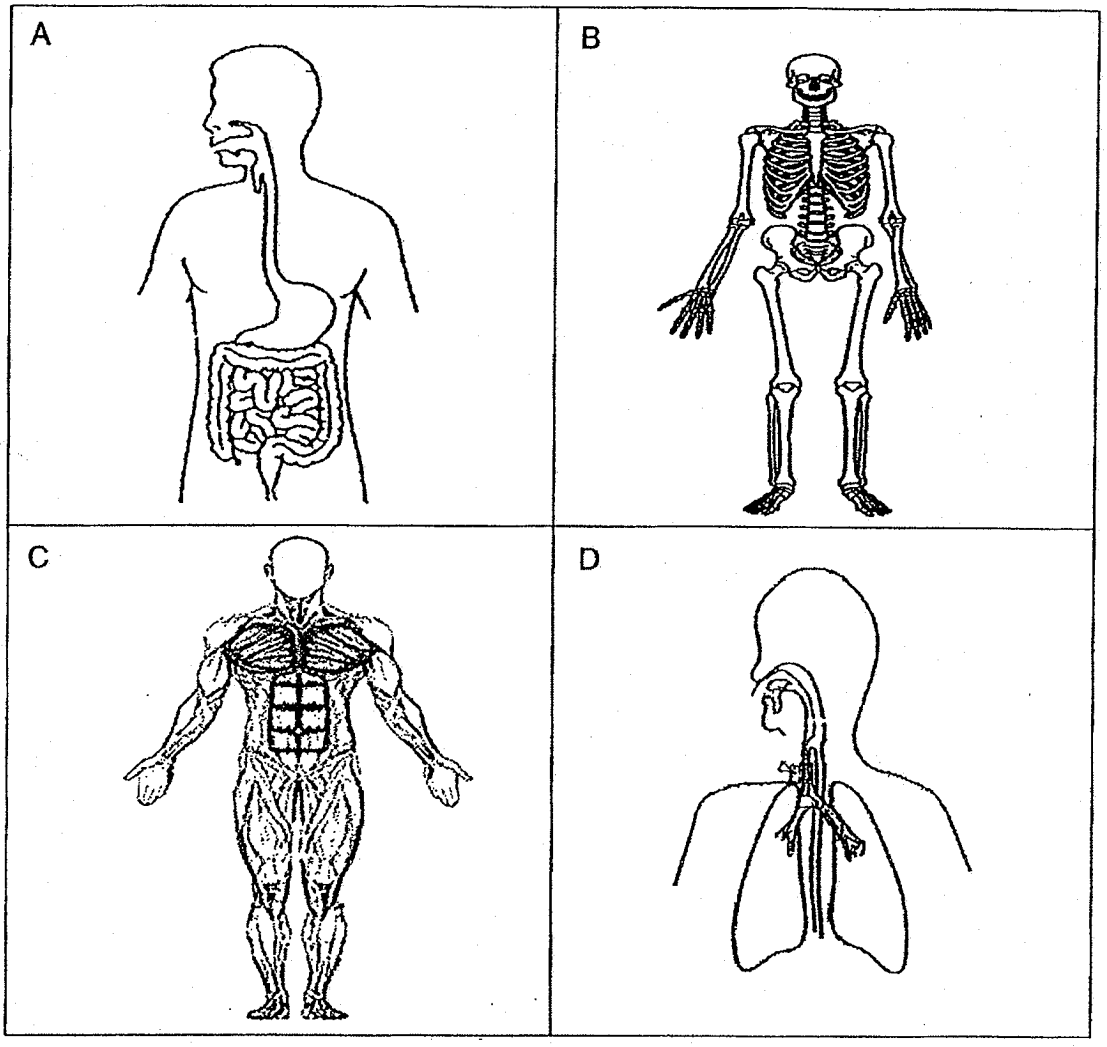
(1) grow
(2) breathe
(3) respond
(4) reproduce

2 Which one of the following is true for both fish and amphibians?

(1) Both lay eggs.
(2) Both have scales.
(3) Both have moist skin.
(4) Both can live both on land and in water.

(Go on to the next page)

3 Study the human systems below.

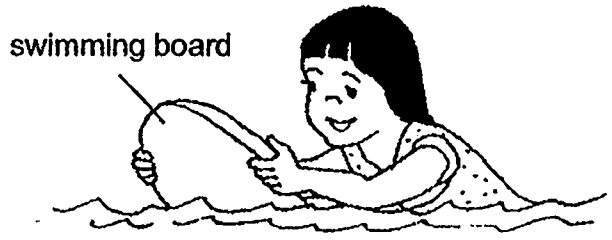


Which of the two human systems work together to allow a person to move around?

(1) A and B
(2) B and C
(3) C and D
(4) A and D

(Go on to the next page)

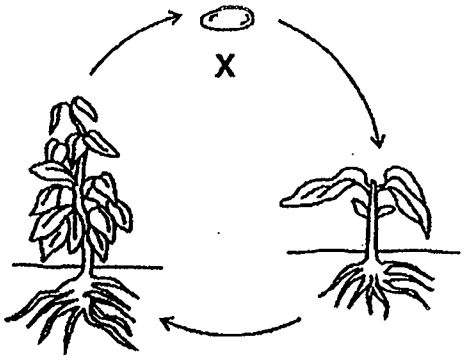
4 The picture below shows a swimming board.



The material used to make the swimming board has to be _____.

(1) flexible
(2) absorbent
(3) transparent
(4) able to float on water

5 The diagram below shows the life cycle of a flowering plant.

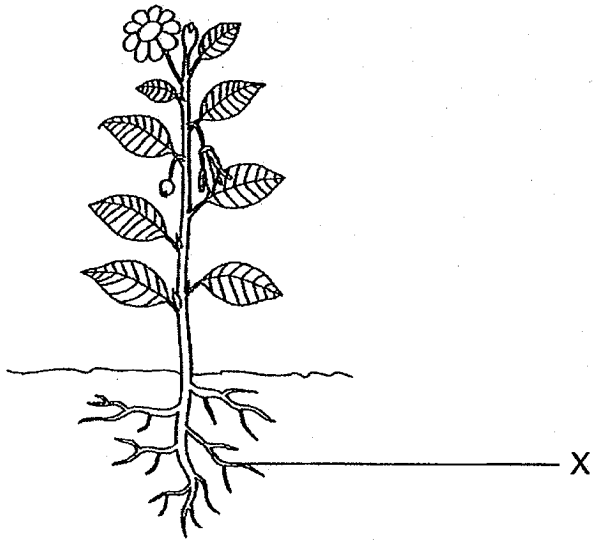


What is stage **X**?

(1) egg
(2) seed
(3) spore
(4) young

(Go on to the next page)

6 The diagram below shows a picture of a plant.



Which of the following are the functions of part X?

A keeps the plant upright

B absorbs water from the soil

C holds the plant firmly to the ground

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

7 In which part of the digestive system is water removed from the undigested food?

(1) gullet

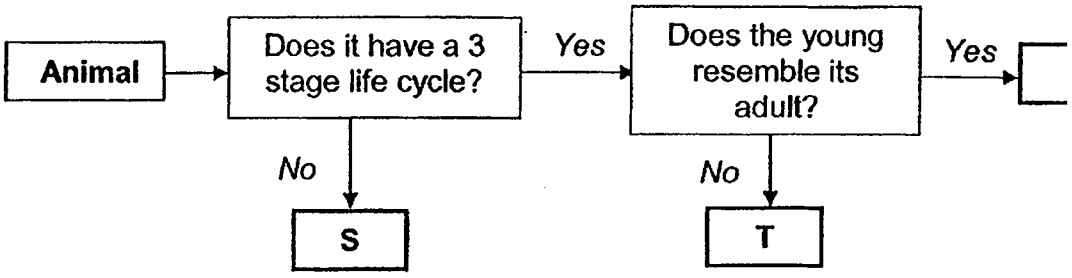
(2) stomach

(3) small intestine

(4) large intestine

(Go on to the next page)

8 Study the flow chart below.



Which of the following correctly represents animals S, T and U?

	S	T	U
(1)	beetle	frog	cockroach
(2)	cockroach	mosquito	beetle
(3)	cockroach	beetle	frog
(4)	mosquito	cockroach	frog

9 Matter is anything that has mass and occupies space.

Which of the following is matter?

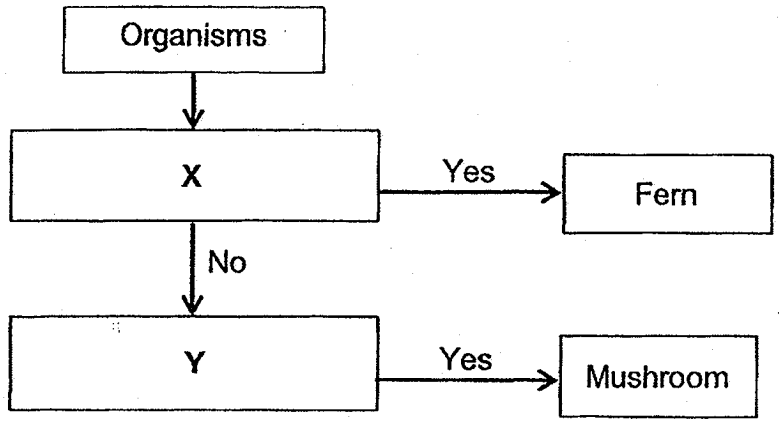
(1) heat
(2) light
(3) sand
(4) shadow

10 Which of the following has a fixed shape?

(1) air
(2) milk
(3) stone
(4) water

(Go on to the next page)

11 Study the flow chart below.



Which of the following questions best represents X and Y?

	X	Y
(1)	Does it bear flowers?	Does it reproduce by seeds?
(2)	Does it make its own food?	Does it reproduce by spores?
(3)	Does it reproduce by seeds?	Does it bear flowers?
(4)	Does it reproduce by spores?	Does it make its own food?

12 Which of the following is **not** a source of light?

(1)

moon

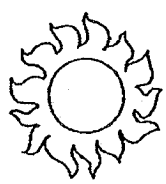
(2)

candle

(3)

lamp

(4)



sun

(Go on to the next page)

13 Which of the following material can be attracted by a magnet?

(1) steel
(2) plastic
(3) rubber
(4) aluminium

14 The table below shows the properties of three substances, A, B and C.

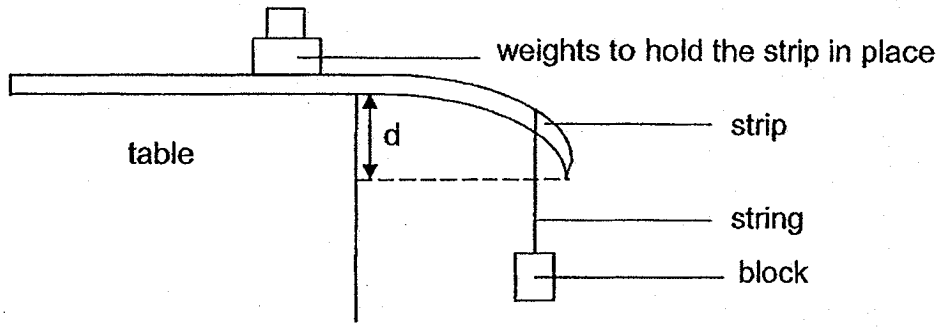
Substances	Properties	
	has definite shape	has definite volume
A	√	√
B		
C		√

Which of the following substances is/are in liquid state?

(1) A only
(2) B only
(3) C only
(4) A and C only

(Go on to the next page)

15 Daryl has four similar strips made of different materials, A, B, C and D. He set up an experiment as shown below to test the flexibility of four strips.



He measured the distance each strip was pulled down by the same block. The table below shows his results.

Material strip is made of	Distance, d (cm)
A	7
B	9
C	4
D	13

Based on the results above, which of the following statements is correct?

(1) Material C is the most flexible.

(2) Material D is the least flexible.

(3) Material B is less flexible than Material D.

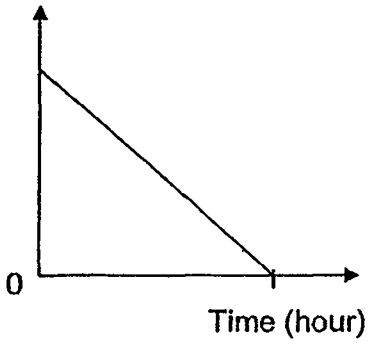
(4) Material A is more flexible than Material B.

(Go on to the next page)

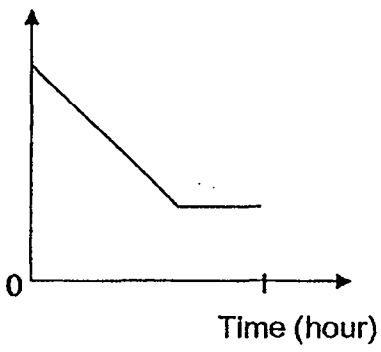
16 A glass of hot water was left on a kitchen table.

Which of the following graphs correctly shows the change in temperature of the glass of hot water over time?

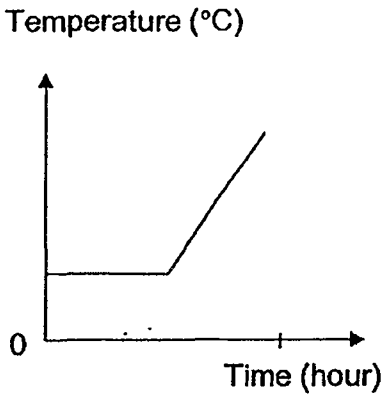
(1)



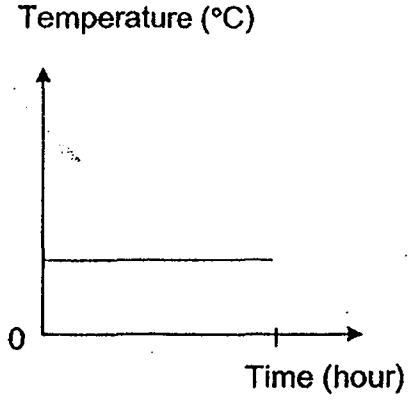
(2)



(3)



(4)



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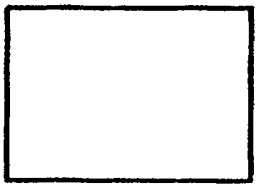
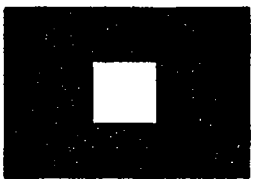
17 The diagram below shows light shining on a wooden toy.



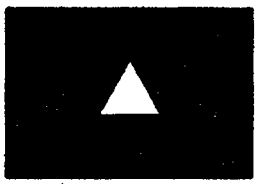
torch wooden toy screen

Which of the following would likely be seen on the screen when the torch is switched on?

(1)



(2)



(3)

(4)

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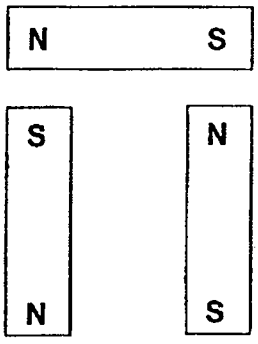
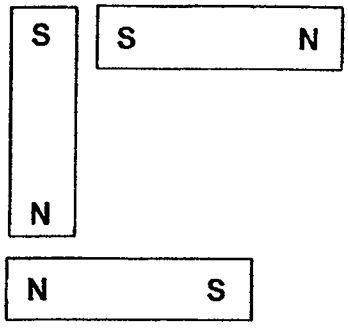
18 Which of the following arrangements would all the magnets move away from each other?

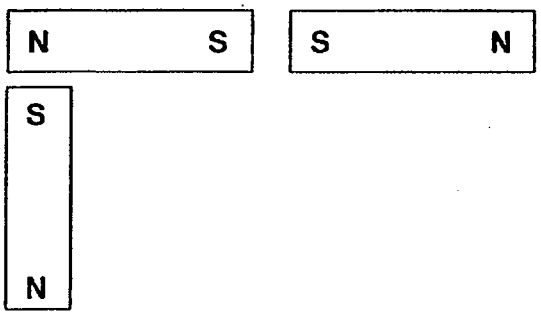
(1)



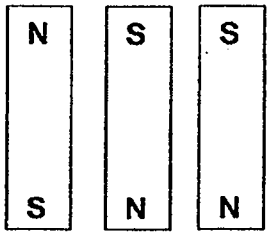
(2)



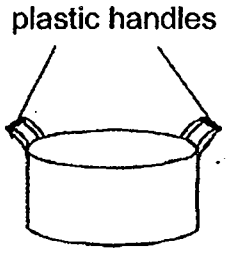
(3)



(4)



19 Dominic boiled some water in the pot as shown below.

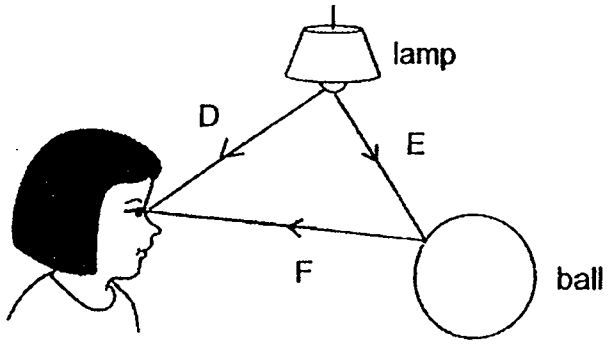


He is able to hold the pot of hot water using the plastic handles because plastic is a _____.

(1) light material
(2) flexible material
(3) poor conductor of heat
(4) good conductor of heat

(Go on to the next page)

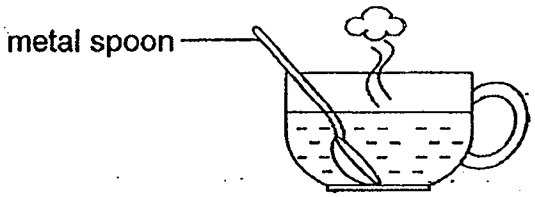
20 Kate is looking at a ball as shown in the diagram below.



Which arrow(s) show the direction of light that allows Kate to see the ball?

(1) D only
(2) E only
(3) D and F only
(4) E and F only

21 Jessica places a metal spoon in a cup of hot coffee.



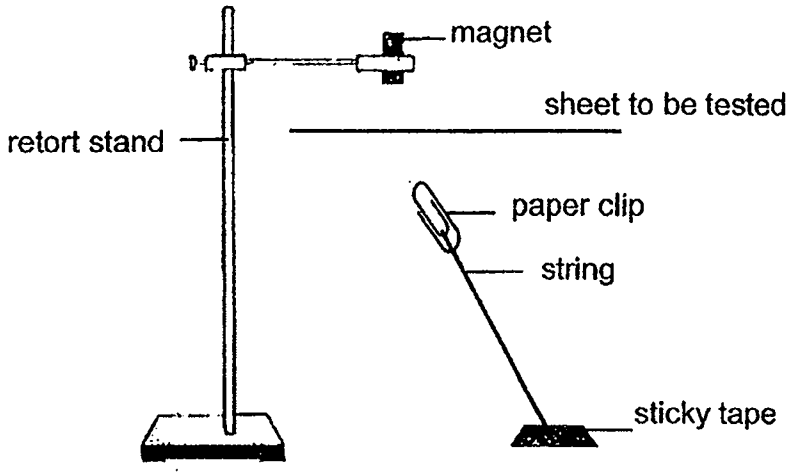
The spoon becomes hot after a while.

Which one of the following explains why?

(1) The cup gains heat from the hot coffee.
(2) The spoon loses heat to the hot coffee.
(3) The spoon gains heat from the hot coffee.
(4) The hot coffee gains heat from the spoon.

(Go on to the next page)

22 Jing Xuan wants to use the set-up below to find out if magnetism can pass through paper and copper.



She has sheets A, B, C and D.

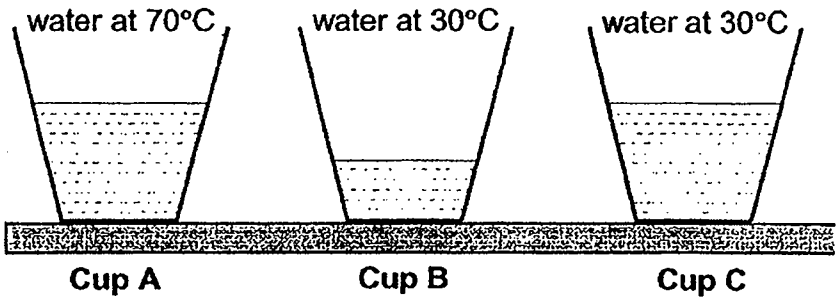
Sheet	Type of material	Thickness of material (cm)
A	paper	0.1
B	copper	0.1
C	paper	0.3
D	copper	0.2

Which two sheets should she use to ensure a fair experiment?

(1) A and B
(2) A and C
(3) B and C
(4) C and D

(Go on to the next page)

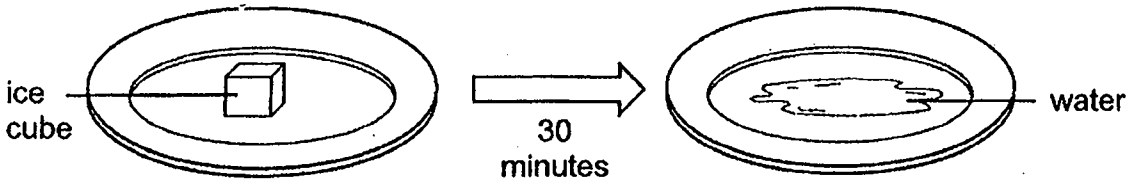
23 The diagram below shows 3 identical cups containing different amounts of water at different temperatures.



Which of the following shows the correct order of increasing amount of heat in the water for cups A, B and C?

	least amount of heat ⟶		**most** amount of heat
(1)	B	A	C
(2)	A	C	B
(3)	B	C	A
(4)	C	B	A

24 An ice cube was left on a plate as shown below. After 30 minutes, it turned into water.

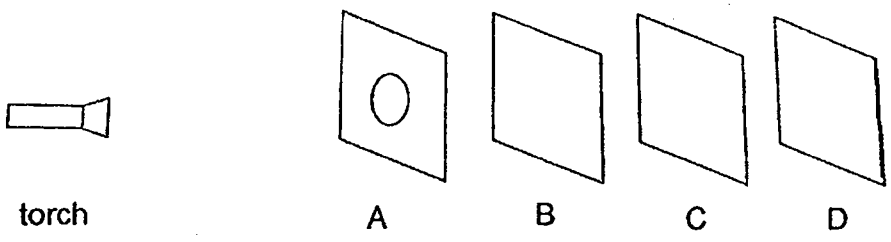


Based on the observation made after 30 minutes, which of the following is correct?

	Is there a change in state?	**Did the ice cube lose heat?**
(1)	Yes	No
(2)	Yes	Yes
(3)	No	No
(4)	No	Yes

(Go on to the next page)

25 Timothy carried out the following experiment in a dark room. Sheets A, B, C and D were arranged in a straight line as shown in the diagram below.



When the torch was switched on, a bright circular patch of light was seen on sheet C only.

Which of the following about the properties of sheets A, B, C and D is correct?

	Allow(s) light to pass through	**Do(es) not allow light to pass through**	**Not possible to tell**
(1)	A	C	B and D
(2)	B	A	C and D
(3)	B	A and C	D
(4)	A and B	C	D

26 Siti tried to attract some steel clips using a nail which had been stroked by a bar magnet. She observed that no steel clips were attracted.

Which of the following could be a possible reason for her observation?

(1) The nail is made of steel.

(2) The nail is made of copper.

(3) The nail was stroked by the south pole of the bar magnet only.

(4) The nail was stroked too many times in the same direction with the same pole of the bar magnet.

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27 Steel bar AB was magnetised using the stroke method as shown in Diagram 1. Diagram 2 shows the magnetic poles of bar AB after it was magnetised.

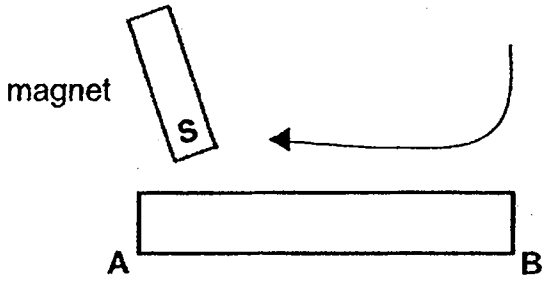


Diagram 1

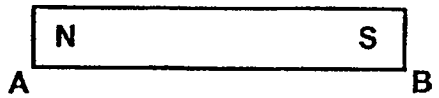
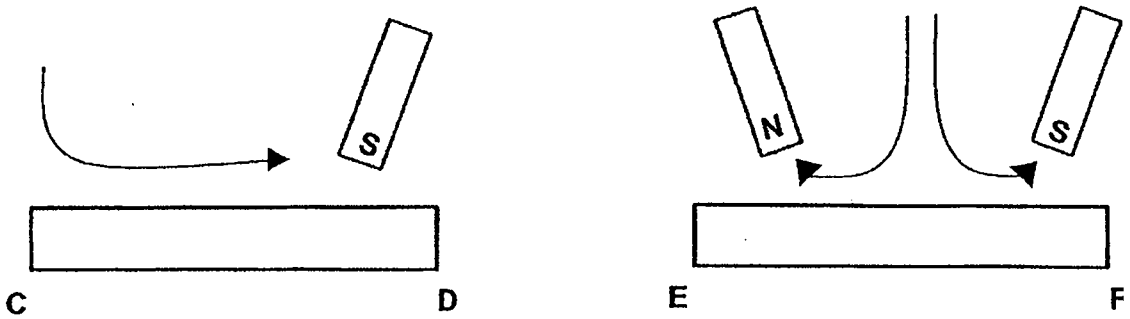


Diagram 2

Steel bars CD and EF were magnetised as shown in the two diagrams below.

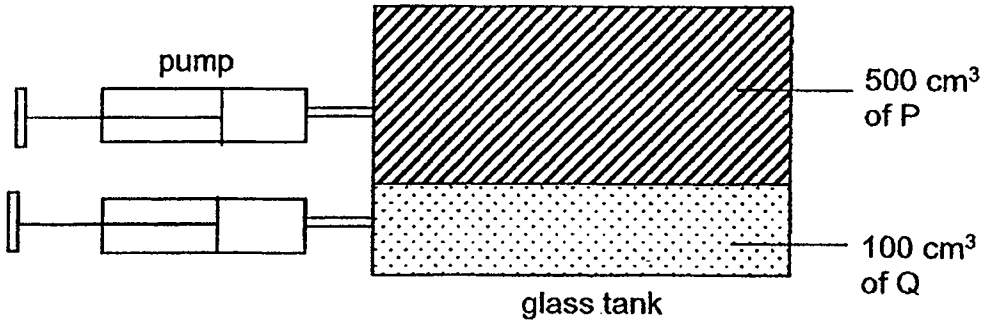


Which of the following shows the magnetic poles of bars CD and EF?

(1)	N S C D	N S E F
(2)	N S C D	S N E F
(3)	S N C D	N S E F
(4)	S N C D	S N E F

(Go on to the next page)

28 The diagram below shows two pumps connected to a glass tank.



The table below shows the volume of P and Q before and after 50 cm^3 of P and 50 cm^3 of Q were pumped into the glass tank.

	Volume of P	**Volume of Q**
before 50 cm^3 of P and 50 cm^3 of Q were pumped into the glass tank	500 cm^3	100 cm^3
after 50 cm^3 of P and 50 cm^3 of Q were pumped into the glass tank	450 cm^3	150 cm^3

Which of the following statements about P and Q are correct?

A P has definite volume.

B Q has definite volume.

C P has no definite volume.

D Q has no definite volume.

(1) A and B only

(2) A and D only

(3) B and C only

(4) C and D only

End of Booklet A

Go on to Booklet B

MARIS STELLA HIGH SCHOOL (PRIMARY)

SA2 EXAMINATION

SCIENCE

31 OCTOBER 2019

BOOKLET B

NAME: _____ ( )

CLASS: Primary 4 ( )

13 questions

44 marks

Total Time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A:	**/ 56**
Booklet B:	/ 43
Grand Total:	/ 99

Parent's Signature: _____

For questions 29 to 41, write your answers in this booklet. The number of marks available is shown in brackets [ ] at the end of each question or part question.

(44 marks)

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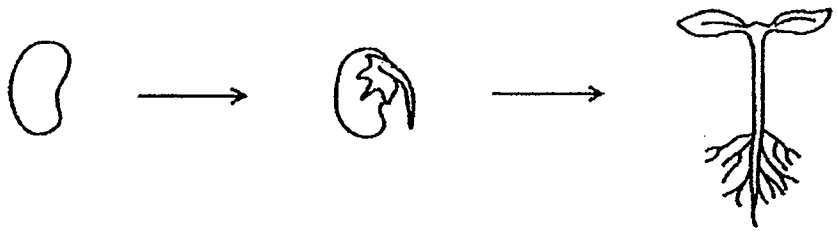
29 Study the pictures of the different stages, P, Q and R, in the growth of a young plant.



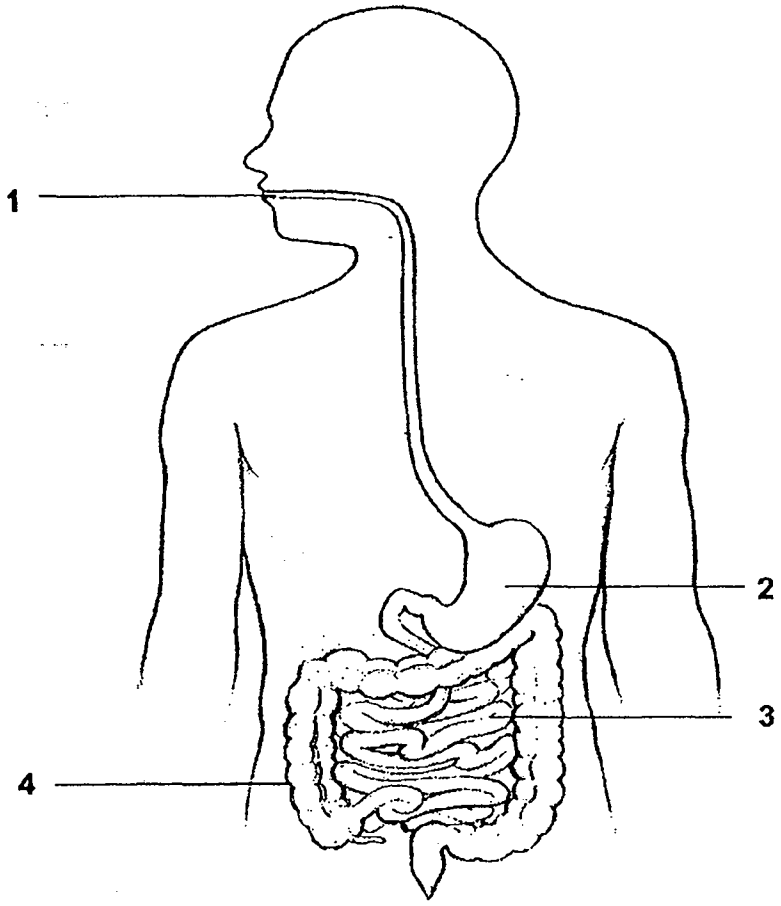
P **Q** **R**

Choose the correct alphabet(s) and/or word(s) from the box below to fill in the two blanks. [2]

P	Q	R
roots	stem	leaves

Stage _____ can make food because it has _____

30 The diagram below shows the human digestive system.



Identify the part, 1, 2, 3 or 4, where: [2]

(a) digestion first takes place: _____

(b) no digestion takes place: _____

(c) State the function of part 3. [1]

_____

_____

	3

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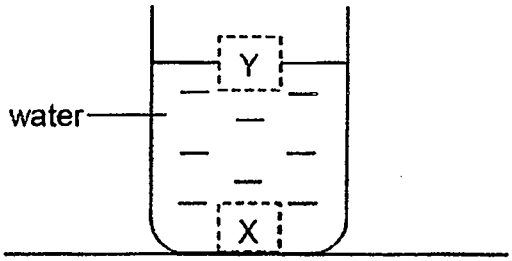
31 Darren placed 2 different blocks, C and D, into a beaker of water as shown in the diagram below.



Block C was found at position Y, while block D was found at position X.

(a) Choose the correct phrases from the box below to fill in the blanks. [2]

contracts in	expands in	floats on	sinks in

This shows that block C _____ water and

block D _____ water.

(b) Darren removed blocks C and D from the beaker of water. He then placed a solid metal block into the same beaker of water.

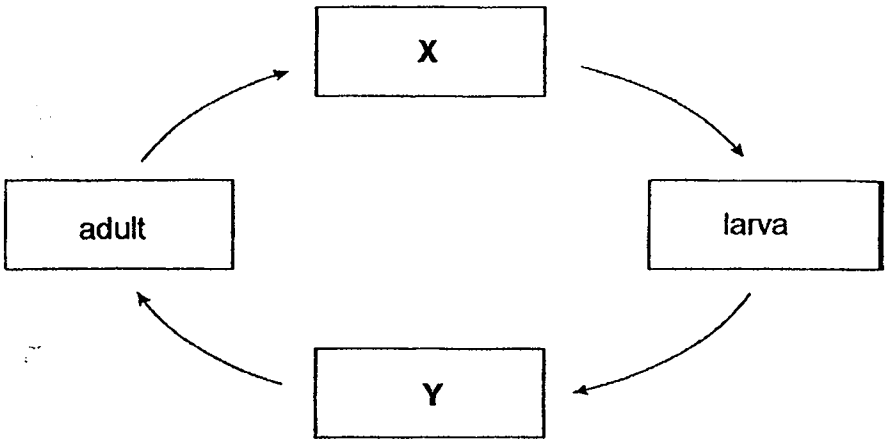
Which position, X or Y, would the solid metal block most likely be at? [1]

_____

	3

(Go on to the next page)

32 The diagram below shows the stages in the life cycle of a butterfly.



Life cycle of a butterfly

(a) Choose the correct words from the box below to name the stages X and Y. [2]

caterpillar	egg	pupa	seed

X: _____

Y: _____

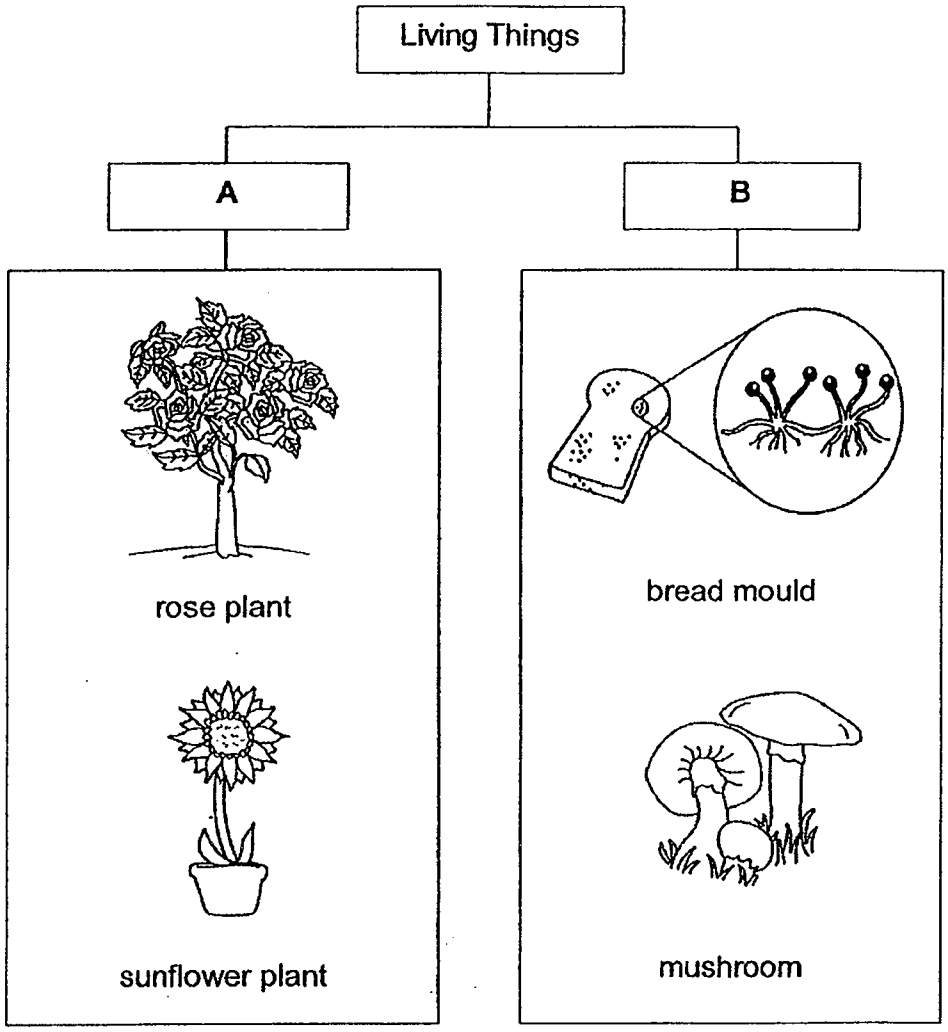
(b) Name an animal that has the same number of stages in its life cycle as the butterfly. [1]

_____

	3

(Go on to the next page)

33 Study the classification chart below.



(a) Choose the correct words from the box below to give suitable headings for A and B. [2]

Flowering plants	Non-flowering plants	Fungi	Bacteria

A: _____

B: _____

	2

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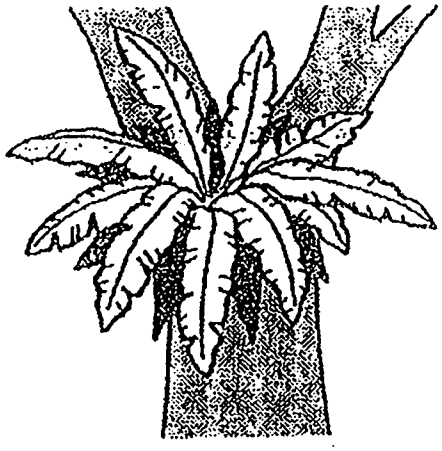
(b) State the difference in how the organisms in groups A and B obtain their food.

[1]

(c) The diagram below shows a picture of a bird's nest fern.



Jonathan says that the bird's nest fern is a flowering plant.

Is he correct? Give a reason. [1]

2

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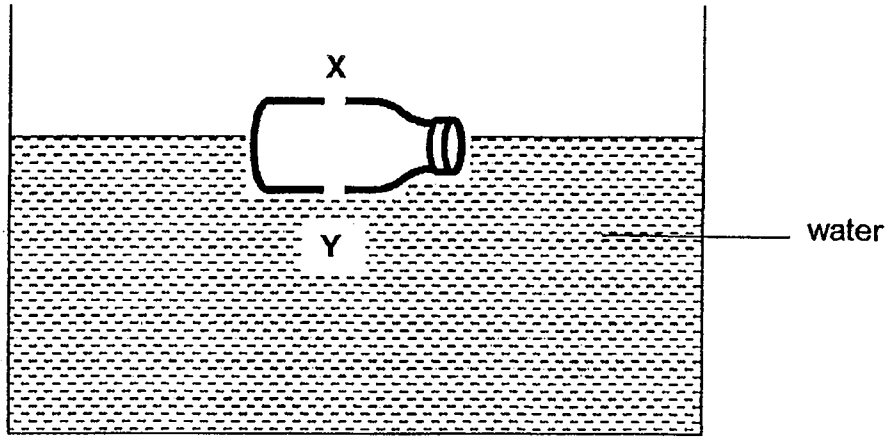
34 An empty bottle with two holes at positions X and Y was placed into a tank of water as shown below.



(a) After 10 seconds, the bottle sank. Explain why. [2]

2

(Go on to the next page)

(b) Felicia wants to cook some rice. She placed 50 cm^3 of rice grains in a cooking bowl as shown in the diagram below. Then, she added 100 cm^3 of water into the cooking bowl.

(i) What is the likely volume of the contents in the cooking bowl after water is added in? [1]

Volume	Tick (✓) in the correct box
50 cm^3	
85 cm^3	
150 cm^3	

(ii) Give a reason for your answer in **(i)**. [1]

_____

_____

1

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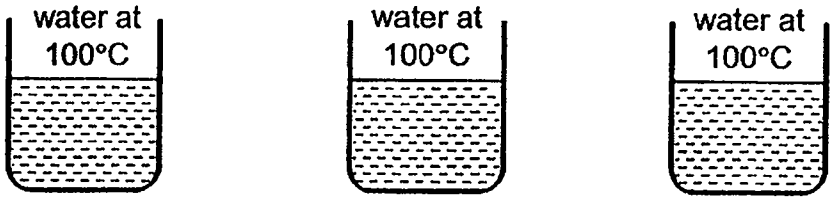
35 John has three similar cups, A, B and C, made of different materials. He poured the same amount of boiling water into each container.



Cup A Cup B Cup C

The table below shows the time taken for the temperature of water in each cup to reach 30°C.

Cup	Time taken for the temperature of boiling water to reach 30°C
A	20 minutes
B	50 minutes
C	60 minutes

(a) Explain why the temperature of water dropped to 30°C after some time. [1]

(b) Which cup, A, B or C, is the best conductor of heat? Explain your answer. [2]

(c) Which cup, A, B or C, can be used to keep ice water cold the longest? [1]

4

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36 Alan placed a ball and a lighted torch in a cardboard box as shown in Diagram 1.

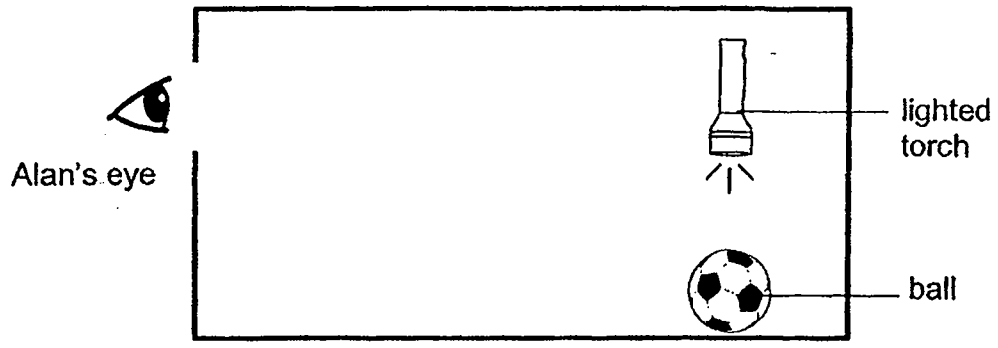

Diagram 1

(a) Explain why Alan is able to see the ball. [2]

A wooden tube was placed in the same cardboard box as shown in Diagram 2.

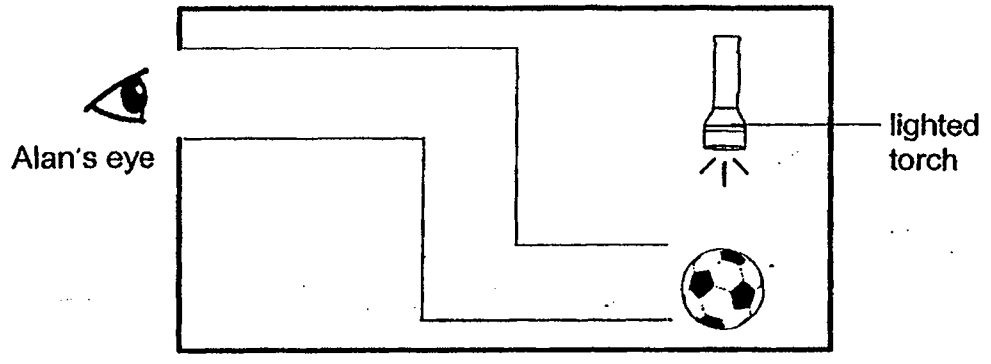

Diagram 2

(b) Alan cannot see the ball now. What property of light does this show? [1]

3

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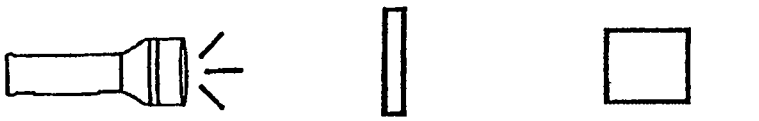
37 Oscar conducted an experiment as shown below. He wanted to find out if material P or Q is more suitable for making blackout curtains. The curtains are to make the room as dark as possible.



torch material light sensor

The table below shows the amount of light detected by the light sensor when materials P and Q were placed between the torch and the light sensor.

Material	No material	P	Q
Amount of light detected (units)	500	0	500

(a) Which material, P or Q, is more suitable for making blackout curtains? Explain why. [1]

1

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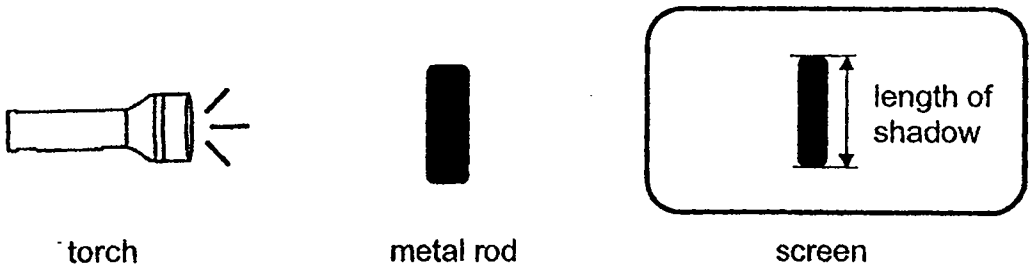
Oscar conducted another experiment as shown below. He placed a metal rod between the torch and a screen.



(b) Using the same items as shown above, what can Oscar do to increase the length of the shadow? [1]

_____

_____

(c) Will the observation on the screen be the same if material Q was used instead of the metal rod? Explain your answer. [2]

_____

_____

3

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38 David heated an empty flask to find out the effect of heating on air. Diagram 1 shows his set-up at the start of the experiment.

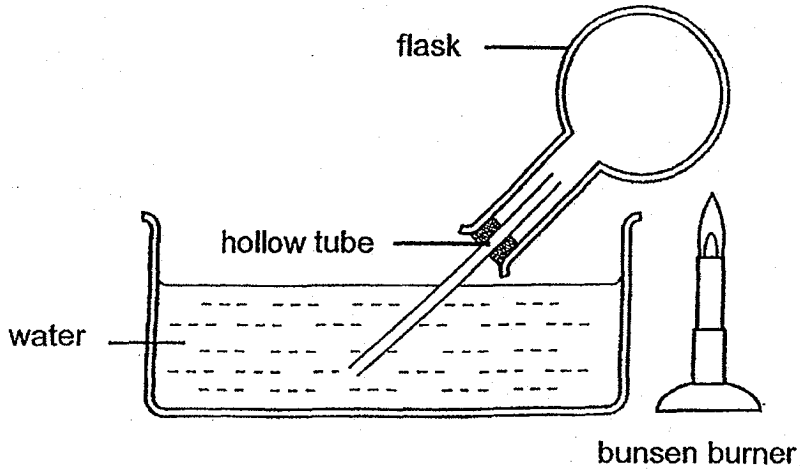

Diagram 1

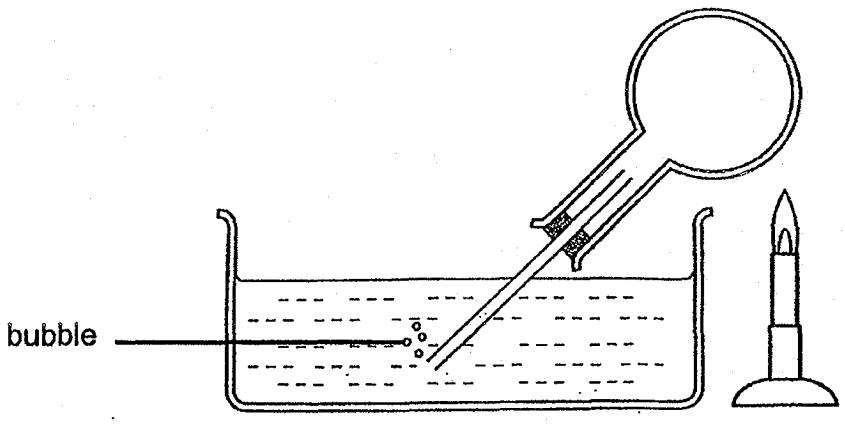

Diagram 2

1 minute later, he observed bubbles in the water as shown in Diagram 2.

(a) Explain how the bubbles were formed. [2]

_____

_____

	2

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David turned off the bunsen burner and continued to observe his set-up. After 5 minutes, he observed that water entered the flask as shown in Diagram 3.

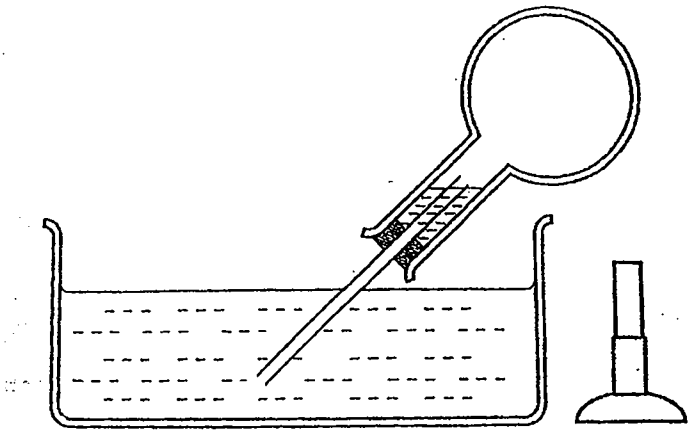

Diagram 3

(b) Explain why water entered the flask. [2]

_____

_____

	2

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39 A beaker contains 300 ml of water. Diagram 1 shows the volume of the contents in the beaker after a ball of plasticine was gently placed in.

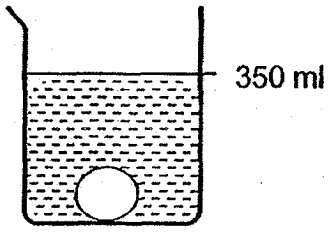

Diagram 1

(a) What is the volume of the plasticine? [1]

The ball of plasticine was removed from the beaker, shaped into a star and then gently placed back into the beaker. Diagram 2 shows the star-shaped plasticine in the same beaker of water.

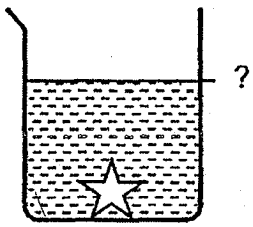

Diagram 2

(b) What is the volume of the contents in Diagram 2? [1]

Volume	Tick (✓) in the correct box
300 ml	
350 ml	
400 ml	

(c) Based on your answer in **(b)**, what can be concluded about the property of plasticine? [1]

	3

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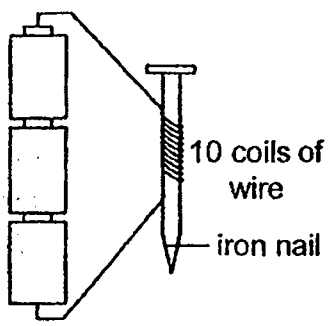
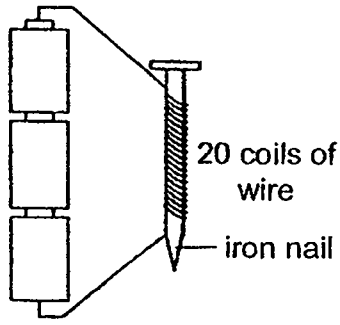
40 Alice set up two set-ups as shown in the diagrams below.



Electromagnet A



Electromagnet B

The table below shows the number of paper clips attracted by electromagnets A and B.

Electromagnet	Number of paper clips attracted
A	5
B	11

(a) What is the relationship between the number of coils of wire and the number of paper clips attracted? [1]

(b) Based on the set-ups, what is the aim of Alice's experiment? [1]

(c) State one important variable that must be kept the same for the experiment to be fair. [1]

	3

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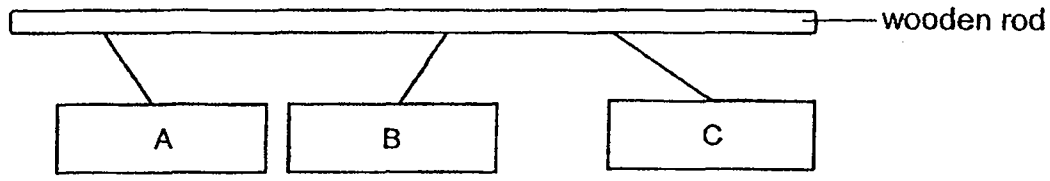
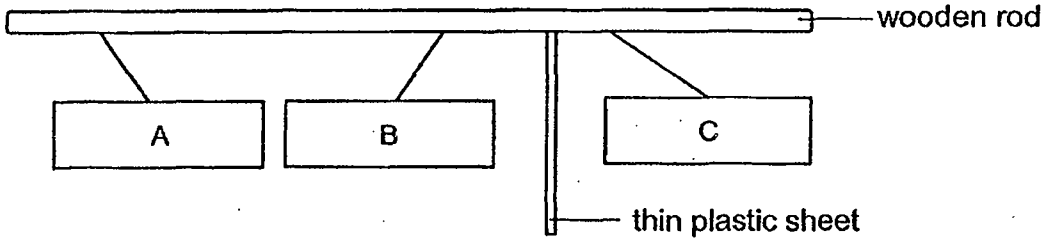
41 Rayner hung three metal bars, A, B and C, next to each other on a wooden rod. Two of the metal bars are magnets. The diagram below shows their positions at rest.



(a) Which two metal bars, A, B or C, are magnets? Explain your answer. [2]

Rayner then placed a piece of thin plastic sheet between bars B and C as shown below.



(b) Rayner observed that bars B and C remained at the same positions. Explain why. [2]

End of Booklet B

4

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SCHOOL : MARIS STELLA PRIMARY SCHOOL

LEVEL : PRIMARY 4
SUBJECT : SCIENCE
TERM : 2019 SA2

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	1	2	4	2	3	4	1	3	3

Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	1	1	3	3	2	4	2	3	4

Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28
3	1	3	1	3	2	4	3

SECTION B

Q29)	Stage R can make food because it has leaves.
Q30)	a) Part 1 b) Part 4 c) Part 3 finishes digestion of food and passes through the walls of the intestine into the blood where it is absorbed.
Q31)	a) This shows that block C floats on water and block D sinks in water. b) Position X
Q32)	a) X : egg Y : pupa b) Mosquito
Q33)	a) A : Flowering plants B : Fungi

	b) Organisms in group A make food for themselves but organisms in group B feed on living things dead or alive. c) He is not correct. The bird's nest fern reproduces by spores but flowering plants reproduce by seeds.
Q34)	a) The air pressure outside the bottle is higher, so it pushes water into the bottle through the bottom hole. There is no vacuum on the top hole, so the water is free to flow out the hole into your sink. b) i) 85cm3 ii) There are tiny air spaces between the rice grains, so some water occupied the space which was previously occupied by the air.
Q35)	a) The boiling water lost heat to the surrounding air and eventually became 30°C, which is room temperature. b) Cup A. The hot water in it took the least time to reach 30°C, so it gained heat the fastest from the hot water and the temperature of the boiling water also decreased the fastest. c) Cup C
Q36)	a) The lighted torch shines light on the ball and the light is reflected off the ball and into Alan's eye. b) Light travels in a straight line.
Q37)	a) Material P, because there is no light detected by the light sensor. b) Oscar can move the torch closer to the metal rod. c) No. The light sensor detected a lot of light when material Q was used, so material Q is transparent. The light from the torch will just pass through material Q and no shadow will be formed.
Q38)	a) Air occupies space, so some of the air had to escape by forming bubbles. b) After turned off the bunsen burner, the air in the flask cools and contracts. This create a low pressure in the flask and outside with high pressure causes water entered the flask.

Q39)	a) 50ml b) 350 ml c) Plasticine had definite volume.
Q40)	a) As the number of coils of wire around the iron nail increases, the number of paper clips attracted also increased. b) To find out if the number of coils of wire around the iron nail affects the number of paper clips attracted by the electromagnet. c) The number of batteries used in the electromagnet.
Q41)	a) B and C. Magnets can attract other magnets and magnetic materials, but only magnets repel each other. Rod B and Rod C are repelling each other, so they are magnets. b) The thin plastic sheet is a non-magnetic material and magnetism can pass through non-magnetic materials, so bar B is still repelling bar C.