PEI HWA PRESBYTERIAN PRIMARY SCHOOL

SEMESTRAL ASSESSMENT 2

PRIMARY 4

SCIENCE

31st October 2017

(BOOKLET A)

Name: _____ ( )

Class: Primary 4 Teamwork _____

Additional Material(s): Optical Answer Sheet (OAS)

Total time for Booklets A and B: 1 h 30 mins

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Index No. at the spaces provided above.
2. DO NOT turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

There are a total of 19 pages in this booklet, excluding the cover page.

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

(56 marks)

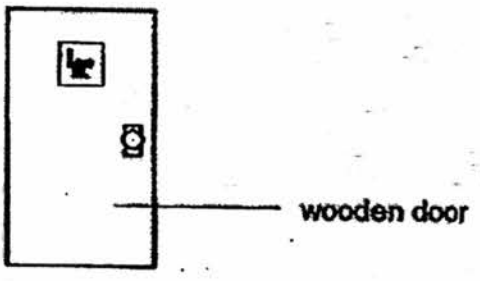
1 In which part of the digestive system is food absorbed into the blood?

(1) Mouth
(2) Gullet
(3) Small intestine
(4) Large intestine

2 Which one of the following is the main function of a leaf on a plant?

(1) Makes food
(2) Takes in water
(3) Holds plant upright
(4) Takes in mineral salts

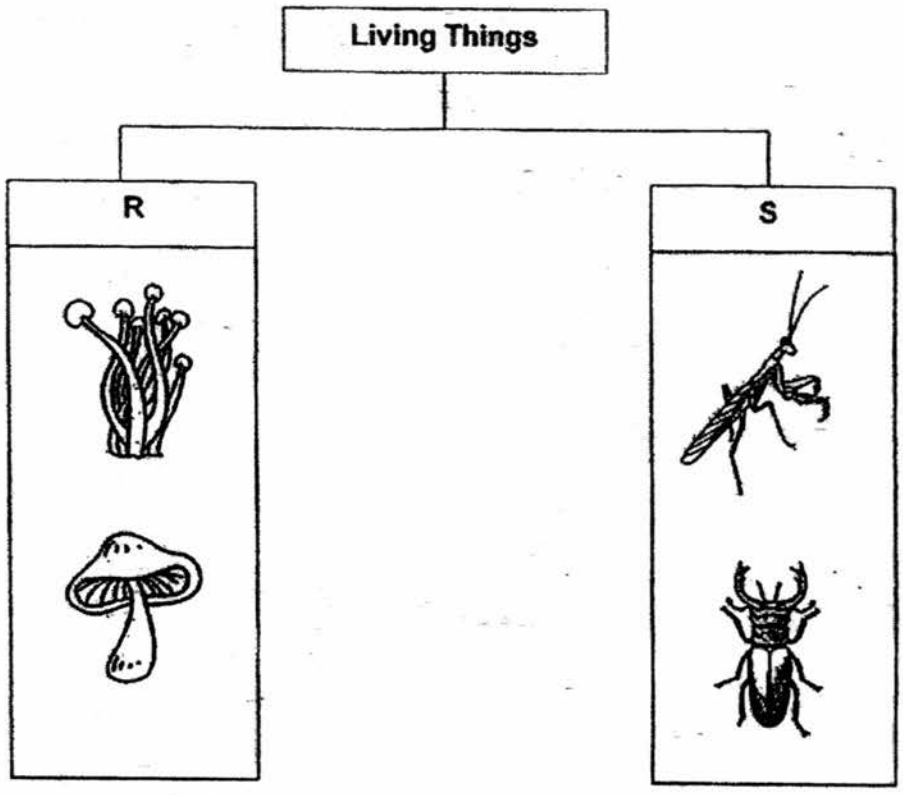
3 The diagram shows a wooden toilet door.



Wood is used to make the door because wood _____.

(1) can bend easily
(2) can conduct heat
(3) can float on water
(4) does not allow light to pass through

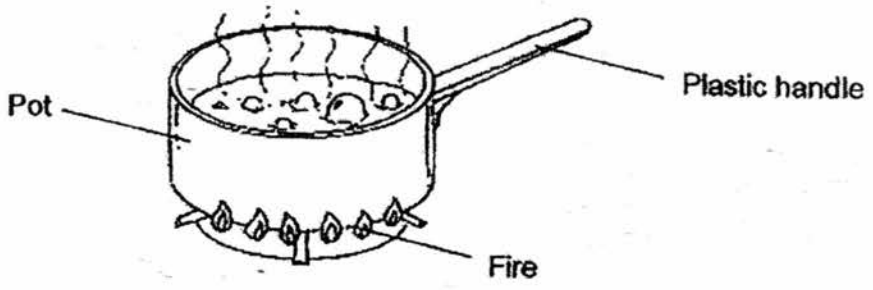
4 The classification chart below shows how some living things can be grouped.



Which one of the following is the most suitable heading for group R?

(1) Fungi
(2) Plants
(3) Insects
(4) Mammals

5 A pot was placed over a fire on the stove.



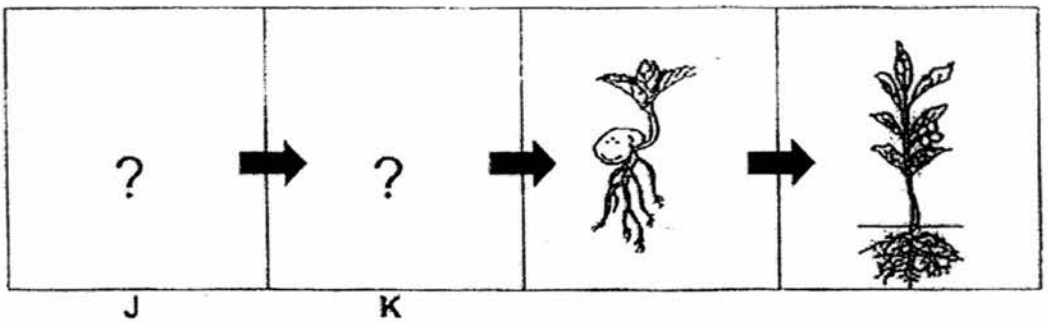
The pot became hotter after a while.
Which one of the following explains this?

(1) The fire gains heat from the pot.
(2) The pot gains heat from the fire.
(3) The fire lost heat to the plastic handle.
(4) The plastic handle lost heat to the pot.

6 Which animal has a pupa as a stage in its life cycle?

(1) Dog
(2) Frog
(3) Butterfly
(4) Cockroach

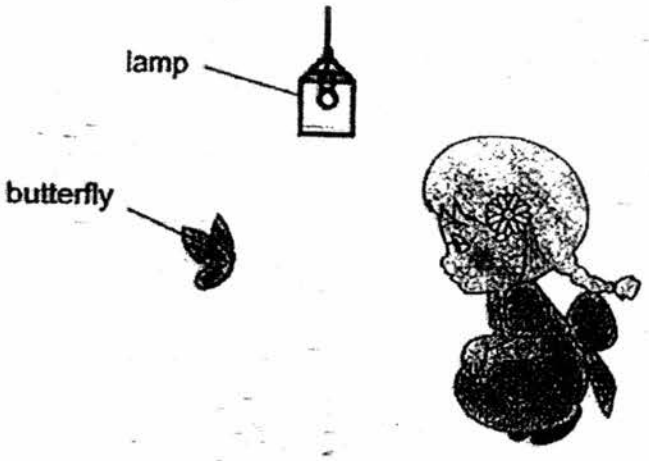
7 The diagram below shows the growth of a young plant with two missing stages J and K.



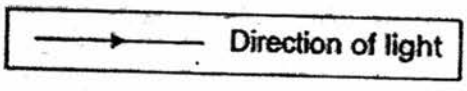
Which one of the following shows the correct stages for J and K?

	J	K
(1)		
(2)		
(3)		
(4)		

8 Look at the picture below.

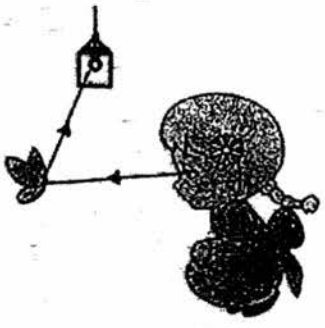


Which one of the following explains why Mary can see the butterfly?



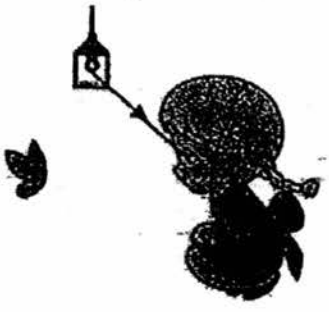
(1)

(2)



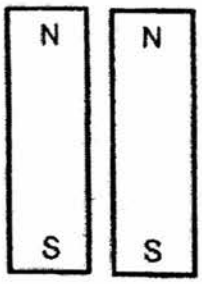
(3)

(4)

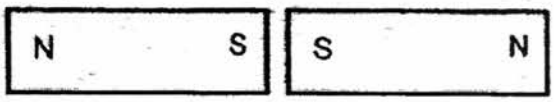


9 In which one of the following will the two magnets pull each other together?

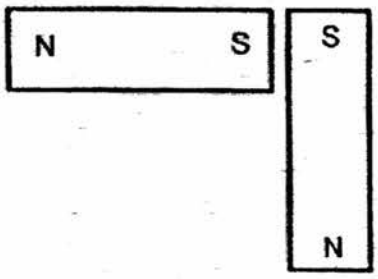
(1)



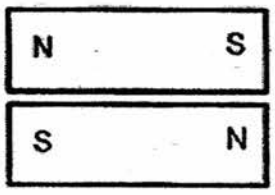
(2)



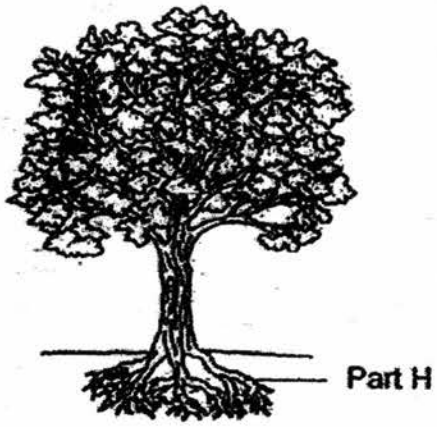
(3)



(4)



10 Study the diagram of the tree below.



The main function(s) of part H is/are to _____.

A make food
B take in air from the surroundings
C anchor the tree firmly to the ground
D take in water and minerals from the soil

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

11 Sharon had a beaker half filled with water as shown in Figure 1 below. She then placed some marbles into the beaker of water one at a time. She observed that the water level in the beaker increased, as shown in Figure 2.

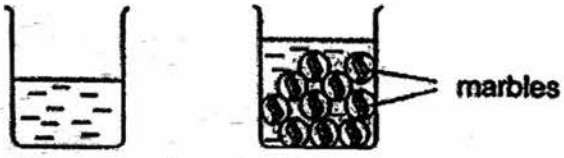
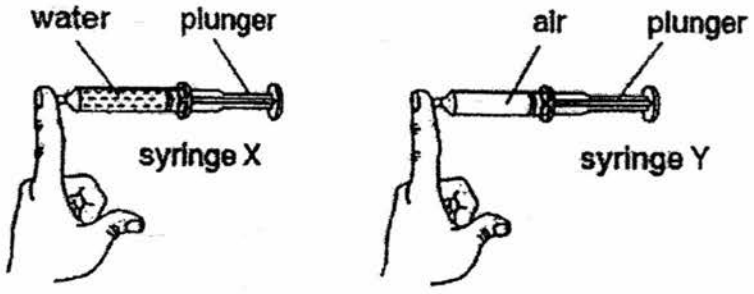


Figure 1 Figure 2

Which one of the following could Sharon conclude from her experiment?

(1) Marbles have mass.
(2) Marbles occupy space.
(3) Water has no fixed volume.
(4) Water has a definite shape.

12 John filled two similar syringes, X and Y, with the same volume of water and air as shown below. He covered one end of each syringe with one finger.



When he pushed the plunger of each syringe, he observed that the plunger of syringe X could not move while the plunger of syringe Y moved a little towards his finger.

Based on his observations from the experiment, which of the following conclusions could John make?

A Air has no fixed volume.
B Air cannot be compressed.
C Water has no fixed volume.
D Water cannot be compressed.

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

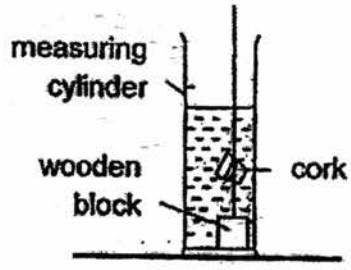
13 The classification table below shows how things are classified based on whether they are matter or not.

Group A	Group B
heat	soil
sound	water
shadow	dolphin

In which group do 'sunlight' and 'wind' belong?

	'sunlight'	'wind'
(1)	A	A
(2)	A	B
(3)	B	A
(4)	B	B

14 Sam wanted to find out the volume of a cork. He tied the cork to a wooden block and dropped it into a cylinder of water as shown below.



Sam had taken down the following measurements, P, Q, R and S.

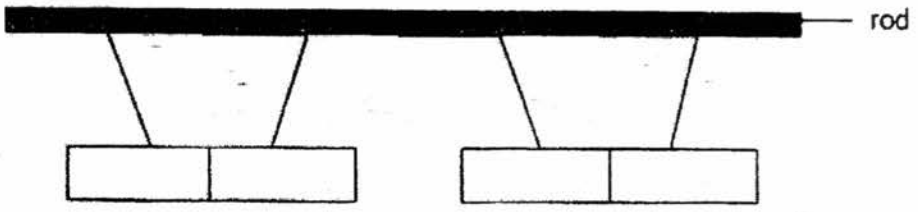
P Volume of water
Q Volume of wooden block
R Total volume of water and wooden block
S Total volume of water, wooden block and cork

Which of the above measurements are needed for Sam to calculate the volume of the cork?

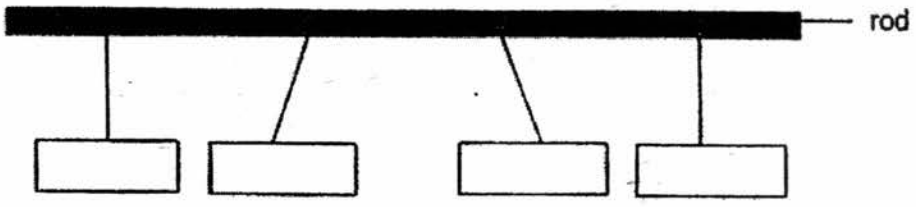
(1) P and Q
(2) Q and S
(3) P and R
(4) R and S

15 Jane suspended an iron bar, an aluminium bar and two bar magnets from a horizontal rod. The four objects are represented by boxes in the diagram below. **Which one of the following observations is possible?**

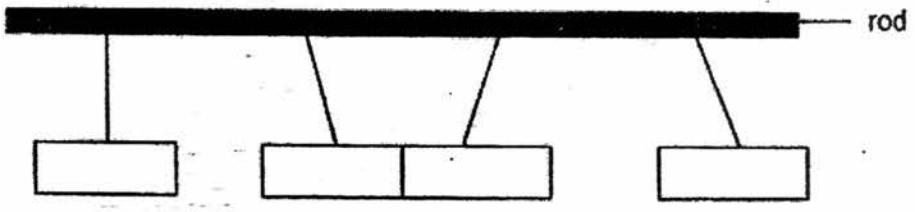
(1)



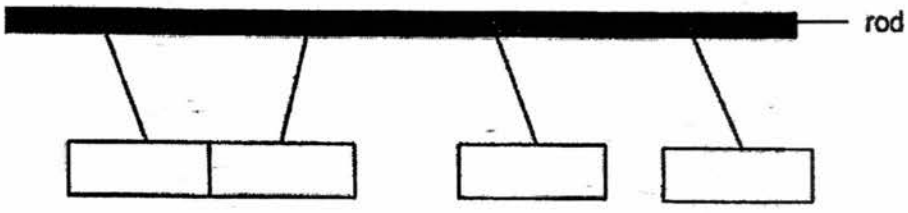
(2)



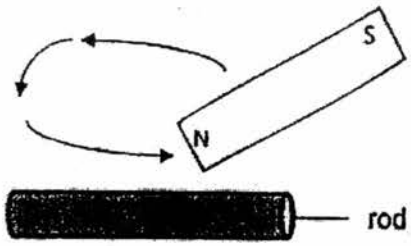
(3)



(4)



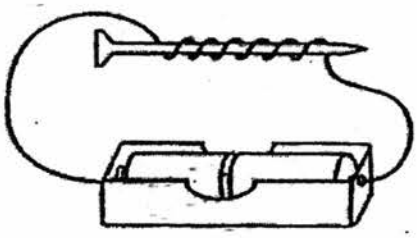
16 Four rods of different materials were stroked using a bar magnet as shown below.



Which of the rod will attract the paper clips after being stroked?

(1) iron
(2) glass
(3) plastic
(4) wooden

17 Randy created an electromagnet as shown in the diagram below. He placed some steel pins near the electromagnet. He noticed that no pins were attracted to the nail.

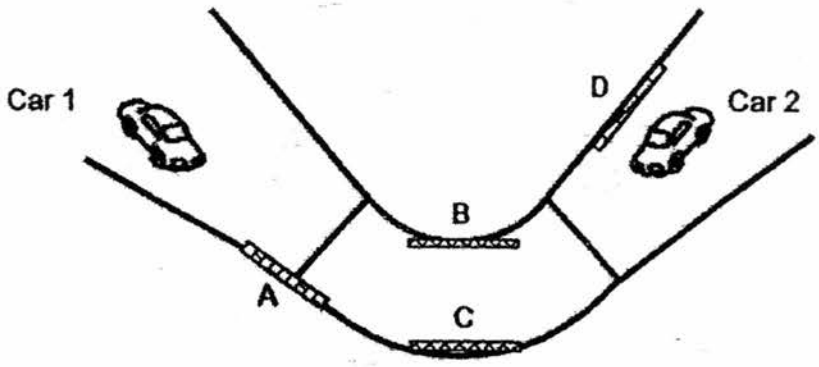


Which of the following could be the reason why no pins were attracted to the nail?

A The nail was made of iron.
B The batteries were too weak.
C The nail was made of copper.

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

18 The diagram below shows a narrow road.



At which position, A, B, C or D should a mirror be placed so that the driver in car 1 could see car 2?

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

19 Which of the following are light sources?

A The sun
B The moon
C A twinkling star
D A torch

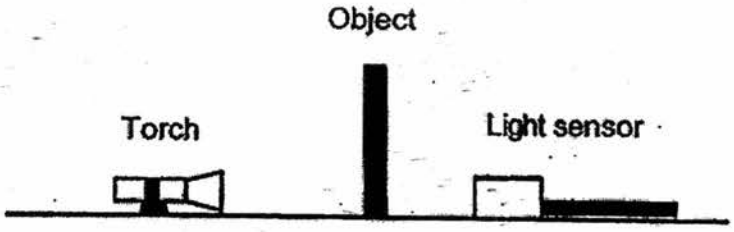
(1) A and B only
(2) B and C only
(3) A and C only
(4) A, C and D only

20 Thomas has a toy plane in his hand.

Which one of the following best describes why Thomas can see the plane?

(1) The toy plane absorbs light.
(2) The toy plane allows light to pass through it.
(3) Light falls on the toy plane and reflects into Thomas' eyes.
(4) Light falls into Thomas' eyes and reflects onto the toy plane.

21 Sally wanted to find out how the thickness of an object affects the amount of light passing through it using the setup shown below.

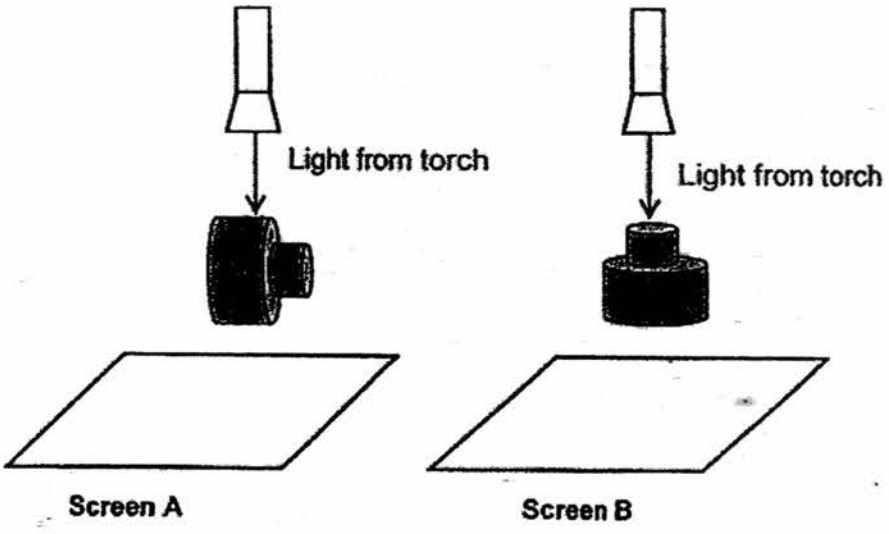


Which three of the following variables should be kept constant to ensure a fair test?

A The material of the object
B The thickness of the object
C The amount of light from the torch
D The distance between the torch and the object

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

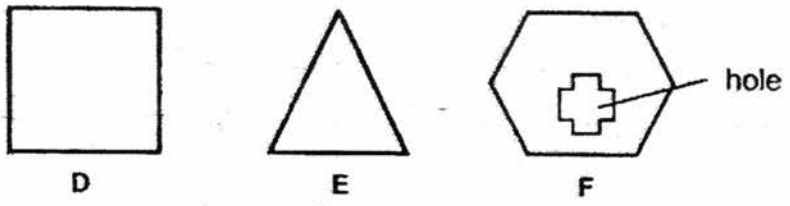
22 Danny investigated the shapes of shadows formed by two identical wooden objects. He placed them in two different positions under two identical torches.



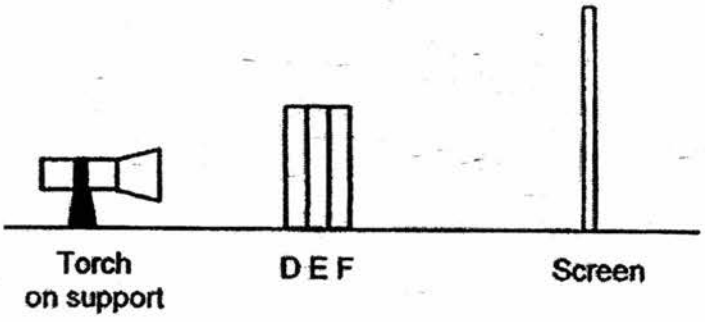
Which one of the following shadows would be observed on each screen?

	Screen A	Screen B
(1)		
(2)		
(3)		
(4)		

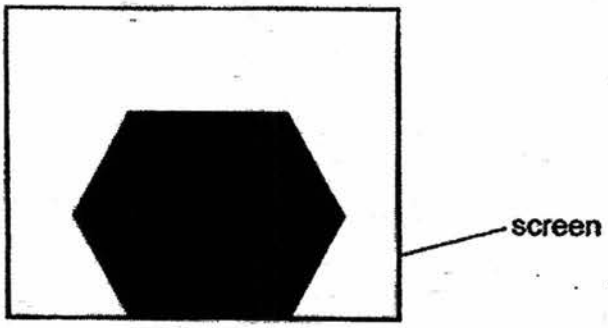
23 Aaron had three objects, D, E and F, which were made of three different materials.



He arranged the objects in a set up as shown below.



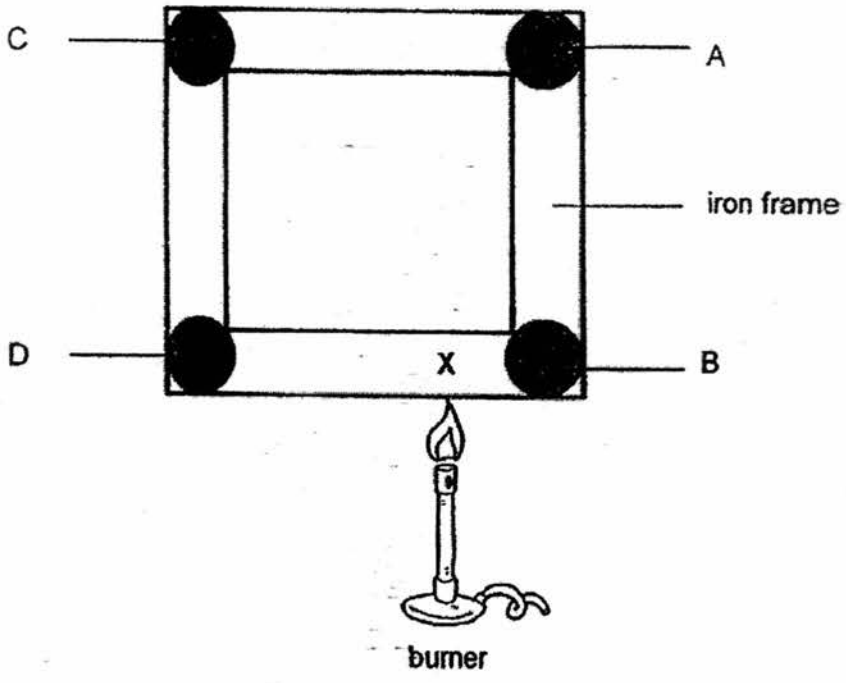
When he switched on the torch in a dark room, he observed the following shadow cast on the screen.



Which one of the following are most likely the properties of the materials for objects D, E and F?

	D	E	F
(1)	No light passes through	No light passes through	Most light passes through
(2)	Some light passes through	Most light passes through	No light passes through
(3)	Most light passes through	No light passes through	Some light passes through
(4)	Most light passes through	No light passes through	No light passes through

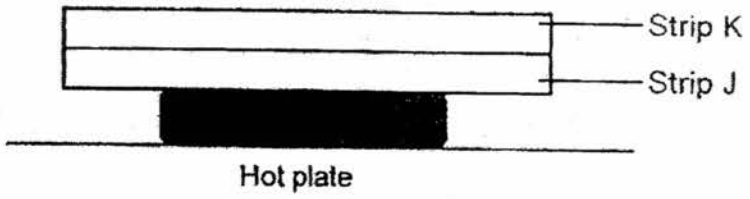
24 Four drops of wax A, B, C and D were dripped at the four corners of an iron frame as shown in the diagram below.



The iron frame was heated with a burner at Point X.
Which of the following correctly shows the order in which the drops of wax would melt and fall off, starting from the fastest to the slowest?

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

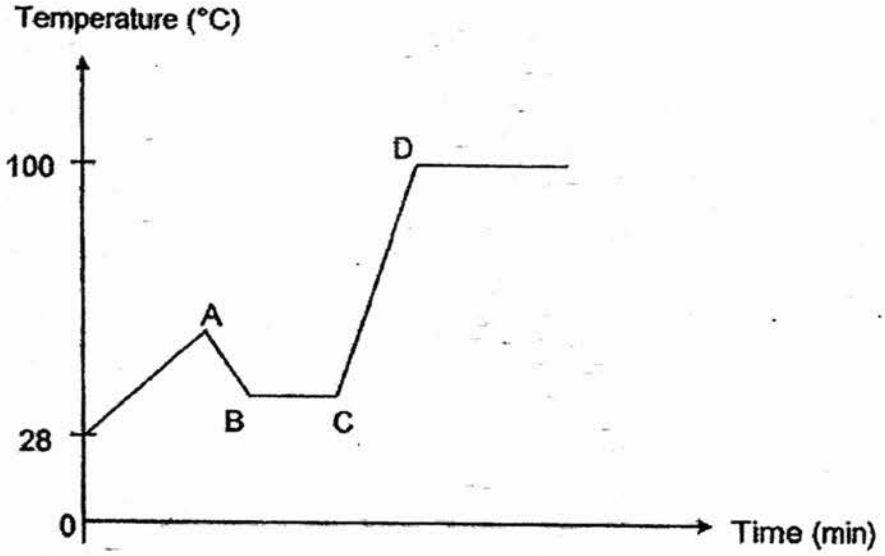
25 Two strips, J and K, were placed on a hotplate for some time as shown.



Which of the following observation and explanation is correct?

	Observation	Explanation
(1)	Strip J became longer	Strip J lost heat first and expanded
(2)	Strip K became longer	Strip K lost heat first and expanded
(3)	Strip J became longer	Strip J gained heat first and expanded
(4)	Strip K became longer	Strip K gained heat first and expanded

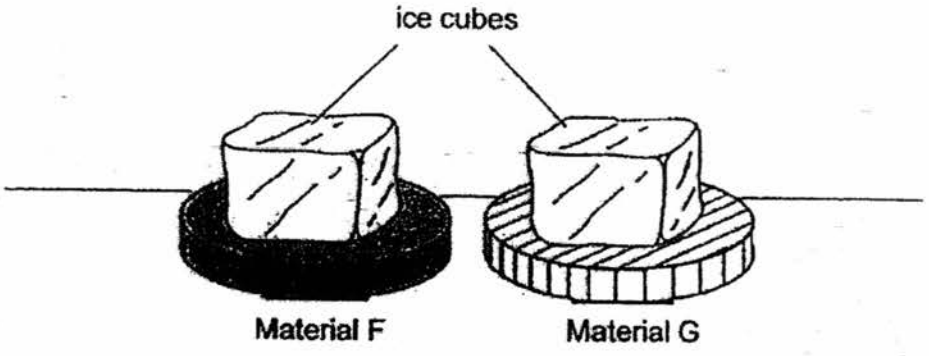
26 The graph below shows the change in temperature when a beaker of water at 28°C was heated.



Kelly added some ice cubes to the beaker at one point during the heating process. At which point did she add the ice cubes?

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

27 Jan placed an ice cube each on a disc made of material F and material G. Both discs were at room temperature at the start of the experiment.



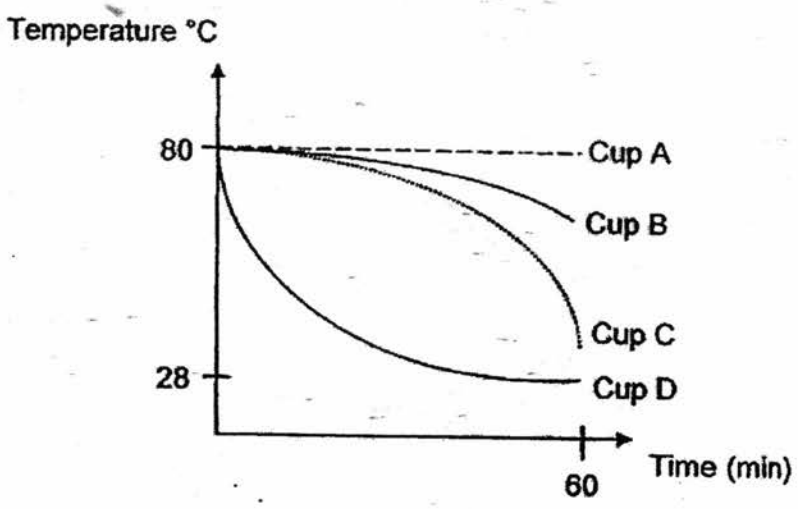
She observed that the ice cube on material F melted completely after 20 minutes but the ice cube on material G took 30 minutes to melt completely.

Based on the experiment above, which of the following is true?

A Material F conducted heat slower than Material G.
B Heat was transferred faster in Material F than in Material G.
C Both ice cubes gained heat from the materials they were placed on.

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

28 An equal amount of water at 80°C is poured into four identical cups made of four different materials. The temperature of the water in each cup is taken every 2 minutes and the results are recorded in the graph below after 60 minutes.



Which cup is made of material which conducts heat best?

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

SEMESTRAL ASSESSMENT 2

PRIMARY 4
SCIENCE
31st October 2017

(BOOKLET B)

Name: _____ ( )

Class: Primary 4 Teamwork _____

Parent's Signature

Total time: 1 hour and 30 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Index No. at the spaces provided above.
2. DO NOT turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write all your answers in this booklet.

FOR TEACHER'S USE

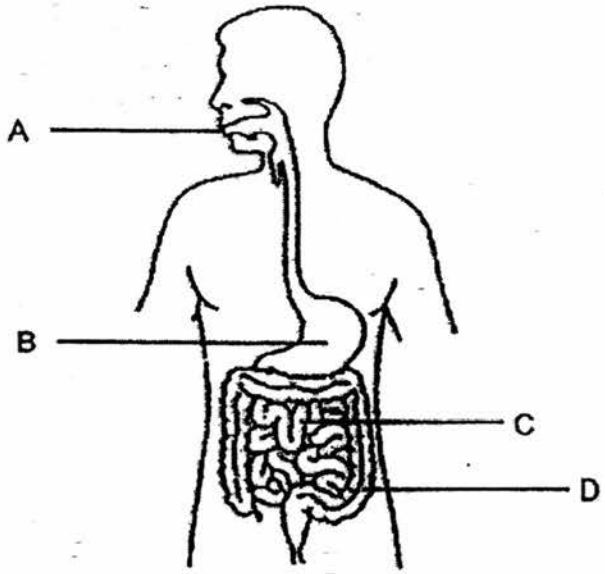
Marks (Booklet A) :	56
Marks (Booklet B) :	44
Total Marks (Booklet A & B) :	100

There are a total of 15 pages in this booklet, excluding the cover page.

Write your answers to the questions 29 to 42 in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question.

(44 marks)

29 The diagram below shows the human digestive system.



(a) State the part (A, B, C or D) where:

(i) Digestion starts: _____ [1]

(ii) No digestion takes place: _____ [1]

(b) What is the function of part C? [1]

_____ _____

_____

30 Observe the livings thing below.

Crocodile

Rain tree

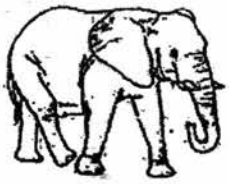
Chicken

Morning glory

(a) Classify the living things above into "Animals" and "Plants". [2]

Animals	Plants

(b) Compare between an elephant and a monkey.



Elephant

Monkey

State the similarity between the elephant and the monkey in the way they reproduce. [1]

_____

_____

31 Tim weighed 4 materials, A, B, C and D, which were of similar shapes and sizes. He soaked each of them into a beaker of water which contained 30ml of water for 2 minutes. Then, he removed them from the beaker before weighing them again. He recorded his findings in the table below.

Materials	Mass of material before being soaked into water (g)	Mass of material after being soaked in water (g)
A	30	40
B	30	60
C	30	30
D	30	50

(a) Which one of the materials, A, B, C or D, absorbed the most amount of water? [1]

_____

(b) Based on the experiment, which one of the materials, A, B, C or D, is most suitable for making raincoats? Explain your answer. [2]

_____

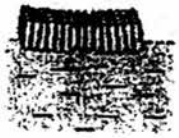
_____

32 A, B, C and D are the various stages in the life cycle of a mosquito.

A

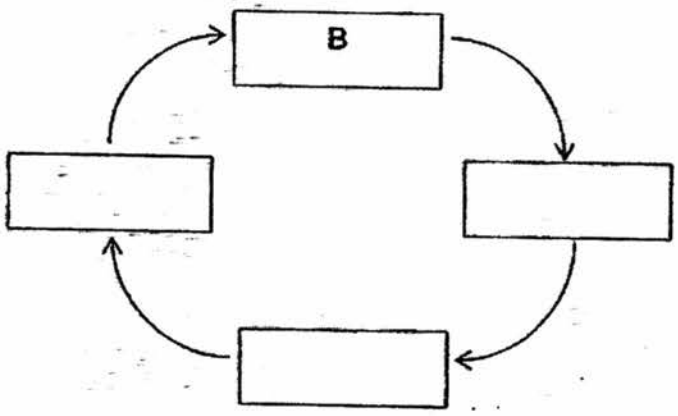
C

B



D

(a) Arrange A, B, C and D in the correct order of the life cycle starting from B. [1]



(b) State one other animal that has a similar life cycle as the mosquito. [1]

_____

(c) State two ways in which we can prevent mosquitoes from breeding at home. [2]

(i) _____

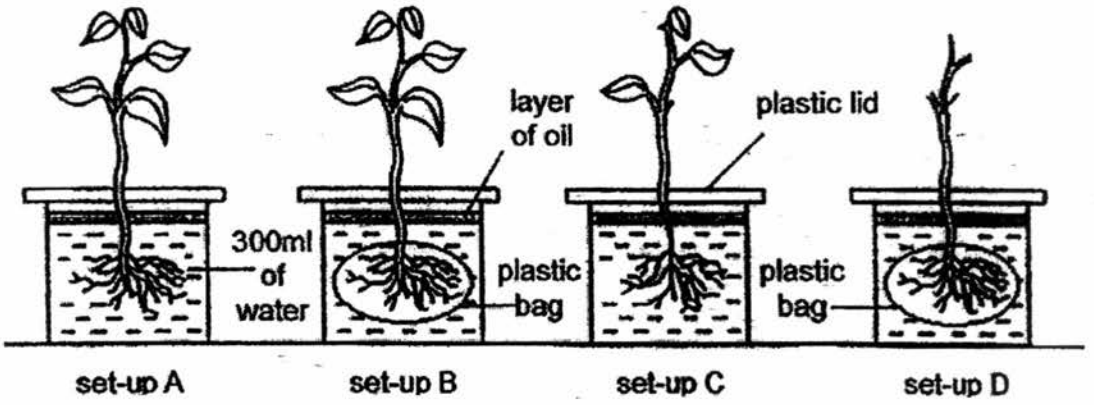
_____

(ii) _____

_____

33 Ben wanted to show that plants take in water through their roots.

He had four similar type of plants with differences in their plant parts as shown below in set-ups A, B, C and D.



(a) Which two set-ups should he use to carry out his test? [1]

_____

(b) Explain your choice in (a). [1]

_____

_____

(c) Which set-up will have the least amount of water left in the beaker? Give a reason for your answer. [1]

_____

_____

34 A beaker of ice was taken out from a freezer and left in the classroom in the position as shown in Figure 1 below.

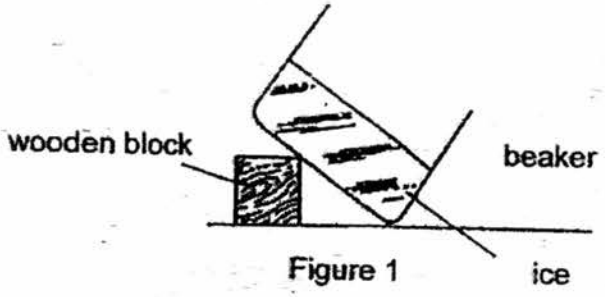


Figure 1

(a) In Figure 2, **draw and label** the observation in the beaker after three hours. [1]

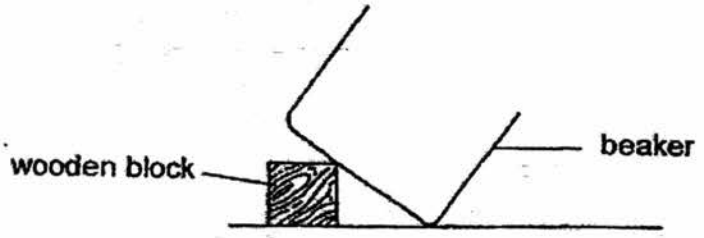
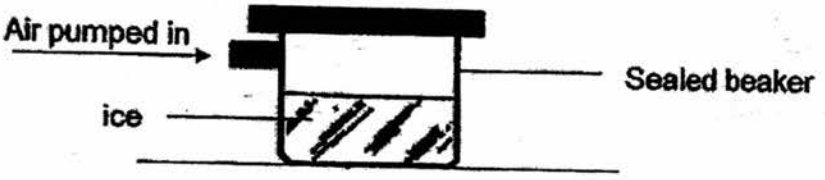


Figure 2

(b) State the property of matter that would explain the observation in (a). [1]

_____

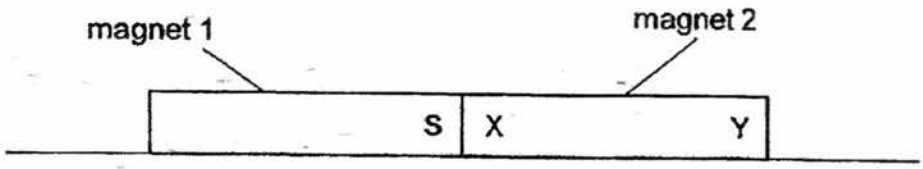
(c) Another beaker of ice was taken out of a freezer and left in the classroom table as shown below.



If the volume of ice is 25 cm^3 and the volume of the beaker is 50 cm^3, what is the volume of air in the sealed beaker when another 10 cm^3 of air is pumped in? [1]

_____

35 Two magnets are placed together as shown below.



The south pole of magnet 1 is labelled S.

(a) State the poles labelled X and Y on magnet 2. [2]

X: _____

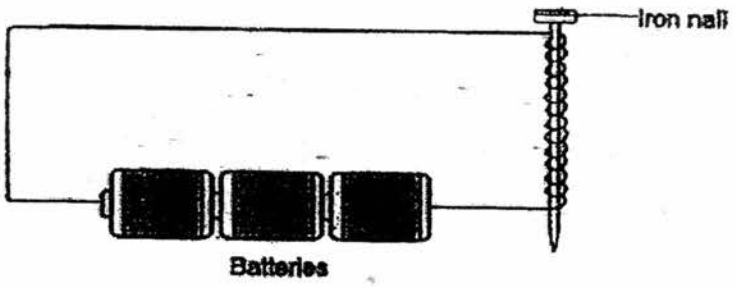
Y: _____

(b) Suggest what you could do to magnet 1 so that magnet 1 would push magnet 2 away from it. [1]

_____

_____

36 Fred set up and experiment as shown below.



He measured the magnetic strength of the electromagnet by counting the number of steel clips the electromagnet could attract. He recorded the results in the table below.

Number of coils of wire around the iron nail	Number of steel clips
10	6
20	11
30	15
40	20

(a) State 2 variables that must be kept constant in the experiment above. [1]

_____

_____

(b) What was the relationship between the number of coils of wire around the iron nail and the number of steel clips attracted? [1]

_____

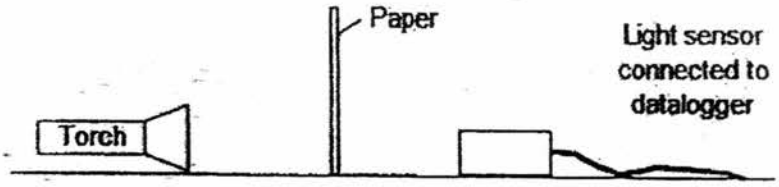
_____

(c) Suggest another way of increasing the magnetic strength of the electromagnet. [1]

_____

_____

37 Ted set up the following experiment in a dark room to find out how the number of sheets of paper will affect the amount of light passing through.



He repeated the experiment by increasing the number of sheets of the same type of paper. He recorded the results in the table below.

Number of sheets of paper	Amount of light detected (units)
0	100
1	72
2	45
3	12
4	0

(a) How did the number of sheets of paper affect the amount of light detected? [1]

_____

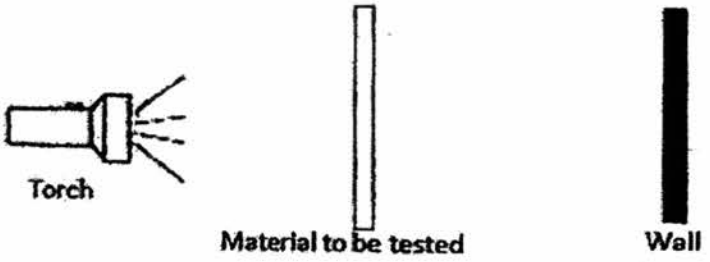
_____

(b) What would he observe about the amount of light detected by the light sensor if he increased the number of sheets of paper to 6? Explain your answer. [2]

_____

_____

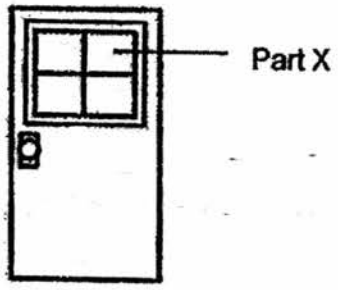
38 Zen wanted to test how well three different materials A, B and C, allow light to pass through. He set up an experiment as shown below.



The table below shows what he observed for each of the three materials when he switched on the torch. All three materials were of the same size and thickness.

Material A	Material B	Material C
Allows most light to pass through	Allows some light to pass through	Does not allow light to pass through

Zen was asked to suggest a material to build part X of the door to a classroom. Part X should allow people outside the classroom to see the activities of the children in the classroom very clearly.



(a) Which material A, B or C would be most suitable to build part X of the door? Give a reason for your answer. [1]

_____

_____

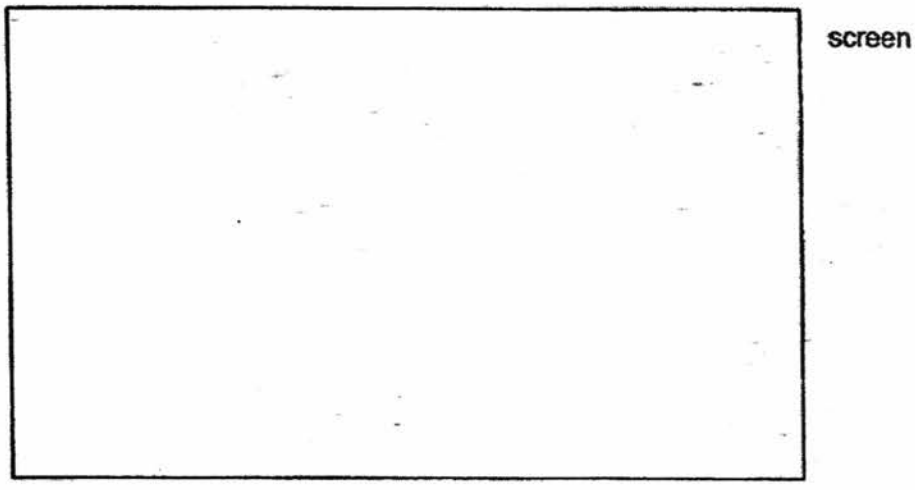
(b) Suggest what material A can be. [1]

_____

39 Jerry shines a torch on a ball and a shadow is formed on a smooth screen.

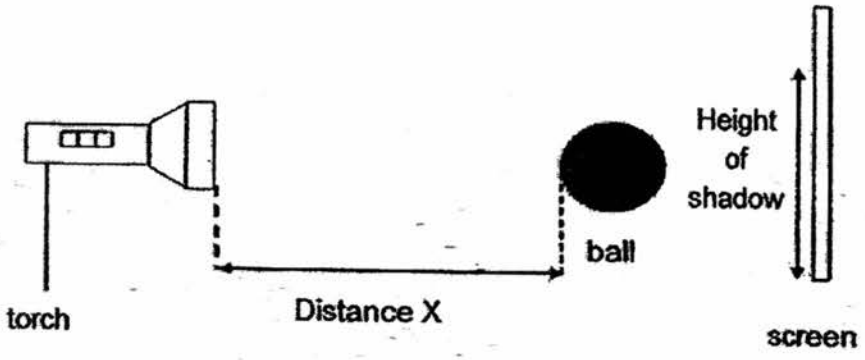
(a) A shadow is formed when light is _____ by the ball. [1]

(b) Draw the shadow of the ball that is formed on the screen. [1]



Question 39 continues on page 31

Jerry then conducted an experiment using the same ball and put them at different distances from the torch. He recorded the height of the shadow formed on the screen as shown in the table below.



Distance X (cm)	Height of shadow formed on the screen (cm)
5	20
8	17
10	15
12	13

(c) Based on the information given in the table, how does distance X affect the height of shadow formed on the screen? [1]

_____

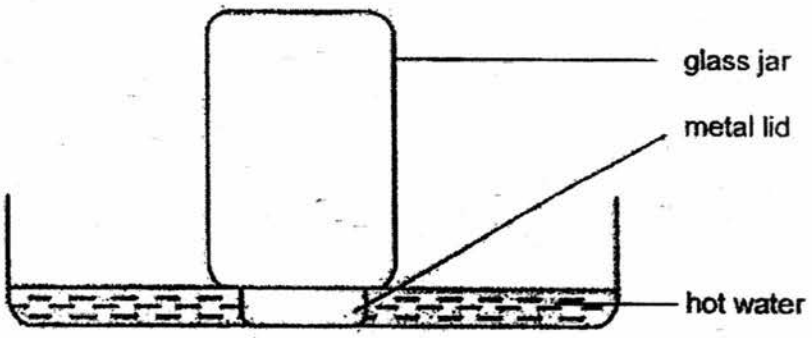
_____

(d) State another way in which Jerry could form a larger shadow on the screen. [1]

_____

_____

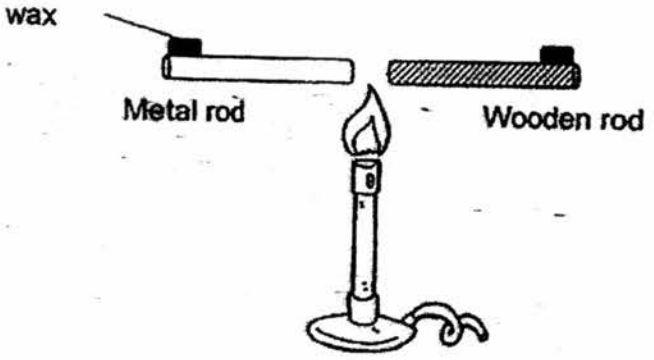
40 Dean had difficulty opening the metal lid of a glass jar. He placed the jar upside down in a basin of hot water as shown in the diagram below.



After that, he could open the lid of the jar easily.

Explain why Dean could open the jar easily after placing the jar upside down in a basin of hot water. [2]

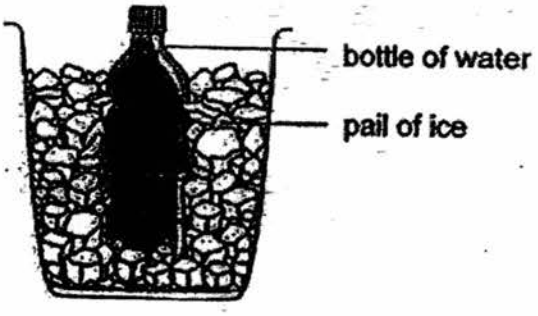
41 (a) Gerald placed equal amounts of wax on a metal rod and a wooden rod. He then heated both rods over a flame at the same time.



What would he observe and why? [2]

The wax on the metal rod melted _____ than the wax on the wooden rod, as metal is a _____ conductor of heat than wood.

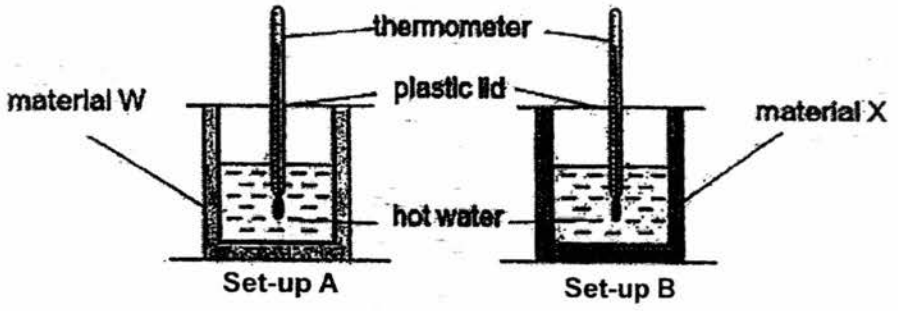
(b) Gerald placed a bottle of water which was at room temperature in a pail of ice.



Put a tick (✓) to show if the statement is 'true' or 'false' in the table provided. [2]

Statements	True	False
The bottle gained heat from the ice.		
The water in the bottle lost heat to the ice.		
The temperature of the water in the bottle decreased.		
The ice gained heat from the water in the bottle.		

42 Ali conducted an experiment to find out which material is a better conductor of heat. He set up the experiment as shown below.



He recorded the temperature of the hot water in each beaker at an interval of 5 minutes as shown in the table below.

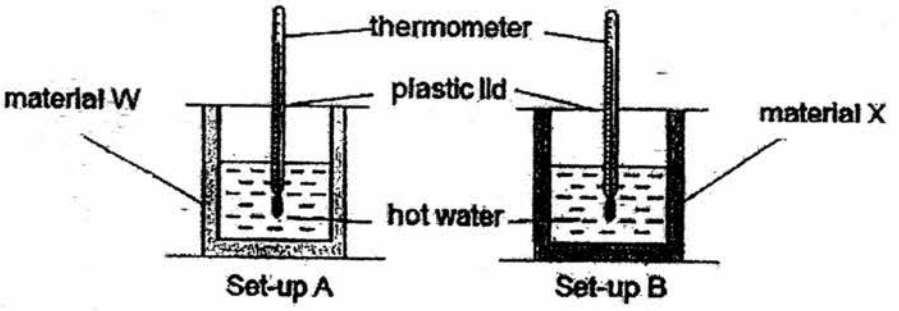
Time (min)	Temperature of water	
	Set-up A	Set-up B
0	80	80
5	60	75
10	50	70
15	40	65

(a) Based on the experiment above, put a tick (✓) next to each variable to show if it should be changed, kept the same or measured. [1]

Variable		Variable to change	Variable to keep the same	Variable to measure
(i)	Size of beaker			
(ii)	Material of beaker			
(iii)	Temperature of water			
(iv)	Temperature of surrounding			

Question 42 continues on page 35

Next, Ali poured all the water away and filled both beakers with the same volume of tap water at 28°C. He then placed both set-ups in the oven at 90°C and measured the temperature.



(b) In which set-up (A or B) will the temperature of water increase faster? Explain your answer. [2]

_____

_____

(c) Ali wanted to keep his coffee warm for longer time.Based on both of his experimens, which material, W or X, should he use to hold his coffee?

Explain your answer. [1]

_____

_____

End of paper

SCHOOL : PEI HWA PRESBYTERIAN PRIMARY SCHOOL

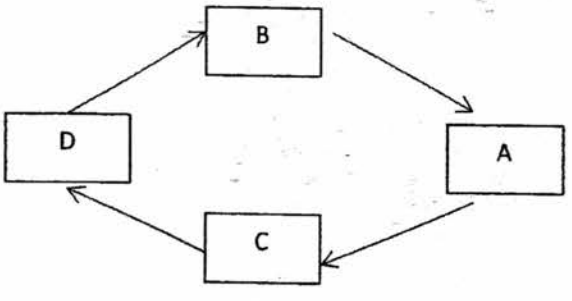
LEVEL : PRIMARY 4
SUBJECT : SCIENCE
TERM : 2017 SA2

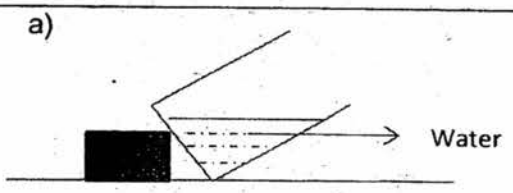
CONTACT :

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	1	4	1	2	3	4	3	4	3
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	2	2	4	3	1	4	3	4	3
Q 21	Q22	Q23	Q24	Q25	Q 26	Q27	Q28		
3	1	4	2	3	1	3	4		

SECTION B

Q29)	a) i) A ii) D b) Part C absorbs digested food into the bloodstream
Q30)	a) Animals → Crocodile, chicken b). Pants → Rain tree, morning glory c) Both the elephant and monkey give birth to young alive.
Q31)	a) Material B b) Material C. It did not absorb any water so it is waterproof and when it rains, the weather will not be wet and the raincoat will not become heavy and can protect the person from getting wet.
Q32)	(a) 

	b) Butterfly c) i) Pour oil onto stagnant water so the mosquito larva would suffocate and die. d) ii) Breed fish in ponds so that the fish will eat mosquito larva.
Q33)	a) Set-up A and B b) Both set-ups have the same condition except one variable the plastic bag which prevents the roots from absorbing water. c) Set-up A. The plant in Set-up A had more leaves and roots which absorb more water and transport up to other parts of the plants and the water is lost more through the leaves since the plant had more leaves.
Q34)	a)  b) Water does not have a definite shape. c) 25 cm^3
Q35)	a) X: North Y: South b) Turn Magnet 1 with its north pole facing X of Magnet 2
Q36)	a) The number of batteries and the type of batteries used b) The more the number of coils of wire around the iron nail, the more the number of steel clips attracted to the iron nail. c) Add more batteries to the set-up
Q37)	a) The more the number of sheets of paper, the lesser the amount of light passes through the paper to be detected by the data logger. b) No light would be detected by the light sensor since there is no light detected at the fourth sheet of papers.
Q38)	a) Material A. It allows the most amount of light to pass through. b) Glass

Q39)

a) Blocked

b)

c) The longer distance X is, the shorter the height of the shadow formed on the screen.

d) Move the screen further away from the ball.

Q40)

a) The lid of the jar gained heat from the hot water and expanded slightly, allowing Dean to open the lid of the jar easily.

Q41)

a) faster, better

b) False
True
True
True

Q42)

a)

Variable	Variable to change	Variable to change	Variable to keep the same
(i)		√	
(ii)	√		
(iii)			√
(iv)		√	

b) Set-up A. It loses heat faster than Set-up B in the experiment as material W is a better conductor of heat.

c) Material X. Material X is a poor conductor of heat and will take more time than W to cool the coffee down. The coffee will lose heat slower.