

METHODIST GIRLS' SCHOOL

Founded in 1887



END-OF-YEAR EXAMINATION 2018

PRIMARY 4

SCIENCE

BOOKLET A

Total Time for Booklets A and B: 1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

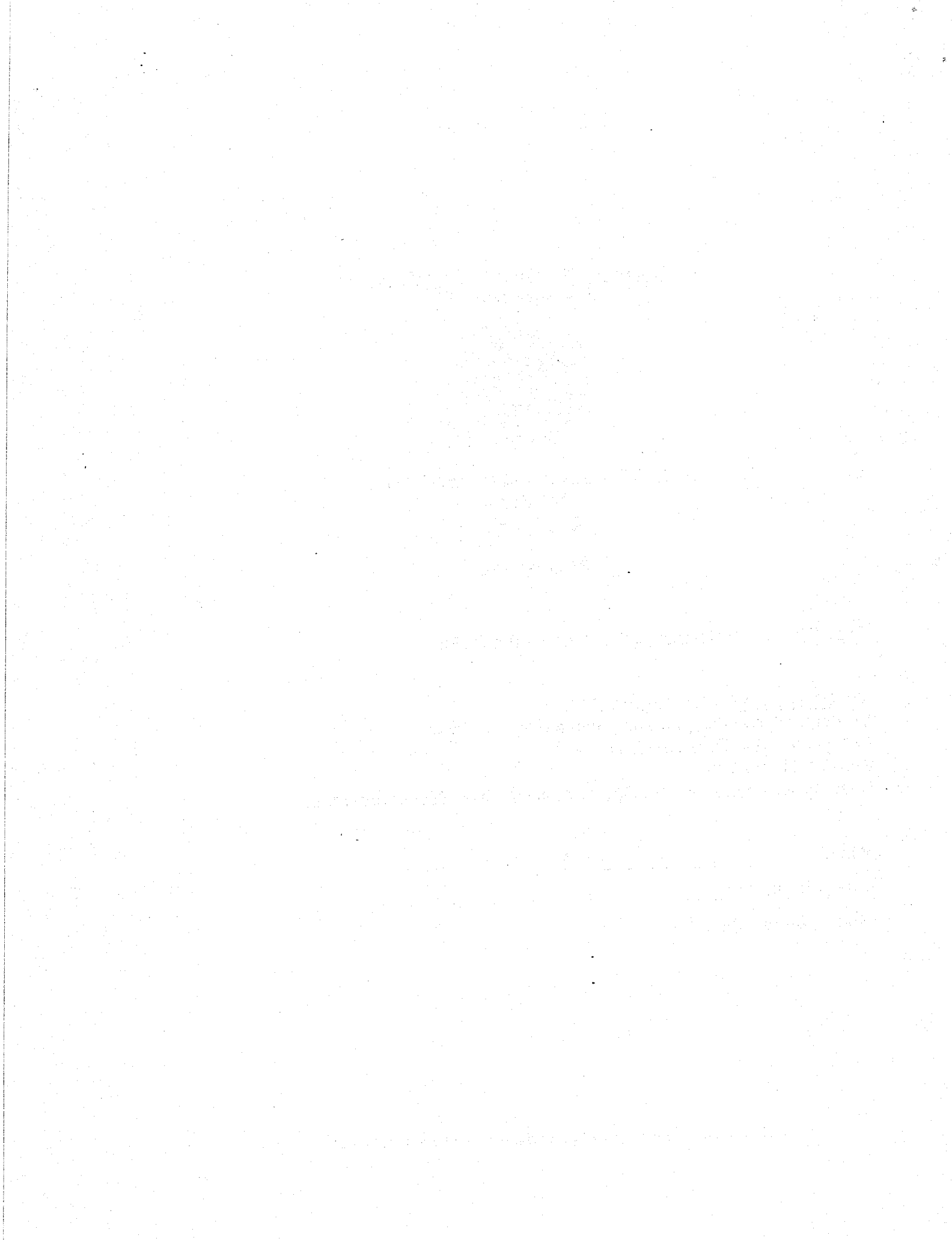
Shade your answers in the Optical Answer Sheet (OAS) provided.

Name: \_\_\_\_\_ ( )

Class: Primary 4. \_\_\_\_\_

Date : 30 October 2018

This booklet consists of 20 printed pages including this page.

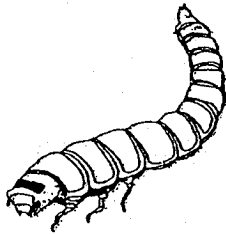


For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet (OAS). [56 marks]

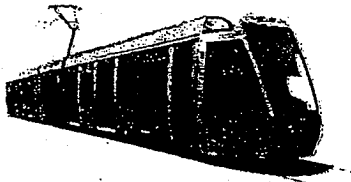
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1 Which one of the following is not a living thing?

(1)



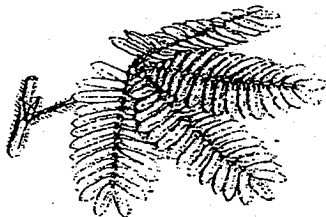
(2)



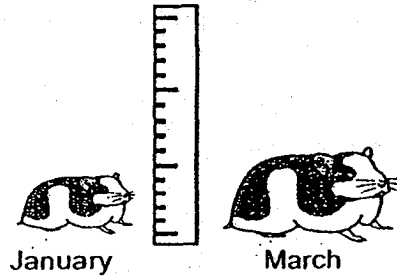
(3)



(4)

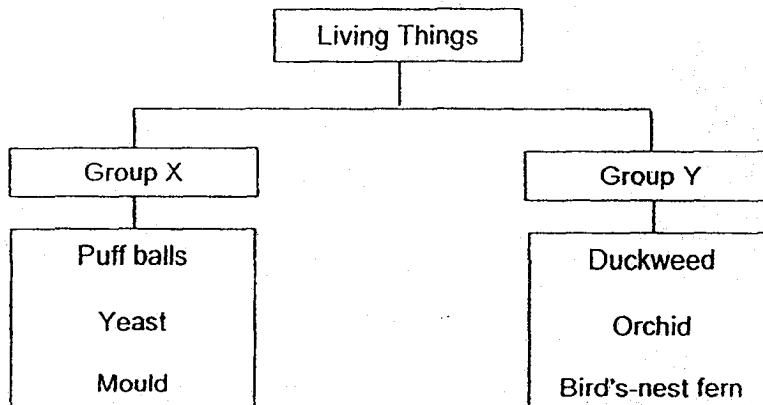


- 2 Sarah bought a hamster from the pet store in January and measured its height. Two months later, she measured its height again.



Based on her observation, Sarah concluded that the hamster is a living thing because it can \_\_\_\_\_.

- (1) die
  - (2) grow
  - (3) reproduce
  - (4) respond to change
- 3 The table below shows how some living things can be grouped.

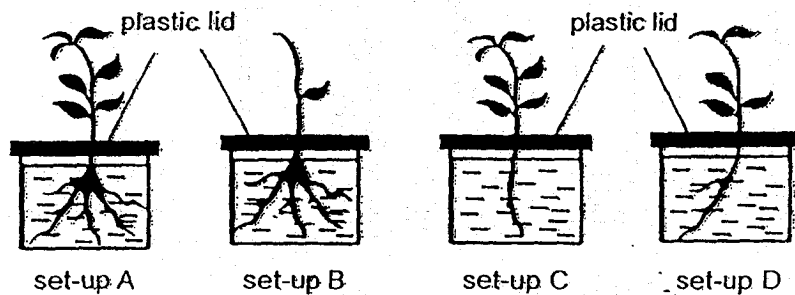


Which one of the following is the most suitable heading for group X?

- (1) Fungi
- (2) Plants
- (3) Bacteria
- (4) Animals

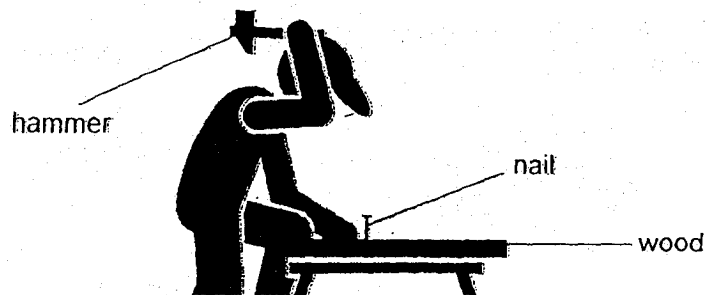
- 4 Adrian wanted to find out if plants take in water through their roots.

He prepared four set-ups A, B, C and D. Each set-up contains a similar plant with some of the plant parts removed as shown below. Each set-up contains 250 ml of water.



Which two set-ups above should Adrian use to conduct a fair test?

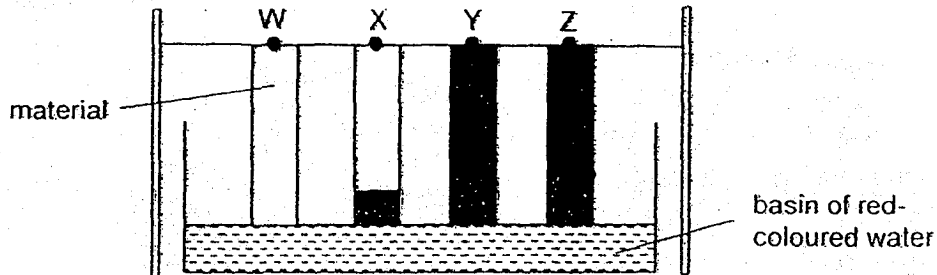
- (1) A and B
  - (2) B and C
  - (3) A and C
  - (4) A and D
- 5 A carpenter used a hammer to hit a nail into a piece of wood.



Steel is used to make the hammer because steel \_\_\_\_\_.

- (1) is shiny
- (2) is strong
- (3) sinks in water
- (4) conducts heat well

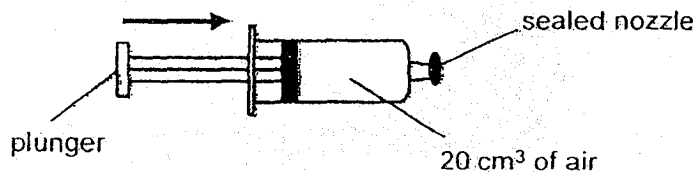
- 6 Mark conducted an experiment to compare the absorbency of different materials. He placed four strips of materials W, X, Y and Z, of identical size, into a basin of red-coloured water for 10 minutes. Mark recorded his observations as shown in the diagram below. He shaded the part of each material that had absorbed the red-coloured water.



Based on the on the diagram above, which of the following shows the most suitable material to make a raincoat, handkerchief and toilet paper?

	Raincoat	Handkerchief	Toilet paper
(1)	X	Y	Y
(2)	W	Z	X
(3)	X	Y	Z
(4)	W	Z	Y

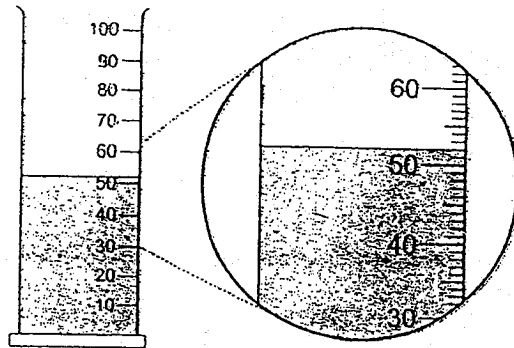
- 7 The diagram below shows a syringe filled with  $20 \text{ cm}^3$  of air. The nozzle was sealed before the plunger was pushed in.



What was the volume of air after the plunger was pushed in?

- (1)  $0 \text{ cm}^3$
- (2)  $20 \text{ cm}^3$
- (3) Less than  $20 \text{ cm}^3$
- (4) More than  $20 \text{ cm}^3$

- 8 The diagram below shows a measuring cylinder containing liquid Y.



What is the volume of liquid Y?

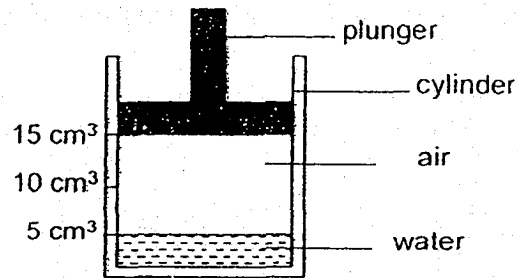
- (1) 50 ml
  - (2) 52 ml
  - (3) 50.2 ml
  - (4) 51.5 ml
- 9 Mr Lim, who is 68 years old, needs to put on his dentures (false teeth) before he eats.



Why does Mr Lim need to put on his dentures before he starts eating?

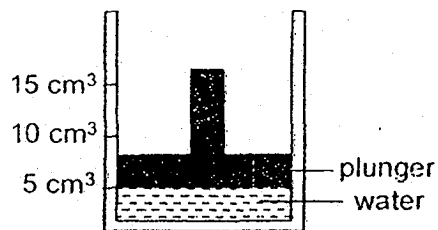
- (1) They help to digest the food.
- (2) They help to release digestive juices into his mouth.
- (3) They help to break down the food into smaller pieces.
- (4) They help to make food soft and wet so that it can be swallowed easily.

- 10 Stacy filled a cylinder with  $5 \text{ cm}^3$  of water and sealed it with a plunger as shown below.

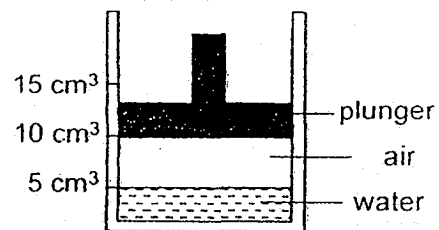


What would Stacy see after she pushed the plunger downwards as far as she could without any air or water escaping?

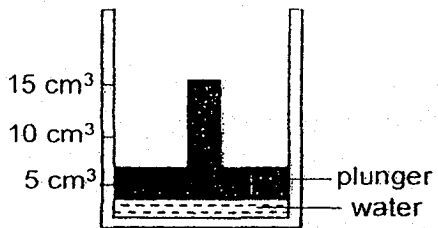
(1)



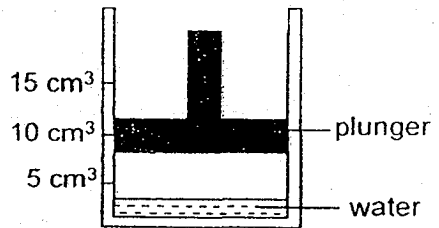
(2)



(3)



(4)

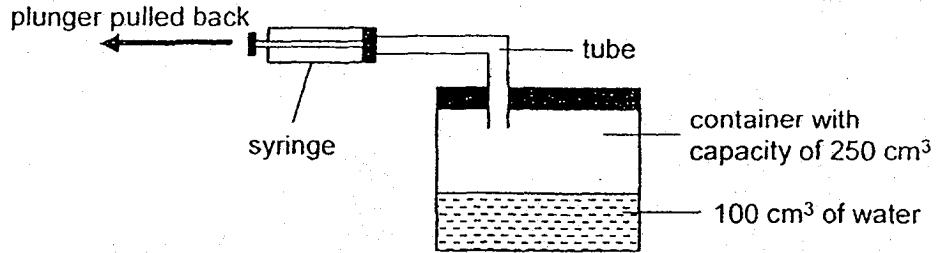


- 11 Which one of the following properties is true for both air and a block of ice?

- (1) They can be seen.
- (2) They take up space.
- (3) They have fixed shapes.
- (4) They have fixed volumes.



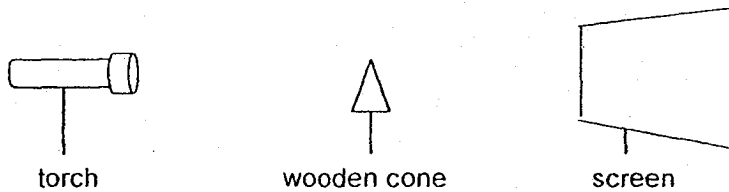
- 12 The diagram below shows a syringe that was fitted to a container through a tube.






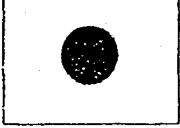
Each time the plunger of the syringe was pulled back completely, 30 cm<sup>3</sup> of air would be drawn out of the container. Which one of the following shows the correct volume of air and water in the container after the plunger was pulled back completely once?

	Volume of air (cm <sup>3</sup> )	Volume of water (cm <sup>3</sup> )
(1)	120	130
(2)	120	100
(3)	150	100
(4)	180	100

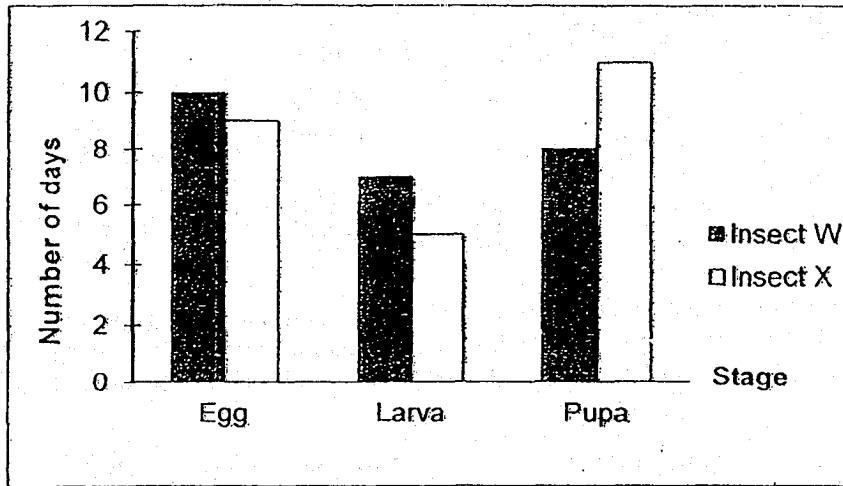
- 13 The set-up below shows light shining on a wooden cone.



Which one of the following shadows would most likely be seen on the screen?

- (1) 
- (2) 
- (3) 
- (4) 

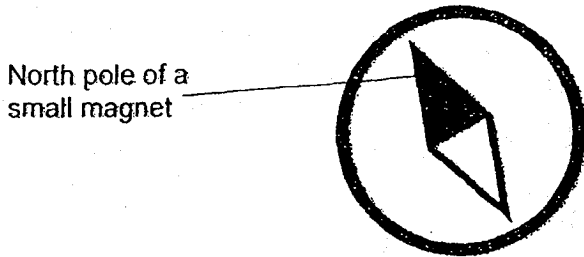
- 14 The graph below shows the number of days it takes for each stage in the life cycles of insects W and X.



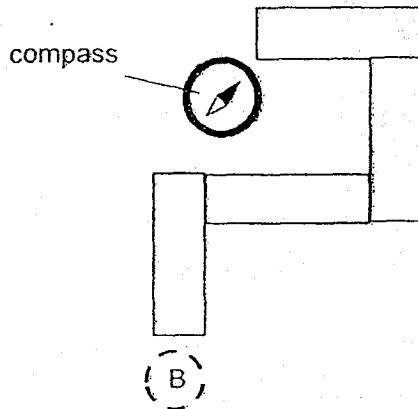
Which stage would insect W and X be in, on the 21<sup>st</sup> day of their life cycles?

	Insect W	Insect X
(1)	Larva	Larva
(2)	Larva	Pupa
(3)	Pupa	Larva
(4)	Pupa	Pupa

15 A compass has a small magnet that can rotate freely as shown.



Four bar magnets were arranged such that they were attracted to one another. A compass was then placed near end A and the direction of the compass needle is as shown below.



What would be the direction of the needle when the compass was placed at position B?

(1)



(2)



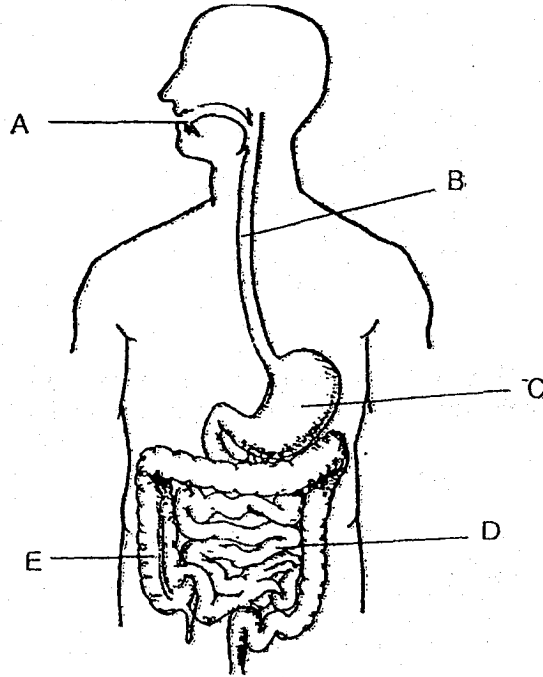
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(4)



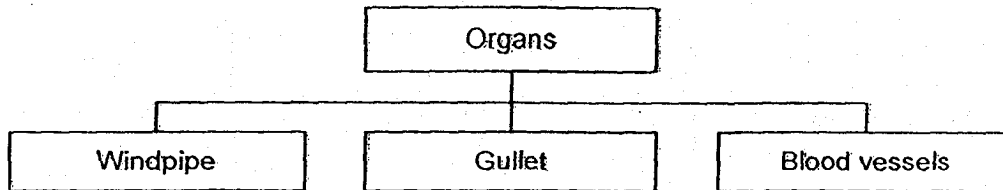
16 Study the human digestive system below.



Which of the following correctly identifies organ E and its function?

	Organ E	Function
(1)	Large intestine	Removes water.
(2)	Large intestine	Digests food completely.
(3)	Small intestine	Absorbs digested food into the blood.
(4)	Small intestine	Breaks down food into simpler substances.

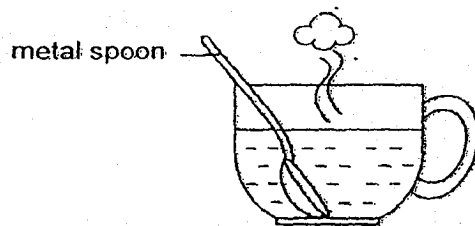
- 17 The classification chart below shows three body organs from different human body systems.



Which one of the following matches the human body systems to the respective organs correctly?

	Windpipe	Gullet	Blood vessels
(1)	Respiratory	Circulatory	Digestive
(2)	Digestive	Respiratory	Circulatory
(3)	Respiratory	Digestive	Circulatory
(4)	Circulatory	Respiratory	Digestive

- 18 Kumar places a metal spoon into a cup of hot coffee.



a cup of hot coffee

The spoon becomes hot after a while. Which one of the following explains why?

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

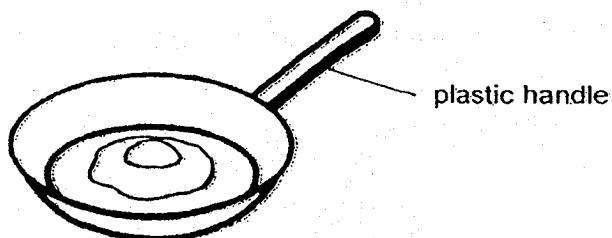
- 19 The table below shows the properties of three matters P, Q and R.

Properties	Matter		
	P	Q	R
Has a definite volume	✓	X	✓
Has a definite shape	✓	X	X
Can be compressed	X	✓	X

Which of the following best represent P, Q and R?

	P	Q	R
(1)	plasticine	milk	wind
(2)	oil	wind	aluminum foil
(3)	aluminum foil	air	oil
(4)	wind	oil	plasticine

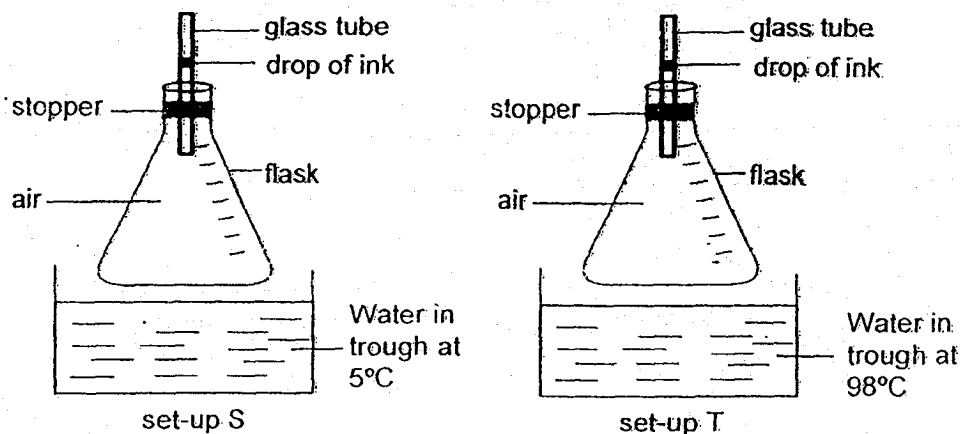
- 20 Hashim fried an egg in a pan as shown in the diagram below.



He is able to hold the frying pan using the plastic handle. This is because plastic is a

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

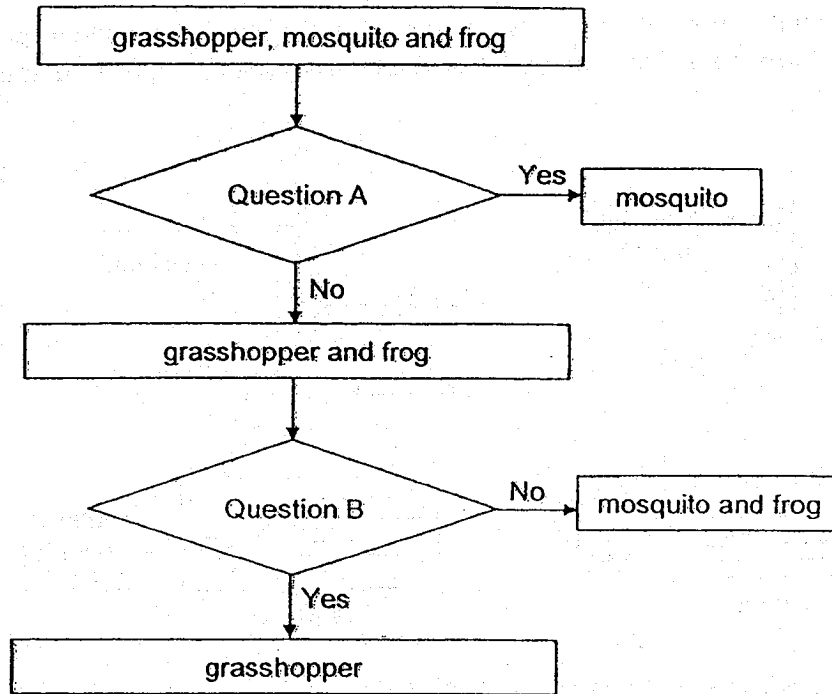
- 21 Adeline carried out an experiment with two set-ups, S and T, as shown in the diagram below. Both set-ups were placed in the Science laboratory with a room temperature of 27°C.



Which of the following would be observed two minutes after the flask was placed in the trough of water in set-ups S and T?

	Observation for set-up S	Observation for set-up T
(1)	The drop of ink will rise.	The drop of ink will fall.
(2)	The drop of ink will fall.	The drop of ink will rise.
(3)	The water level in the trough will rise.	The water level in the trough will fall.
(4)	The water level in the trough will fall.	The water level in the trough will rise.

22 Mei Ling classified the three animals with the help of a flow chart as show below.

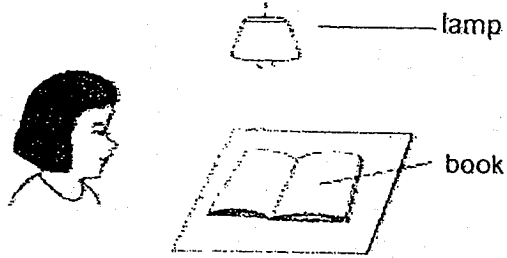


What are the two questions?

	Question A	Question B
(1)	Does it have four-stage life cycle?	Does it have a young stage?
(2)	Does it have four-stage life cycle?	Does the adult look like the young?
(3)	Does it have three-stage life cycle?	Does the adult look like the young?
(4)	Does it have three-stage life cycle?	Does the adult lay eggs in water?

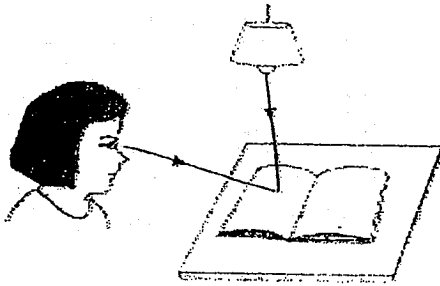


23 Look at the picture below.

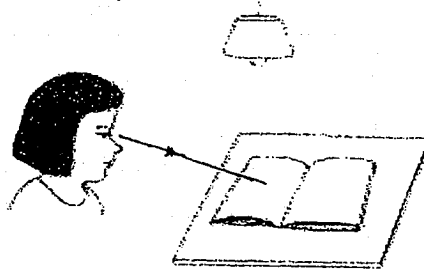


Which one of the following shows how Sue can see the book on the table?

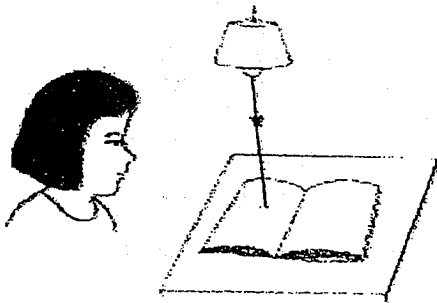
(1)



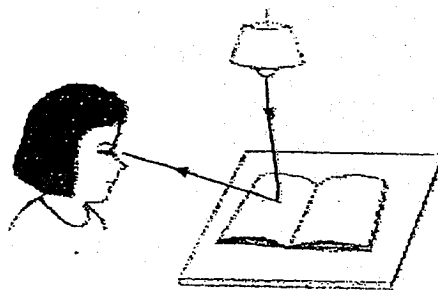
(2)



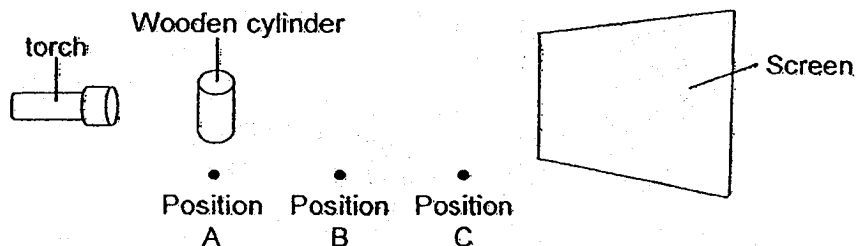
(3)



(4)



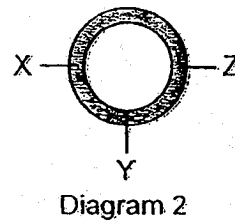
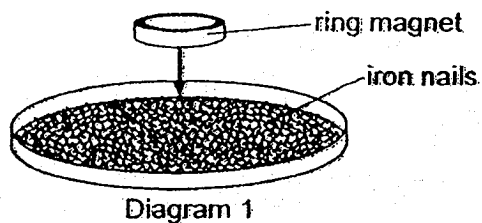
- 24 Nicholas shone a torch on a piece of wooden cylinder and a shadow was formed on the screen. He placed the wooden cylinder at positions A, B and C. At each position, he measured the height of the shadow formed on the screen as shown in the diagram below.



Which of the following correctly represents the results?

Height of shadow (cm)		
Position A	Position B	Position C
(1) 15	7	11
(2) 7	15	11
(3) 15	11	7
(4) 7	11	15

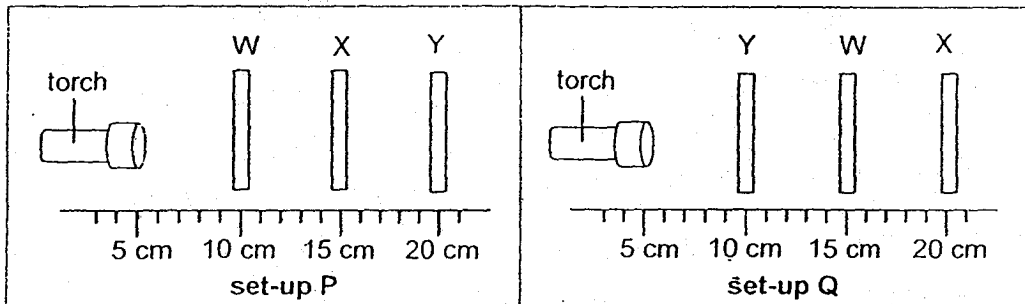
- 25 Diagram 1 below shows a ring magnet lowered onto a tray of iron nails. Diagram 2 shows the bottom view of a ring magnet.



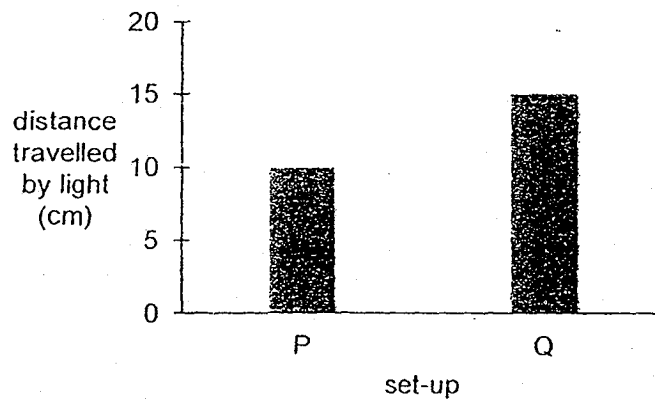
Which one of the following most likely shows the number of iron nails attracted to the bottom of the magnet at Position X, Y and Z?

	Position X	Position Y	Position Z
(1)	15	7	11
(2)	7	15	11
(3)	15	15	15
(4)	7	11	15

- 26 Denise conducted an experiment to investigate the amount of light that could pass through three sheets W, X and Y which were made of different materials. The three different sheets were positioned in two set-ups P and Q as shown in the diagrams below.



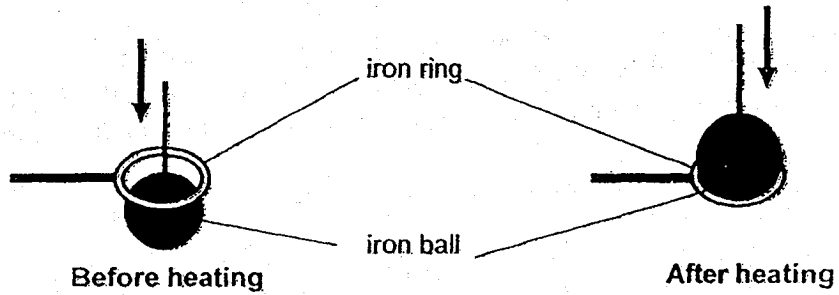
The distance travelled by the light for each set-up was measured and the results are shown in the graph below.



Which of the following correctly describe sheets W, X and Y?

Does it allow light to pass through?			
	W	X	Y
(1)	Yes	Yes	No
(2)	Yes	No	Yes
(3)	Yes	No	No
(4)	No	Yes	Yes

27 The diagram below shows what happened before and after an iron ball was heated.



What could be done to enable the iron ball to pass through the iron ring again?

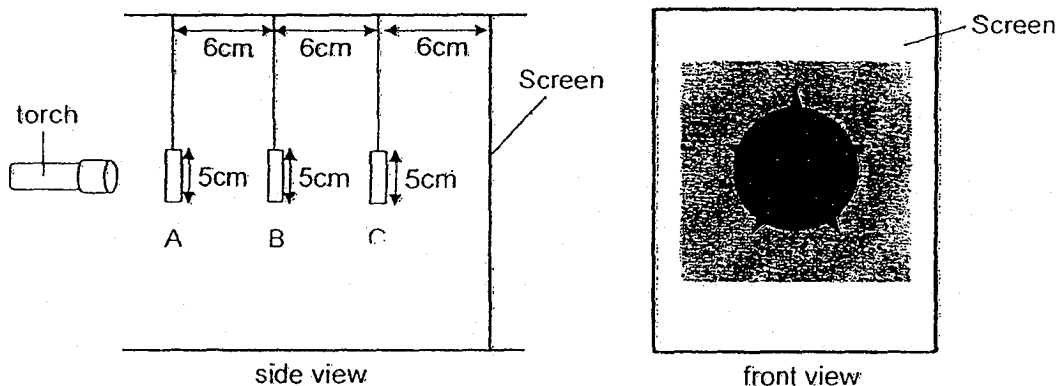
- A Place the iron ball in a beaker of ice water.
- B Place the iron ring in a beaker of ice water.
- C Place the iron ball in a beaker of boiling water.
- D Place the iron ring in a beaker of boiling water.

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

- 28 The diagram below shows three shapes, a square, a star and a circle, each made of different materials.



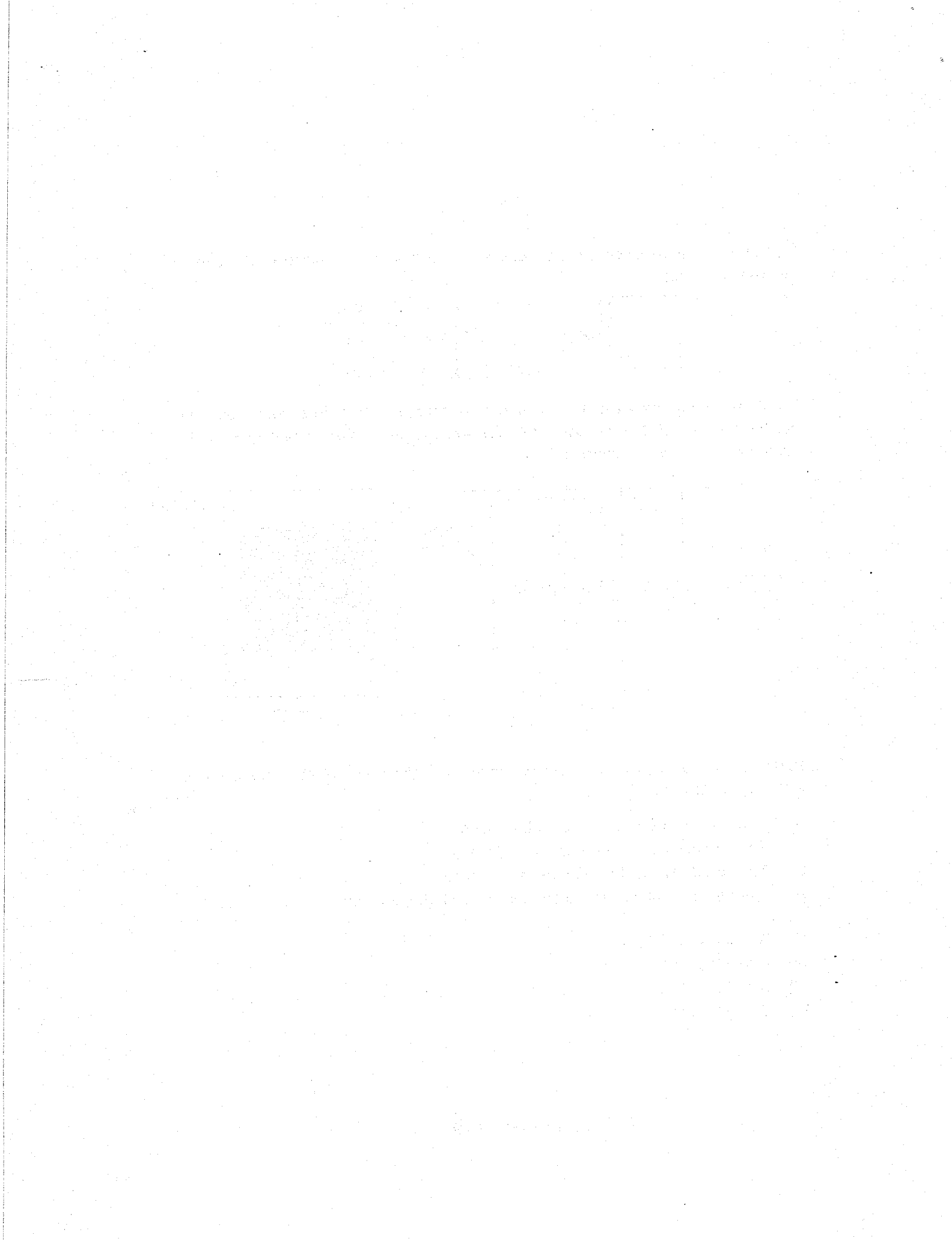
The three cut-outs were then hung in between the torch and a white screen at different positions A, B and C. When the torch was switched on, a shadow was cast on the screen as shown in the diagram below.



Based on the observation of the shadow formed on the screen, which of the following statements are correct?

- A The circle is nearer to the torch than the star.
- B The square is further from the torch than the circle.
- C The star does not allow light to pass through.
- D The square allows more light to pass through than the circle.

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



METHODIST GIRLS' SCHOOL

Founded in 1887



END-OF-YEAR EXAMINATION 2018

PRIMARY 4  
SCIENCE

BOOKLET B

Total Time for Booklets A and B: 1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

Name: \_\_\_\_\_ ( )

Class: Primary 4. \_\_\_\_\_

Date : 30 October 2018

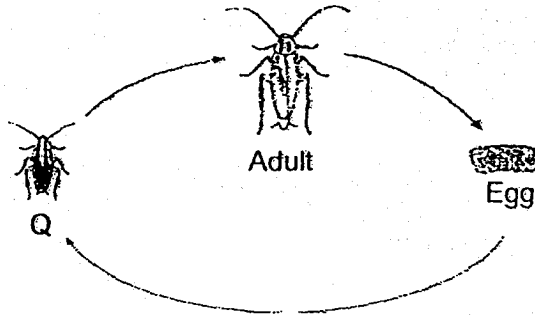
Booklet A	56
Booklet B	34
Total	90
Parent's Signature	

This booklet consists of 13 printed pages including this page.

For questions 29 to 40, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question. [34 marks]

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29 The diagram below shows the stages in the life cycle of a cockroach.

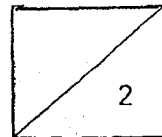


(a) Name stage Q. [1]

\_\_\_\_\_

(b) State one other insect that has a similar life cycle as a cockroach. [1]

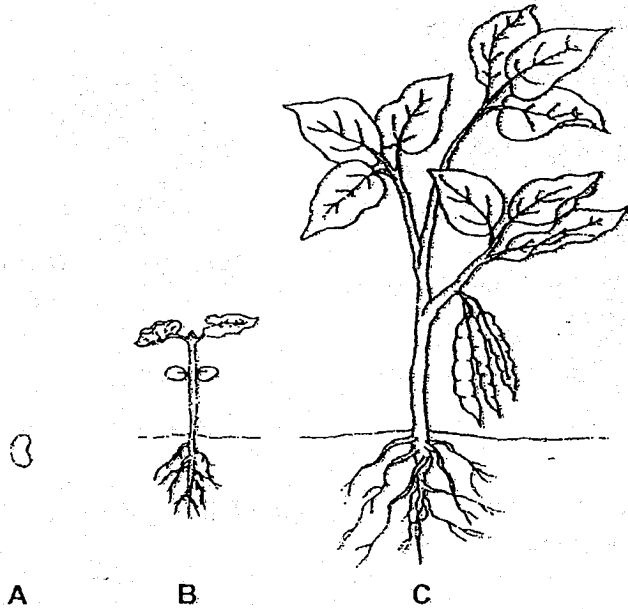
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30. The diagram below shows the stages in the life cycle of a plant.



Choose the correct words from the box to answer the question below.

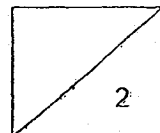
egg	seed	young plant	adult plant
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Name stages A and B in the life cycle of the plant.

[2]

A: \_\_\_\_\_

B: \_\_\_\_\_



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31 The diagrams below show two plants.

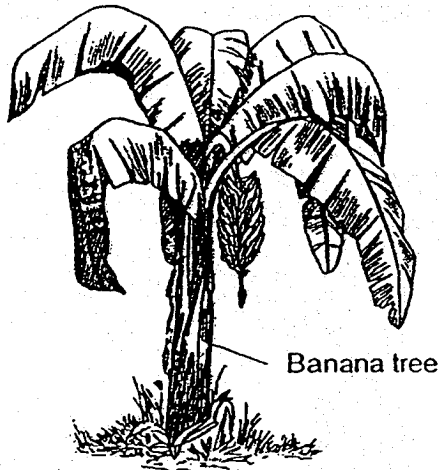


Diagram A

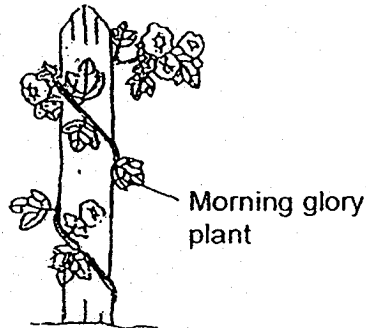


Diagram B

- (a) Based on the diagrams above, which stage of the life cycle are both plants at? Explain your answer. [1]

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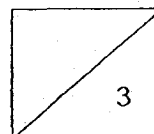
- (b) On diagram A and B, label with the letter "X", the part of the plant that helps support the leaves, flowers and fruits. [1]

- (c) Explain why it is important for the part labelled in (b) to hold the leaves up in both plants? [1]

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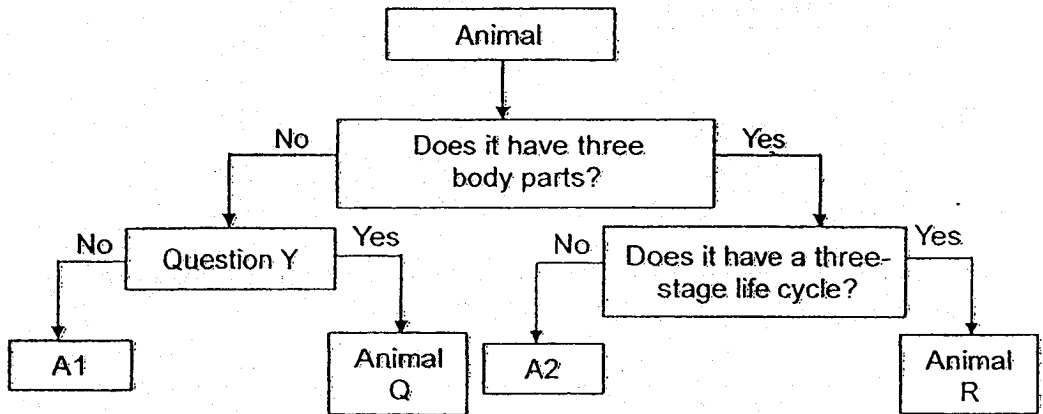


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32 The characteristics of animals P, Q, R and S are described in the table below.

Animal	Characteristic(s)
P	It gives birth to young alive.
Q	It breathes through its moist skin and lungs.
R	It has six legs. There are three stages in its life cycle.
S	Its life cycle consists of the egg, larval, pupal and adult stages.

Animal Q and R have been identified in the flow chart shown below.



(a) What would question Y likely be? [1]

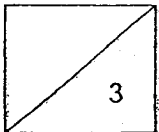
Question Y: \_\_\_\_\_  
 \_\_\_\_\_

(b) Which animal, P or S, does A2 represent? Explain your answer. [1]

\_\_\_\_\_  
 \_\_\_\_\_

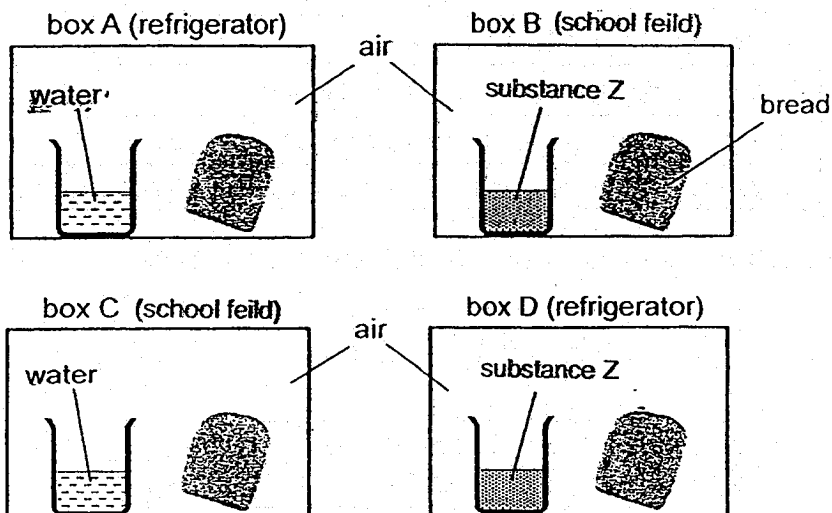
(c) Give an example of animal Q.

\_\_\_\_\_



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- 33 Jerome placed four similar slices of bread in four identical sealed boxes. He placed the boxes A and D in the refrigerator and boxes B and C out in the school field. Substance Z absorbs water from the surrounding.



- (a) After one week, Jerome found black patches growing on the bread in one of the boxes. What are the black patches? [1]

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- (b) In which box A, B, C or D did Jerome find the black patches? Explain why [2]

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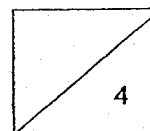
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- (c) Jerome compared his observations of the bread in boxes A and C. What was he trying to find out? [1]

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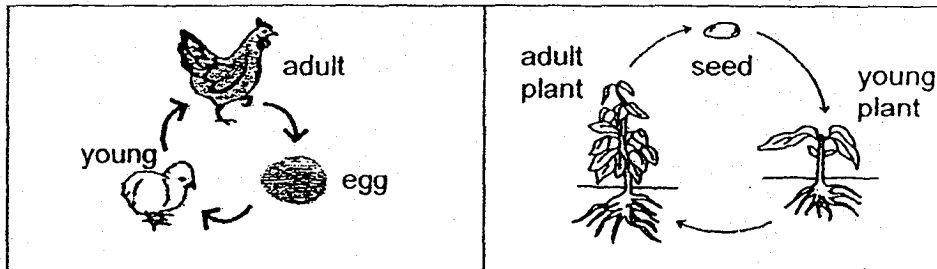


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34 The diagram below shows the life cycle of two living things.



- (a) Why is it important for living things to have an adult stage in their life cycle? [1]

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Farmer Tan studied the effect of the temperature on the hatching of chicken eggs. The table below shows the results of his study.

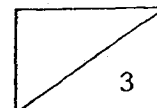
Temperature	Number of eggs hatched
35°C	0
36°C	4
37°C	9
38°C	15
39°C	24
40°C	6
41°C	0

- (b) Based on the results above, what would be the best temperature to hatch the most number of chicken eggs? [1]

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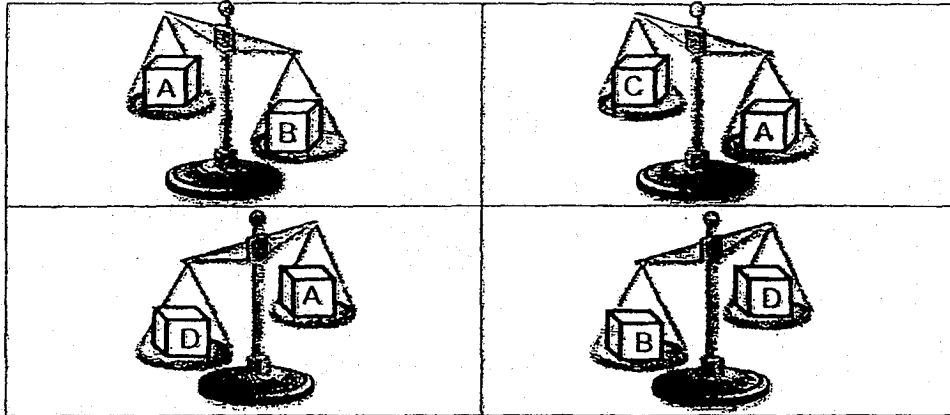
- (c) What is the relationship between the temperature and the number of eggs hatched? [1]

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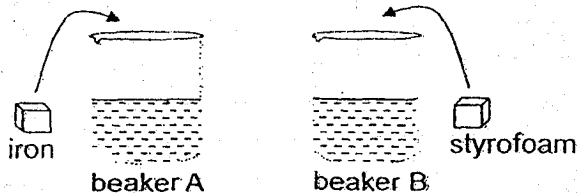
35 The diagram below shows four objects A, B, C and D of identical size placed on a lever balance.



(a) Arrange the objects according to their mass, beginning with the greatest mass. [1]

Greatest mass			Smallest mass

Penny placed two identical cubes made of different materials, into two beakers, each containing 200 ml of water.



(b) Penny then observed that the water level in beaker A is higher than in beaker B. Explain why. [2]

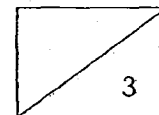
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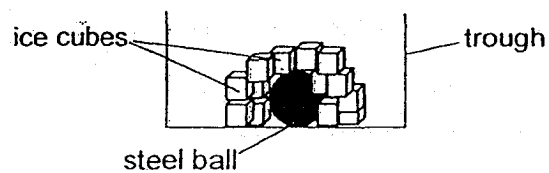
36 Classify the following into matter and non-matter.

[3]

thunder	sand	heat
light	petrol	glue

Matter	Non-matter

37 Mrs Spenser placed a steel ball that was heated to  $85^{\circ}\text{C}$  into the trough. She then placed some ice cubes into it.



(a) After 10 minutes, Mrs Spenser observed that all the ice cubes melted. Give a reason for her observation. [1]

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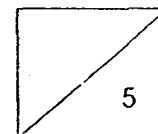
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(b) After 10 minutes, Mrs Spenser took the steel ball out of the trough. Suggest a reason why she was able to pick up the steel ball easily without burning her hand. [1]

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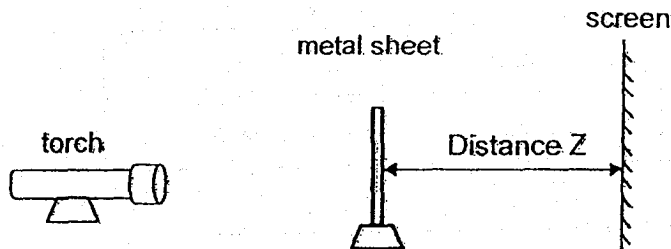


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- 38 Athirah set up an experiment as shown in the diagram below. When she switched on the torch, a shadow of the metal sheet was formed on the white screen.



She wanted to find out how the distance would affect the height of the shadow formed on the white screen. She did not move the torch throughout her experiment.

Athirah recorded her results as shown in the table below.

Distance Z (cm)	Height of shadow (cm)
4	9
8	13
12	19

- (a) What is the relationship between distance Z and the height of the shadow? [1]

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- (b) Explain how the shadow of the metal sheet is formed on the white screen. [1]

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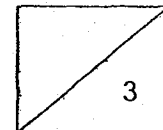
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- (c) Athirah then replaced the metal sheet with a similar sized piece of frosted plastic sheet. Explain how the shadow formed by the frosted plastic sheet is different from the shadow formed by the metal sheet. [1]

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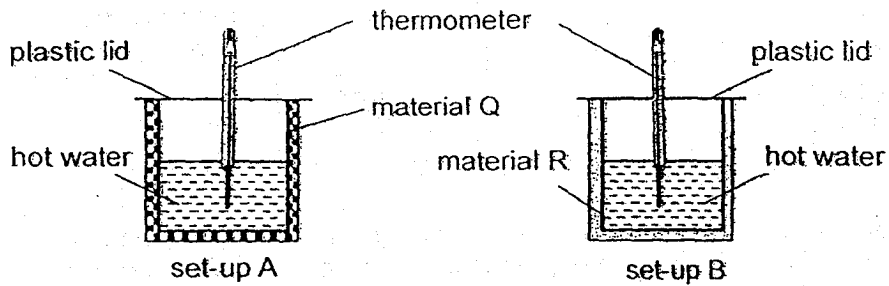
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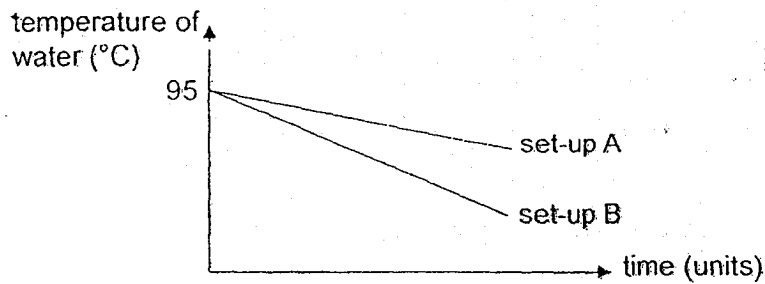
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- 39 Sophia conducted an experiment using set-ups A and B as shown below. She wrapped a glass container with material Q and another identical glass container with material R. She filled both containers with the same volume of hot water at 95°C.



Sophia measured the temperature of the water at different times and plotted her results in the graph shown below.



- (a) Based on the graph above, Sophia concluded that material R conducts heat better than material Q. Explain why. [1]

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Material Q in set-up A was used to make an oven glove. This material had small air spaces inside it.

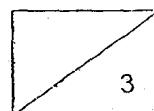


- (b) Explain how the air spaces in material Q would help protect the user's hands from hot objects. [2]

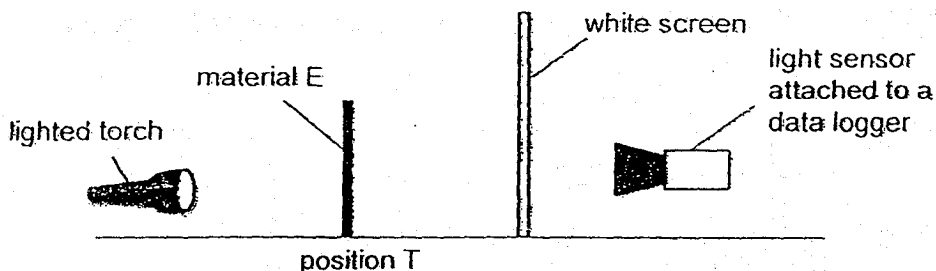
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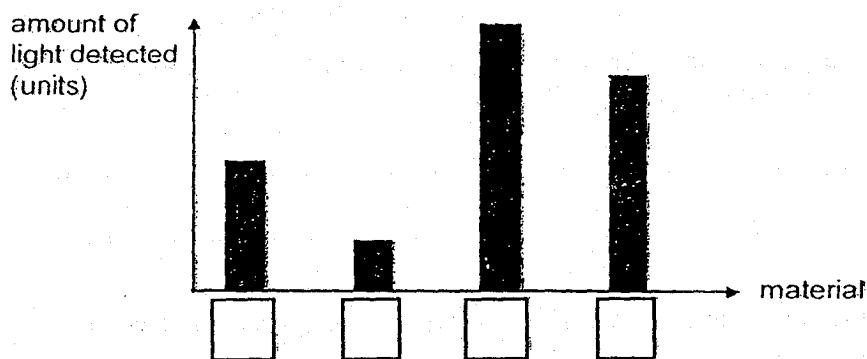
- 40 Maurice conducted an experiment in a dark room to compare the degree of transparency of four different materials E, F, G and H as shown in the diagram below.



Maurice placed material E at position T and observed the shadow formed on the white screen. She repeated the same experiment with materials F, G and H. Her observation is recorded in the table below.

Material	Shadow formed
E	light
F	Very dark
G	Dark
H	Very light

Maurice presented her results in the bar graph below.

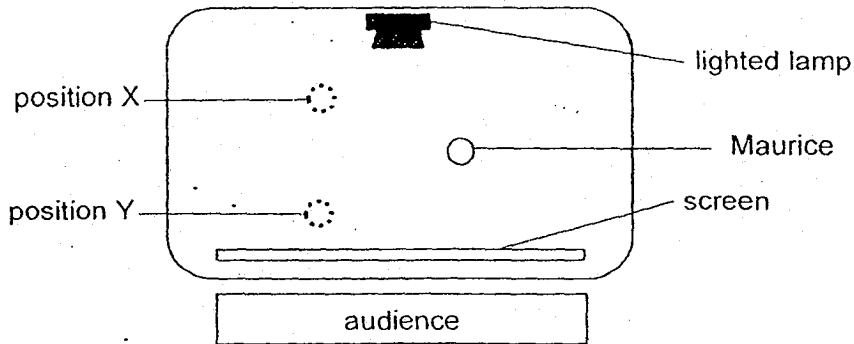


- (a) Based on the results in the table, write the letters E, F, G and H in the boxes provided above. [1]
- (b) Based on the results above, which material E, F, G or H is the most suitable to make a pair of swimming goggle lens? Explain your answer. [1]

Maurice put up a shadow performance with her friend, Daniel, who is the same height as her. The diagram below shows what the audience saw on the white screen.



The diagram below shows the layout of the stage for the shadow performance.

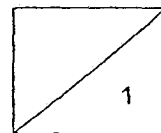


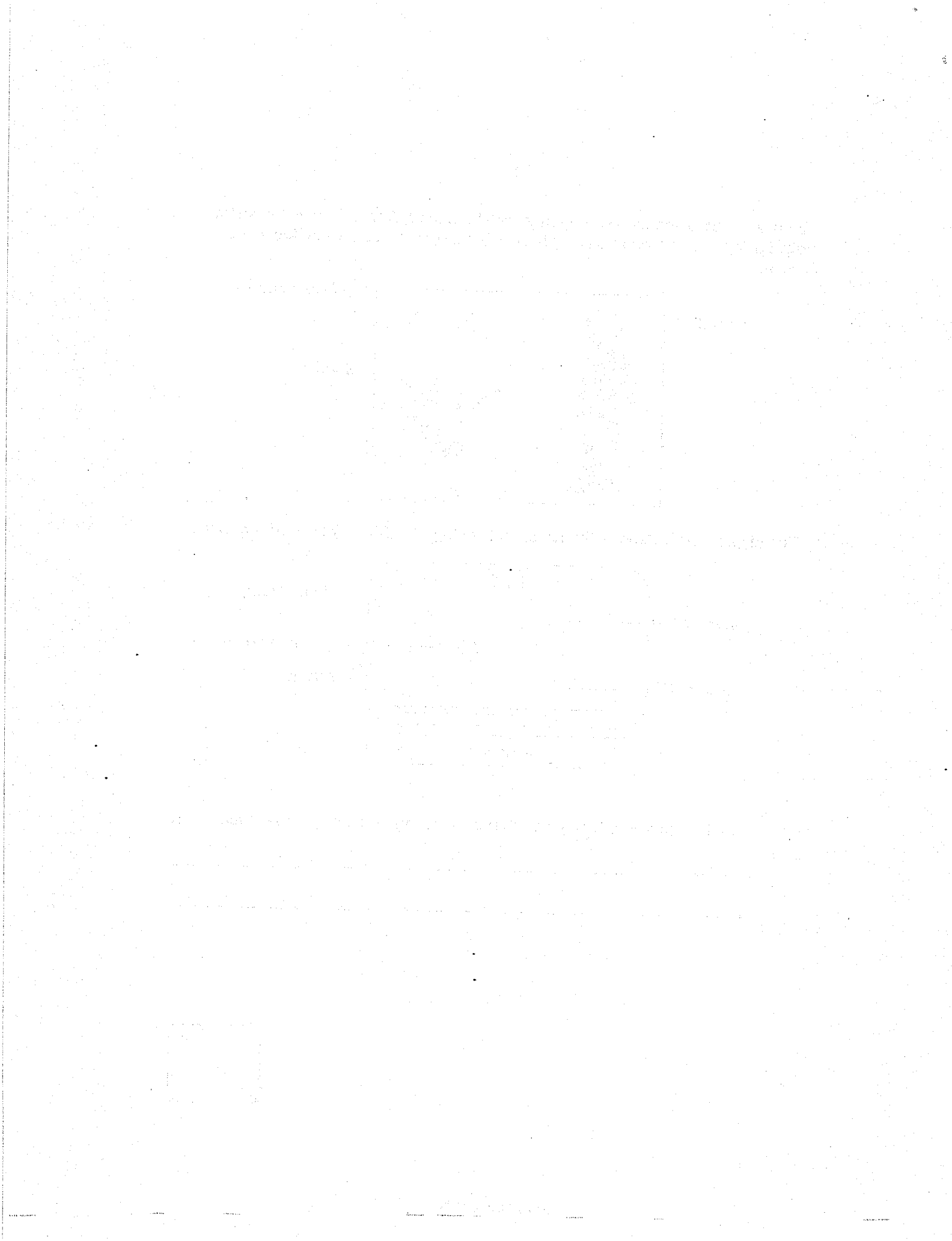
(c) At which position, X or Y, was Daniel standing? Explain your answer. [1]

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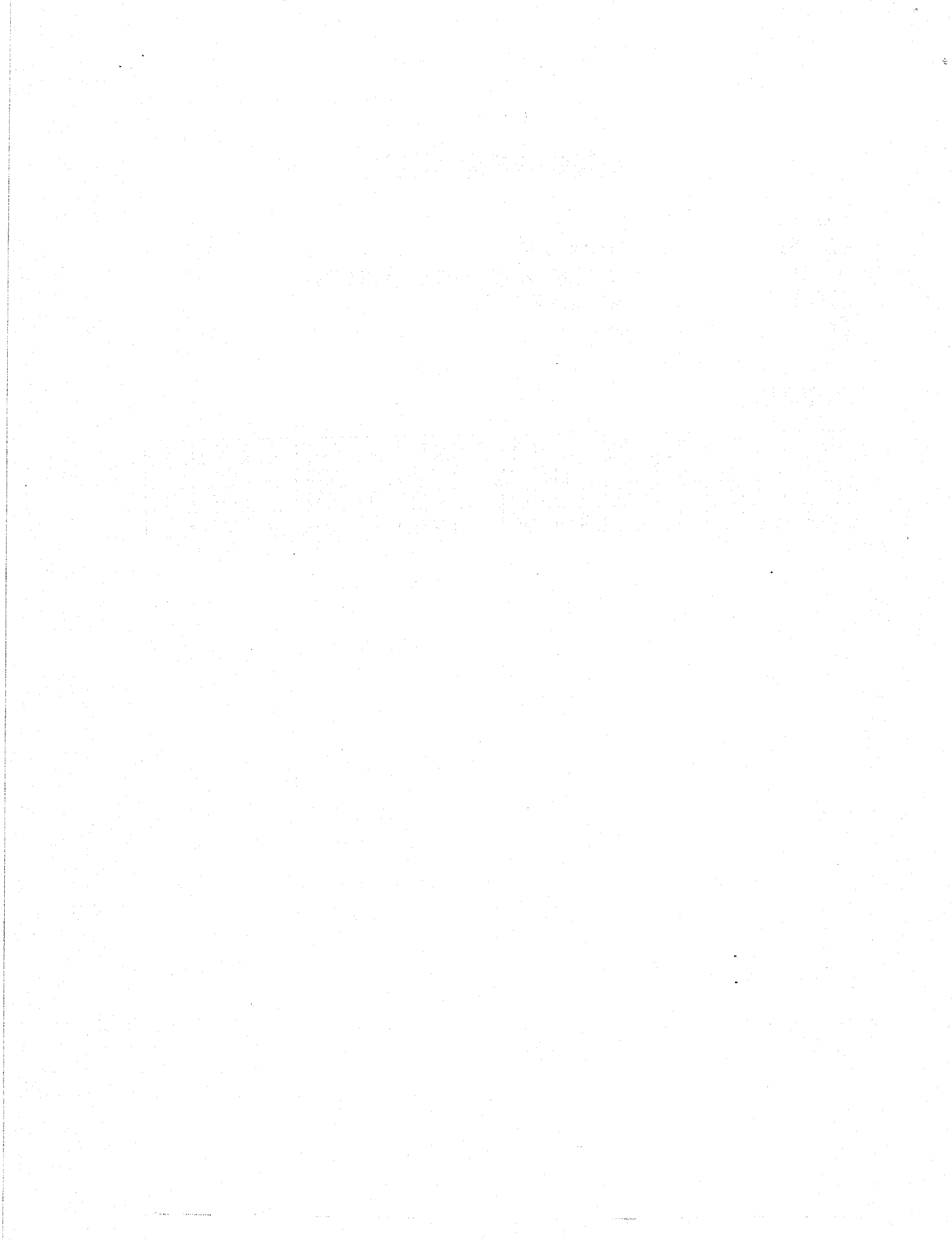


# ANSWER KEY


YEAR : 2018  
LEVEL : PRIMARY 4  
SCHOOL : METHODIST GIRLS' SCHOOL  
SUBJECT : SCIENCE  
TERM : SA2

## BOOKLET A

Q1	2	Q5	2	Q9	3	Q13	3	Q17	3	Q21	2	Q25	3
Q2	2	Q6	4	Q10	2	Q14	4	Q18	4	Q22	2	Q26	2
Q3	1	Q7	3	Q11	2	Q15	3	Q19	3	Q23	4	Q27	2
Q4	3	Q8	2	Q12	3	Q16	1	Q20	3	Q24	3	Q28	4



**2018 SA2 Booklet B1 Answer Key**

Qn	Answer
29a	Q: Nymph
29b	Grasshopper/dragonfly/damselfly.
30	A. Seed. B: Young plant.
31a	Both plants both <u>bear fruits and flowers</u> as they are at the <u>adult stage</u> .
31b	
31c	The part labelled X helps to support the leaves to absorb more sunlight to make food for the plant.
32a	Question Y: Does it breathe through its moist skin and lungs?
32b	Animal S. It has three body parts and a four-stage life cycle.
32c	frog/toads/ salamander.
33a	Mould/bread mould/fungi
33b	Box C. All living things need water, warmth, air and food to grow.
33c	Jerome wants to find out if temperature affects the growth of the black patches.
34a	Only the adult stage can reproduce and ensure the continuity of their own kind.
34b	39°C
34c	The higher the temperature, the higher the number of chicken eggs hatched until the temperature of 40°C the number of chicken eggs hatched would decrease.
35a	B, D, A, C
35b	The Iron cube sinks and occupies more space while the Styrofoam cube floats and occupy less space in the water.
36	Matter: sand, glue, petrol Non-matter: heat, light, thunder
37a	The ice cubes gained heat from the hot steel ball.
37b	The steel ball lost heat to the ice cubes.
38a	The shorter/greater the distance Z, the smaller/longer the shadow will be.

38b	A shadow is formed when light is blocked by the metal sheet.
38c	Frosted plastic is translucent/allows some light to pass through, so shadow formed is lighter.
39a	The temperature of water in set-up B is decreasing faster than set-up A.
39b	Air is a poor conductor of heat and would slow down heat gain from the hot object to the user's hand.
40a	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 2px 10px;">G</div> <div style="border: 1px solid black; padding: 2px 10px;">F</div> <div style="border: 1px solid black; padding: 2px 10px;">H</div> <div style="border: 1px solid black; padding: 2px 10px;">E</div> </div>
40b	Material H, because it is transparent / allows the most light to pass through, so that the swimmer can see through it.
40c	Position X as Daniel can cast a bigger shadow when he is nearer to the lighted lamp.