METHODIST GIRLS' SCHOOL
Founded in 1887

END-OF-YEAR EXAMINATION 2023
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 : 26 October 2023

This booklet consists of 16 printed pages including this page.

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For each question from 1 to 24, 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).

[48 marks]

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1 When a puffer fish is frightened, it will become bigger as shown below to defend itself.



This shows that the puffer fish is a living thing because it can _____.

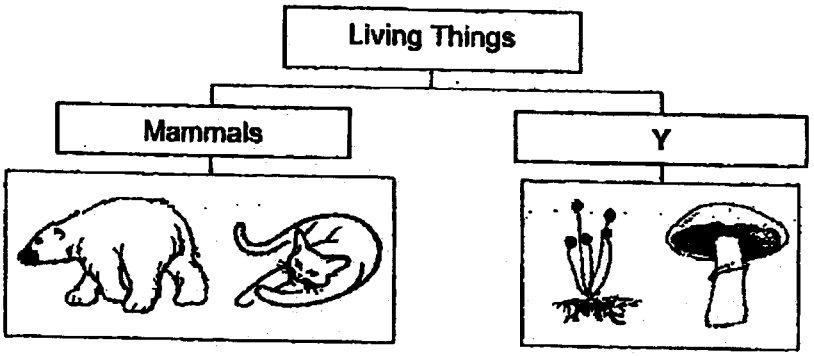
(1) grow

(2) move

(3) respond

(4) reproduce

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



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

(1) Birds

(2) Fungi

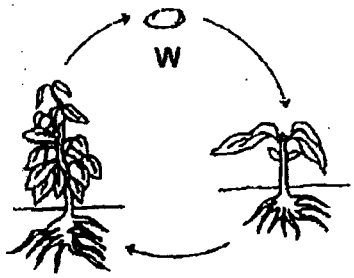
(3) Plants

(4) Bacteria

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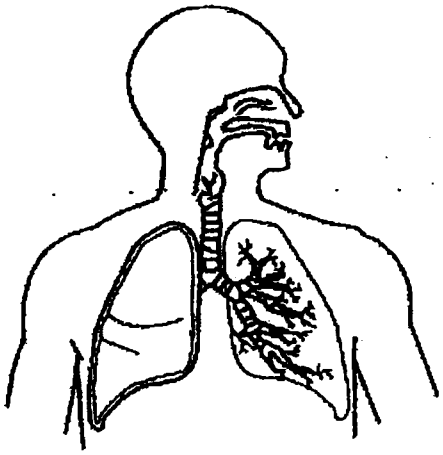
3 The diagram shows the life cycle of a plant.



What is the stage marked W?

(1) egg
(2) seed
(3) seedling
(4) adult plant

4 Which organ system is shown in the diagram?



(1) skeletal system
(2) muscular system
(3) circulatory system
(4) respiratory system

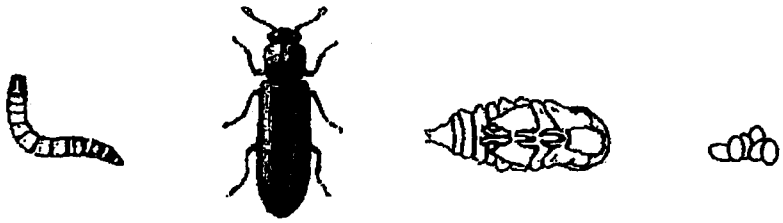
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5 Which one of the following is the function of a leaf on a plant?

(1) makes food
(2) takes in water
(3) holds plant upright
(4) takes in mineral salts

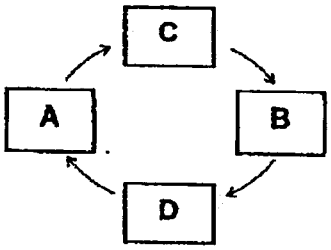
6 A, B, C and D are the various stages in the life cycle of a mealworm.



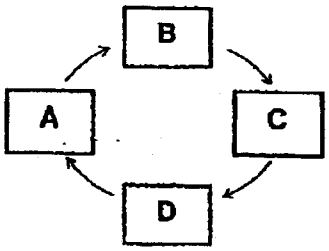
A B C D

Which of the following shows the correct life cycle of a mealworm?

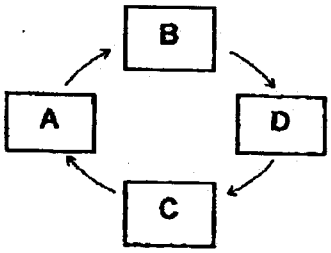
(1)



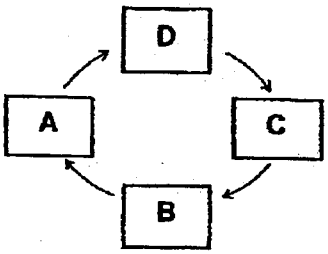
(2)



(3)



(4)



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7 The table below shows the functions of the different organs in the human digestive system.

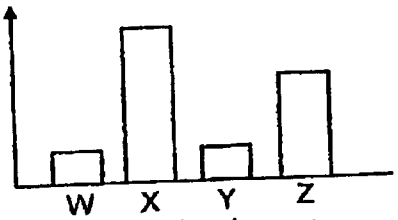
Functions	Organs in the digestive system			
	W	X	Y	Z
Digestion takes place	✓		✓	✓
Absorbs water from undigested food		✓		
Absorb digested food into the bloodstream				✓

Which of the following graphs shows the correct organs labelled W, X, Y and Z?

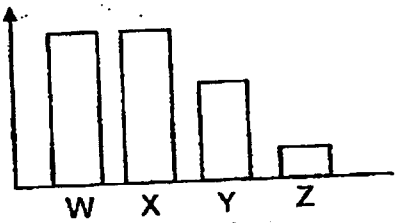
(1)



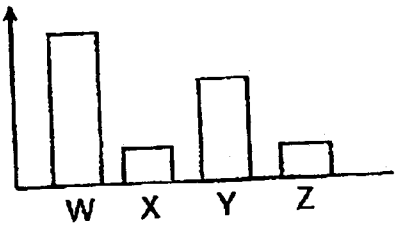
(2)



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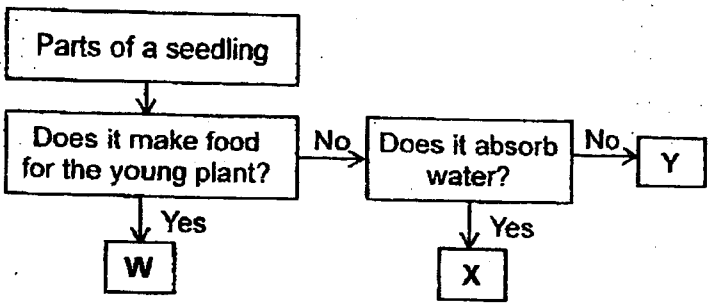
(4)



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8 Study the flowchart below.



Which of the following correctly represents W, X and Y?

	W	X	Y
(1)	leaves	stem	shoot
(2)	leaves	root	stem
(3)	shoot	root	stem
(4)	shoot	stem	leaves

9 The table below shows some characteristics of organisms P, Q and R.

Characteristic	Organism		
	P	Q	R
It has a pupal stage in its life cycle.	Yes	No	No
It has a 3-staged life cycle.	No	Yes	Yes
The young looks like the adult.	No	No	Yes
The young moults several times as it grows.	Yes	No	Yes

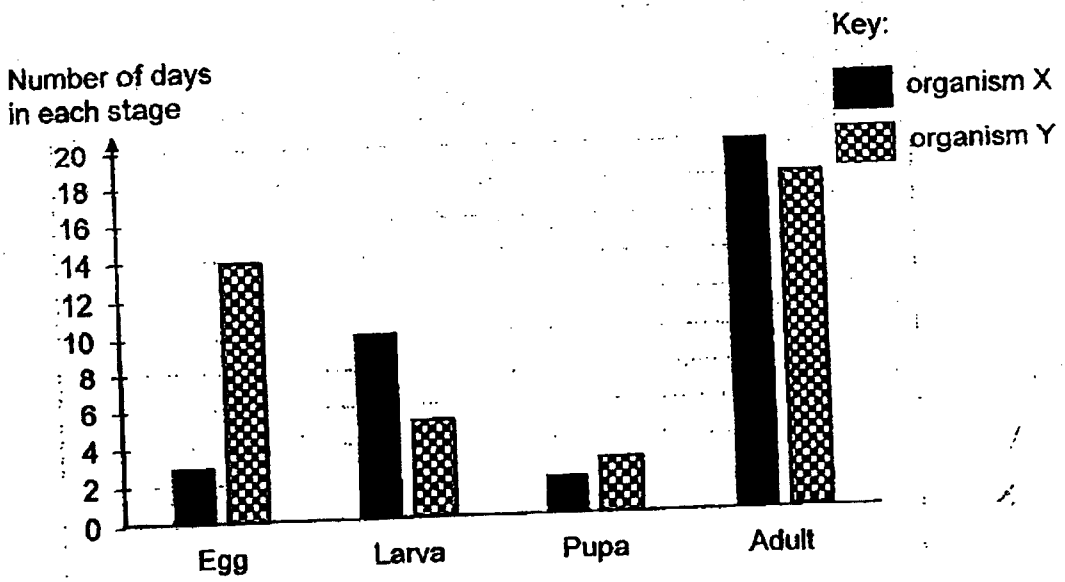
What are organisms P, Q and R?

	P	Q	R
(1)	beetle	grasshopper	chicken
(2)	mosquito	grasshopper	cockroach
(3)	mosquito	frog	cockroach
(4)	beetle	frog	chicken

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10 Study the bar graph below.



Based on the bar graph, which one of the following statements is true about organisms X and Y?

(1) Organism Y lays more eggs than organism X.

(2) Organism Y has a shorter life cycle than organism X.

(3) Organism X lives in water while organism Y lives on land.

(4) Both organisms spend more days as a larva than as a pupa.

11 Which material can be attracted by a magnet?

(1) steel

(2) wood

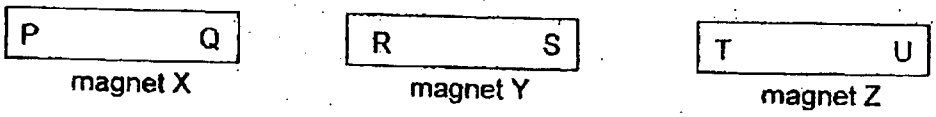
(3) rubber

(4) copper

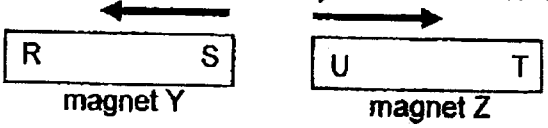
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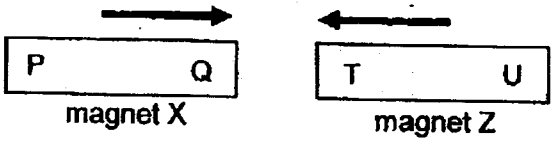
12 The diagram below shows three magnets, X, Y and Z.



When S was placed near U, they moved away from each other as shown below.



When Q was placed near T, they moved towards each other as shown below.



Based on the observation above, which one of the following are possible interactions between the magnets?

A P repels R

B U attracts R and attracts P

C R attracts T and attracts Q

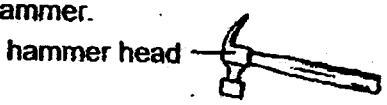
(1) A only

(2) B only

(3) A and B only

(4) B and C only

13 The diagram shows a hammer.



Metal is used to make the hammer head because metal _____.

(1) can reflect light

(2) does not break easily

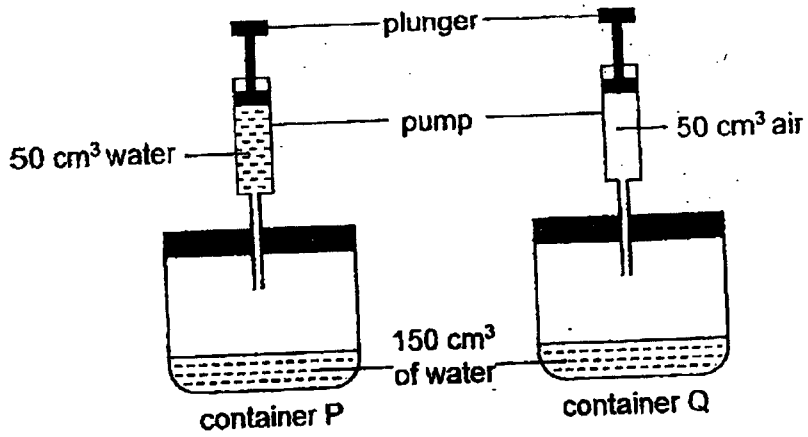
(3) does not absorb water

(4) can bend without breaking

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14 Study the set-ups below. Both Containers P and Q have volume of 500 cm^3 each. Pumps containing water and air are connected to containers P and Q as shown below.



When the plungers are pushed in once completely, 50 cm^3 of water and 50 cm^3 of air are forced into containers P and Q respectively. What is the volume of air in containers P and Q after the plungers are pushed once completely?

	Volume of air in P (cm^3)	Volume of air in Q (cm^3)
(1)	200	300
(2)	300	350
(3)	300	400
(4)	350	400

15 Which one of the following properties is true for both air and a pencil?

(1) They can be seen.

(2) They take up space.

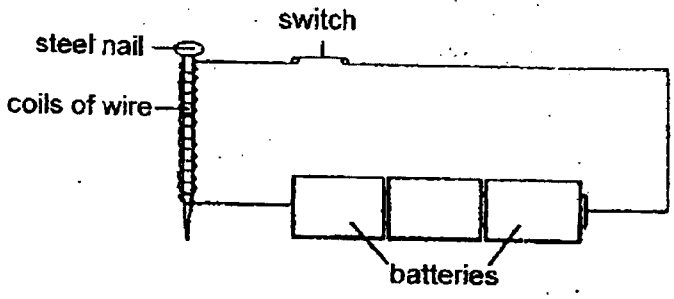
(3) They have fixed shapes.

(4) They have fixed volumes.

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16 Sara conducted an experiment to find out how the number of coils of wires around a steel nail would affect the strength of the magnetized nail.



She then recorded her results in the table below.

Number of coils of wire around the steel nail	Number of paper clips attracted
24	12
36	16
48	20
60	22
72	22
84	22

Based **only** on the results, which of the following conclusion(s) can be made?

A As the coils of wire around the steel nail increases, the magnetic strength of the electromagnet decreases.

B After 60 coils of wire, the number of coils of wire around the nail will not increase the strength of the magnetized nail.

C No paper clips will be attracted when the coils of wire around the steel nail is less than 24.

(1) A only

(2) B only

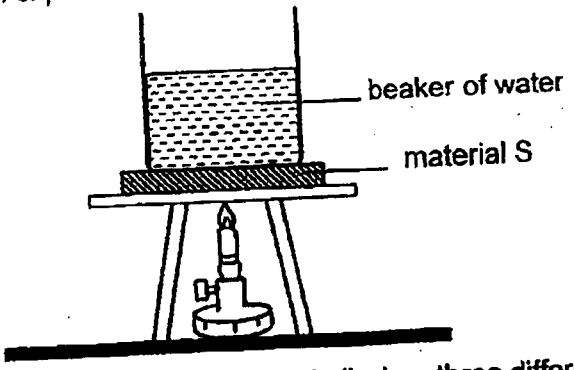
(3) A and B only

(4) B and C only

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17 Mei Mei conducted an experiment using the set-up shown below.



She recorded the time taken for the water to boil when three different materials S, T, U were placed below the beaker of water in the table below. The materials were of similar size and thickness.

Material	How well the material conducts heat	Time taken for the water to start boiling (min)
S	poor	15
T	very good	15
U	good	15

After completing the experiment, Mei Mei realized that she did not record the volume of water in the beaker at the start of the experiment.

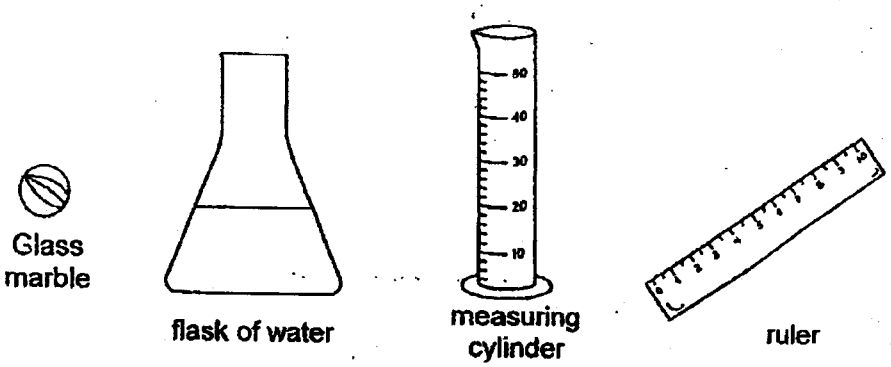
Based on the results, which one of the following most likely shows the volume of water used in each beaker at the start of the experiment?

	Volume of water in beaker (cm^3)		
	S	T	U
(1)	100	200	300
(2)	300	100	200
(3)	300	200	100
(4)	100	300	200

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18 Arjun has a glass marble as shown below. He is provided with a flask of water, a measuring cylinder and a ruler.



Using **only** the apparatus provided above, which property of the glass marble cannot be measured?

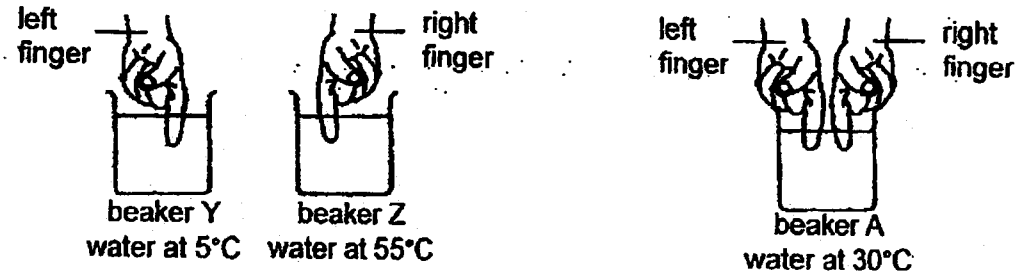
(1) Mass

(2) Length

(3) Volume

(4) Ability to float or sink

19 Chandra placed one left finger into beaker Y and one right finger in beaker Z. After 30 seconds, he placed both fingers into beaker A at the same time as shown below.



What would Chandra feel in each finger when placed in beaker A after 30 seconds?

	Left finger	Right finger
(1)	warmer	colder
(2)	colder	colder
(3)	colder	warmer
(4)	warmer	warmer

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20 Which one of the following is **NOT** a source of heat?

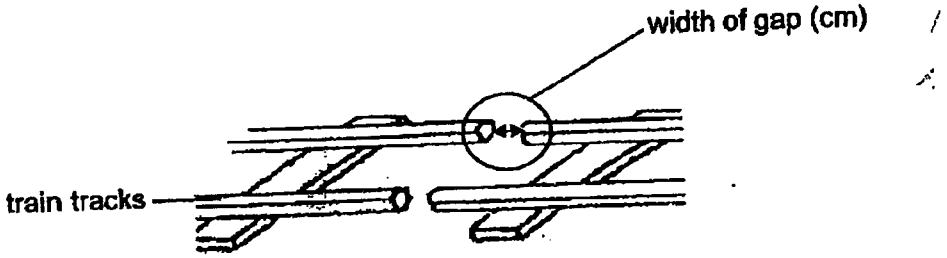
(1) The sun

(2) A lighted bulb

(3) A woollen cap

(4) A candle flame

21 Ben noticed that train tracks are built with small gaps in between them.



Which of the following statement correctly explains what happens to the width of the gaps as the day becomes cooler?

(1) The tracks lost heat and contracted, causing the width of the gap to increase.

(2) The tracks lost heat and expanded, causing the width of the gap to decrease.

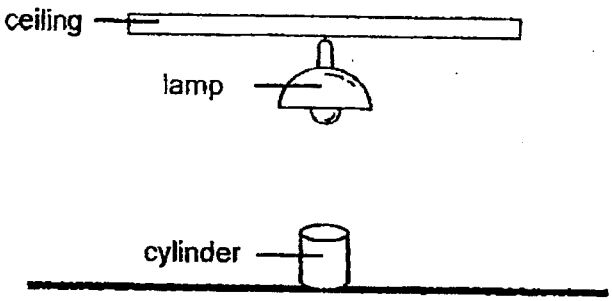
(3) The tracks gained heat and expanded, causing the width of the gap to increase.

(4) The tracks gained heat and contracted, causing the width of the gap to decrease.

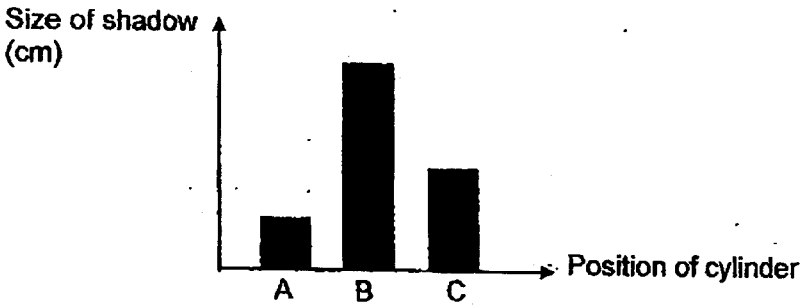
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22 Bala placed a cylinder under a lamp as shown below. The cylinder was then moved to three different positions, A, B and C in the same room.

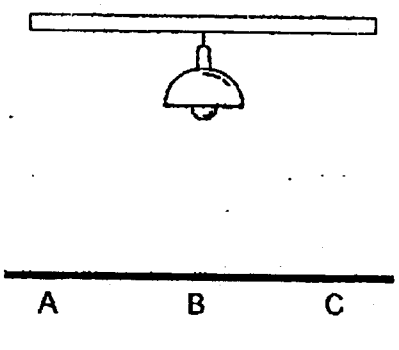


He recorded his observations in the graph below.

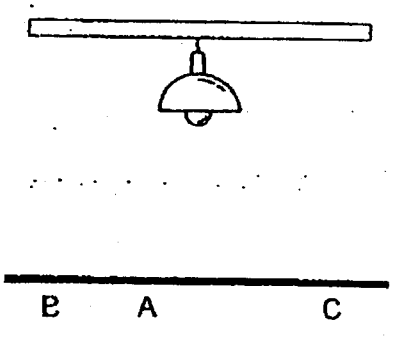


Which of the following correctly shows the positions Bala placed the cylinder?

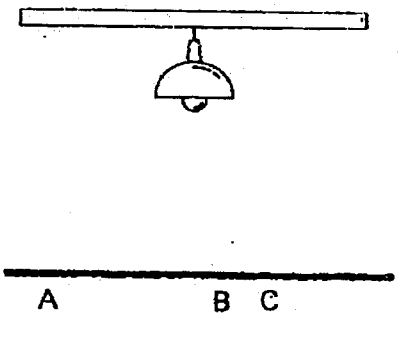
(1)



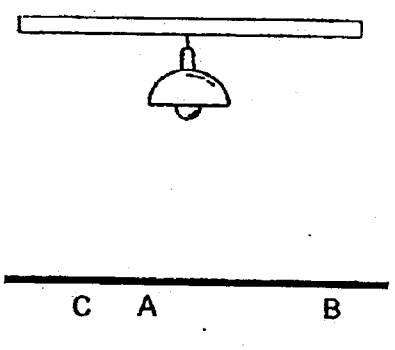
(2)



(3)



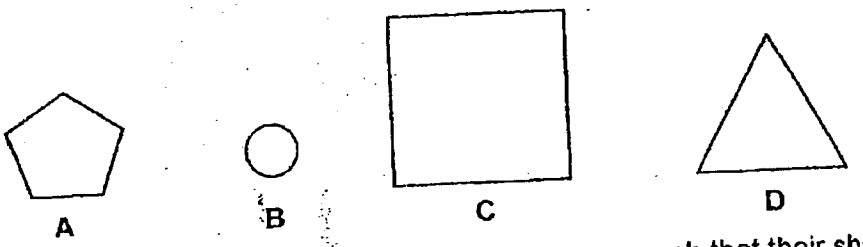
(4)



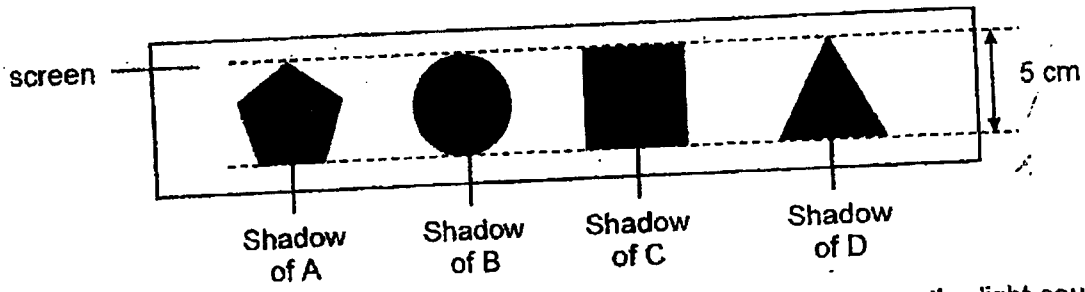
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23 Ali had four cardboards of different shapes and sizes as shown below.

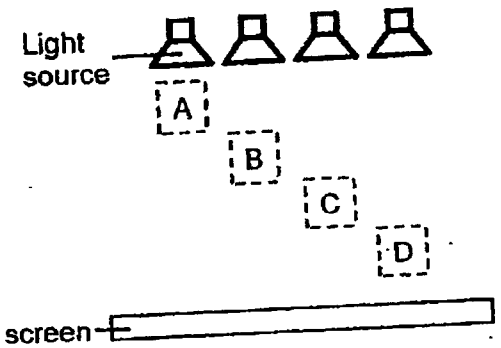


He placed the four cardboards in front of similar light sources such that their shadows on the screen were of the same height.

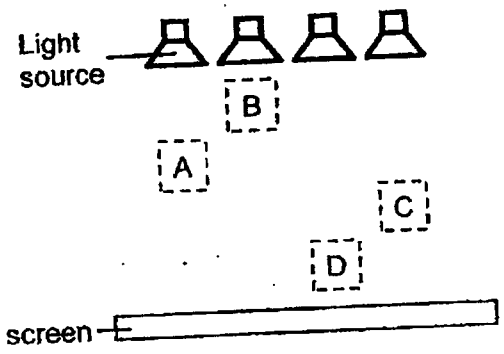


Which one of the following shows the position of cardboards between the light sources and the screen?

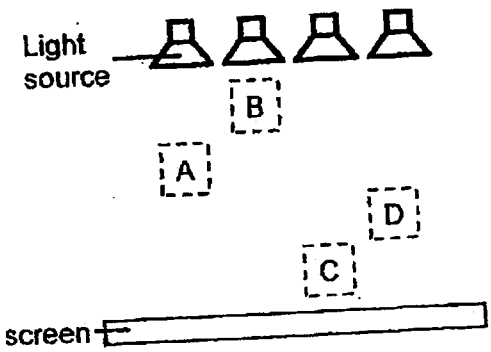
(1)



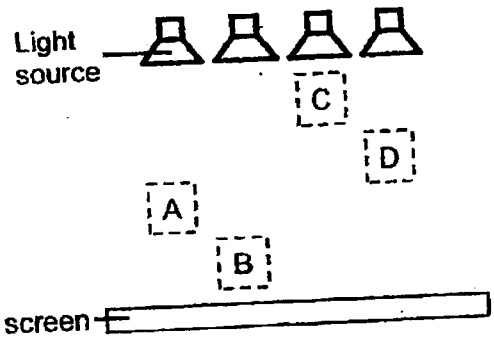
(2)



(3)



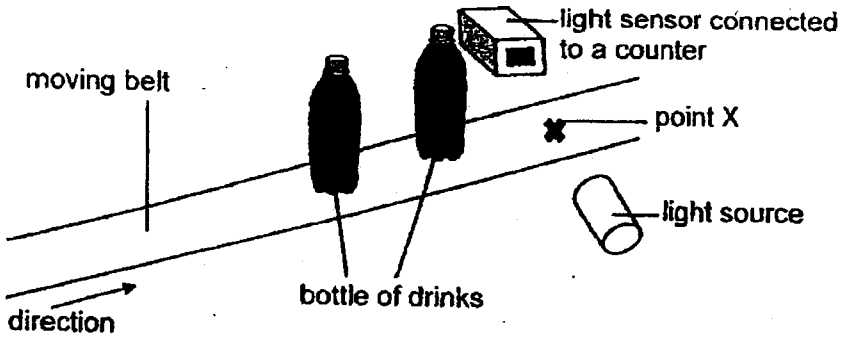
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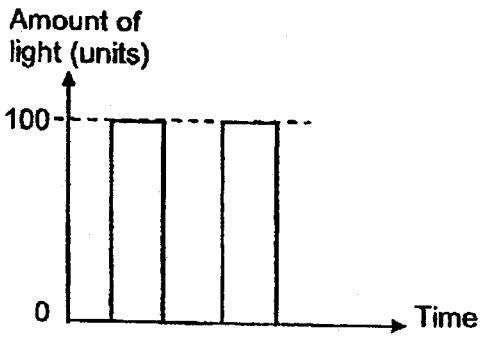
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24 A factory uses a light sensor to count the number of bottle drinks passing through point X on the conveyor belt. The bottles are made of metal.

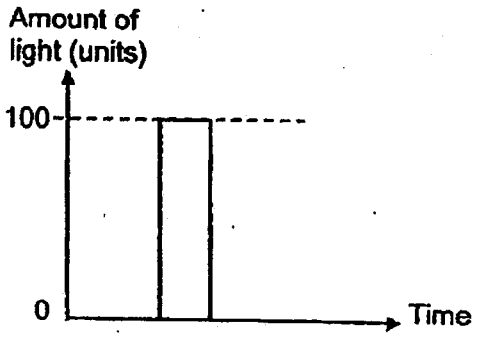


Which one of the following graphs shows how the amount of light detected by the light sensor changes as the two bottles pass through point X?

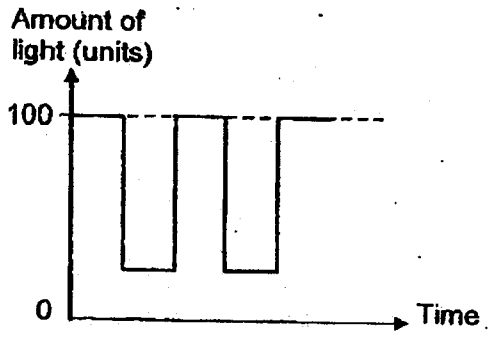
(1)



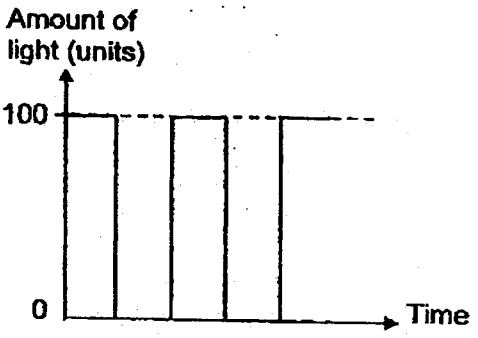
(2)



(3)



(4)



End of section A

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Founded in 1887

END-OF-YEAR EXAMINATION 2023
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 : 26 October 2023

Booklet A	48
Booklet B	32
Total	80
Parent's Signature	

This booklet consists of 11 printed pages including this page.

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For questions 25 to 35, 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.

[32 marks]

25 John observed and grouped some things as shown in the table.

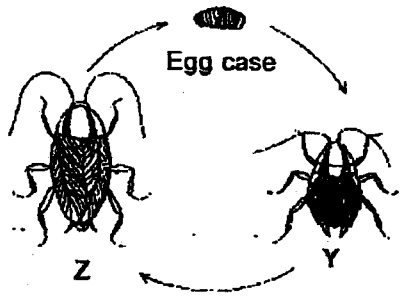
A	B
giraffe	rock
bee	clock
mushroom	pencil

What are the suitable headings for A and B? [2]

Group A: _____

Group B: _____

26 The diagram below shows the life cycle of a cockroach.



(a) Name stage Y. [1]

_____

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

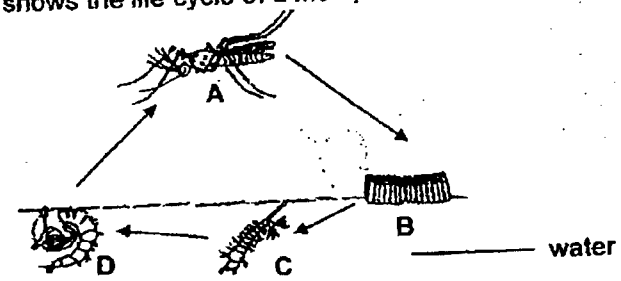
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4

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27 The diagram below shows the life cycle of a mosquito.



(a) Explain why the number of mosquitoes in the environment decreased during certain months when less rainfall was recorded. [1]

(b) State two ways the mosquito larva is different from the pupa. [1]

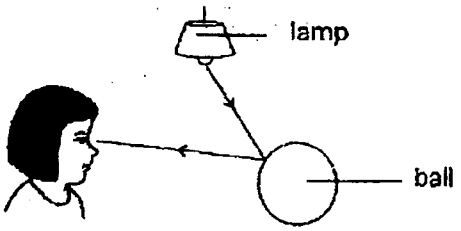
(c) Explain how laying many eggs each time help the mosquito to continue its life cycle. [2]

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28 The diagram shows how Mary sees a ball.



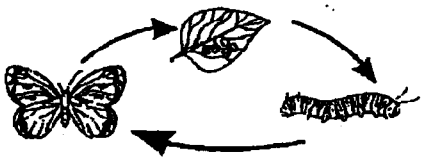
Fill in the blanks using the correct words in the box.

Absorbed	source	reflected	house

(a) The lamp is the light _____. [1]

(b) Light is _____ by the ball. [1]

29 Alessa drew the life cycle of a butterfly as shown below.



Life cycle of a butterfly

(a) Her teacher said that the life cycle drawn above was incorrect. Explain why. [1]

_____

_____

(b) State one similarity and one difference between the life cycle of a butterfly and the life cycle of a frog. [2]

Similarity: _____

_____

Difference: _____

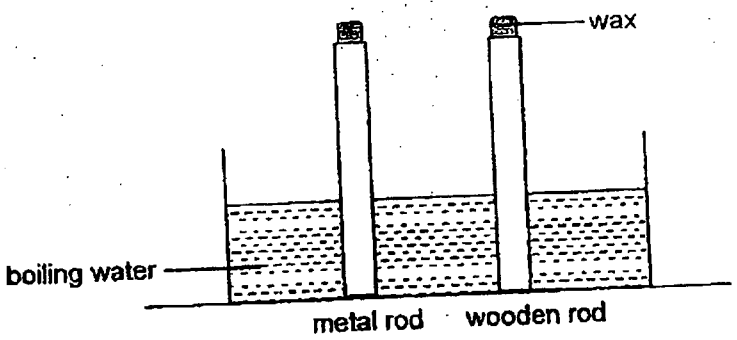
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5

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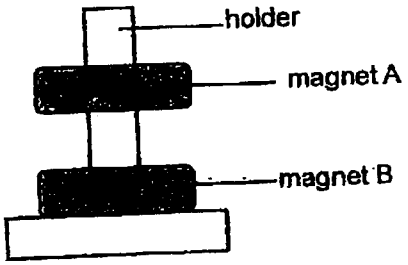
30 James placed a metal rod and a wooden rod into a tank of boiling water as shown below. Equal amounts of wax were put on both rods.



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.

31 Marcus placed two ring magnets, A and B, through a holder as shown below.



(a) The holder was made of plastic and did not attract the magnets.

Plastic is a _____ material. [1]

(b) Why was magnet A floating above magnet B?

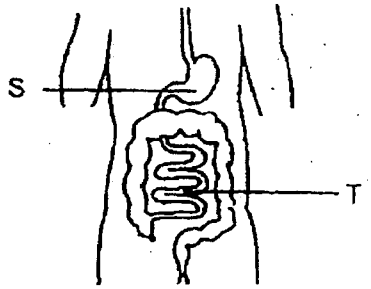
Magnet B _____ magnet A. [1]

4

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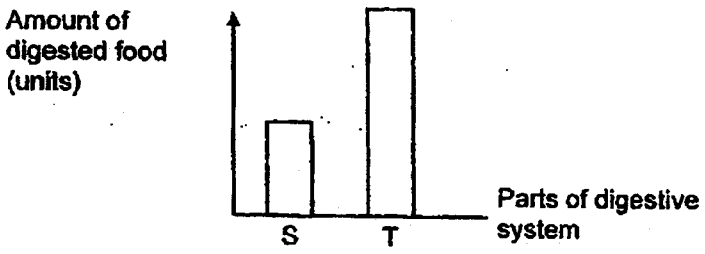
32 The diagram below shows a human digestive system.



(a) State the two functions of the human digestive system. [2]

Sam ate a bowl of noodles. After four hours, the doctor measured the amount of digested food in different parts of the digestive system.

The graph below shows the amount of digested food at various parts of his digestive system.



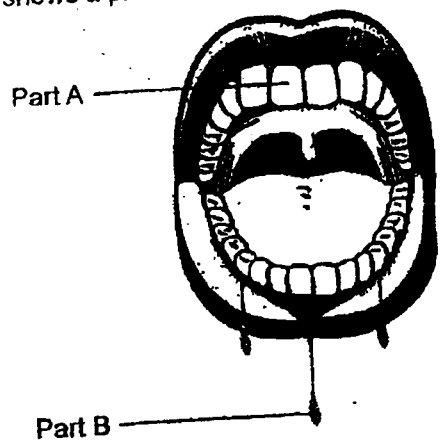
(b) The amount of digested food increased between part S and T. Explain why. [1]

3

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The diagram below shows a picture of a mouth.



[2]

(c) Identify parts A and B and state their function.

Part A: _____

Function of Part A: _____

_____

Part B: _____

Function of Part B: _____

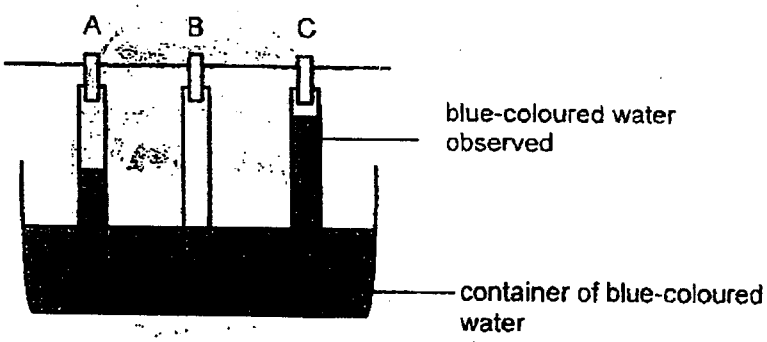
_____

2

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33 Mr Lee set-up an experiment as shown below.



He placed three strips of different materials, A, B and C, into a container of blue-coloured water from the same distance. After three minutes, he observed the height of water that rose in each material as shown above.

(a) Based on the experiment, state the property Mr Lee was trying to find out about materials A, B and C. [1]

(b) Suggest another measurement that Mr Lee could make on each strip to conclude the property stated in (a). [1]

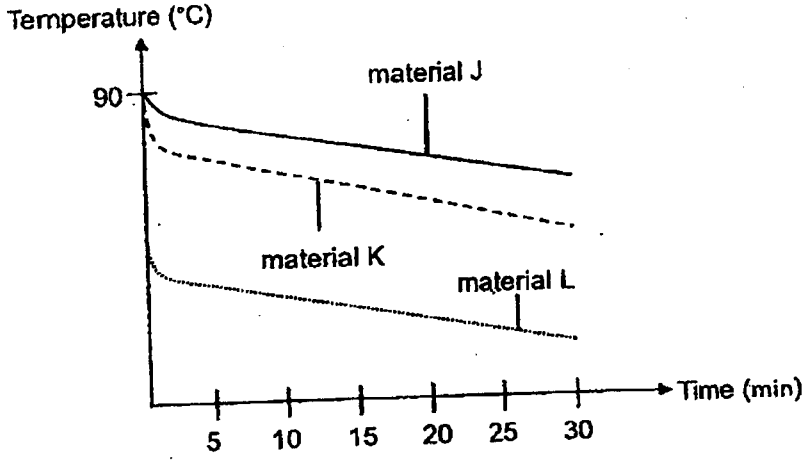
(c) Based on Mr Lee's results, which material, A, B or C, is most suitable to make a bath towel? Explain your answer. [1]

3

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34 Brandon heated three materials, J, K and L, to 90°C. He then measured and recorded the temperature of the three materials for the next 30 minutes. The graph below shows the change in temperature of the materials after they were left to cool.



(a) One of the graphs is drawn wrongly. State the material J, K or L, for the graph that was drawn wrongly and explain why. [1]

(b) After the materials were left to cool for three hours, Brandon measured the temperature of the three materials and found that they were the same. Explain why. [1]

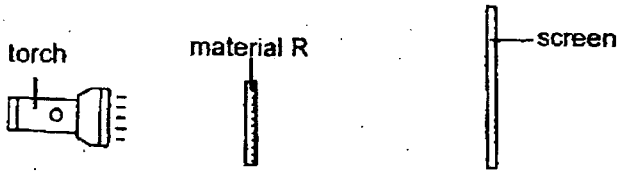
(c) Brandon would like to bring some cold drinks for a picnic. Which material, J or K, is more suitable for making a container that will keep the cold drinks cool for a longer time? Explain your answer. [2]

4

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35 Luke carried out an investigation in a dark room to study the shadows formed on a screen by four different materials, R, S, T and U, as shown in the diagram below. The materials are of the same size and thickness.



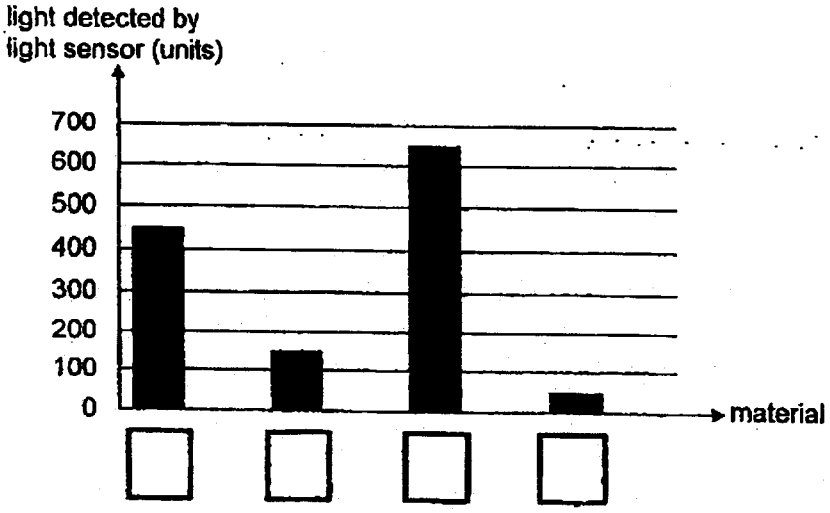
He recorded his observations in the table below.

Material	Observation of Shadow
R	Very dark
S	No shadow
T	Not dark
U	Dark

Luke repeated his investigation by replacing the screen with a light sensor connected to a datalogger.



His results are shown in the bar graph below.



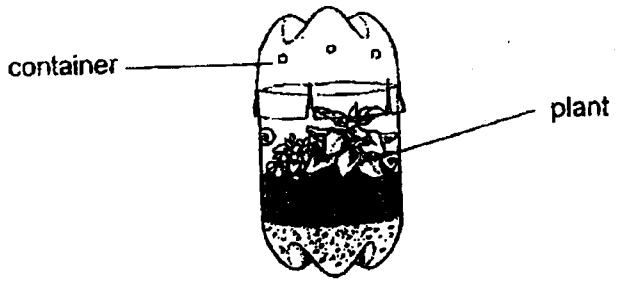
(a) Based on Luke's observations of the shadows cast on the screen, fill in the boxes above with R, S, T and U. [1]

1

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(b) Luke wants to construct a mini bottle garden with plants that grow well in a sunny and warm environment.



Which material, R, S, T or U, would be most suitable for making the container? Explain your answer. [2]

_____

_____

2

End of Booklet B

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SCHOOL : METHODIST GIRLS' SCHOOL
LEVEL : PRIMARY 4
SUBJECT : SCIENCE
TERM : 2023 WA 1

CONTACT :

SECTION A

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

SECTION B

Q25)	Group A: Living things Group B: Non-living things
Q26)	a) Stage Y: Nymph b) Frog/chicken/grasshopper
Q27)	a) With less rainfall, there will be fewer places for the adult mosquitos to lay their eggs so fewer eggs can be hatched and developed into adults b) The larva of the mosquito eats a lot and molts several times but the pupa does not. c) Laying many eggs will ensure that at least some eggs will hatch and develop into adults which can reproduce and continue its life cycle.
Q28)	a) Source b) Reflected
Q29)	a) The butterfly has 4 stages in its life cycle. b) (i) Both lay eggs (ii) The butterfly has 4 stages in life cycle while the frog has 3 stages in their life cycle
Q30)	Faster;better

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Q31)	a) Non-magnetic b) repelled
Q32)	a) Function 1: Breaks down food into simple substances Function 2: Absorbs digested food so it can be used by the body b) Part T adds more digestive juices to allow more food to be digested into simpler substances\ c) Part A: Teeth. break down food into smaller pieces Part B: Saliva. To make food soft
Q33)	a) Absorbency/waterproof b) The mass of each strip before and after the experiment. c) Material C. It absorbs the most amount of water.
Q34)	a) Material L did not have starting temperature of 90 degrees b) The three materials loss heat to the surrounding air and their temperatures decreased until they reached room temperature. c) Material J lost heat the slowest so it is the poorest conductor of heat and will slow down heat gain by cold drinks
Q35)	a) T, U, S, R b) It is transparent so plant can get enough light to make food.

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