

Anglo-Chinese School (Junior)



SEMESTRAL ASSESSMENT (2022)

PRIMARY 4

SCIENCE

BOOKLET A

Friday

28 October 2022

1 hr 45 min

Name: _____ () Class: 4.()

INSTRUCTIONS TO PUPILS

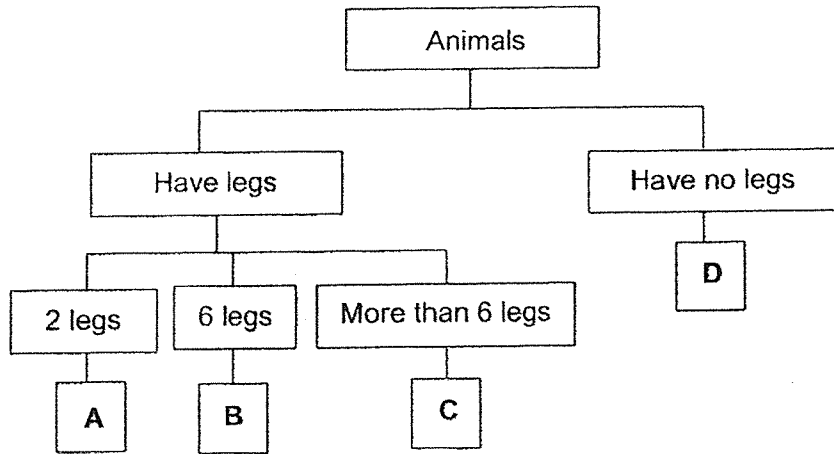
- 1 Do not turn over the pages until you are told to do so.
- 2 Follow all instructions carefully.
- 3 There are 28 questions in this booklet.
- 4 Answer ALL questions.
- 5 Shade your answers in the Optical Answer Sheet (OAS) provided.



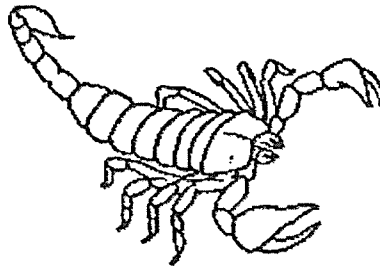
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade your answer on the Optical Answer Sheet.

(56 marks)

1. Study the chart.

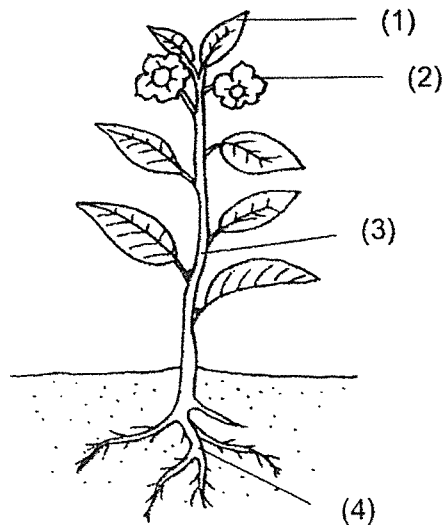


Where would you put this animal in the chart?



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

2. Which part, (1), (2), (3), or (4), supports the plant?



3. Which of the following objects is **not** made of waterproof material?

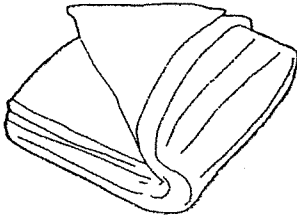
(1) wooden fork



(2) ceramic pot



(3) towel

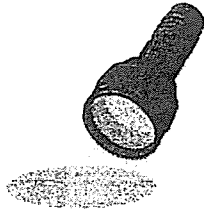


(4) rubber gloves

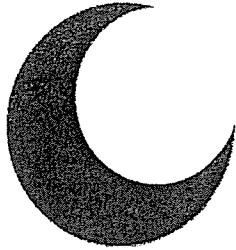


4. Which of the following is a source of light?

(1) a lighted torch



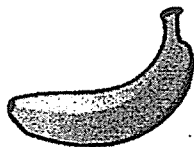
(2) the moon



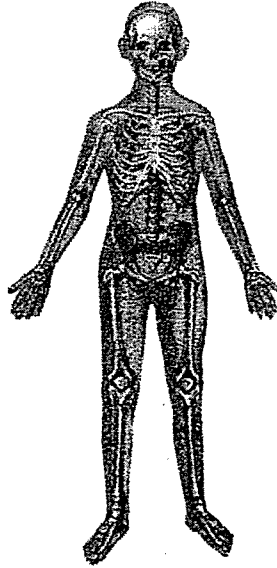
(3) eyes



(4) a banana



5. Which organ system is shown in the diagram?

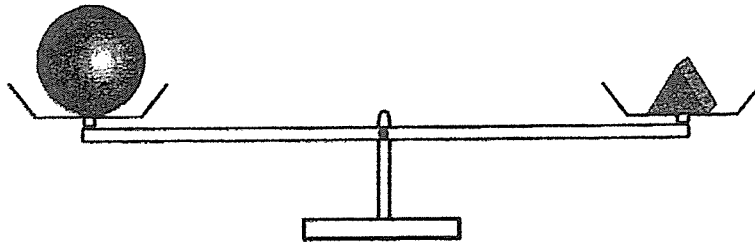


- (1) skeletal system
 - (2) muscular system
 - (3) circulatory system
 - (4) respiratory system
6. Ivan made the following observations on the life cycle of an animal.
- There are four stages in the life cycle.
 - The young does not look like the adult.

Which animal was Ivan observing?

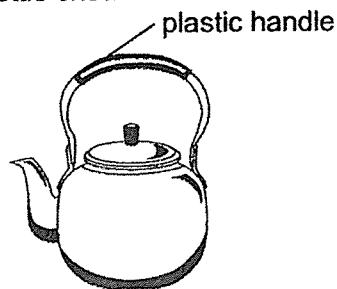
- (1) frog
- (2) beetle
- (3) chicken
- (4) cockroach

7. Study the diagram.



Which of the following statement about the two objects is true?

- (1) They have the same size.
 - (2) They have the same mass.
 - (3) They have the same shape.
 - (4) They have the same volume.
8. Hazel boiled some water in the kettle shown.



She is able to hold the kettle of boiling water using the plastic handle. This is because plastic is a _____.

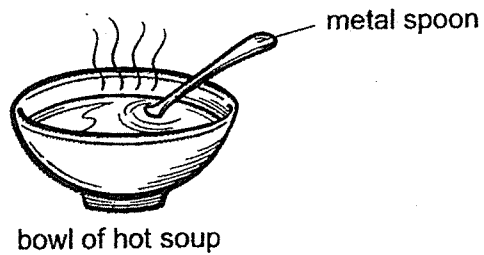
- (1) light material
 - (2) flexible material
 - (3) poor conductor of heat
 - (4) good conductor of heat
9. The diagram shows a magnet brought near a plastic block.



What will happen to the plastic block?

- (1) It will move up.
- (2) It will not move.
- (3) It will move to the left.
- (4) It will move to the right.

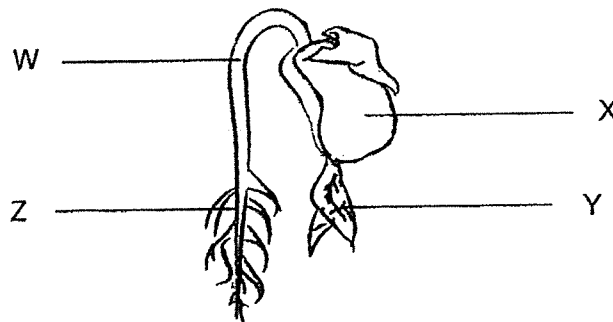
10. Richard places a metal spoon in a bowl of hot soup.



The spoon becomes hotter after a while.

Which one of the following explains this?

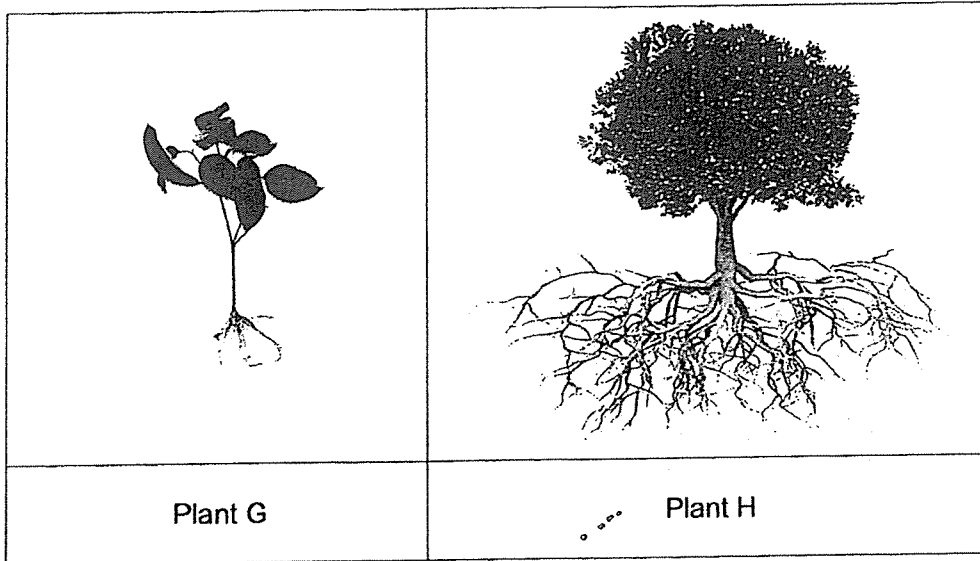
- (1) The bowl loses heat to the hot soup.
 - (2) The spoon loses heat to the hot soup.
 - (3) The hot soup gains heat from the spoon.
 - (4) The spoon gains heat from the hot soup.
11. The diagram shows a germinating seed.



Which part, W, X, Y or Z, of the seed grows out first during germination?

- (1) W
- (2) X
- (3) Y
- (4) Z

12. The pictures show two plants, G and H.



Four students made comments about the plants.

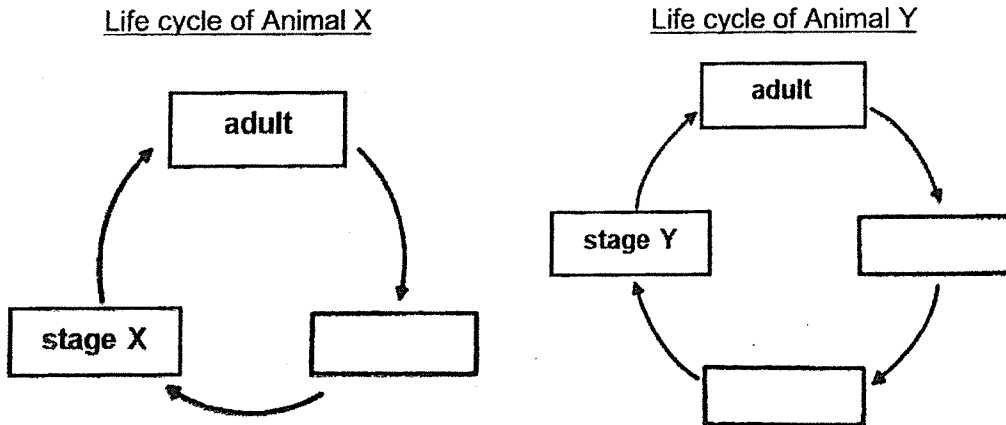
- Aminah: Only the roots of Plant H anchor the plant firmly to the ground.
 Bala: Plant G will be uprooted more easily during a storm.
 Caden: Plant H can make more food than Plant G.
 David: The roots of Plant H absorb more water and mineral salts from the soil than the roots of Plant G.

Whose comments are true?

- (1) Bala and David
- (2) Aminah and Caden
- (3) Bala, Caden and David
- (4) All four students

13. The diagram shows the stages in the life cycle of two animals, X and Y.

Each box represents a stage of the life cycle.



What are stages X and Y?

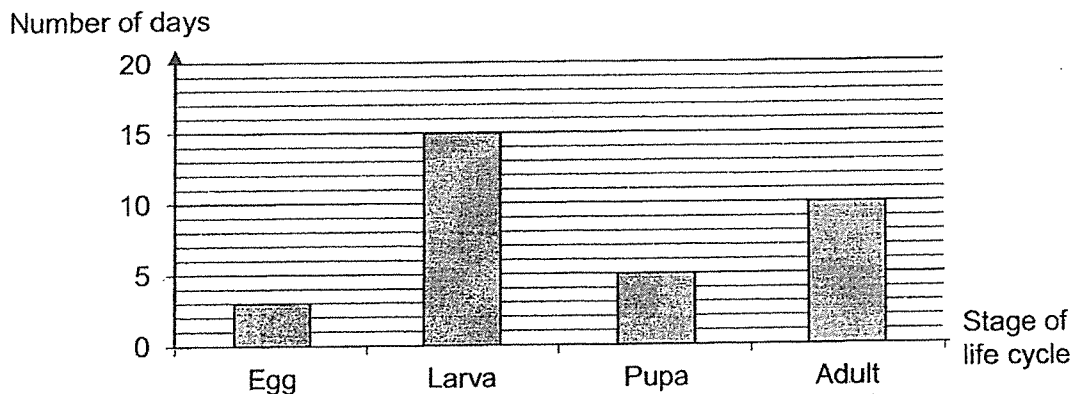
	stage X	stage Y
(1)	pupa	larva
(2)	nymph	pupa
(3)	nymph	larva
(4)	larva	pupa

14. Which of the following describes the larva of the butterfly?

- A It eats a lot.
- B It does not move.
- C It looks like the adult.
- D It moults several times.

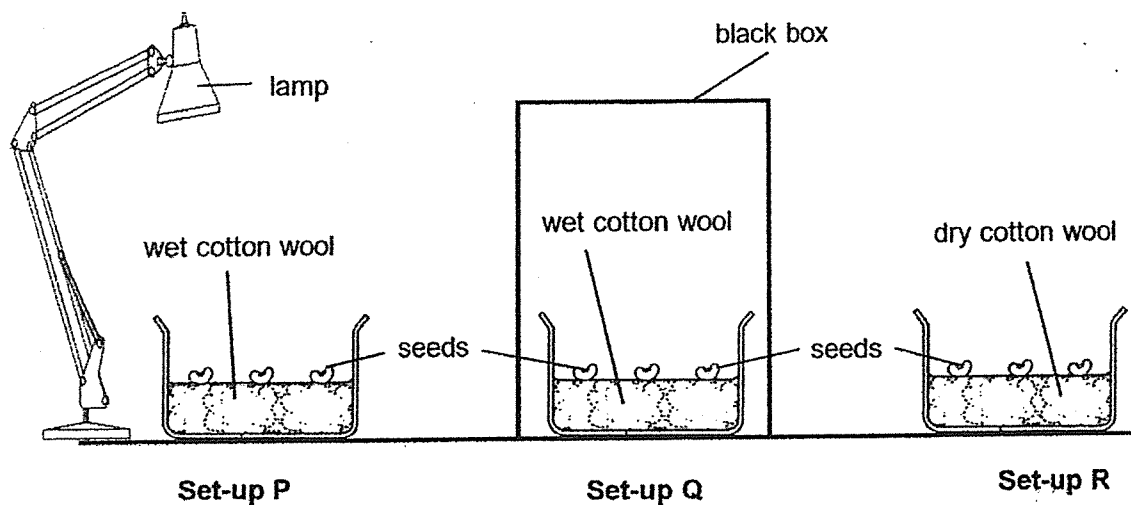
- (1) A and D only
- (2) B and C only
- (3) A, C and D only
- (4) A, B, C and D

15. The graph shows the number of days Animal X was at the different stages of its life cycle.



Based on the graph, which of the following statements about Animal X is correct?

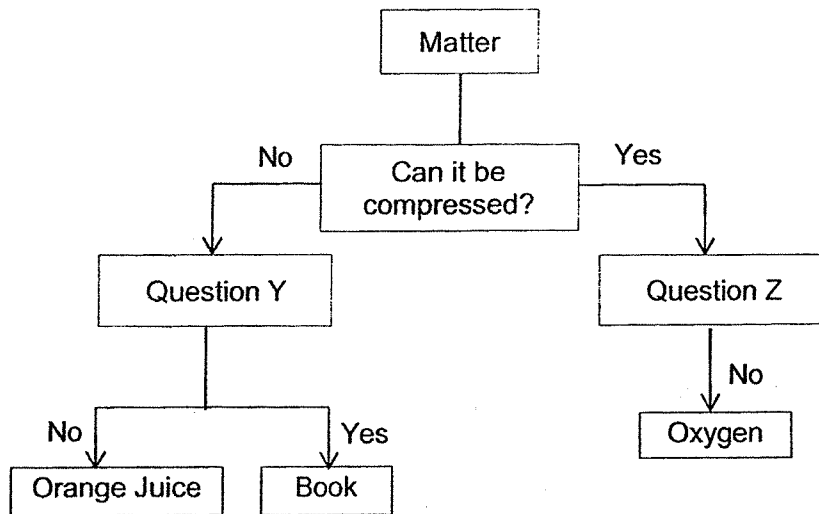
- (1) It has a three-staged life cycle.
 - (2) The egg hatched on the 5th day.
 - (3) The pupa became an adult after 5 days.
 - (4) It was a pupa for more days than a larva.
16. Ethan prepared three set-ups, P, Q and R, to investigate the conditions needed for seeds to germinate. All the set-ups were placed in the classroom at 30°C.



In which of the set-up(s) would the seeds germinate?

- (1) P only
- (2) P and Q only
- (3) Q and R only
- (4) P, Q and R

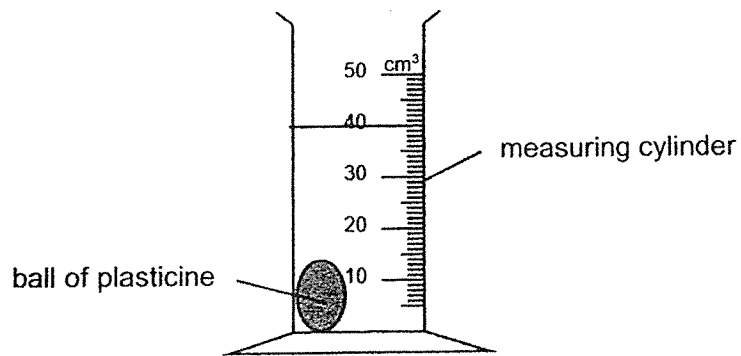
17. Study the flowchart.



What are the most suitable questions for Y and Z?

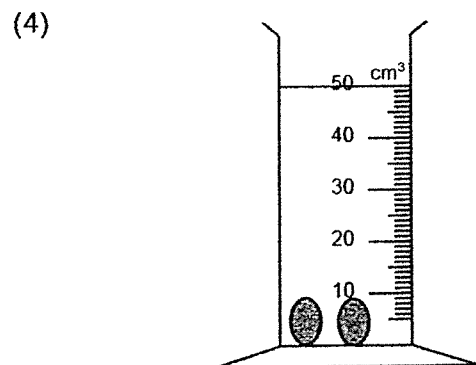
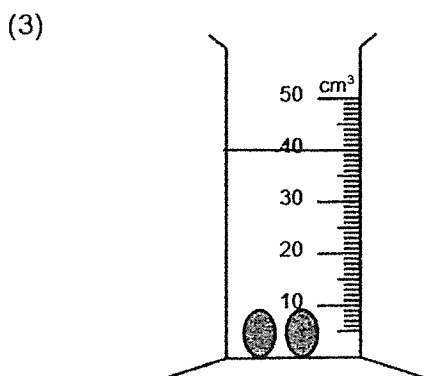
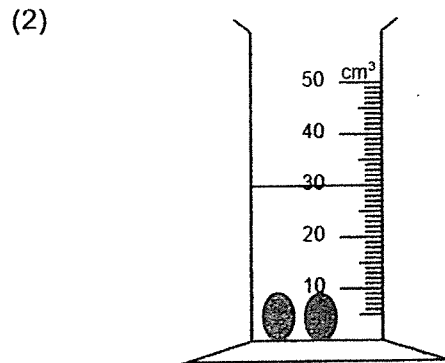
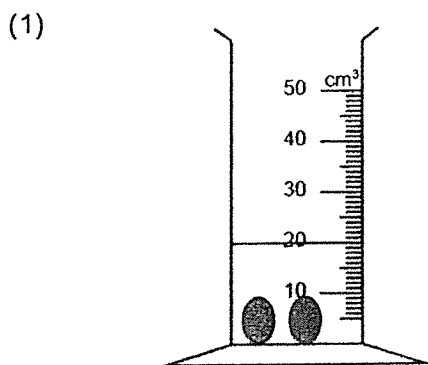
	Question Y	Question Z
(1)	Can it be seen?	Does it have a definite shape?
(2)	Does it have mass?	Does it have a definite shape?
(3)	Does it have a definite shape?	Can it be seen?
(4)	Can it be seen?	Does it have mass?

18. Asher placed a ball of plasticine into a measuring cylinder. He noticed that the water level rose to the 40 cm^3 mark as shown in the diagram.

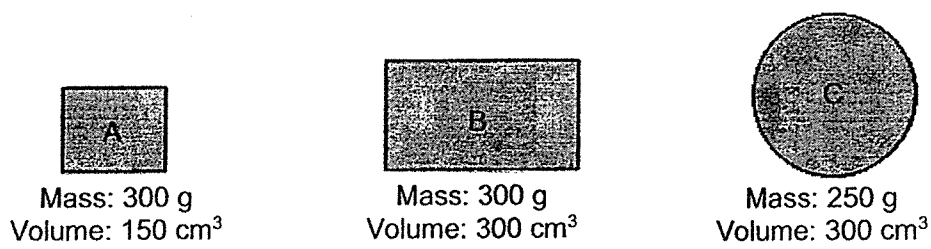


He then took the ball of plasticine out of the water, cut it into two pieces and lowered them gently into the water again.

Which of the following diagrams show the correct water level in the measuring cylinder?

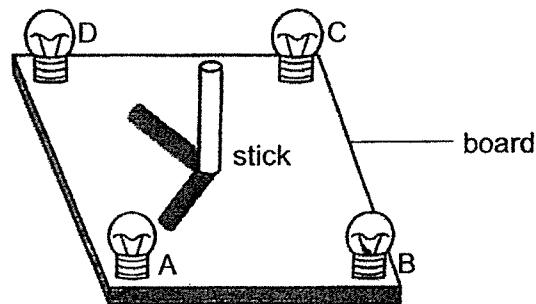


19. The diagram shows three objects, A, B and C.



Based on the information given, which of the following statements is true?

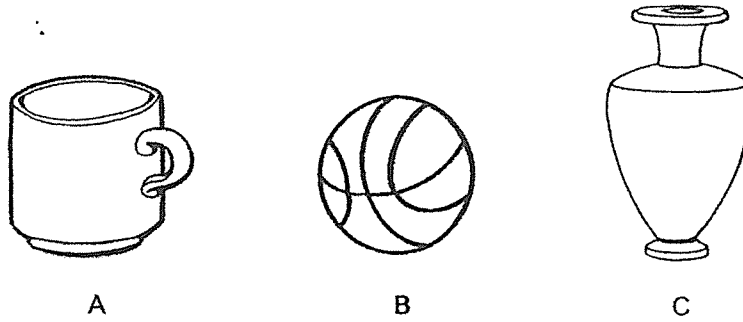
- (1) Object A has a smaller mass than object B.
 - (2) Object A occupies more space than object B.
 - (3) Object B occupies more space than object C.
 - (4) Object B and object C occupy the same amount of space.
20. A stick is placed in the middle of a square board.



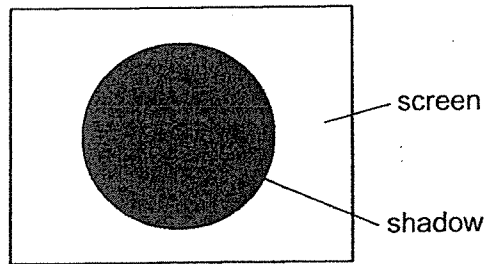
Which two bulbs are switched on to form the shadows on the board?

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

21. The diagram shows three objects A, B and C.

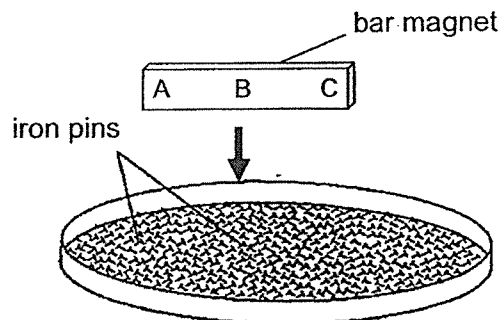


Which object(s), A, B and/or C, can cast the shadow as shown?



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

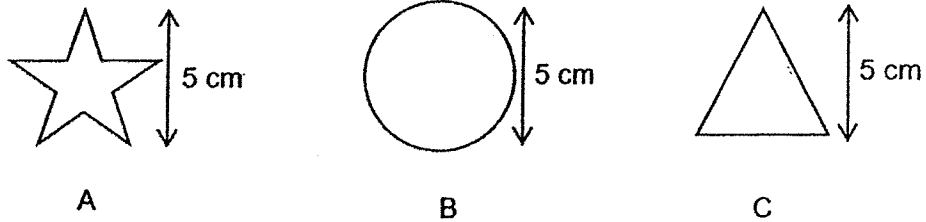
22. A bar magnet was lowered into a tray of iron pins as shown.



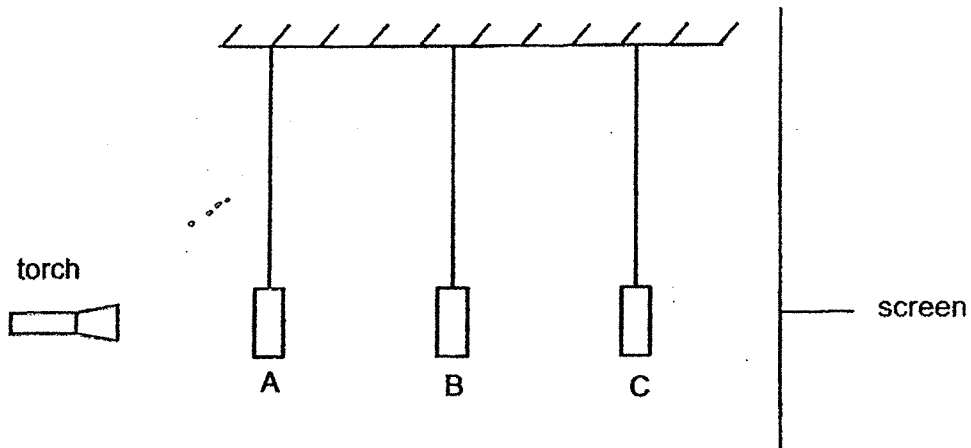
Which of the following most likely shows the number of iron pins attracted to the bar magnet at positions A, B and C?

	A	B	C
(1)	2	10	2
(2)	10	10	10
(3)	10	2	10
(4)	10	10	2

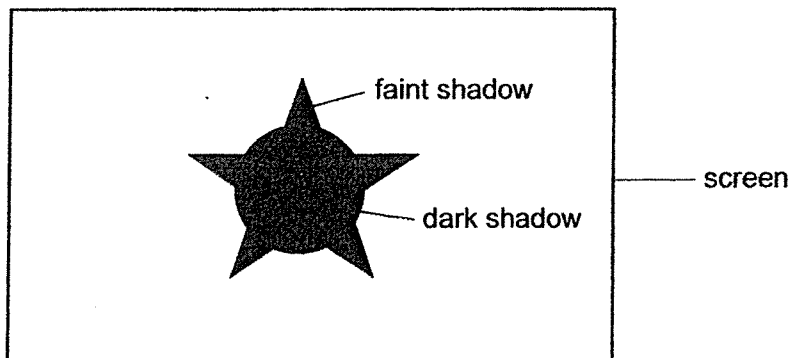
23. Tim cut out three objects, A, B and C, which are made of different materials as shown.



He hung the three shapes in different positions as shown in the set-up below.



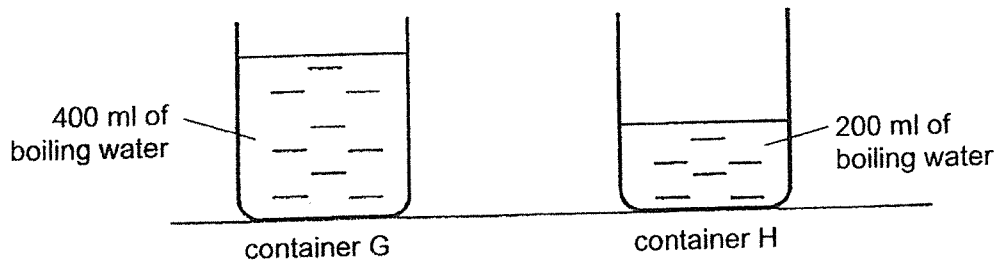
The following diagram shows the shadows formed on the screen when the torch was switched on.



Based on the shadows formed, which of the following correctly matches the objects A, B and C to their properties?

	Does not allow light to pass through	Allows some light to pass through	Not possible to tell
(1)	A	B	C
(2)	B	A	C
(3)	B	C	A
(4)	C	B	A

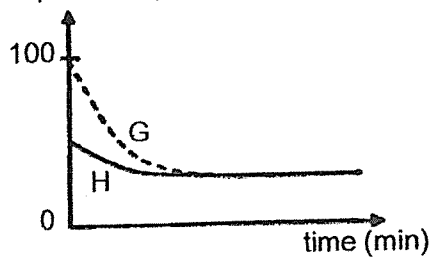
24. Hema placed two identical empty containers, G and H, both initially at room temperature, on a table. She poured 400 ml of boiling water into container G and 200 ml of boiling water into container H.



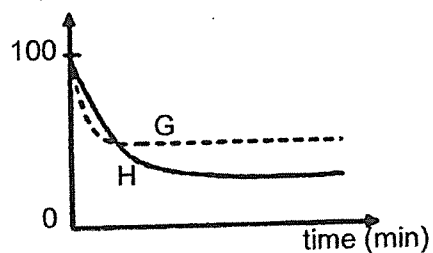
She recorded the temperatures of the water in G and H every minute for some time in a graph.

Which graph shows the correct results?

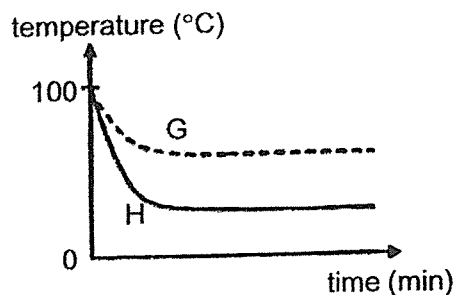
- (1) temperature ($^{\circ}\text{C}$)



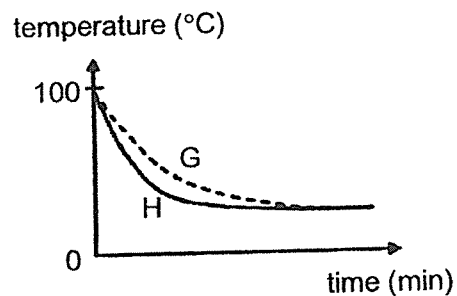
- (2) temperature ($^{\circ}\text{C}$)



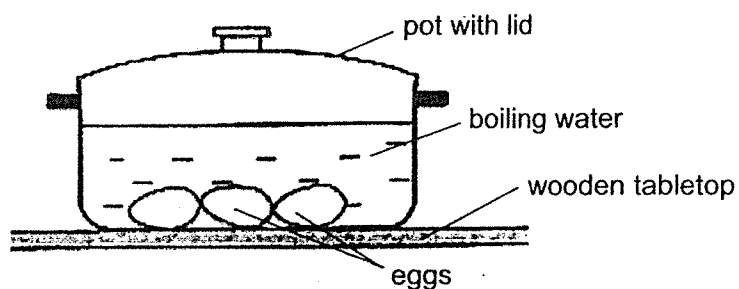
- (3)



- (4)



25. Samantha wanted to cook some eggs with boiling water. She covered the pot with a lid for 10 minutes.

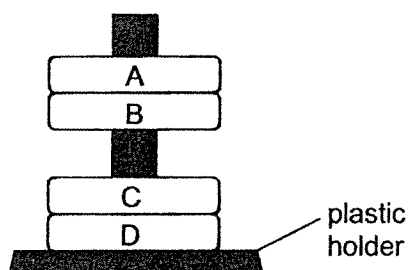


What can Samantha do to make sure that the water in the same pot would be kept as hot as possible?

- A Remove the lid on the pot.
- B Place the pot on a rubber mat.
- C Place the pot in an air-conditioned room.
- D Add some boiling water to the pot every two minutes.

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

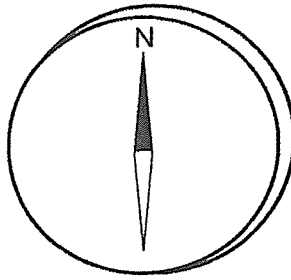
26. Four rings, A, B, C and D, are placed one at a time on a plastic holder. Among the four rings, two are ring magnets and two are steel rings. The observation is as shown.




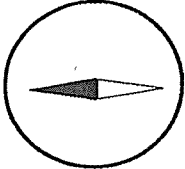
Which two are the steel rings?


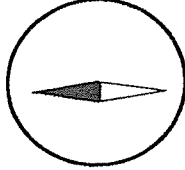
- (1) A and B
- (2) A and D
- (3) B and C
- (4) C and D

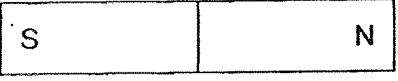
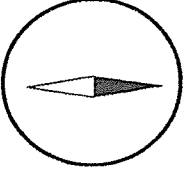
27. The diagram shows a compass.

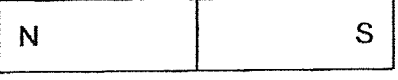
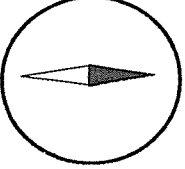


Which of the following show(s) the correct observation when a bar magnet is placed beside the compass?

A  

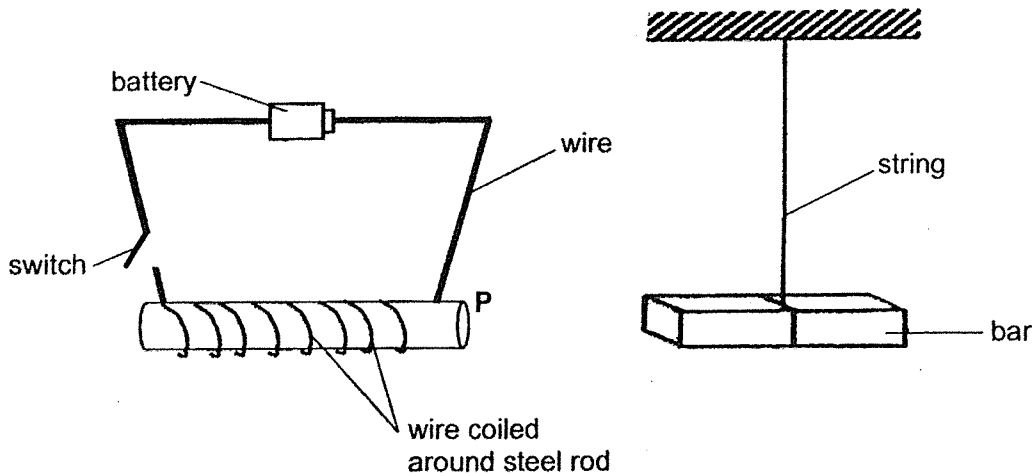
B  

C  

D  

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

28. George prepared the set-up as shown. When he closed the switch, the bar swung towards point P.



Which conclusion(s) can be made from his observation?

- A The bar is a magnet.
- B The bar is made of a magnetic material.
- C The bar will swing away from point P if there were more coils of wires around the steel rod.

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

End of Booklet A

Anglo-Chinese School (Junior)



SEMESTRAL ASSESSMENT (2022)

PRIMARY 4

SCIENCE

BOOKLET B

Friday

28 October 2022

1 hr 45 min

Name: _____ () Class: 4. () Parent's Signatu

INSTRUCTIONS TO PUPILS

- 1 Do not turn over the pages until you are told to do so.
- 2 Follow all instructions carefully.
- 3 There are 13 questions in this booklet.
- 4 Answer ALL questions.
- 5 The marks are given in the brackets [] at the end of each question or part question.

Booklet	Possible Marks	Marks Obtained
A	56	
B	44	
Total	100	

This question paper consists of 16 printed pages (inclusive of cover page).

For questions 29 to 41, write your answers in this booklet.

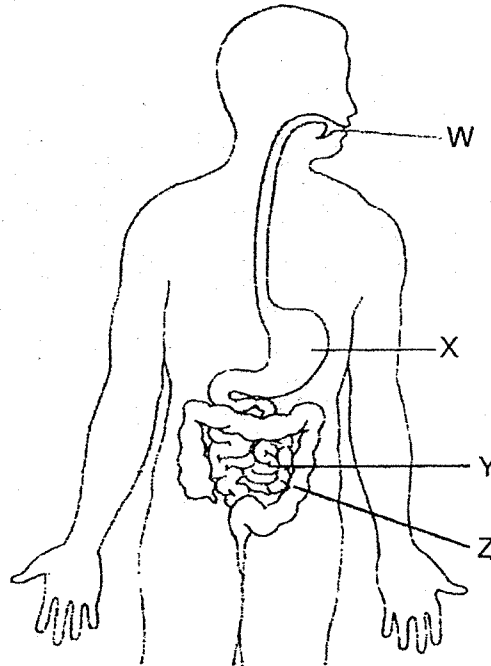
The number of marks available is shown in the brackets [] at the end of each question or part question. (44 marks)

29. Classify the following into matter and non-matter.

[3]

water	air	shadow
matter		non-matter

30. The diagram shows the human digestive system.



Using the letters, W, X, Y or Z, identify the part where

(a) digestion of food is completed: _____

[1]

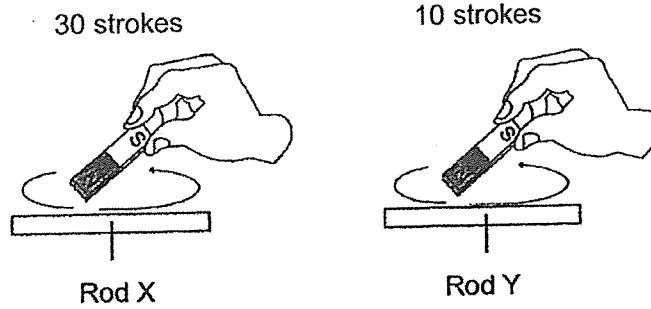
(b) there is no digestion of food: _____

[1]

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SCORE	5
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31. Joshua stroked two similar iron rods X and Y with the same magnet as shown.

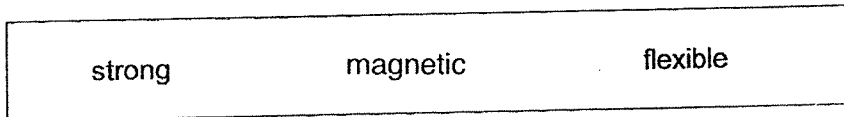


Both rods became magnets and were used to attract similar pins.

(a) Circle the correct answer. [1]

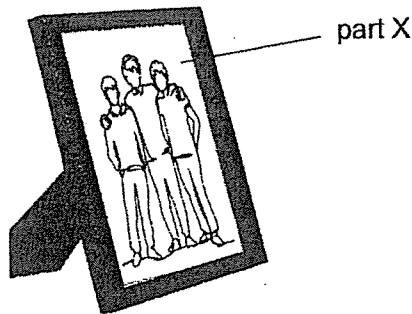
Rod X attracted (less pins than / the same number of pins as / more pins than) rod Y.

(b) Choose the correct word from the box to complete the statement. [1]

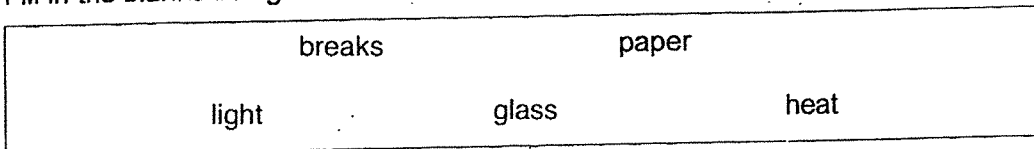


Joshua's observation shows that rods X and Y are _____ materials.

32. The diagram shows a photo frame.



Fill in the blanks using the correct words in the box. [3]

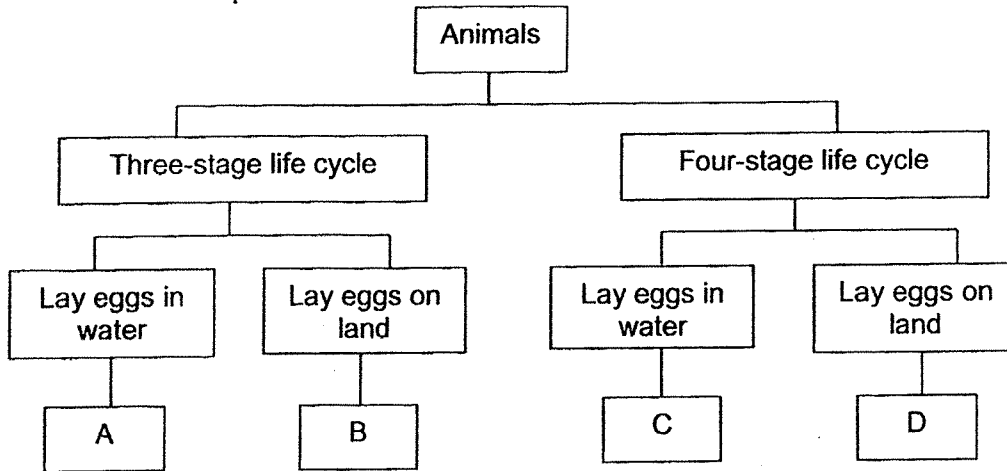


Part X is made of _____ because it allows _____ to pass through so that we can see the photograph. However, part X _____ easily when dropped.

(Go on to the next page)

SCORE	5
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33. Study the classification chart carefully.



(a) Based on the classification chart, state all the characteristics of Animal D. [1]

(b) Give an example of animal A and animal B. [1]

A: _____

B: _____

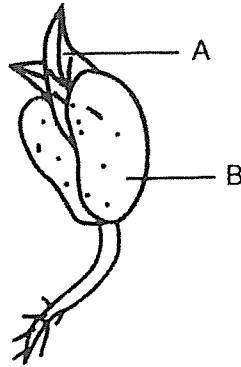
(c) Based on the classification chart, which animal, A, B, C or D, best represents a mosquito? [1]

(d) Name the stage of the life cycle of a mosquito at which it is considered harmful to humans. Give a reason for your answer. [1]

(Go on to the next page)

SCORE	4
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34. Amy observed the different stages in the life cycle of a bean plant. During the first few days of growth of the bean plant, the seedling appeared as shown.



- (a) Name part A and state its function. [1]

Part A: _____

Function: _____

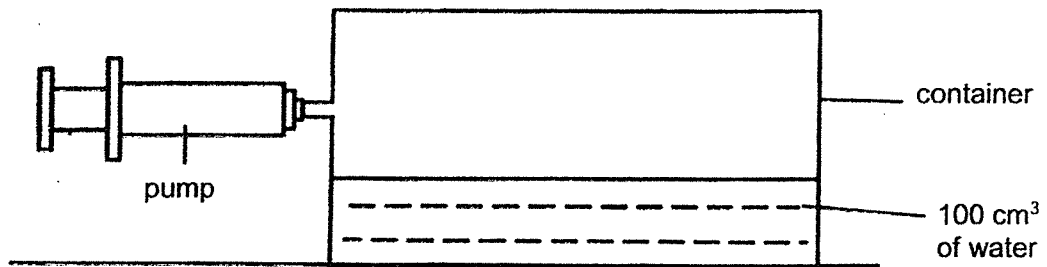
- (b) As the seedling develops into a young plant, the mass of part B decreases. Explain why. [1]

- (c) Name the stage of the life cycle of the bean plant that Amy will observe fruits. [1]

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SCORE	
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35. Peter has a container with a volume of 300 cm^3 and filled it with 100 cm^3 of water. He connected a pump to the container and pumped in 50 cm^3 of air into the container.

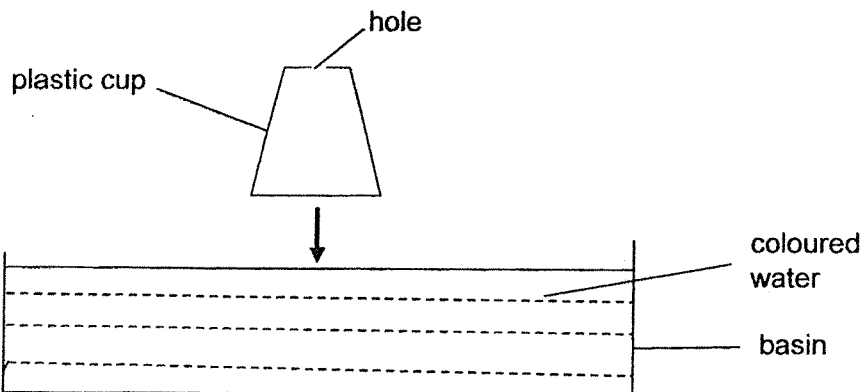


- (a) State the volume of air in the container after air was pumped into the container. [1]

- (b) What property of air is shown in this experiment? [1]

Peter conducted another experiment. He made a small hole at the bottom of a transparent plastic cup. He then lowered the cup into a basin of coloured water as shown in the diagram, until it touched the bottom of the basin.

He observed some bubbles rising from the hole in the cup as he lowered the cup into the water.

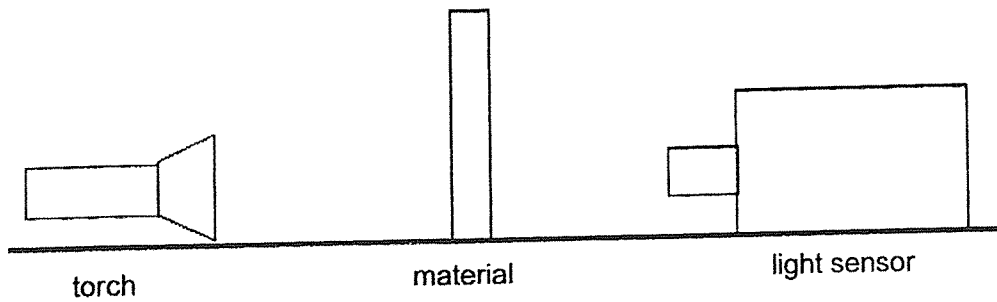


- (c) Explain why bubbles were observed. [2]

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SCORE	4
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36. James set up an experiment as shown. He wanted to find out how much light can pass through different materials A, B, C and D. The light sensor is used to measure the amount of light that passes through the materials.



The results are recorded in the table.

Materials	Amount of light detected by the light sensor (units)
A	1000
B	400
C	900
D	0

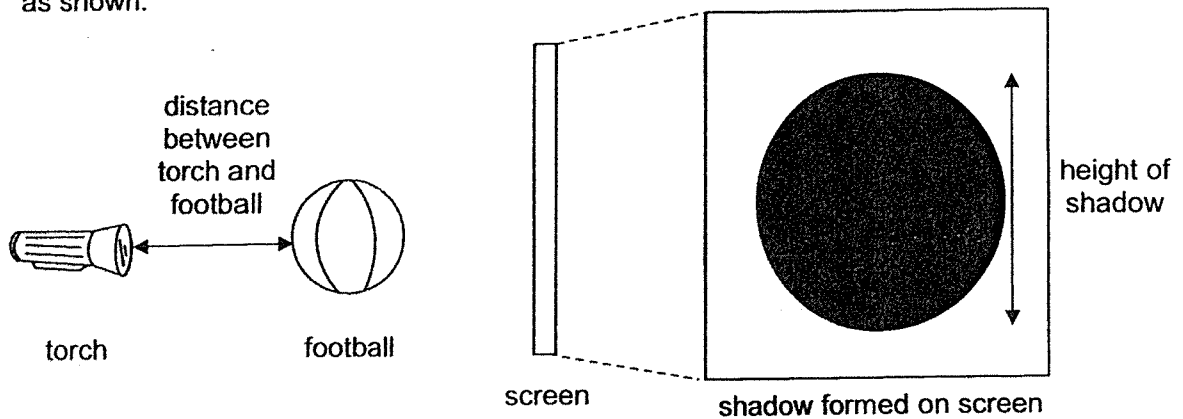
- (a) State the property of light that allows the light from the torch to be detected by the light sensor. [1]

- (b) Based on the results, which material, A, B, C or D, should James use to make a curtain so that his room will be completely dark during daytime? Give a reason for your answer. [2]

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SCORE	3
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37. Joshua wanted to find out how the distance between the torch and the football affects the height of the shadow formed on the screen. He set up an experiment as shown.



He recorded his results in the table.

Distance between torch and football (cm)	Height of shadow formed (cm)
20	7
15	9
10	11
5	13

- (a) How does the distance between the torch and the football affect the height of shadow formed? [1]

- (b) State the possible height of the shadow formed if the distance between the torch and the football is 8 cm. [1]

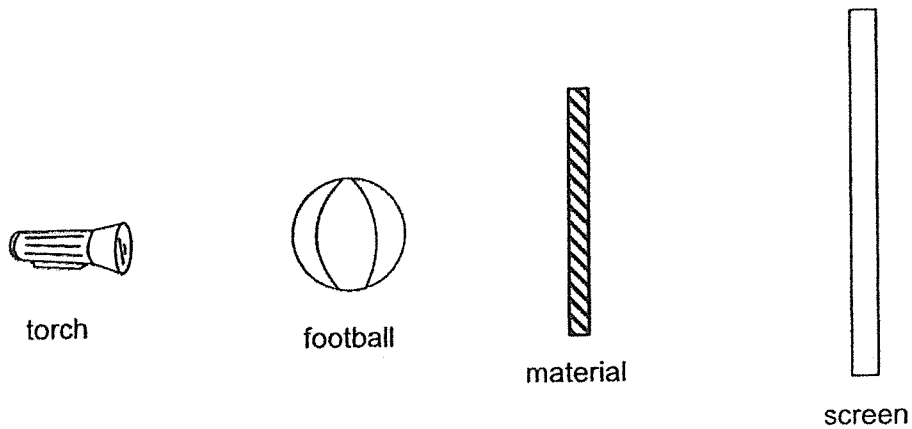
Height of shadow: _____

- (c) Without moving the torch or the football, state one change that Joshua can make to the set-up to form a taller shadow. [1]

(Go on to the next page)

SCORE	3
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Joshua then decided to find out if different types of materials affected the shadow of the football formed on the screen. He placed each material, X, Y and Z, in between the football and the screen as shown.



His observations are recorded in the table.

Material	Shadow of football formed on screen
X	Dark shadow
Y	Light shadow
Z	No shadow formed

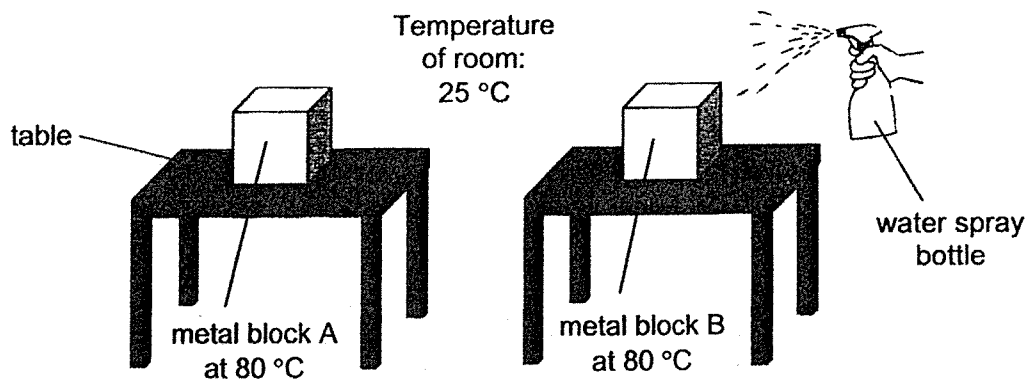
- (d) The three types of materials that Joshua used were glass, wood and tracing paper. Based on his observations, match the type of materials that he used by writing X, Y, or Z in the boxes provided. [1]

Type of Material	Material (X, Y or Z)
wood	
glass	
tracing paper	

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SCORE	1
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38. Callen wanted to find out if the presence of water on a metal block affects how fast the temperature of the metal block changes. He left two identical metal blocks A and B, which were heated up to $80\text{ }^{\circ}\text{C}$, in a room as shown.



He sprayed some water on metal block B and used a heat sensor to take the temperature of the metal blocks over 10 minutes and recorded his results in the table.

Time (min)	0	2	4	6	8	10
Temperature of metal block A ($^{\circ}\text{C}$)	80	66	56	49	45	43
Temperature of metal block B ($^{\circ}\text{C}$)	80	59	47	39	34	30

- (a) Based on the results of the experiment, what can Callen conclude? [1]

- (b) State the temperature of the metal blocks after two hours. [1]

Metal block A: _____ Metal block B: _____

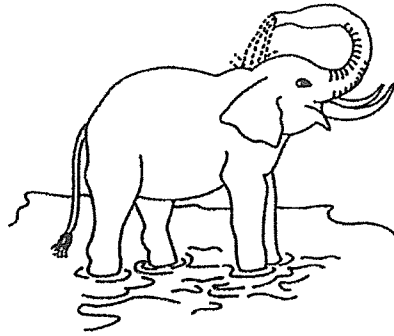
- (c) State another variable that must be kept constant for the experiment to be fair. [1]

Variable to keep constant: _____

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SCORE	3

- (d) Elephants spray water on their bodies to keep cool especially on hot days.



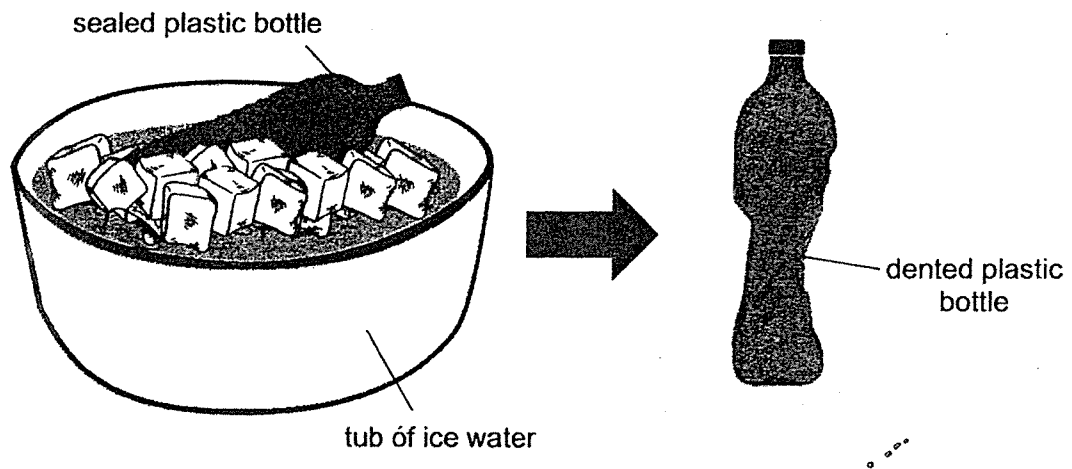
Based on Callen's experiment, explain how elephants keep themselves cool when they spray water on their bodies.

[1]

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SCORE	1
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39. Xavier placed a sealed empty plastic bottle in a tub of ice water and removed the bottle from the ice water after ten minutes. He observed that the plastic bottle was dented as shown.



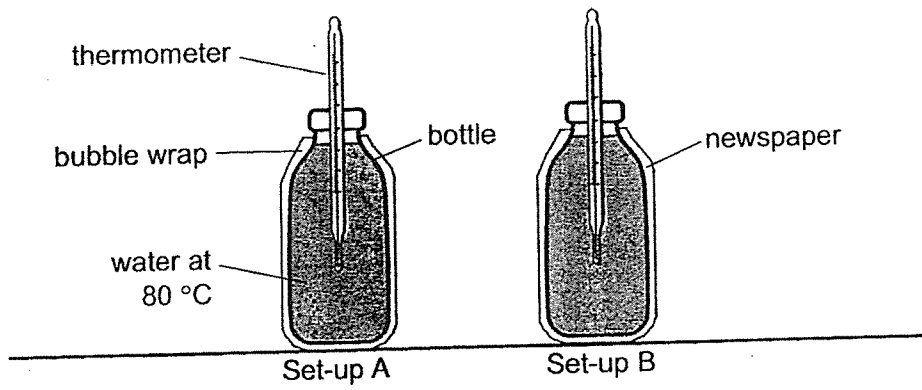
- (a) Explain why the sealed plastic bottle was dented after placing it in ice water. [2]

- (b) Xavier then placed the sealed dented plastic bottle into a tub of warm water. State what would happen to the dented plastic bottle. [1]

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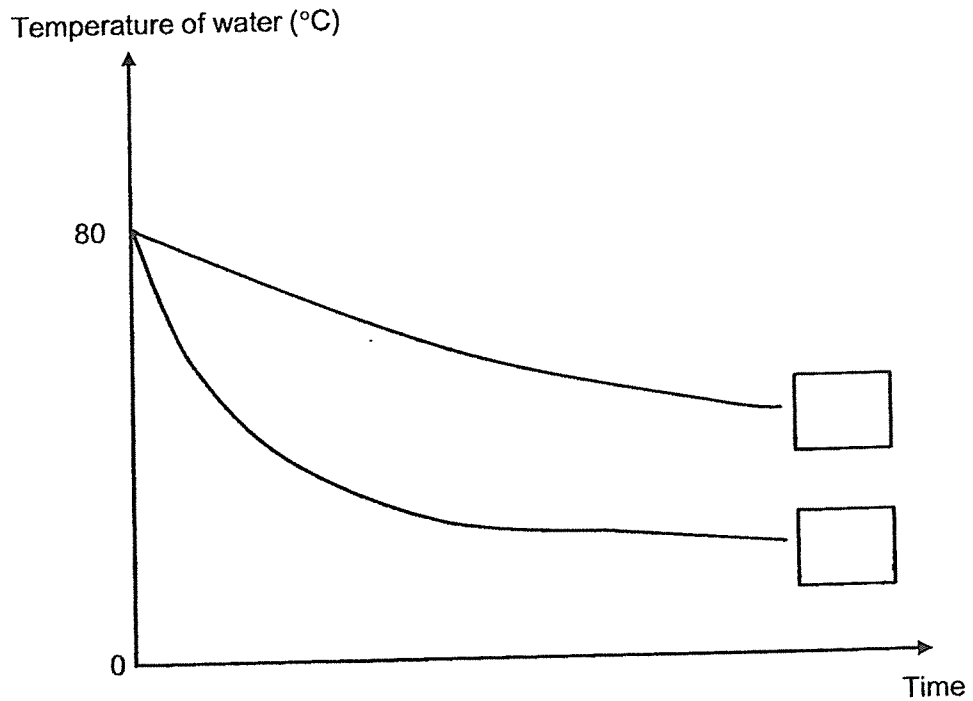
SCORE	
	3

- (c) Xavier prepared set-ups A and B using two identical bottles filled with water at 80 °C as shown. The bottles were wrapped with two different materials of the same size and left on the same table.



Label the line graphs with letters A and B to match them to the temperature of water in the bottle in each set-up over a period of time.

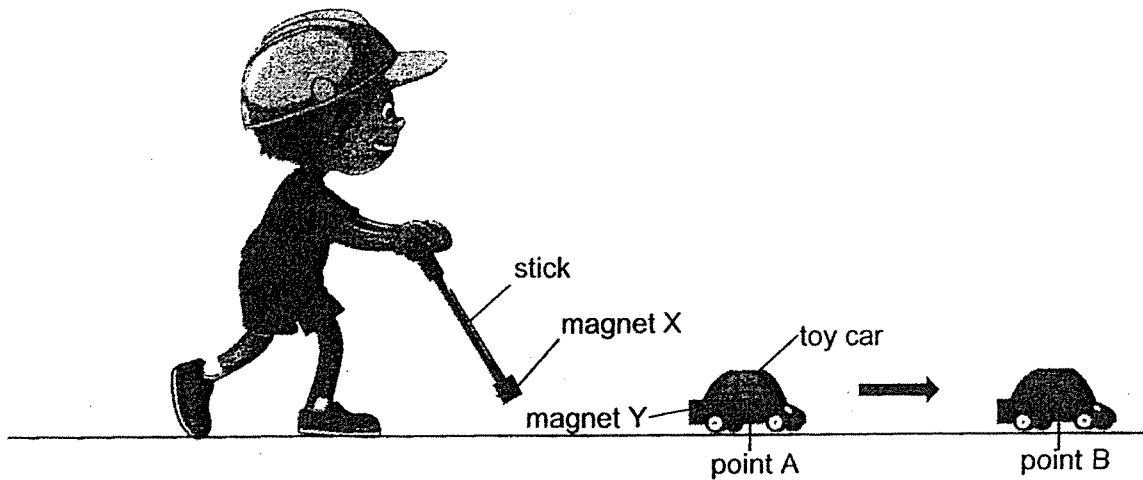
[1]



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SCORE	1
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40. When Alvin brings the stick close to the toy car positioned at point A, the toy car moves away from the stick and stops at point B as shown.



- (a) Explain why the toy car moves away from the stick. [2]

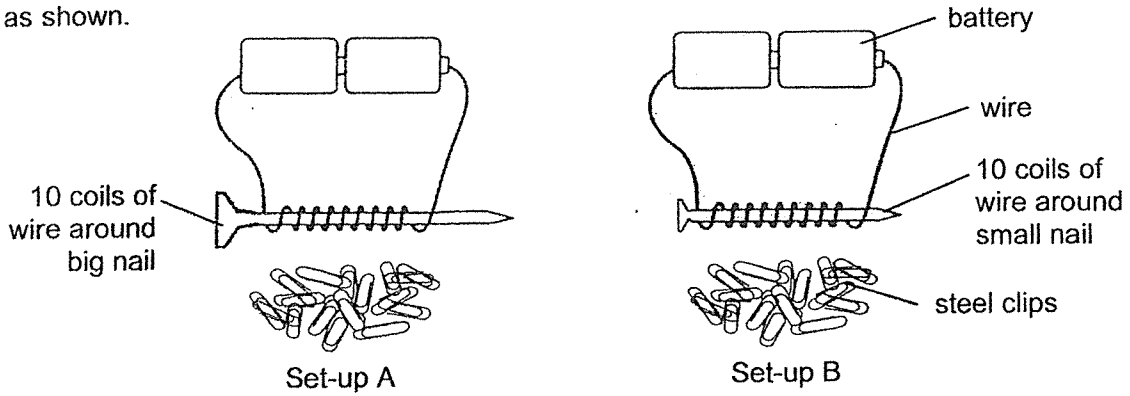
- (b) State what Alvin would observe about the toy car if he replaces magnet X with a stronger magnet before bringing the stick close to the toy car at point A. [1]

- (c) Alvin then replaces the magnet on the stick with an aluminium bar. He brings the stick close to the toy car at point A and observed that the toy car did not move towards point B. Give a reason why. [1]

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SCORE	4
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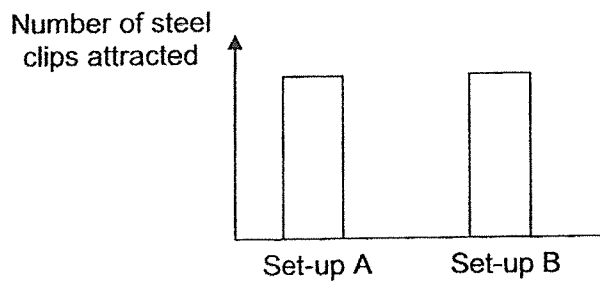
41. Roy prepared two set-ups, A and B, for his experiment using similar batteries and steel clips as shown.



He placed the electromagnets near some steel clips and observed how many steel clips the electromagnets attracted.

- (a) What was Roy trying to find out in his experiment? [1]

He recorded the results of his experiment in the graph as shown.



- (b) Based on the results of the experiment, what can Roy conclude? [1]

- (c) Suggest what Roy can do to the batteries in both set-ups to increase the number of steel clips attracted by the electromagnets. [1]

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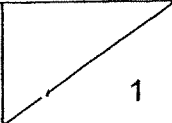
SCORE	3
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- (d) Suggest two changes Roy needs to make to set-up A if he wants to find out how the number of coils of wire around the iron nail affects the number of steel clips it attracts. [1]

Change 1: _____

Change 2: _____

END OF PAPER

SCORE	
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YEAR : 2022
 LEVEL : PRIMARY 4
 SCHOOL : ANGLO-CHINESE SCHOOL (JUNIOR)
 SUBJECT : SCIENCE
 TERM : SEMESTRAL ASSESSMENT

(BOOKLET A)

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

(BOOKLET B)

Q29	matter	non-matter	
	water air	shadow	
Q30	a)	Y	
	b)	Z	
Q31	a)	*more pins than*	
	b)	magnetic	
Q32	Part X is made of <u>glass</u> because it allows <u>light</u> to pass through so that we can see the photograph. However, part X <u>breaks</u> easily when dropped		
Q33	a)	Animal D has a four-stage life cycle and lays egg on land.	
	b)	A: Frog B: Cockroach	
	c)	C	
	d)	Adult stage it can spread diseases	
Q34	a)	Part A: leaf Function: to trap in light energy and allow for photosynthesis to make food to occur.	
	b)	It contains stored food which is used up by the seedling as it.	
	c)	Adult stage.	
Q35	a)	200cm ³	
	b)	Air can be compressed	
	c)	The coloured water in the basin displaced the air in the air in the cup escaped through the hole as bubbles.	
Q36	a)	Light travels in a straight line.	
	b)	D as it does not allow any light to pass through, making it perfect for his room to be completely dark during daytime.	

Q37	a)	As the distance between the torch and the football decreases, longer the height of the shadow.	
	b)	12cm	
	c)	Move the screen further away from the football.	
	d)	wood	Z
	glass	X	
	tracing paper	Y	
Q38	a)	Water on the metal block causes the temperature of the metal block to decrease faster.	
	b)	Metal block A: 25°C	Metal block B: 25°C
	c)	Type of table	
	d)	Elephants lose heat faster because water gains heat from the elephants bodies.	

Q39	a)	Air in the bottle lost heat to the cold water and contracted.	
	b)	The warm water will cause the plastic bottle and the air inside it to expand, causing it to return to its original state.	
	c)	<p>Temperature of water (°C)</p> <p>80</p> <p>0</p> <p>Time</p> <p>A</p> <p>B</p>	
Q40	a)	Like poles of the magnets X and Y were facing each other.	
	b)	The toy car would move towards point B faster.	
	c)	Aluminium bar cannot attract or repel magnet Y as it is a non-magnetic material.	
Q41	a)	To find out if the size of the nail affects the number of steel clips attracted by the electromagnet.	
	b)	The size of the nail does not affect the strength of the electromagnet.	
	c)	Use batteries with higher voltage	
	d)	Change 1: Make the size of set-up A's nail the same size as Set-up B's nail. Change 2: Add more coils of wire around the iron nail	

2
END