

PSLE SCIENCE

BOOKLET A

SECTION A (28 x 2 marks = 56 MARKS)

For each question, four options are given. One of them is the correct answer. Write your answer (1, 2, 3 or 4) in the brackets provided.

1. Jamie conducted several tests on 4 materials, A, B, C and D. The results of the tests are as shown below.

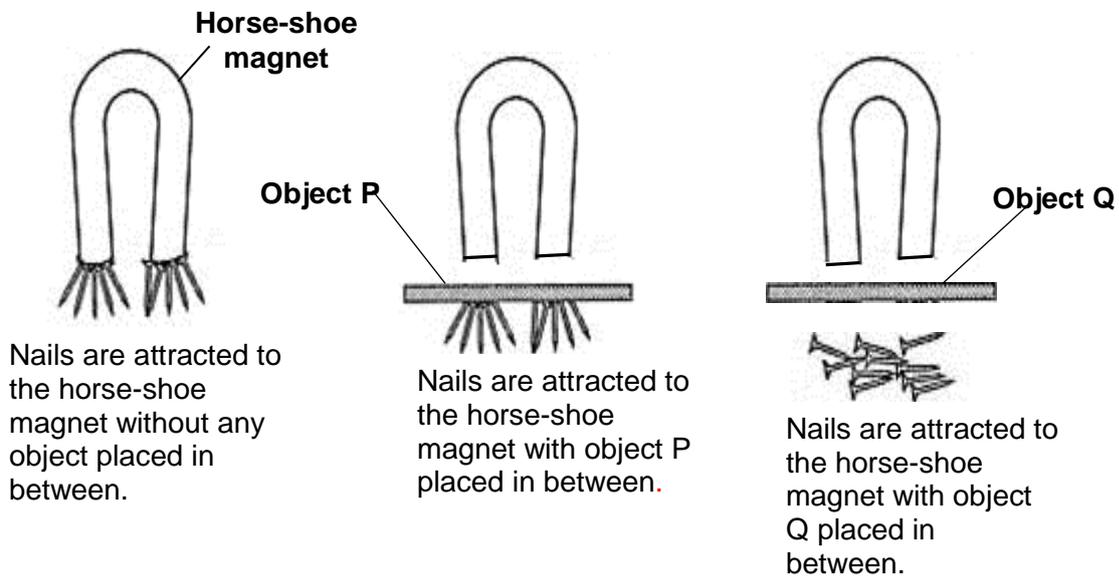
	A	B	C	D
Breaks easily	Yes	No	Yes	No
Allows light to pass through	Yes	No	No	No
Is a good conductor of heat	No	Yes	No	No
Is waterproof	No	Yes	Yes	Yes

Based on her results, which of the above materials is most suitable for making the handle of a frying pan?

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

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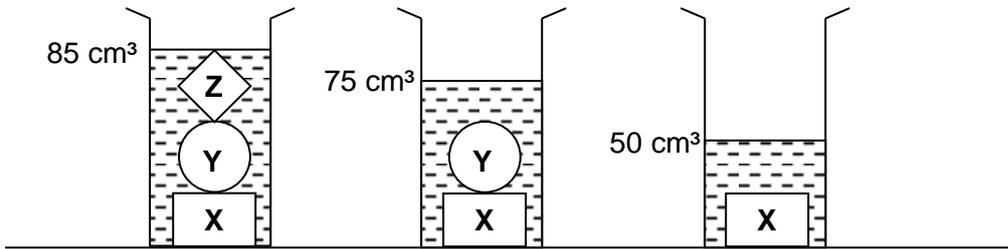
2. The diagrams below show the effect of a horse-shoe magnet on some iron nails. Objects, P and Q, are made of different materials but are of the same thickness.



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

- (1) Object P is made of magnetic material but Object Q is not.
- (2) Magnetism can pass through Object P but not Object Q.
- (3) The magnet loses its magnetism when Object Q is attracted to it.
- (4) The magnet is not strong enough to attract the nails when Object Q is placed between the magnet and the nails.

3. Joan poured an equal amount of water into 3 identical measuring cylinders. Objects, X, Y and Z, were placed in the measuring cylinders as shown in the diagram below.



Based on her experiment, Joan wrote down some statements in her Science journal.

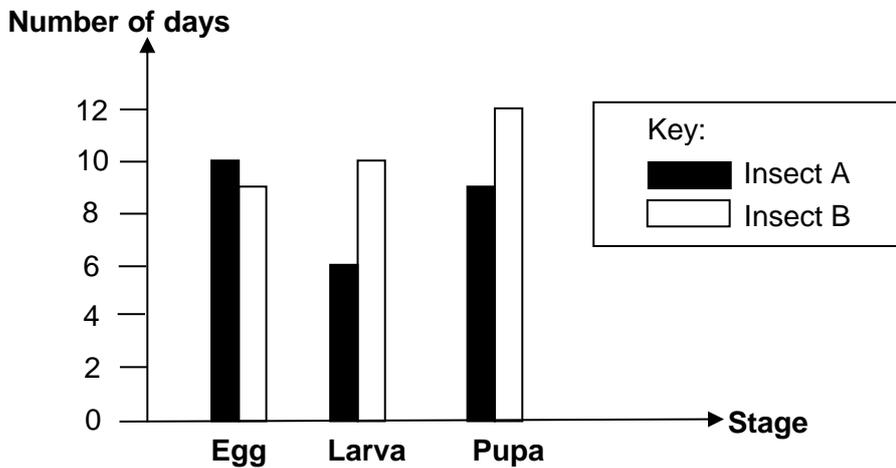
- A: The mass of object Z is 10 g.
- B: The volume of object Y is 25 cm³.
- C: The volume of object Y is greater than the volume of object Z.
- D: The total mass of object X and object Y is greater than the mass of object Z.

Which of the following statements are **correct**?

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

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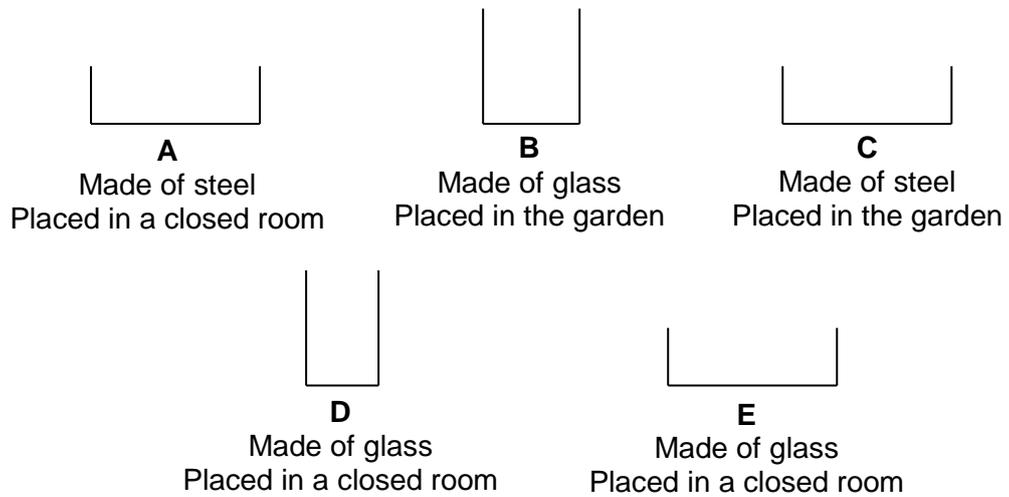
4. The graph below shows the number of days Insects A and B take to develop from the first stage of their life cycle to the third stage of their life cycle.



At which stage would insect A and insect B be on the 20th day after the eggs were laid?

	Insect A	Insect B
(1)	larva	larva
(2)	larva	pupa
(3)	pupa	larva
(4)	pupa	pupa

5. Gladys conducted an experiment to investigate if the presence of wind affects the rate of evaporation of water. She filled 5 containers made of different materials with equal amount of water and placed them in the locations as described in the diagrams below.

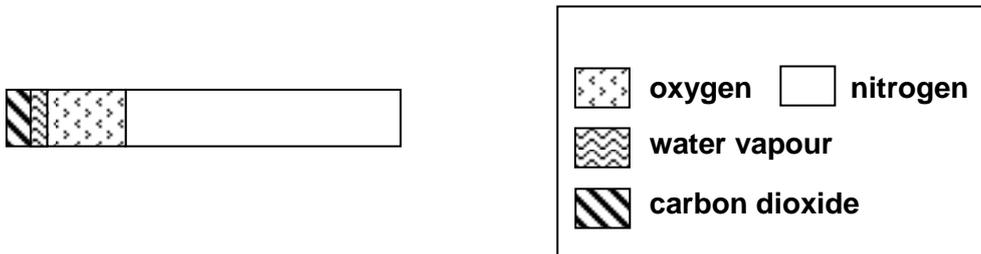


Which 2 containers should she compare in her experiment?

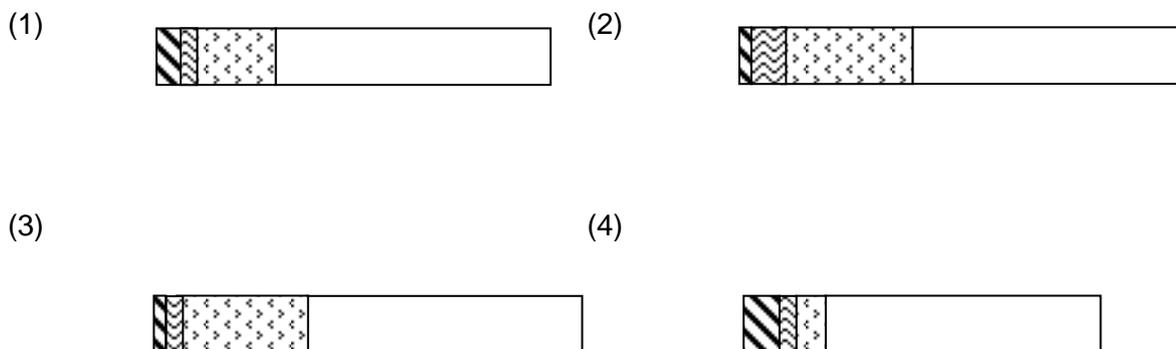
- (1) A and C
- (2) B and D
- (3) C and E
- (4) D and E

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6. Yue Ling applied a layer of oil on both the uppersides and undersides of all the leaves of a well-watered plant. She placed the plant in an airtight glass tank and placed it in a well-lit room. The proportion of different gases present in the glass tank at the beginning of the experiment as shown below.



Which of the following most likely shows the amount of different gases present in the glass tank after 6 hours?



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7. Object N melts at 4°C and boils at 108°C. It is a solid at X°C and a gas at Y°C. Which one of the following reading best represents X and Y?

	X (°C)	Y (°C)
(1)	3	101
(2)	3	114
(3)	4	108
(4)	8	118

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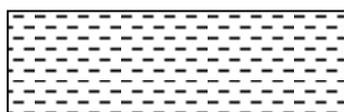
8. Which of the following statements about inhaled and exhaled air are **true**?

	Inhaled Air	Exhaled Air
A:	It contains more oxygen.	It contains less oxygen.
B:	Its temperature is lower.	Its temperature is higher.
C:	It contains less nitrogen.	It contains more nitrogen.
D:	It contains more water vapour.	It contains less water vapour.

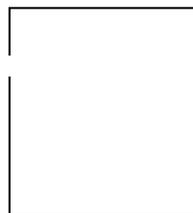
- (1) A and B only
- (2) A and C only
- (3) B and D only
- (4) A, B and D only

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9. Fabio has 2 containers, A and B of the same thickness. He filled container A with 500 ml of water to the brim as shown in the diagram below, Then he poured all the water from container A to container B.



Container A



Container B

Based on his observation, what can he conclude from the experiment?

- A: Water has definite volume.
- B: The water would take the shape of Container B.
- C: The mass of the water in container B would be higher than in container A.
- D: Water has no definite volume and can be compressed.

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

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10. Morgan was involved in activities X, Y and Z at different times of the day. His heartbeats were recorded in the table as shown below.

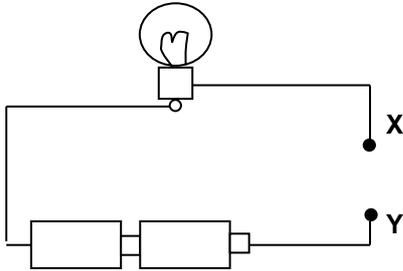
Activity	Pulse (heartbeat per minute)
X	70
Y	115
Z	85

Which of the following best represents activities X, Y and Z?

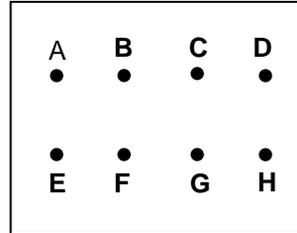
	X	Y	Z
(1)	Running	Sleeping	Walking
(2)	Sleeping	Walking	Running
(3)	Walking	Sleeping	Running
(4)	Sleeping	Running	Walking

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11. The diagrams below show a circuit tester and a circuit board. The two points, X and Y, are placed at different points of the circuit board. The bulb lights up when the circuit is closed.



Circuit Tester



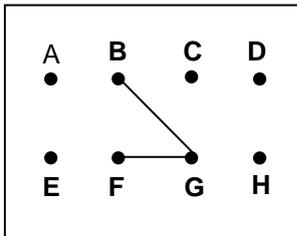
Circuit Board

The table below shows what happens when different points on the circuit board are in contact with the circuit tester.

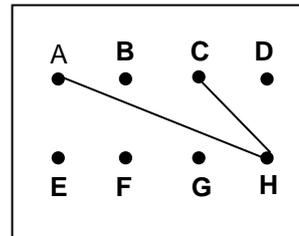
Points	Does the bulb light up?
A and H	No
B and G	Yes
B and F	Yes
D and E	No

Which of the following shows how the wires are connected at the back of the circuit card?

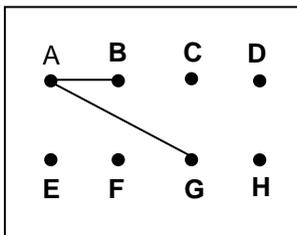
(1)



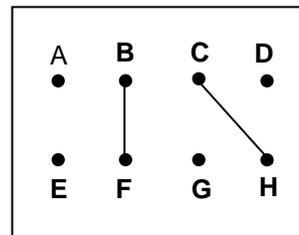
(2)



(3)

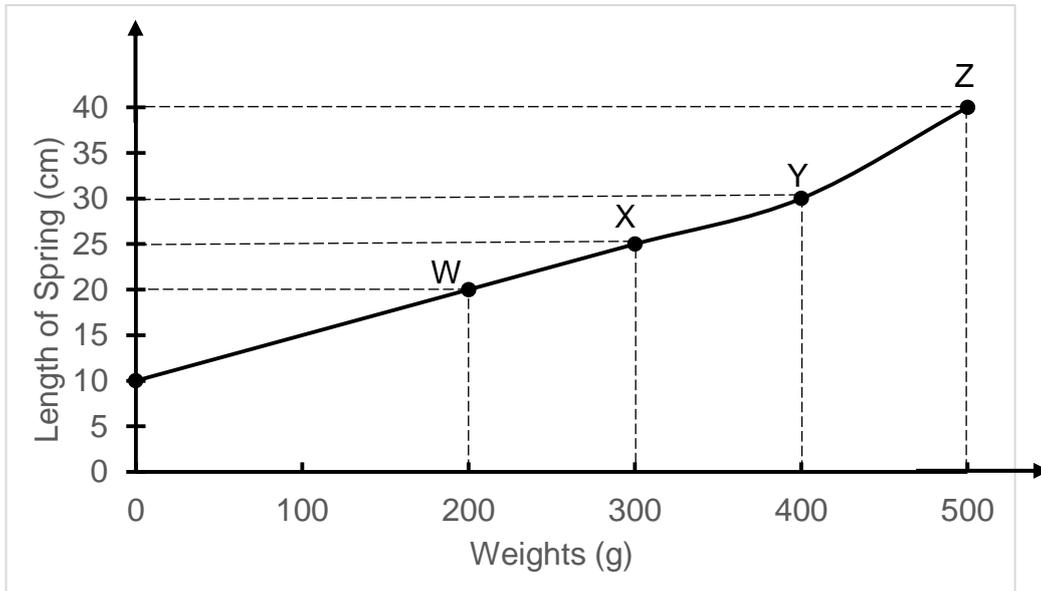


(4)



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12. Alfred carried out an experiment to determine the effects of different weights have on a spring. He then plotted the line graph below.



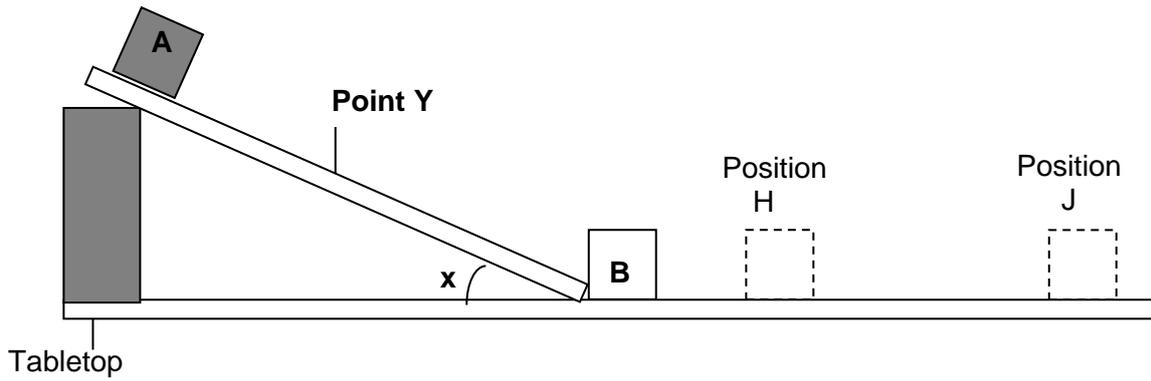
Based on the graph above, what can Alfred conclude about his experiment?

- A: The spring has an initial length of 10 cm.
- B: When 300 g is added to the spring, the extension of the spring is 25 cm.
- C: The length of spring extends by 5 cm for every 100g increase in the weights
- D: As the weights increase, the length of spring increases.

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

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13. Shermaine carried out the following experiment on a tabletop. When she released Box A, Box B moved to position H.

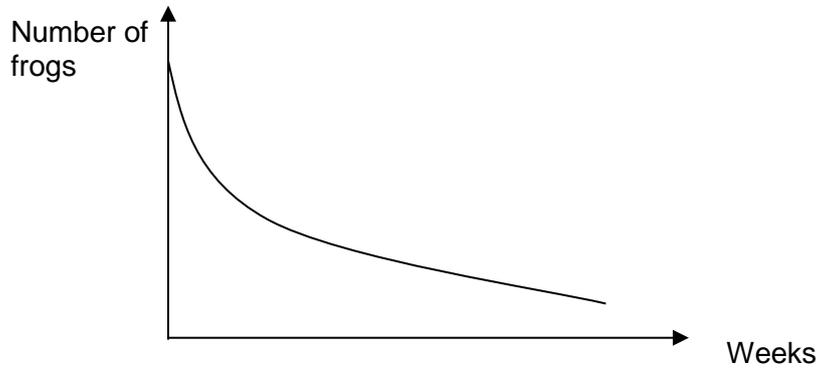


What could she do to the setup to ensure that Box B move to position J?

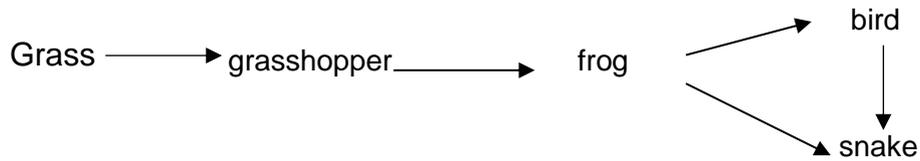
- A: Use a lighter Box A
 - B: Use a heavier Box B
 - C: Increase the angle (x) of the ramp
 - D: Release Box A from Point Y on the ramp
- (1) C only
(2) A and B only
(3) B, C and D only
(4) A, B, C and D

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14. The graph below shows the change in the size of the frog population in a pond over a period of time.



The following food web shows the relationship between frogs and other organisms.



What could be the possible causes for the change in the frog population above?

- A: A significant increase in the water level in the pond.
- B: A significant increase in the grass population.
- C: A significant increase in the snake population.
- D: A significant decrease in the grasshopper population.

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

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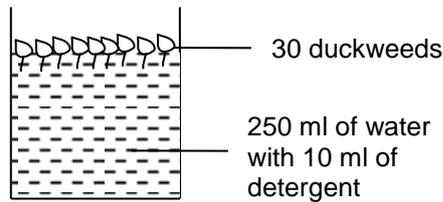
15. Jane tried to remove the screw-on cap of her bottle of mineral water but it was too tight for her. She dipped the cap of the bottle in hot water for a few minutes to open it.

She was able to open the cap because _____.

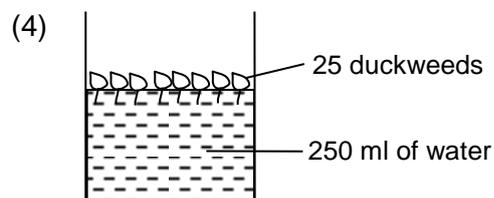
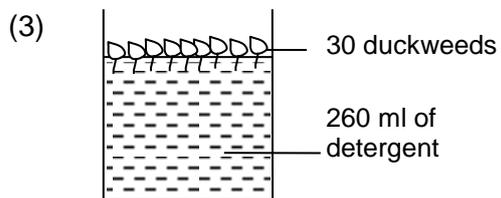
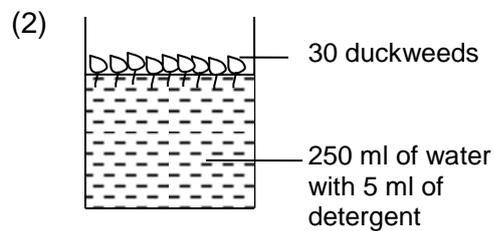
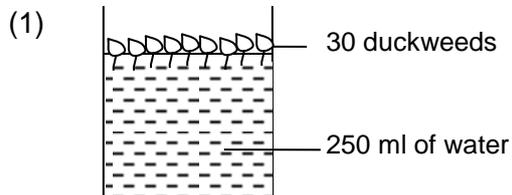
- (1) the cap gained heat and expanded.
- (2) the cap lost heat and expanded.
- (3) the cap lost heat and contracted.
- (4) the cap gained heat and contracted.

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16. Jason wanted to find out whether duckweeds grow well in water containing detergent. The diagram below shows his set-up of the experiment.

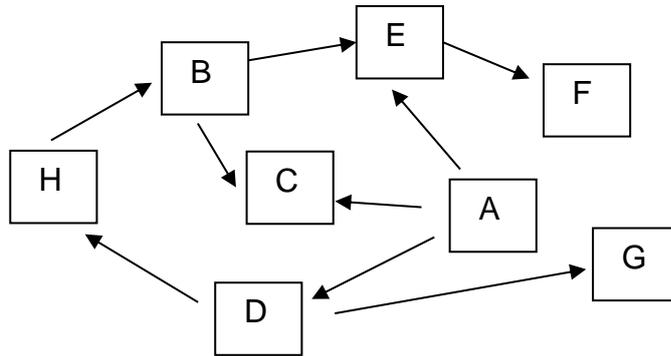


Which of the following setup should Jason use as a control for the experiment?



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17. Study the food web below.



Which of the following are **both plant-and-animal-eaters**?

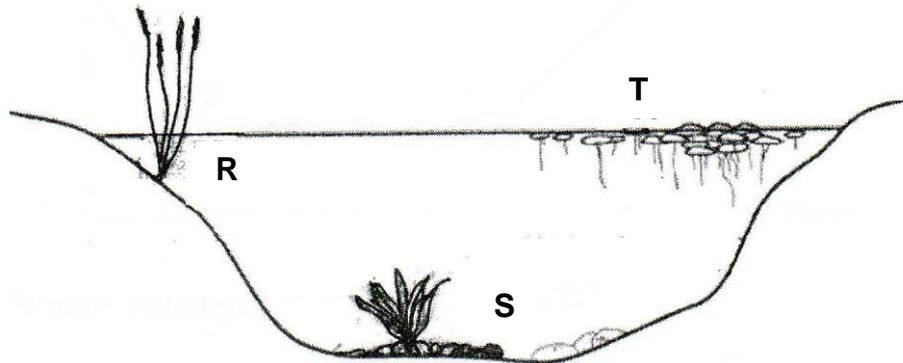
- (1) B and D only
- (2) C and D only
- (3) C and E only
- (4) E and H only

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18. Jenny recorded the temperature and the amount of sunlight present at three different locations, A, B and C, in a pond, in the table below.

Locations	A	B	C
Temperature ($^{\circ}\text{C}$)	30	20	25
Amount of Sunlight (Lux)	10,000	3,000	5,500

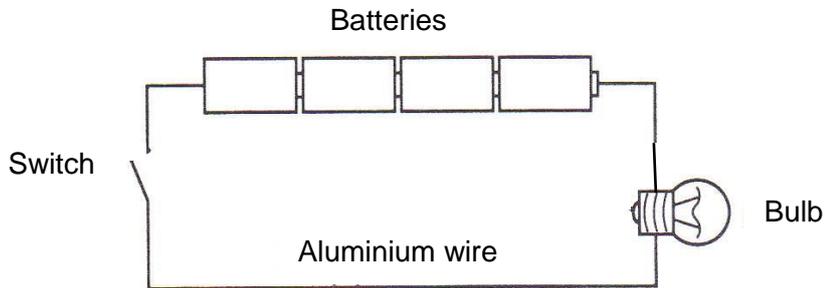
At which parts of the pond are locations, A, B and C, most likely to be?



	A	B	C
(1)	R	S	T
(2)	S	T	R
(3)	T	R	S
(4)	T	S	R

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19. Roy set up an electric circuit using four similar batteries as shown in the diagram below.

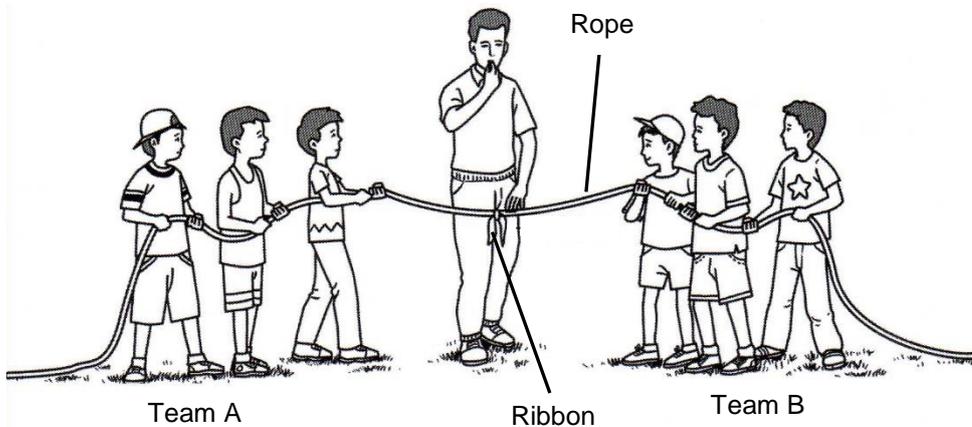


When the switch is closed, the bulb would _____.

- (1) be dim
- (2) not light up
- (3) stay bright for a long time
- (4) light up very brightly and then blow

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20. The diagram below shows two teams in a game of 'tug of war'. When the teacher blew the whistle, the pupils started pulling the rope but the ribbon, which was tied in the centre of the rope, remained in the same position.



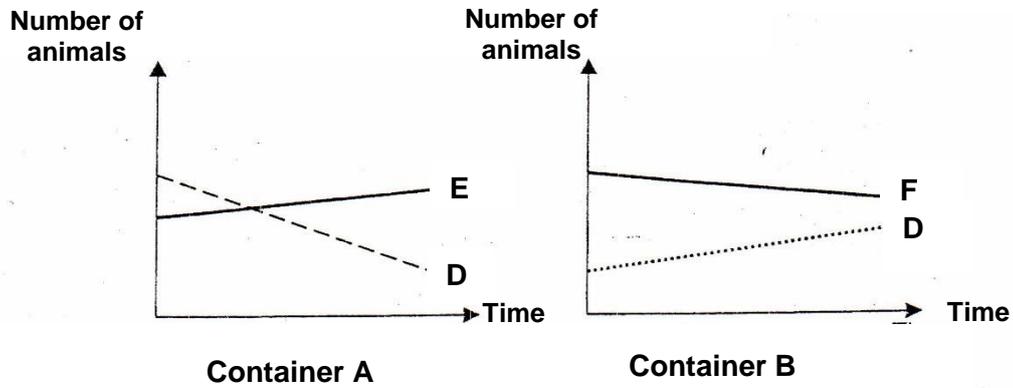
Which of the following statements best describes the situation above?

- (1) The two teams exerted unequal forces on the rope.
- (2) The two teams exerted equal and opposite forces on the rope.
- (3) The two teams exerted equal forces in the same direction on the rope.
- (4) Team A exerted a pulling force while Team B is exerting a pushing force on the rope.

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21. Heath caught three different kinds of animals, D, E and F, from the field. He put animals D and E in Container A and animals D and F in Container B. There were equal number of plants and equal amount of water placed in the 2 containers.

At the end of the month, he counted the number of animals left in the containers. He plotted his results as shown in the graphs below. No dead animals were found in the containers.

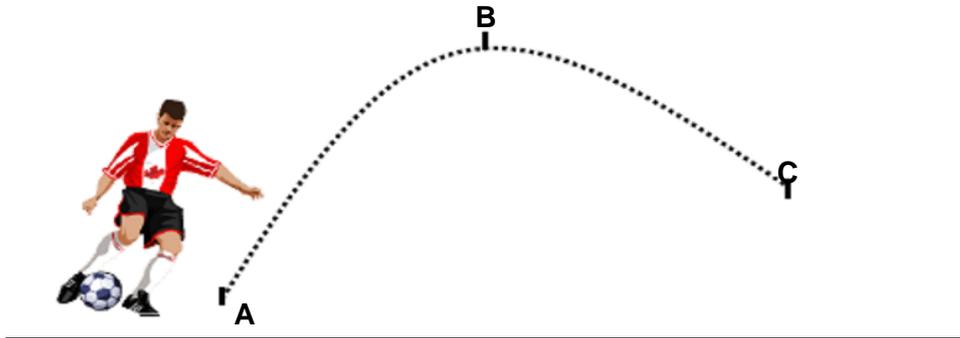


Based on the graphs, which one of the following shows the correct food relationship among the three animals?

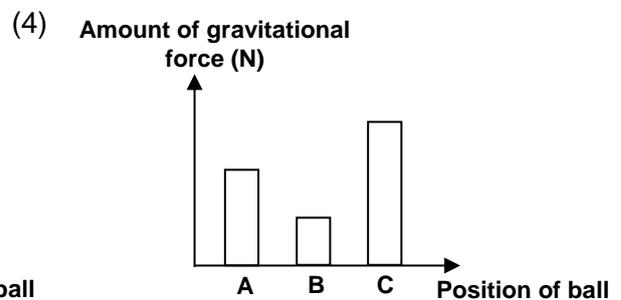
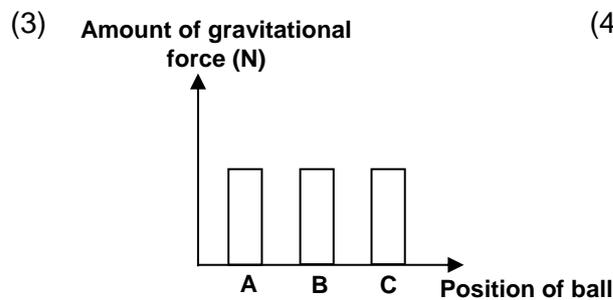
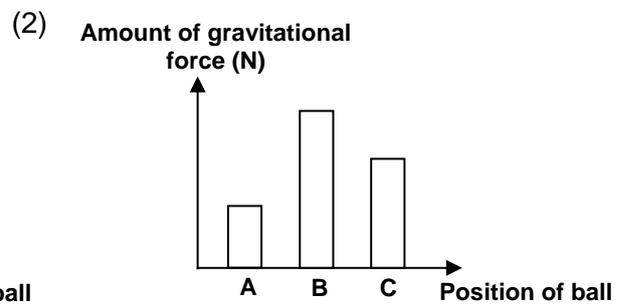
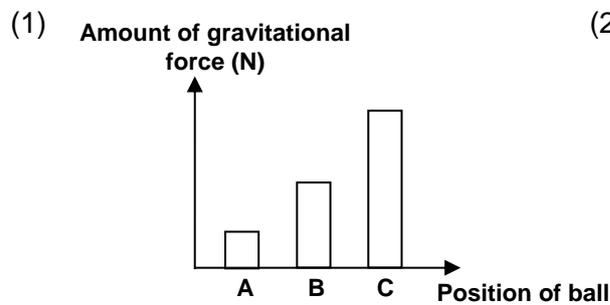
- (1) $D \rightarrow E \rightarrow F$
- (2) $E \rightarrow F \rightarrow D$
- (3) $F \rightarrow D \rightarrow E$
- (4) $F \rightarrow E \rightarrow D$

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22. The diagram below shows the path of the ball when it was kicked during a soccer game. Points, A, B and C, are different positions along the path of the ball.

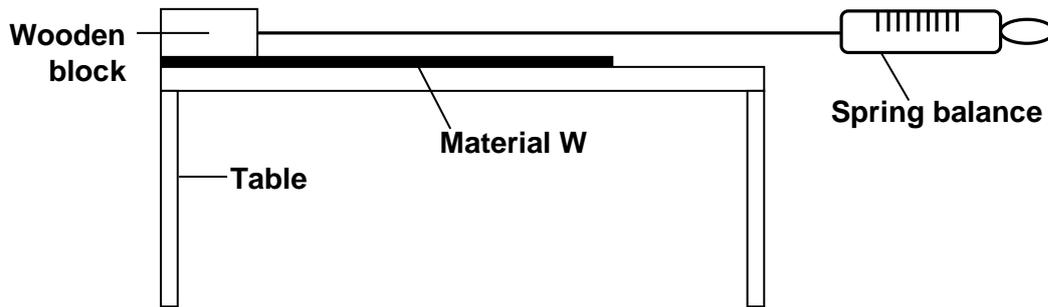


Which one of the following graphs correctly shows the amount of gravitational force acting on the ball at points, A, B and C?



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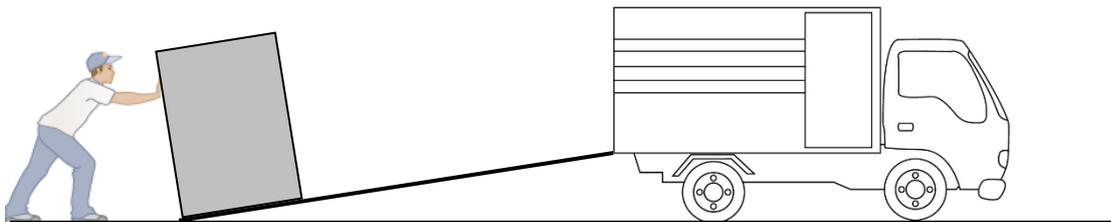
23. Fabian set up an experiment as shown below.



He used a spring balance to find out the force needed to pull a wooden block across 4 different materials, W, X, Y and Z. He started with Material W before replacing it with the remaining 3 materials, X, Y and Z, one at a time. He then recorded the results in the table below.

Material	W	X	Y	Z
Force required (N)	200	197	153	175

Fabian wanted to use a suitable material to make a ramp so that he could load his box onto his vehicle more easily as shown below.



Based on his experiment, which material would Fabian choose to place on the surface of the ramp?

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

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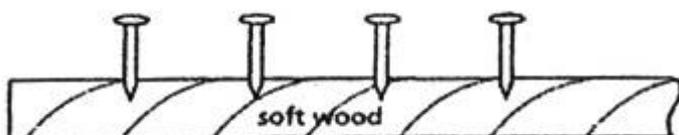
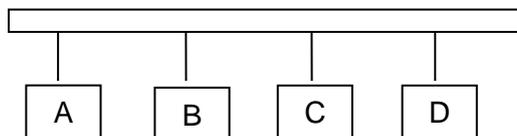
24. Taufiq wants to find out how the mass of a plastic toy affects the time it takes to fall vertically to the ground from a certain height. What are the variables Taufiq had to keep the same to ensure that it is a fair test?

- A: The mass of the toys.
- B: Time taken for the toys to reach the ground.
- C: Material of the toys.
- D: Height from which the toys are released.

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

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25. Mary placed 4 nails of the same length and thickness on a piece of softwood as shown below.



She dropped 4 weights, A, B, C and D, which were hung from the same height onto each of the nails. The weights are of the same size and shape. The lengths of the 4 nails that went into the wood were measured and recorded in the table below.

	A	B	C	D
Length of nail that went into the wood (cm)	1.2	2.5	0.5	1.6

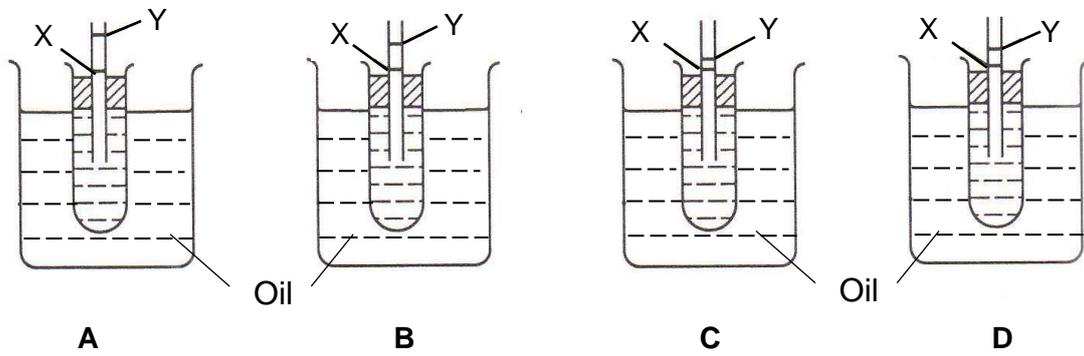
Based on the results, Mary can conclude that _____.

- A: Weight C is the heaviest
- B: Weight D is heavier than Weight A
- C: the weights are made of different materials
- D: Weight B has the greatest gravitational potential energy

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

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26. Jules placed four test tubes containing the same amount of water into four beakers of hot oil which were at different temperatures. The water in each test tube was at room temperature.

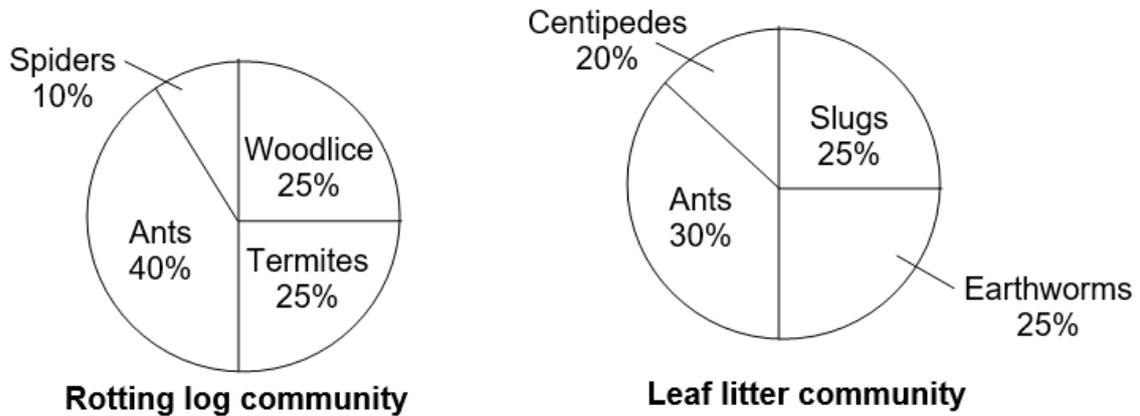


She left the test tubes in the beakers for 5 minutes. X marks the original water level in each test tube and Y is the new water level after 5 minutes. Which beaker contained oil which was lowest in temperature?

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

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27. Halim conducted a study on the type of animals he found in a rotting log community and a leaf litter community. He then constructed two pie charts as shown below.



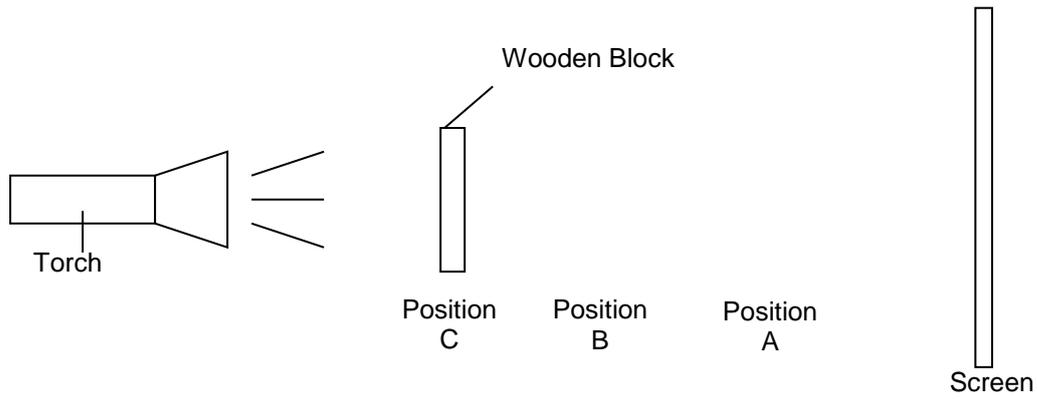
Based on the information above, which of the following statement(s) is/are true?

- A: There are fewer spiders than termites in the rotting log community.
- B: The centipedes in the leaf litter community prey on earthworms only.
- C: The organisms in each of the communities can form a single food chain.
- D: There are more ants in the rotting log community than in the leaf litter community.

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

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28. Study the setup below.



Gary placed the wooden block at position A and measured the height of the shadow cast on the screen. He repeated the steps for position B and then position C.

Which of the following would most probably be his measurement of the shadow at the various positions?

	Height (cm) of shadow when wooden block is at Position _____		
	A	B	C
(1)	8	16	24
(2)	24	16	8
(3)	8	24	16
(4)	16	24	8

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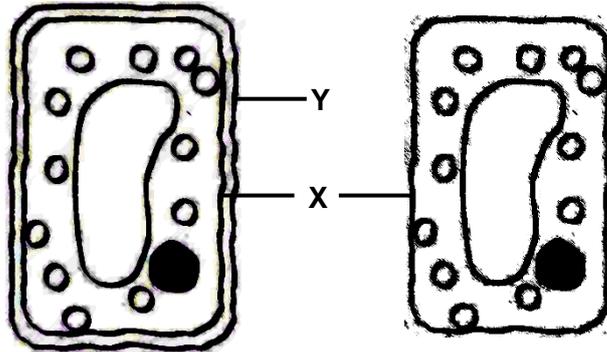
PSLE SCIENCE

BOOKLET B

Section B (44 marks)

Read the following questions carefully. Write your answers in the space provided

29. Sofie took a plant cell A and placed the cell in a beaker containing iodine. After an hour, she found no traces of iodine inside the plant cell. Sofie then took another plant cell B from the same plant, this time removing Part Y and repeated her experiment.



- (a) Would iodine be found in the cell after Part Y was removed? Give a reason for your answer.

(1m)

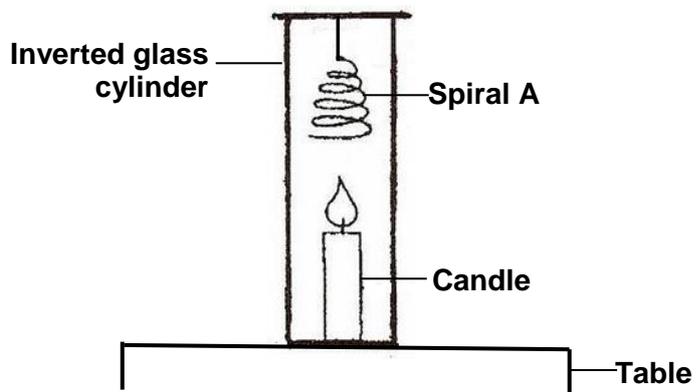
- (b) Name Parts X and Y of the plant cell.

Part X: _____

Part Y: _____

(1m)

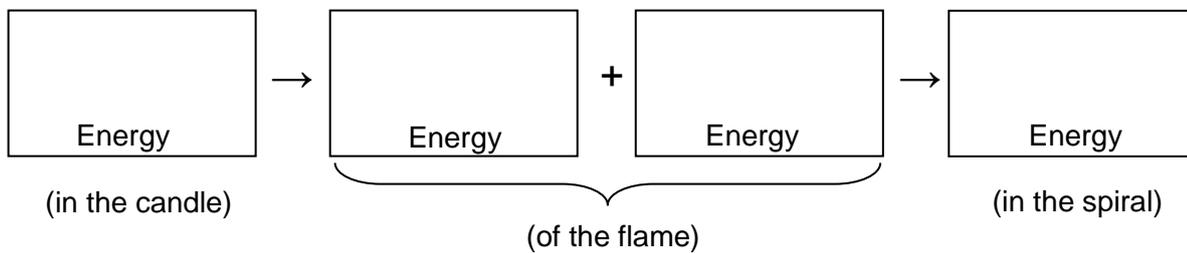
30. Luke set up the experiment as shown below. Using identical glass cylinders, candles and spirals, he observed that the spiral started to spin after the candle was lit.



- (a) Explain how the spiral started to spin when the candle was lit.

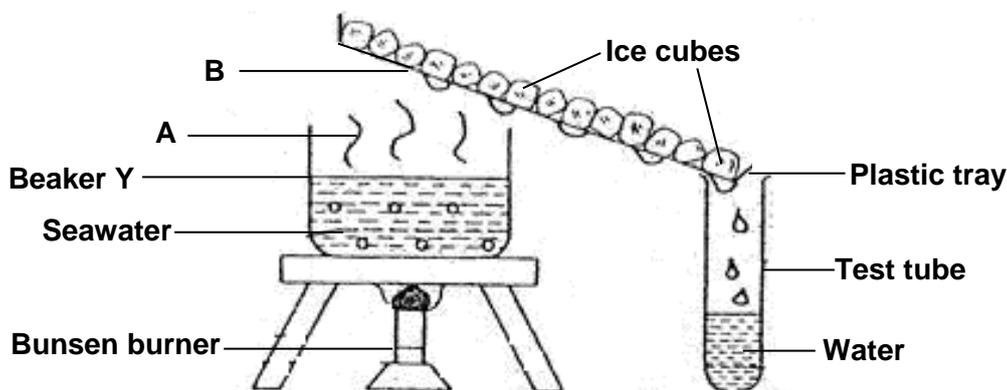
(1m)

- (b) Complete the boxes below to show the energy changes in the diagram above.



(1m)

31. Joanne conducted an experiment as shown below. She filled Beaker Y with some seawater. She also placed ice cubes on the plastic tray. Joanne noticed that water was collected in the test tube.



- (a) In the table below, write down the process that took place at A and B.

	Process
A	
B	

(1m)

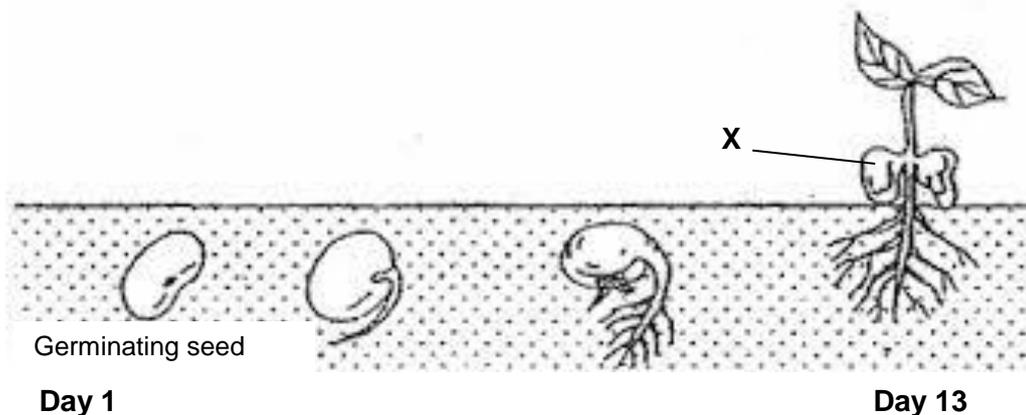
- (b) Describe how the water was collected in the test tube.

(1m)

- (c) Using the same setup as shown above, Joanne conducted another experiment. However, she did not place any ice cubes on the plastic tray. State whether the volume of water collected in the test tube would be **greater**, **lesser** or **the same** as the first experiment if she conducted the experiment for the same period of time. Explain your answer.

(1m)

32. The diagram below shows the germination of a seed and its growth into a seedling from Day 1 to 13.



- (a) The root appears first during germination to absorb water so that the germinating seed can grow. Give another reason why the root appears first.

(1m)

- (b) In the space provided below, draw a line graph, to show the changes in the mass of Part X during the germinating process.

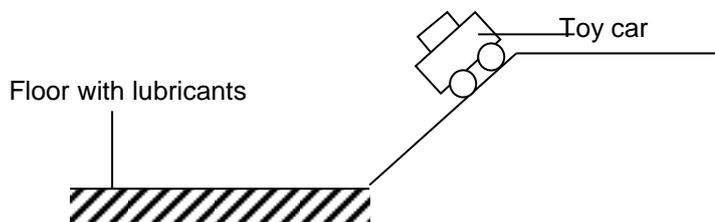


(1m)

- (c) Identify Part X and explain your graph in (b).

(1m)

33. Study the setup below. Dan conducted an experiment to find out which is the best lubricant. He applied Lubricant W on the floor and released a toy car down the ramp. He repeated the process with lubricants, X, Y and Z.



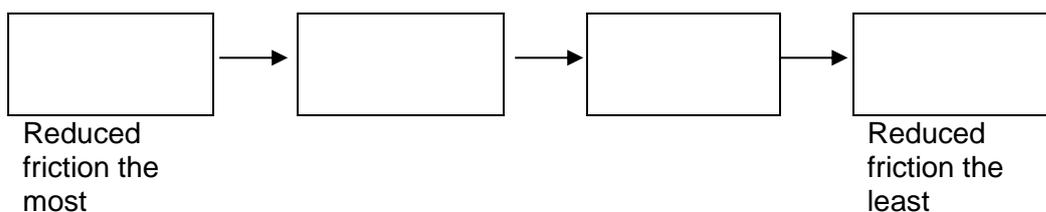
The distance the toy car travelled along the floor when different lubricants were applied was measured and recorded in the table below.

Lubricant	Distance travelled by the toy car (cm)
W	100
X	90
Y	200
Z	150

- (a) What could Dan have done to ensure that the results are consistent and reliable?

(1m)

- (b) Arrange lubricants, W, X, Y and Z, according to their ability to reduce friction.



(1m)

- (c) State two variables that should remain the same for the experiment to be fair.

(i) _____

(ii) _____

(1m)

34. A flowering tree P is seen to have thorns all around its trunk as shown below.



(a) Explain why there are thorns growing on the trunk of Tree P.

(1m)

(b) It was also noticed that the flowers of Tree P give off a nice scent when they are in full bloom. Explain why the flowers give off a nice scent when they are in full bloom.

(1m)

(c) Animal F, an insect-eater, as shown below is often seen resting on the trunk of Tree P.

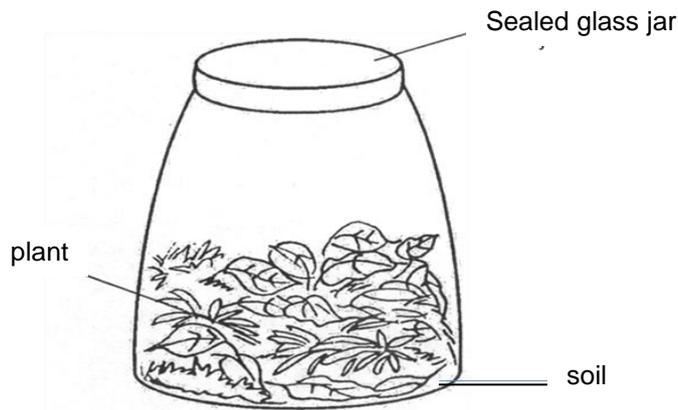


Animal F

State **one** benefit how Animal F and Tree P help each other in order to survive in the habitat.

(1m)

35. Joseph wanted to build a terrarium consisting of small plants.



(a) After putting the layer of soil and adding in the plants, what must Joseph do before sealing the glass jar?

(1m)

(b) Where should he place the terrarium to ensure healthy plant growth?

(1m)

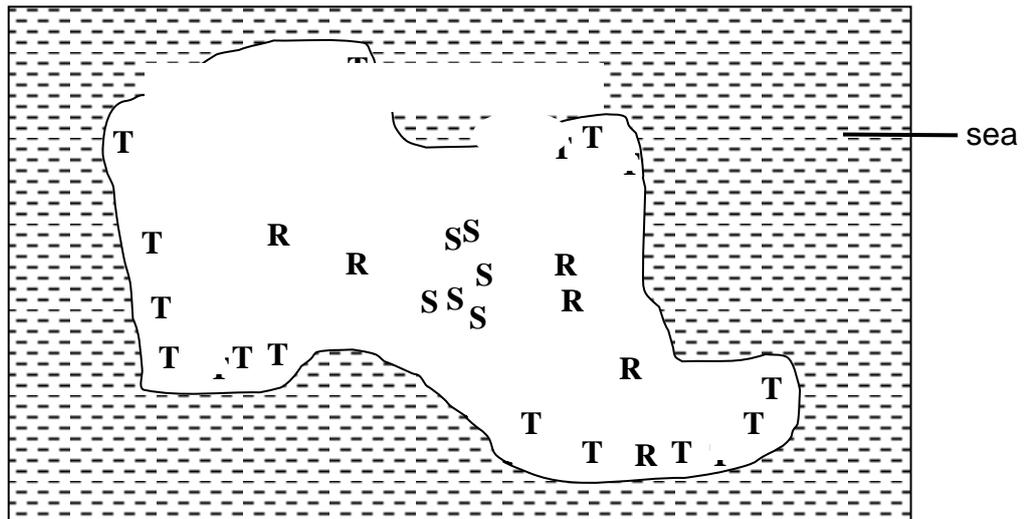
(c) Explain how the plants in the terrarium are able to obtain a continuous supply of carbon dioxide and oxygen to survive.

Carbon dioxide:

Oxygen:

(2m)

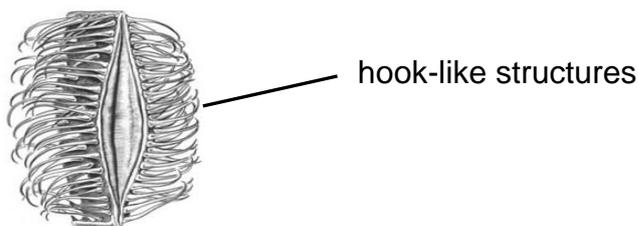
36. The diagram below shows the map of an island with different plants, R, S and T. Some animals also live on the island.



(a) Based on the diagram above, which plant, R, S or T, is most likely to be dispersed by splitting action? Give a reason for your answer.

(2m)

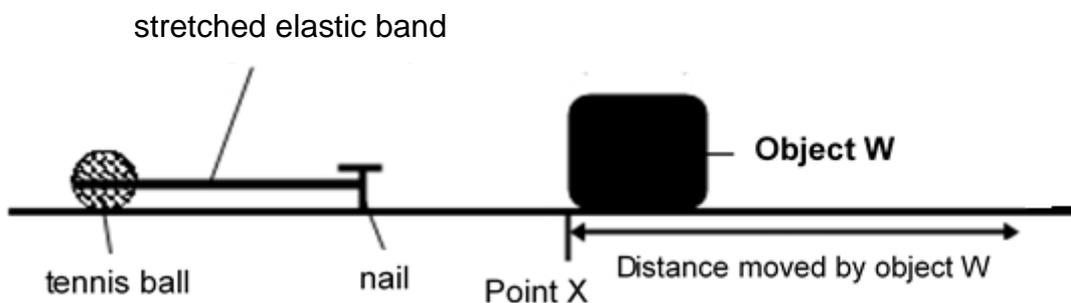
(b) The picture below shows a magnified view of an inedible fruit.



Which plant, R, S or T do you think this fruit most likely come from? Explain how it is dispersed on the island.

(2m)

37. A group of students wanted to find out the effect of a stretched elastic band on the distance travelled by Object W. The set-up was prepared as shown below. They measured the distance Object W moved from Point X after being hit by the tennis ball.



The results were recorded in the table below.

Length of stretched elastic band (cm)	Distance moved by object W (cm)		
	1 st reading	2 nd reading	Average
12	6.7	7.1	6.9
16	8.0	8.2	8.1
20	10.7	10.5	10.6

- (a) What is the reason for performing two tries before calculating the average distance?

(1m)

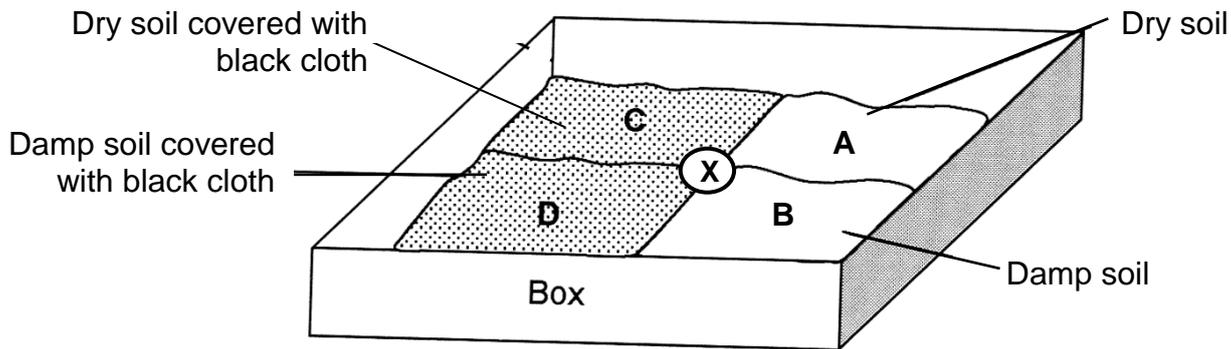
- (b) What is the relationship between the length of the stretched elastic band and the distance moved by Object W?

(1m)

- (c) When the length of the stretched elastic band was 20cm, predict the distance moved by Object W if it was fitted with 4 wheels at the base.

(1m)

38. Annie prepared the setup below to find out the conditions preferred by woodlice as shown in the diagram below.



Annie released 20 woodlice and placed them at Centre X of the box. She waited for an hour before she counted the number of woodlice in the different sections. She then recorded her findings in the table below.

Section	Number of Woodlice
A	1
B	5
C	4
D	10

(a) Why did Annie put the woodlice at Centre X at the start of the experiment?

(1m)

(b) Based on her results, which environment did the woodlice prefer the most? Give a reason for your answer.

(2m)

(c) **Based on the experiment above**, state **2 characteristics** of living things as shown in the experiment.

(i) _____

(ii) _____

(1m)

39. Sammy set up an aquarium as shown below.



The aquarium was sealed and left untouched in a brightly-lit corner. After 2 weeks, both the populations of the water plant and water snail increased.

(a) Besides depending on each other for oxygen and carbon dioxide, state another way in which the water snail and water plant are interdependent on each other for their survival.

(1m)

As the weeks passed, Sammy noticed some algae growing on the inner wall of the aquarium. The algae population was growing more quickly than they could be eaten by the water snail. A month later, Sammy noticed that only the population of the water snail had increased but not the water plant.

(b) Draw a food web to show the food relationship between the water plant, water snail and the algae in the space provided below.

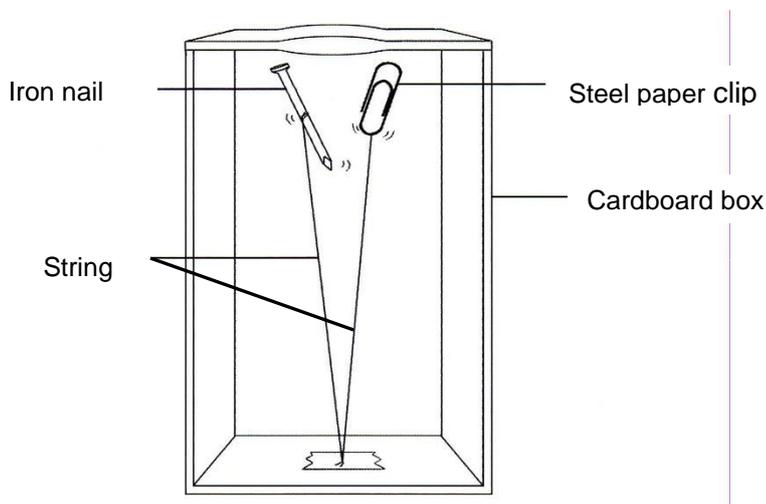
(1m)

A large empty rectangular box with a black border, intended for drawing a food web.

- (c) Explain why the population of the water snail continued to increase as the weeks passed but not the water plant.

(1m)

40. Mary decided to perform a magic trick for her classmates. She prepared the set up below. Without touching the steel paper clip and the iron nail, Mary was able to make the objects in the box “float”.



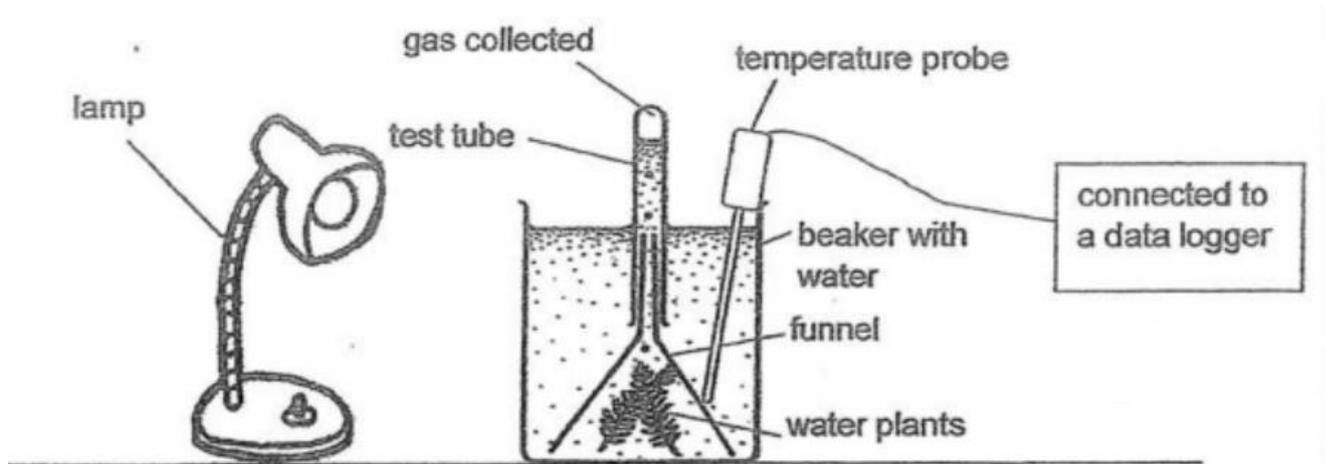
- (a) Explain how Mary was able to make the objects in the box ‘float’.

(2m)

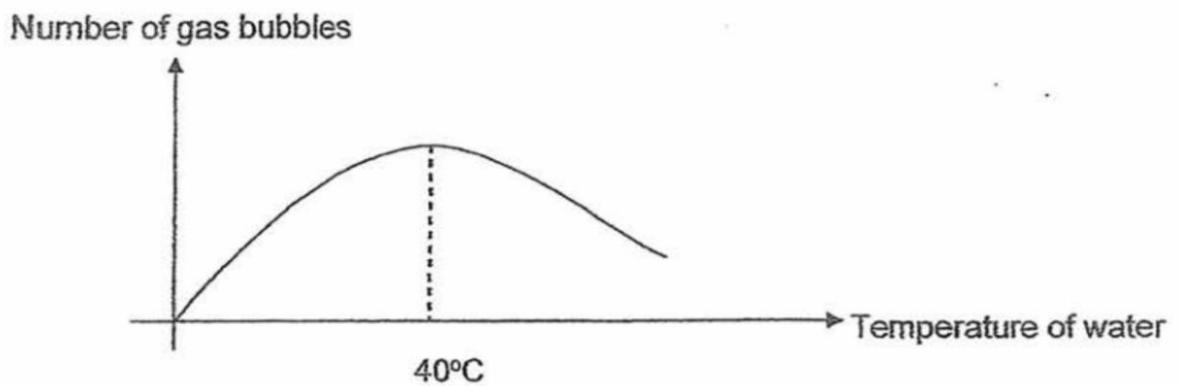
- (b) Mary replaced the iron nail and steel paper clip with a piece of aluminium foil and a plastic straw. Would she be able to make the objects ‘float’? Explain your answer.

(2m)

41. Liping conducted an experiment using the set-up below.



The temperature probe recorded the temperature of the water in the beaker over a period of time. Liping counted the number of gas bubbles given out by the water plants at the same time. The graph below shows the results of her experiment



(a) Based on Liping's results, what was the relationship between the temperature of water and the amount of gas collected?

(1m)

(b) Give a reason why the temperature of water rises as the time passes.

(1m)

(c) Identify the gas that is collected in the test tube.

(1m)

(d) It was reported that close to a thousand fish at Bishan - Ang Mo Kio Park died during the hotter months of the year. Based on the experiment above, give a reason why the fish in the park died.

(2m)