PEI CHUN PUBLIC SCHOOL

PRIMARY 5

END-OF-YEAR EXAMINATION 2024

SCIENCE

(BOOKLET A)

Additional Materials: Optical Answer Sheet (OAS)

Total Time for Booklets A and B: 1 h 45 min

Name: _____ ( )

Class: Primary 5 /( ) _____

Date: 24 October 2024

Science Teacher: _____

INSTRUCTIONS TO CANDIDATES

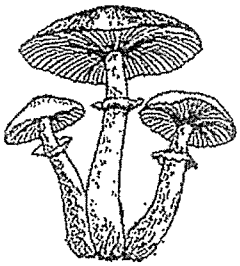
1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Shade your answers on the Optical Answer Sheet (OAS) provided.

Section A (28 × 2 marks)

For questions 1 to 28, choose the most suitable answer and shade its number (1, 2, 3 or 4) on the Optical Answer Sheet (OAS) provided.

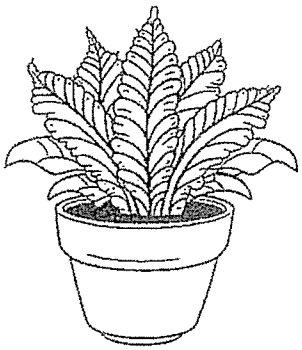
1 Which of the following does **not** reproduce by spores?

(1)



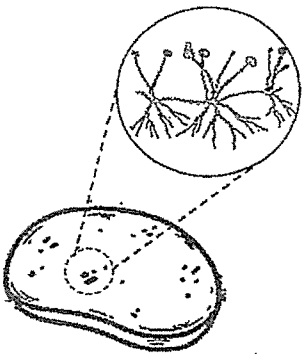
mushroom

(2)



fern

(3)

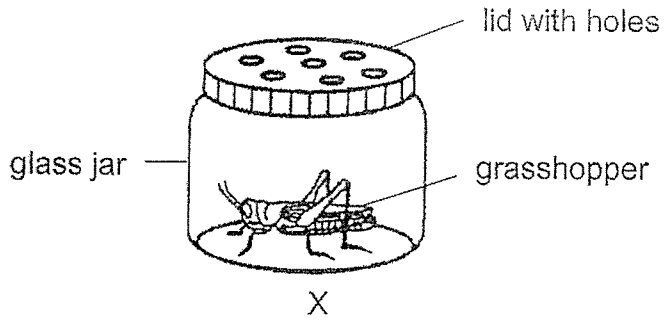


bread mould

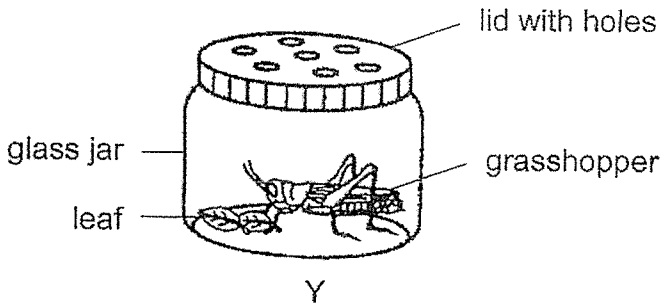
(4)

dandelion

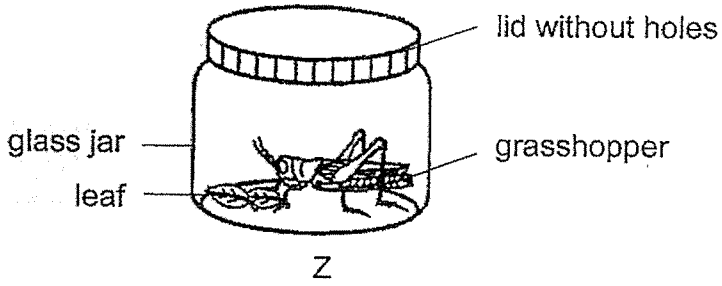
2 Siti wanted to keep a grasshopper as a pet. She thought of three possible ways, X, Y and Z to keep her grasshopper.



X



Y

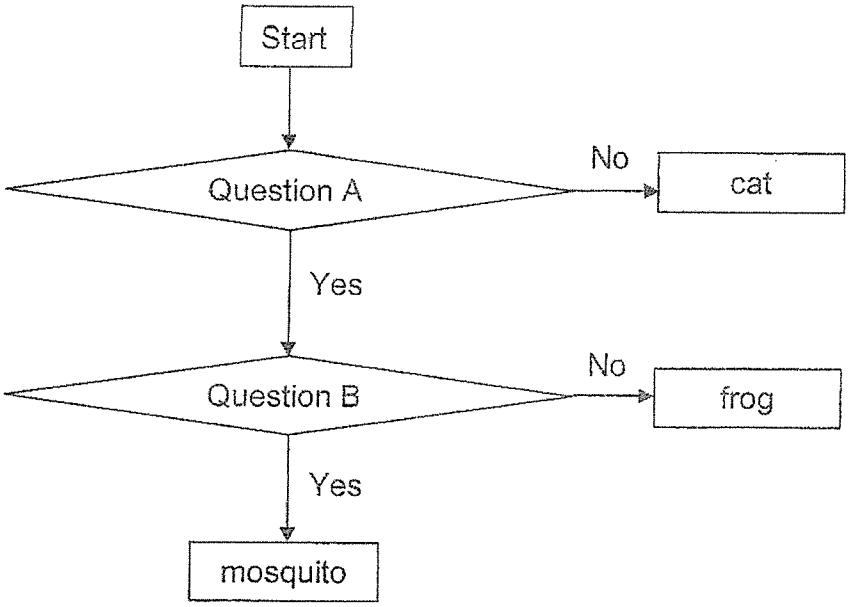


Z

Which of the following is correct?

	Most suitable way to keep the grasshopper	Least suitable way to keep the grasshopper
(1)	X	Z
(2)	Y	X
(3)	Y	Z
(4)	Z	Y

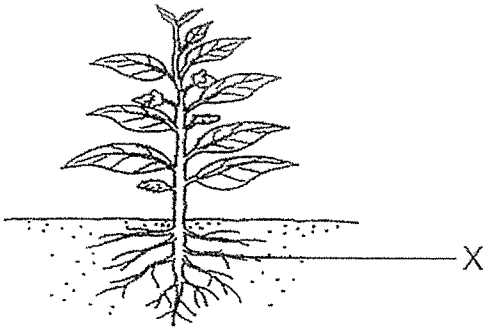
3 Mei Ling classified three animals as shown below.



What are questions A and B?

	Question A	Question B
(1)	Does it have wings?	Does it have three body parts?
(2)	Does it lay eggs?	Does it have wings?
(3)	Does it have wings?	Does the young of the animal look like its adult?
(4)	Does it lay eggs?	Does the young of the animal look like its adult?

4 The diagram below shows a plant with a part marked X.

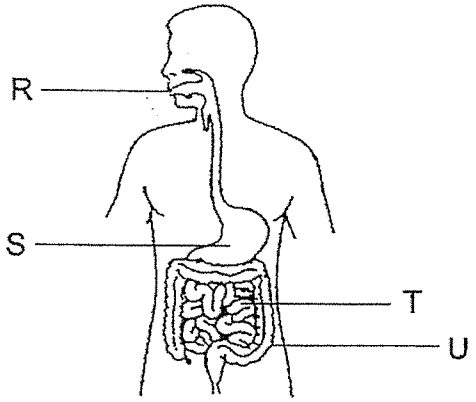


Which of the following describe the functions of part X?

A It holds the plant upright.
B It makes food for the plant.
C It absorbs water for the plant.
D It holds the plant firmly to the ground.

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

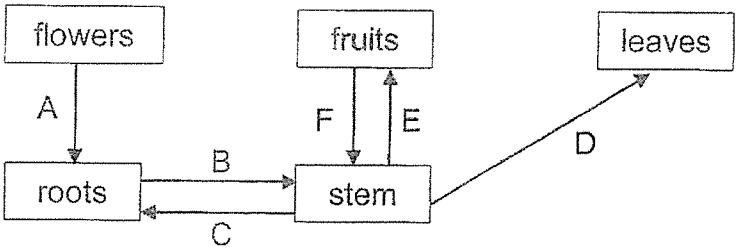
5 The diagram shows the human digestive system.



Which of the following is correct?

	Digestion takes place	Water is absorbed from undigested food
(1)	R, S and T	T
(2)	R, S and T	U
(3)	S, T and U	T
(4)	S and T	U

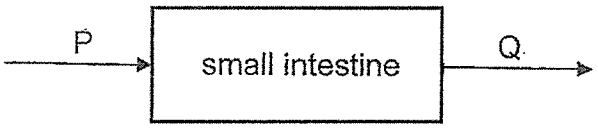
6 Study the diagram below.



Which arrows shows the correct direction in which water moves in a plant?

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

7 The diagram below shows the flow of blood towards and away from the small intestine a few hours after a meal.



Which of the following correctly compares the amount of carbon dioxide and digested food found in the blood at P to that at Q?

	carbon dioxide	digested food
(1)	more	less
(2)	less	less
(3)	more	more
(4)	less	more

8 The table shows the breathing rates of Ann and Belle during an exercise.

Time (min)	Breathing rate (breaths per min)	
	Ann	Belle
0	16	13
2	19	15
4	23	18
6	28	22
8	34	27

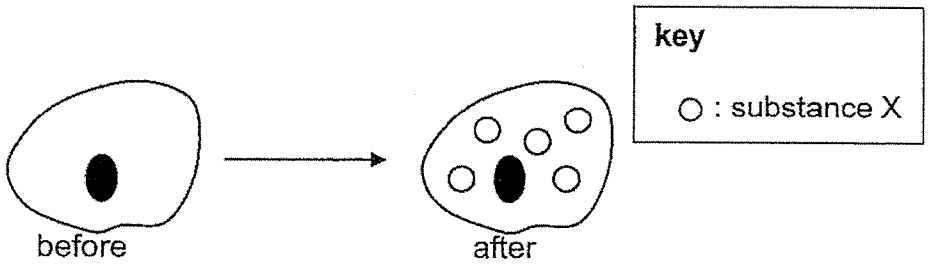
Which statement is correct?

(1) Ann's breathing rate was slower than Belle's breathing rate.
(2) Ann breathed in more oxygen per breath as compared to Belle.
(3) Ann breathed out more carbon dioxide per breath as compared to Belle.
(4) Ann's breathing rate increased more than Belle's breathing rate during the exercise.

9 Which of the following about the lungs and gills is correct?

(1) Both transport oxygen to different parts of the body.
(2) Exchange of gases takes place in the lungs and gills.
(3) Oxygen is removed from the body by the lungs and gills.
(4) Carbon dioxide is taken into the blood in the lungs and gills.

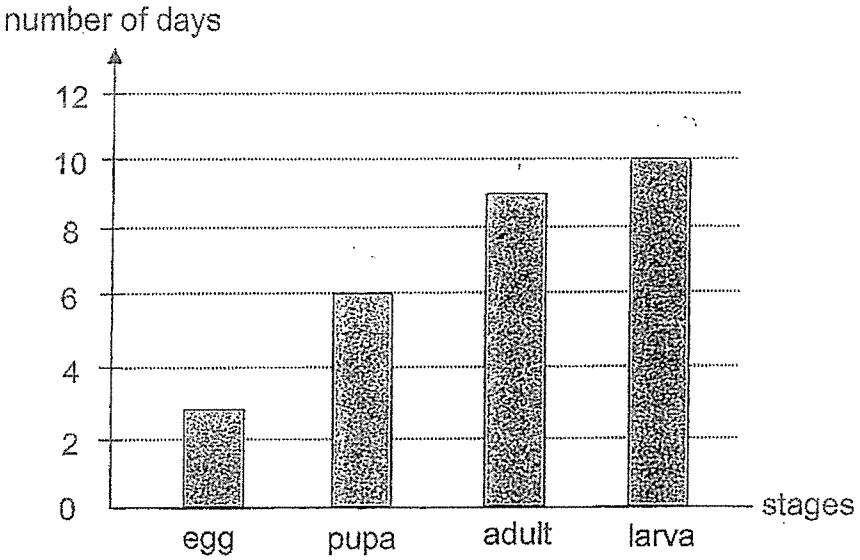
10 Amelia observed an animal cell under a microscope before and after placing it into a liquid containing substance X. The observation of the cell is shown below.



Which cell part allowed for the movement of substance X into the cell?

(1) nucleus
(2) cell wall
(3) cytoplasm
(4) cell membrane

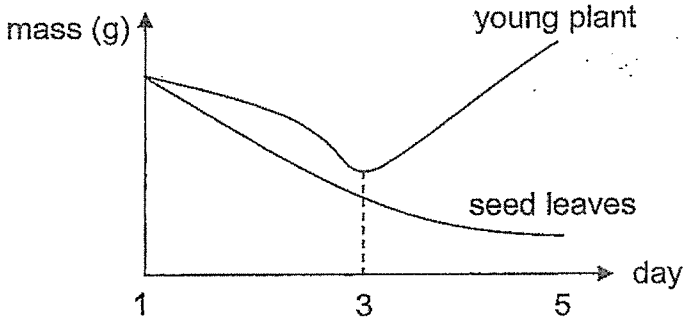
11 The graph shows the length of time for each stage in the life cycle of insect T



How many days does it take for insect T to reach the adult stage **after** the egg has hatched?

(1) 13
(2) 16
(3) 19
(4) 28

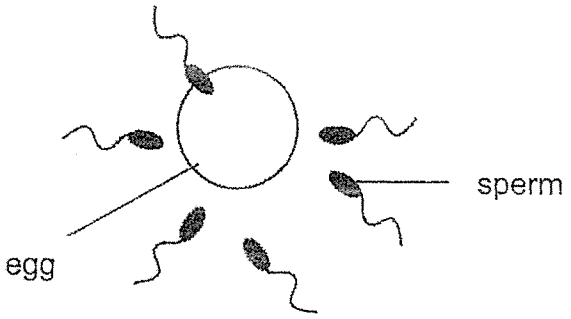
12 The graph below shows the changes in the mass of a young plant and its seed leaves during germination.



Which of the following best explains the changes in the graph?

(1) The leaves first appear around day 3.
(2) The roots grow out first followed by the shoot.
(3) The young plant only starts to grow after day 3.
(4) The seed leaves provide food for the young plant until day 3.

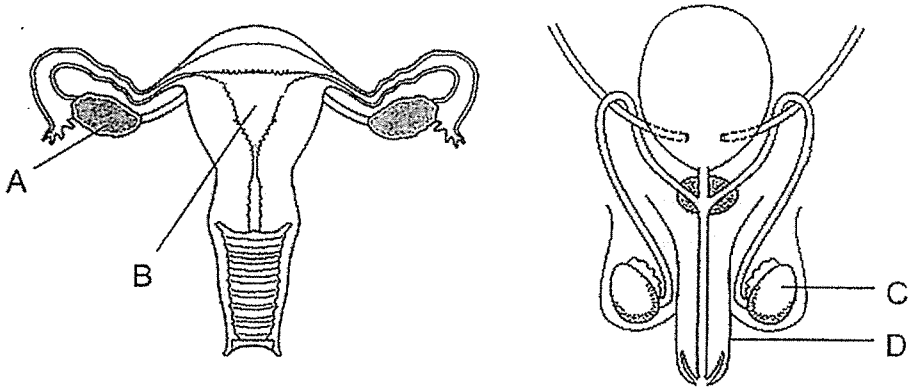
13 The diagram shows the fertilisation process in human reproduction.



Which statement about fertilisation is correct?

(1) Many sperms can fuse with the egg.
(2) The fertilised egg develops in the ovary.
(3) Fertilisation takes place in the male body.
(4) Only one sperm is needed for fertilisation.

14 The diagrams below show the male and female human reproductive systems.



Which parts of these systems produce reproductive cells?

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

15 Tom conducted an experiment using some similar seedlings over a period of two weeks. The table below shows the variables and results.

Pot	Type of soil used	Amount of water used daily (cm^3)	Number of seedlings planted	Average height of seedlings after 2 weeks (cm)
P	sandy soil	150	10	4.5
Q	garden soil	300	20	7.5
R	garden soil	150	20	4.5
S	garden soil	300	10	5.5

Based on Tom's experiment, what is/are the possible aim(s) of his experiment?

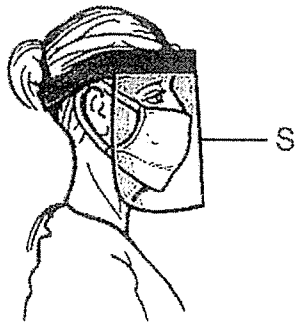
A To find out if overcrowding affects the average height of seedlings.

B To find out if the type of soil affects the average height of seedlings.

C To find out if amount of water added affects the average height of the seedlings.

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

16 Maria designed a reusable face shield as shown in the picture below.

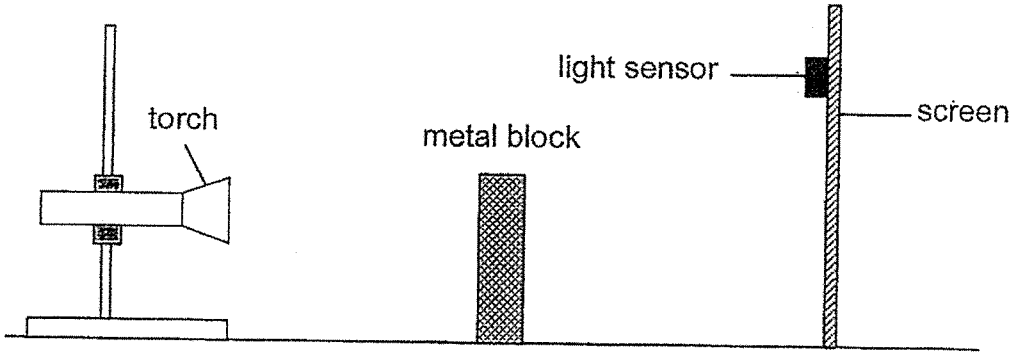


Which material is most suitable for making part S of the face shield?

	Material	Property		
		strong	waterproof	allows light to pass through
(1)	A	×	×	✓
(2)	B	✓	×	✓
(3)	C	✓	✓	×
(4)	D	✓	✓	✓

Key
✓ : yes
× : no

17 Atiqah set up the following experiment in a dark room. The light sensor on the screen gave a reading of 50 units.

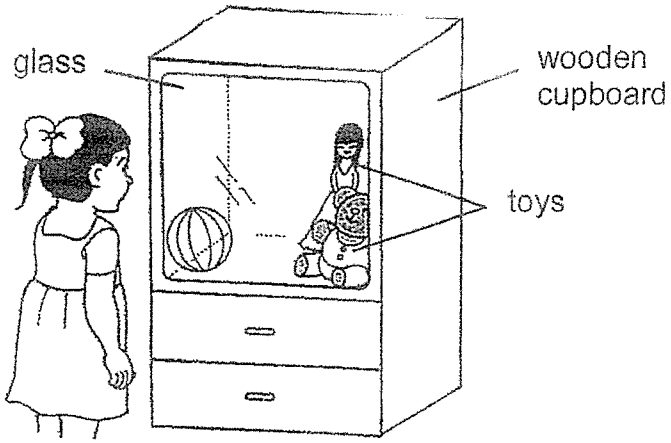


As Atiqah moved one object in the set-up, the length of the shadow increased and the reading on the light sensor increased slowly to 120 units and then dropped to 0 units suddenly.

Which object did Atiqah move and in which direction?

(1) screen towards metal block
(2) torch towards the metal block
(3) screen away from metal block
(4) metal block away from the screen

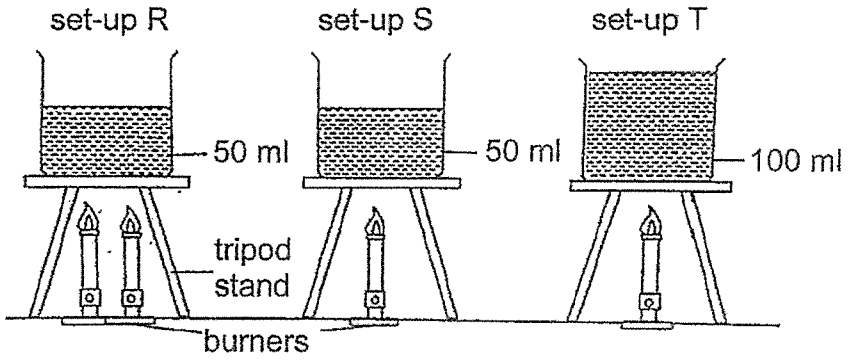
18 Sue looked into a wooden cupboard as shown.



Which statement explains why she can see the glass?

(1) Light is blocked by wood.
(2) Light is reflected from the toys.
(3) Light passes through the glass easily.
(4) Some light is reflected from the glass.

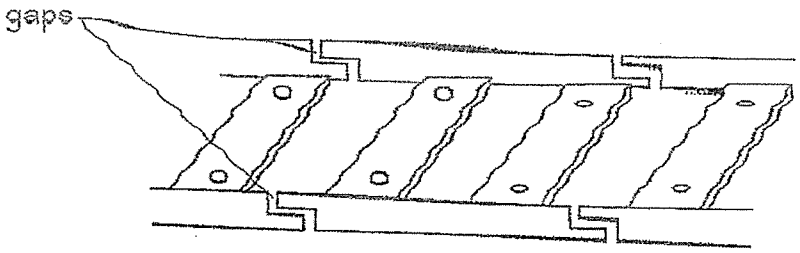
19 Rosie heated three beakers of water in the room as shown below. The water in each beaker was heated until it was boiling.



Which of the following statements is true about the water in the set-ups at the end of the experiment?

(1) The water in set-up R had the most heat.
(2) The water in set-up T had the most heat.
(3) The water all three set-ups had the same amount of heat.
(4) The water in set-up R had more heat than the water in set-up S.

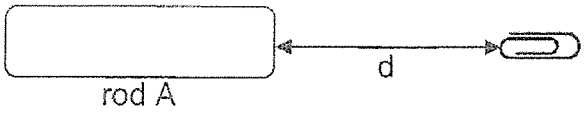
20. There are gaps between railway tracks as shown below



On a hot day, the gaps allow the railway tracks to _____.

(1) gain heat and expand
(2) gain heat and contract
(3) lose heat and expand
(4) lose heat and contract

21 Ming Hui made three magnets using the stroking method. He used the same bar magnet to stroke three identical rods, A, B and C, for different number of times in the same direction.

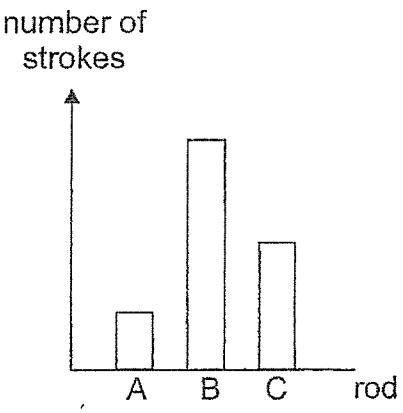


He brought each rod close to a paper clip and measured the furthest distance at which the paper clip was attracted, d. His results are shown in the table below.

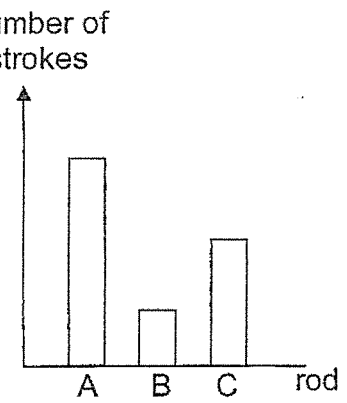
Rod	Distance at which the paper clip was attracted, d (cm)
A	13
B	4
C	7

Which of the following graphs correctly shows the number of times each rod was stroked with the bar magnet?

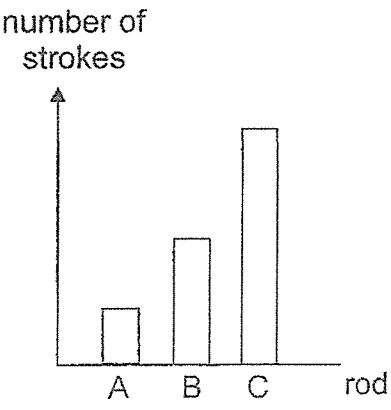
(1)



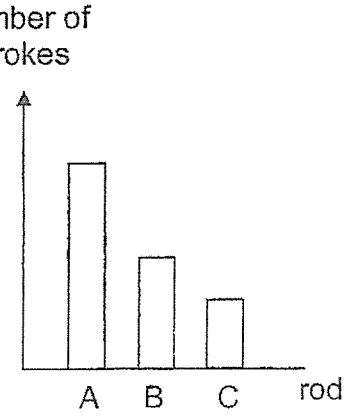
(2)



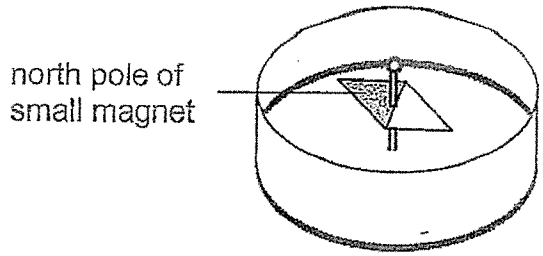
(3)



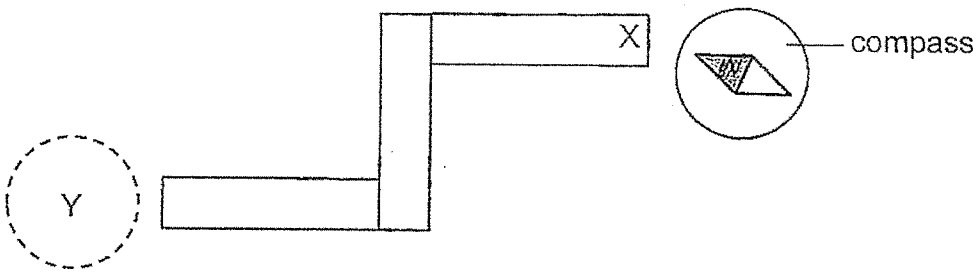
(4)



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

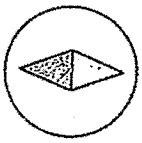


Three bar magnets were arranged such that they were attracted to one another. A compass was then placed near end X and the direction of the compass needle is as shown.

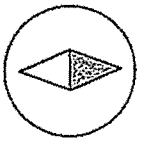


What would be the direction of the needle when the compass was placed at Y?

(1)

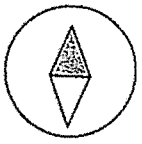


(2)

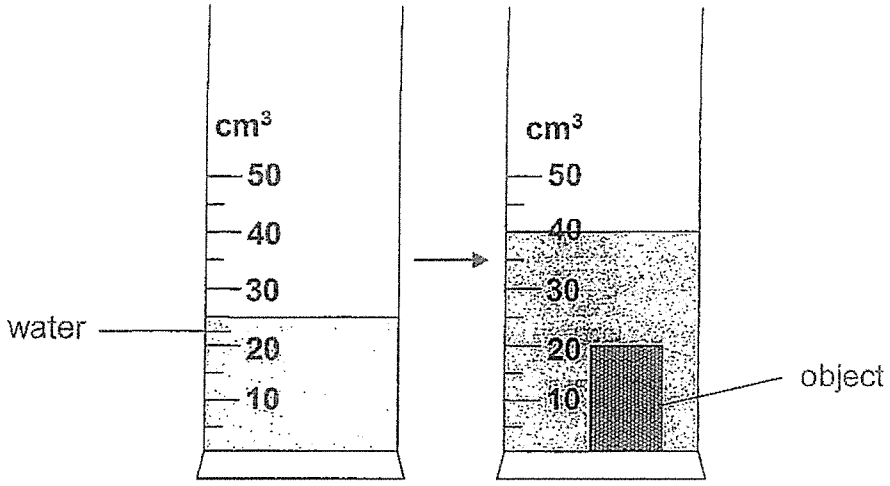


(3)

(4)



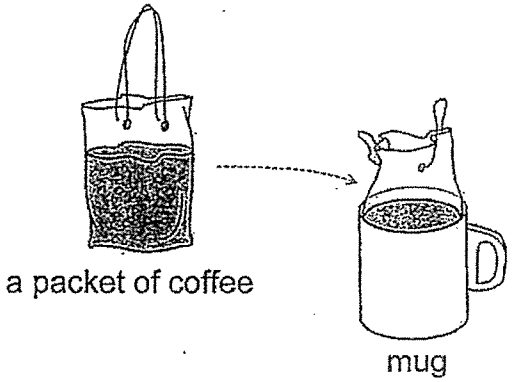
23 An object is placed in a cylinder of water as shown below.



What is the volume of the object?

(1) 15 cm^3
(2) 20 cm^3
(3) 25 cm^3
(4) 40 cm^3

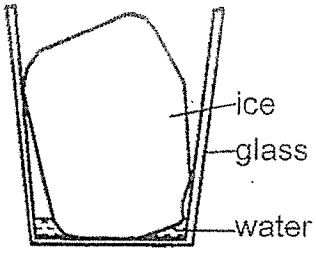
24 Syafiq put a packet of coffee into a mug without overflowing as shown.



Which of the following about the volume and shape of the packet of coffee is correct?

	Volume	Shape
(1)	changed	changed
(2)	changed	remains the same
(3)	remains the same	changed
(4)	remains the same	remains the same

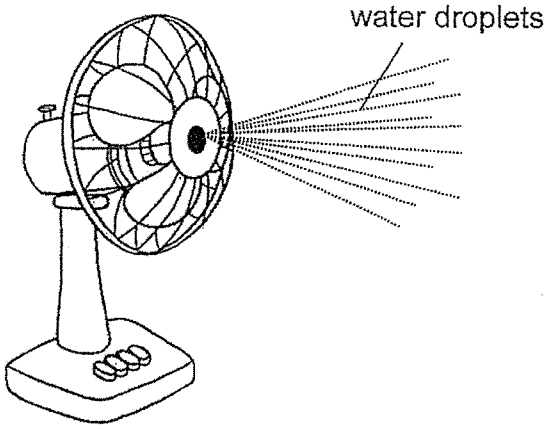
25 A block of ice at 0 °C was placed in an empty glass and left in the classroom.



What will happen after some time?

(1) The temperature of the block of ice increases.
(2) The temperature of the block of ice decreases.
(3) The temperature of the water around the block of ice is 0 °C.
(4) The temperature of the water around the block of ice is less than 0 °C.

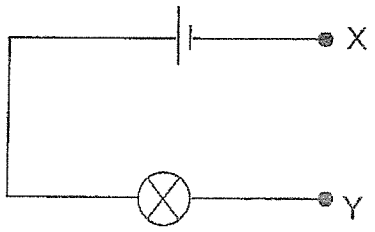
26 The diagram below shows a fan which blows out water droplets at room temperature to cool the surroundings.

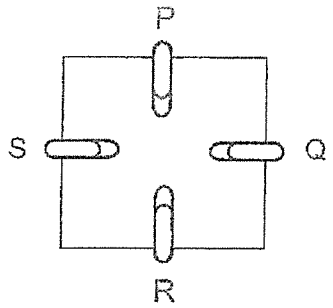


Which of the following best explains how the fan cools the surroundings?

(1) The air in the surroundings gained heat from the water droplets.
(2) The water droplets lost heat to the surrounding air and evaporated.
(3) The water droplets gained heat from the surrounding air and condensed.
(4) The water droplets gained heat from the surrounding air and evaporated.

27 The diagrams below show a circuit tester and the top view of a circuit card with four paper clips, P, Q, R and S, attached to the circuit card. The paper clips are connected using wires on the underside of the circuit card.



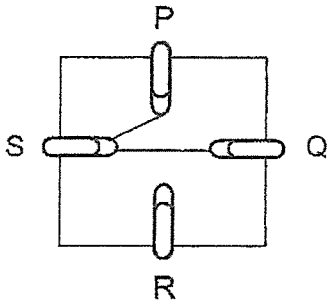


When Riley connected the circuit tester to the various paper clips, he recorded the results in the table below.

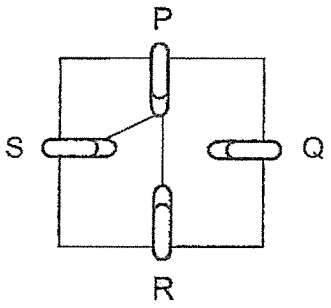
Paper clip connected to X	Paper clip connected to Y	Did the bulb light up?
P	S	yes
Q	R	no
Q	S	no
R	S	yes

Which of the following connections on the underside of the circuit card is possible?

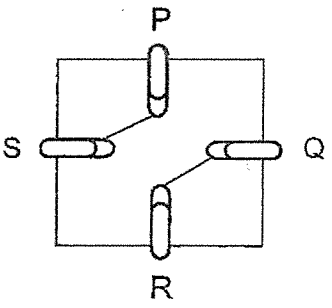
(1)



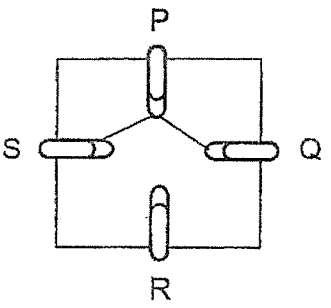
(2)



(3)



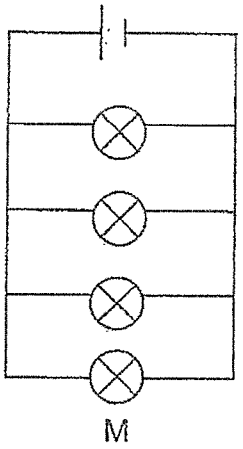
(4)



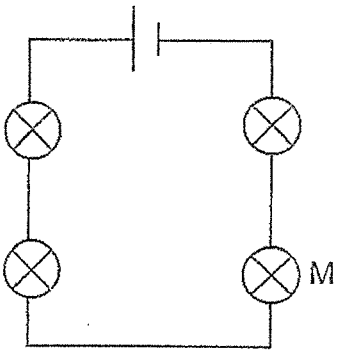
28 Jason set up four circuits using identical bulbs and batteries as shown.

In which circuit will bulb M be the brightest?

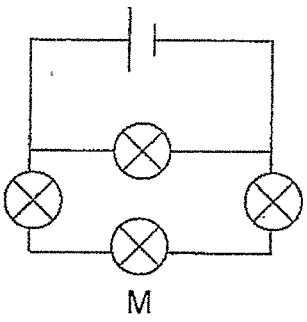
(1)



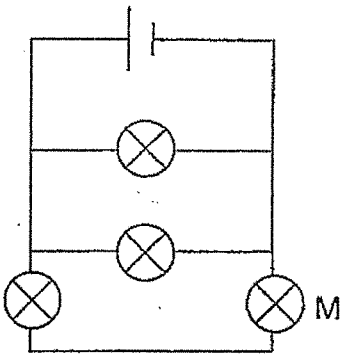
(2)



(3)



(4)



End of Section A

PEI CHUN PUBLIC SCHOOL

PRIMARY 5

END-OF-YEAR EXAMINATION 2024

SCIENCE

(BOOKLET B)

Total Time for Booklets A and B: 1 h 45 min

Name: _____ ( )

Class: Primary 5 /( )_____

Date: 24 October 2024

Science Teacher: _____

Parent's Signature: _____

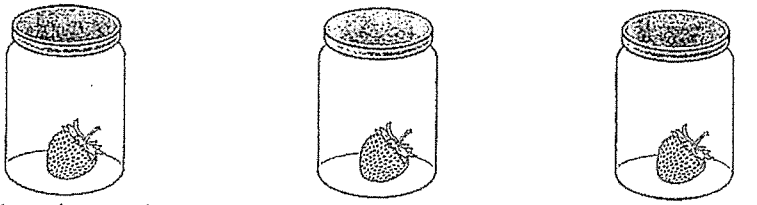
SECTION A	56
SECTION B	44
TOTAL	100

INSTRUCTIONS TO CANDIDATES

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Write your answers in this booklet.

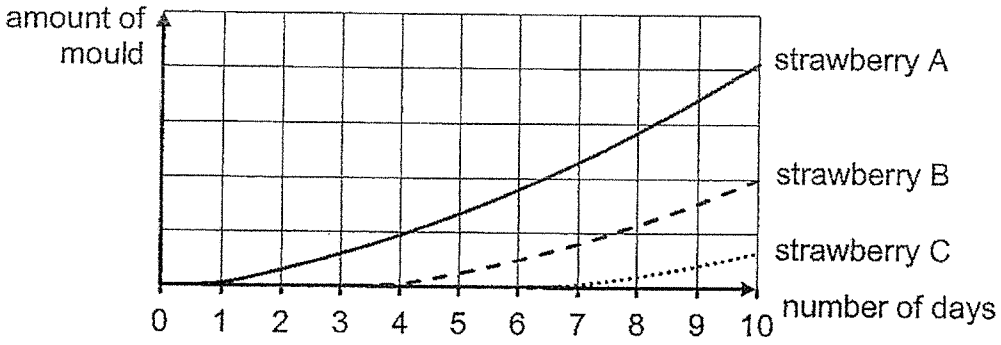
Section B (44 marks)
For questions 29 to 40, write your answers in the spaces provided.

29 Henry carried out an experiment to study the growth of mould. He kept three similar fresh strawberries in three identical glass jars as shown below.



strawberry A (kept at 30 °C) | strawberry B (kept at 20 °C) | strawberry C (kept at 10 °C)

He measured and recorded the amount of mould growing on each of the strawberries over ten days. His results are shown in the graph below.

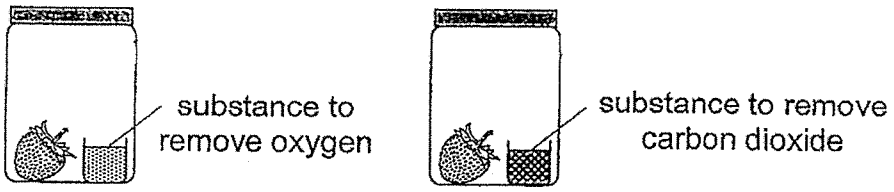


(a) Based on his results, what can Henry conclude about the effect of temperature on mould growth? [1]

_____

_____

(b) Henry repeated his experiment with two other similar fresh strawberries, D and E, kept in identical air-tight glass jars as shown below.



strawberry D (kept at 20 °C) | strawberry E (kept at 20 °C)

He observed that mould grew on strawberry E after a few days, but not on strawberry D.

Based on his observations, state one condition that mould needs for growth. [1]

_____

SCORE

(c) Henry read that fresh fruits turn mouldy faster when kept with a mouldy fruit. He wanted to investigate if this is true.

Henry prepared two set-ups for his investigation.
Complete the table below by stating the items that he should use in set-up 2 to carry out his experiment correctly. [1]

Set-up 1	Set-up 2
1 glass jar 1 fresh strawberry 1 mouldy strawberry	

(d) State how mould reproduces. [1]

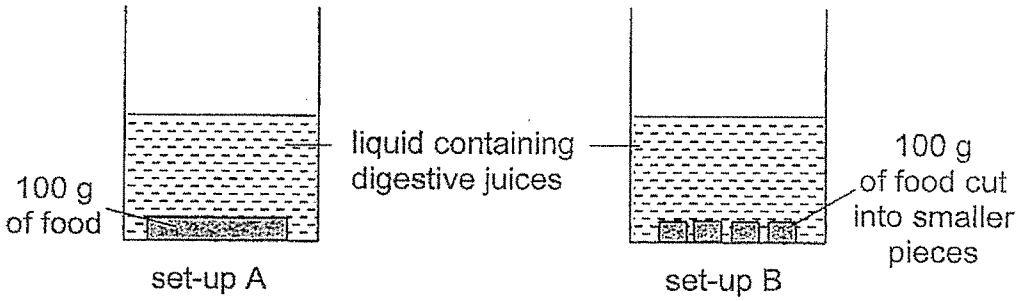
SCORE

30 **(a)** State what digestion is. [1]

_____

_____

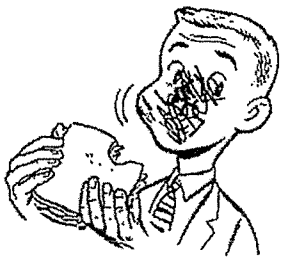
(b) Benny conducted an experiment with the two set-ups shown below.



Benny compared the amount of undigested food in the two set-ups after one hour. His results are shown below.

Set-up	Exposed surface area of food (cm^2)	Amount of undigested food left after one hour (g)
A	120	80
B	180	50

Benny's mother told him that for better digestion, he should chew his food before swallowing.



Based on Benny's experiment, explain how chewing food before swallowing helps in digestion. [2]

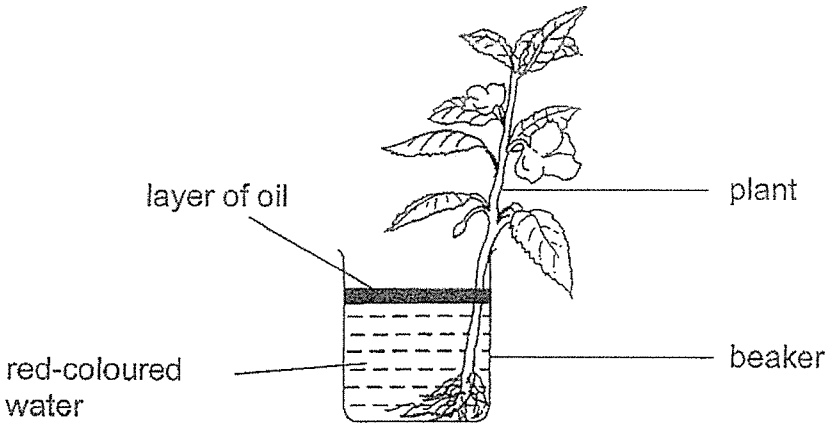
_____

_____

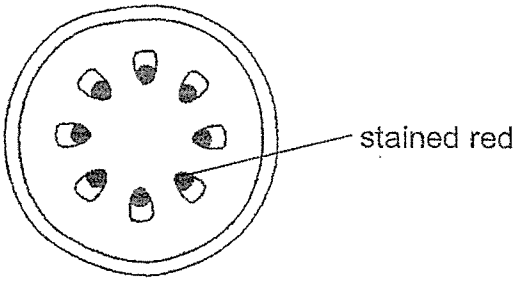
_____

SCORE

31 Jack put a plant into a beaker of red-coloured water.



After one day, the leaves and flowers of the plant turned red. Jack cut the stem. The diagram below shows a section of the stem.



(a) Name the part of the stem that was stained red and state its function. [1]

_____

_____

(b) Jack wanted to find out if the number of leaves on the plant affects the amount of water taken in by the plant. He used three similar plants and three identical beakers with the same amount of red-coloured water.

(i) State the variable that Jack should change in his experiment. [1]

_____

_____

(ii) Suggest what Jack should measure to obtain the results. [1]

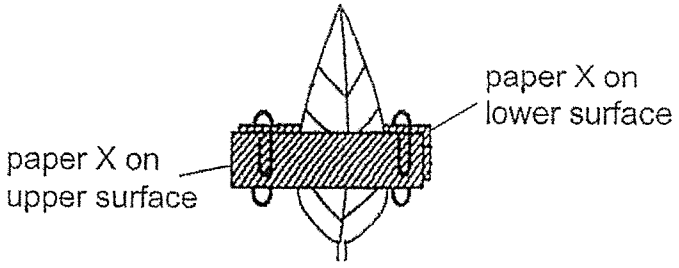
_____

_____

SCORE

32 Sam wanted to find out if the upper or lower surface of the leaf of plant A has more stomata.

He conducted an experiment by clipping dry pieces of paper X to the upper and lower surfaces of a leaf of plant A as shown below.



Paper X turns pink when wet. When more water is present, its colour changes more quickly.

(a) After two hours, Sam observed that both pieces of paper X turned pink.

Give a reason for his observation. [1]

_____

_____

(b) Sam compared the time taken for both pieces of paper X to turn pink. He concluded that the leaf of plant A had more stomata on the lower surface than on the upper surface.

What observation would show that his conclusion was correct? [1]

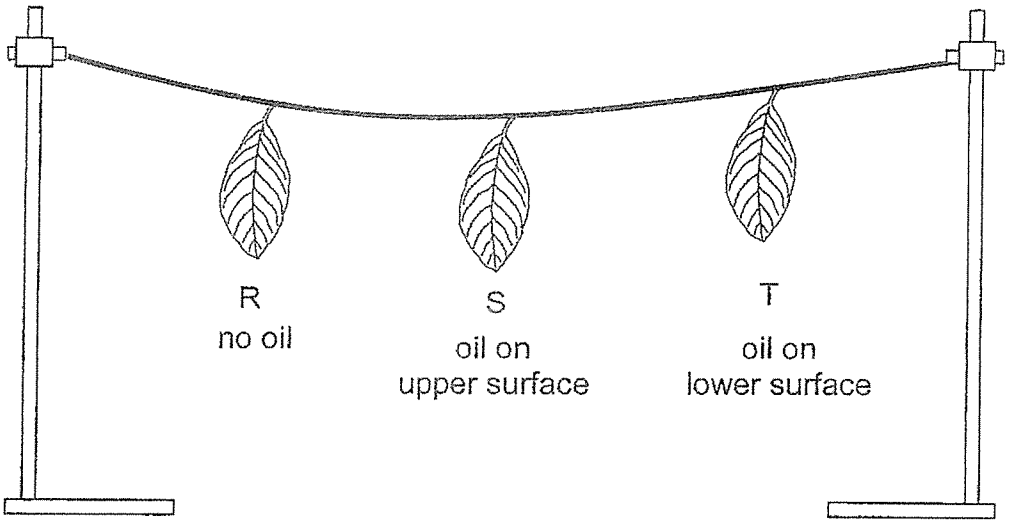
_____

_____

SCORE

(c) Sam conducted another experiment using three similar leaves, R, S and T, from plant A.

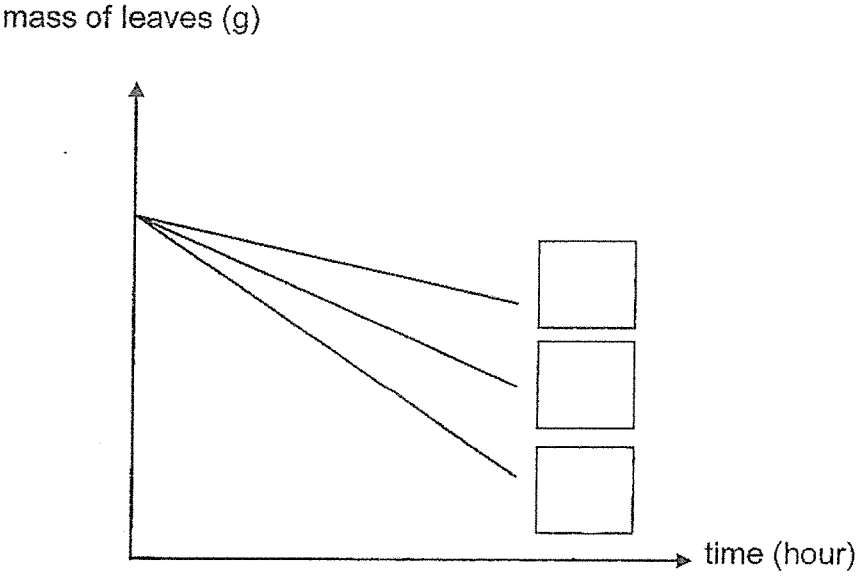
He coated one of the surfaces of leaves S and T with oil that did not drip. Each leaf was weighed and then hung up in an open area as shown below.



After five hours, he weighed each leaf again.

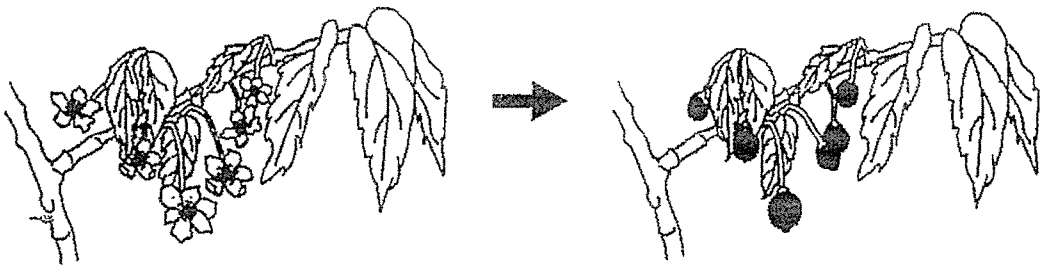
The graph below shows how the mass of the leaves changed after five hours.

Based on his conclusion in **(b)**, fill in R, S and T in the boxes provided to match each leaf to its mass. [1]



SCORE

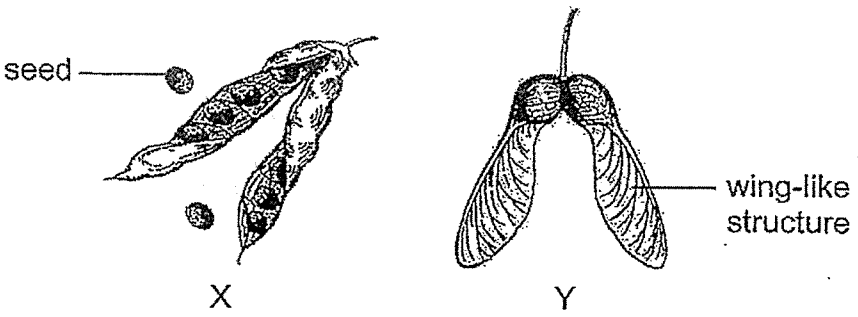
33 Fruits are formed from the flowers of a plant as shown below.



(a) State the two processes of reproduction that have taken place. [1]

_____

(b) The diagram below shows fruits X and Y.



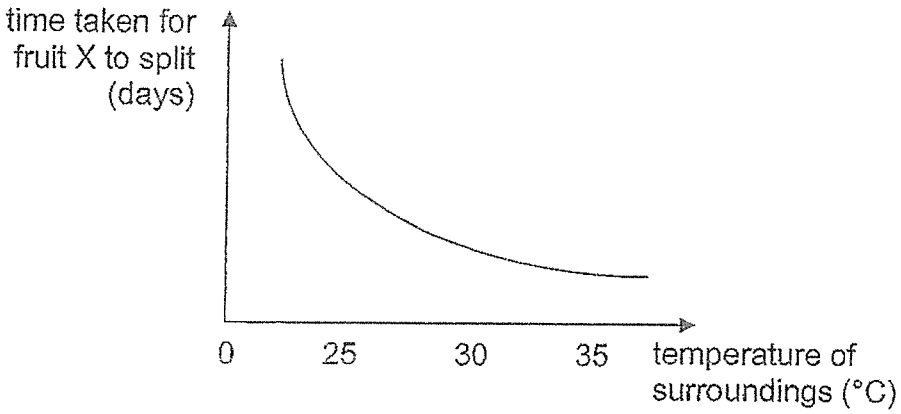
(i) State one advantage of the method used by fruit X to disperse its seeds as compared to that of fruit Y. [1]

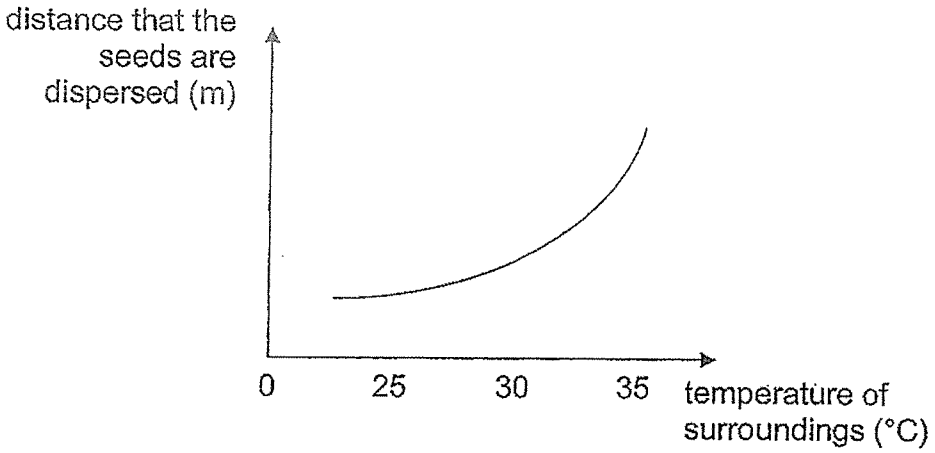
_____

_____

SCORE

(ii) A farmer conducted an experiment to find out the effect of temperature of surroundings on the time taken for fruit X to split and the distance that the seeds are dispersed from the parent plant. The graphs below show the results of the experiment.



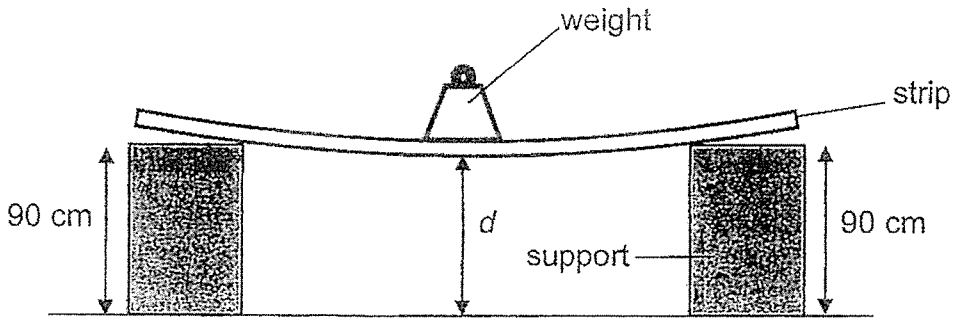


Based on the results of his experiments, explain how an increase in the temperature of the surroundings helps fruit X to disperse its seeds better.

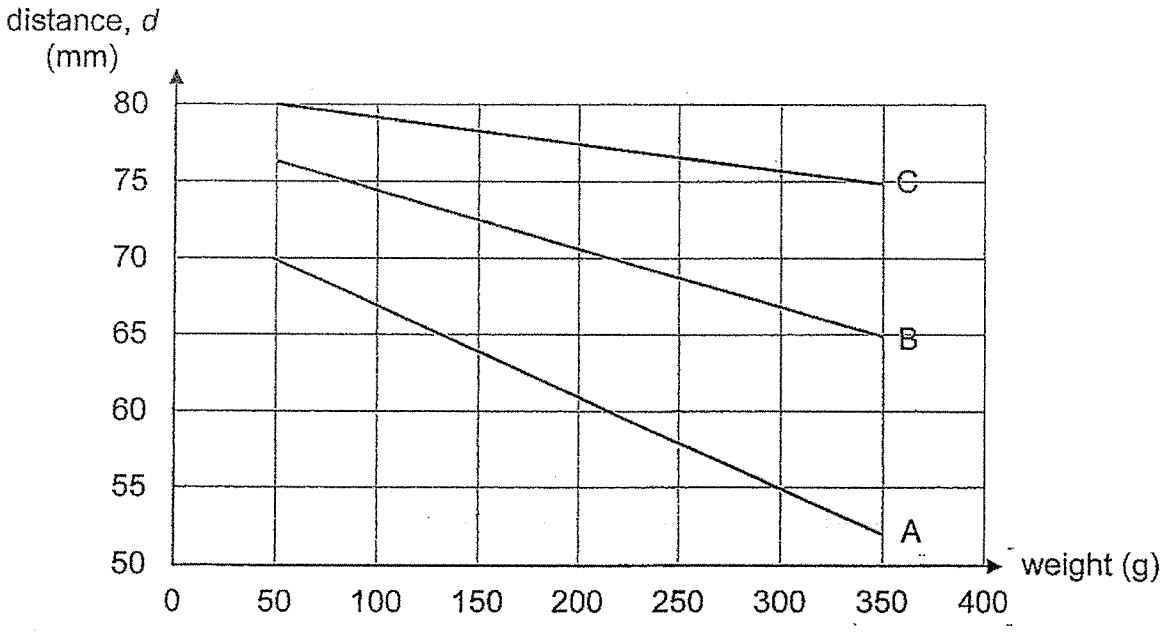
[2]

SCORE

34 Jiawei carried out an experiment to compare three similar strips made of different materials, A, B and C. He measured the distance, *d*, at the middle of the strip after adding each weight.



His results are shown below.

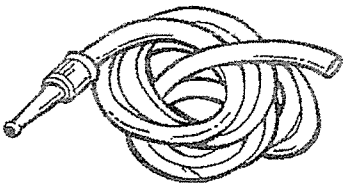


(a) State the relationship between distance, *d*, and the weight added on the strip. [1]

(b) State one variable of the strip that was fixed so that the experiment was a fair test. [1]

SCORE

(c) The diagram below shows a coiled water hose.



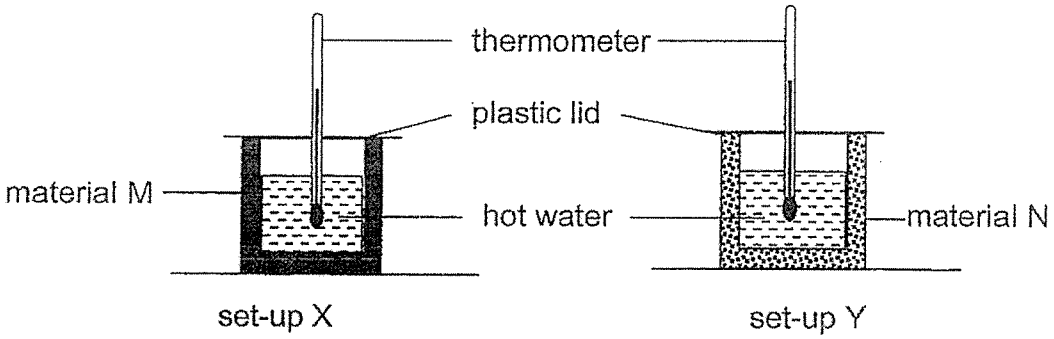
(i) Based on Jiawei's experiment, which material, A, B, or C, is most suitable for making the water hose? Explain your answer. [1]

(ii) State another property of the material that makes it suitable for making the water hose. [1]

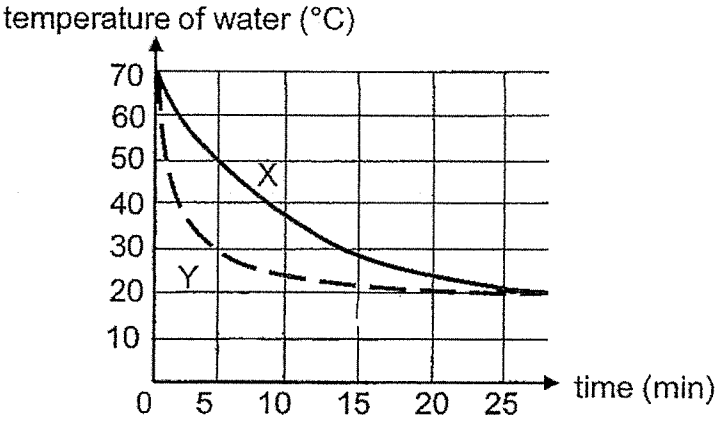
SCORE

35 (a) State what temperature is. [1]

(b) Joe conducted an experiment using set-ups X and Y as shown below. He wrapped a glass beaker with material M and another identical glass beaker with material N. He filled both beakers with the same volume of hot water at 90 °C.



Joe measured the temperatures of the water at different times and plotted his results in the graph shown below.



(i) Why did the temperature of water decrease in both set-ups over time? [1]

(ii) What can Joe conclude about how the temperature of the water changes with time in set-up X compared to that in set-up Y? [1]

SCORE

(iii) Material M in set-up X was used to make a jacket. This material had small air spaces inside it.

Explain why the air spaces in material M helps to keep a person wearing the jacket warm in cold weather. [1]

36 Allen was given two similar rods, P and Q. One of the rods was a magnet and the other was a magnetic material. He wanted to find out which rod was a bar magnet.

Allen arranged the rods as shown in diagram 1. He found out that there was weak attraction between the rods. When he rearranged the rods as shown in diagram 2, the attraction between the rods was strong.

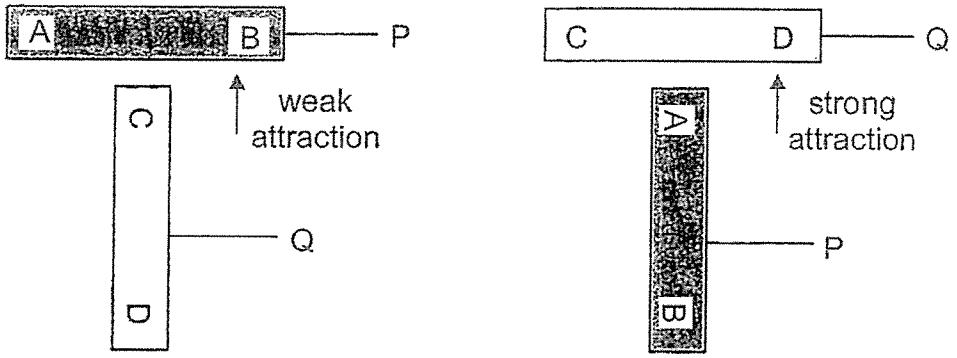
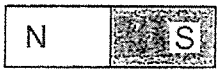


Diagram 1 Diagram 2

(a) Based on his observations, which rod, P or Q, is the magnet? Explain your answer. [2]

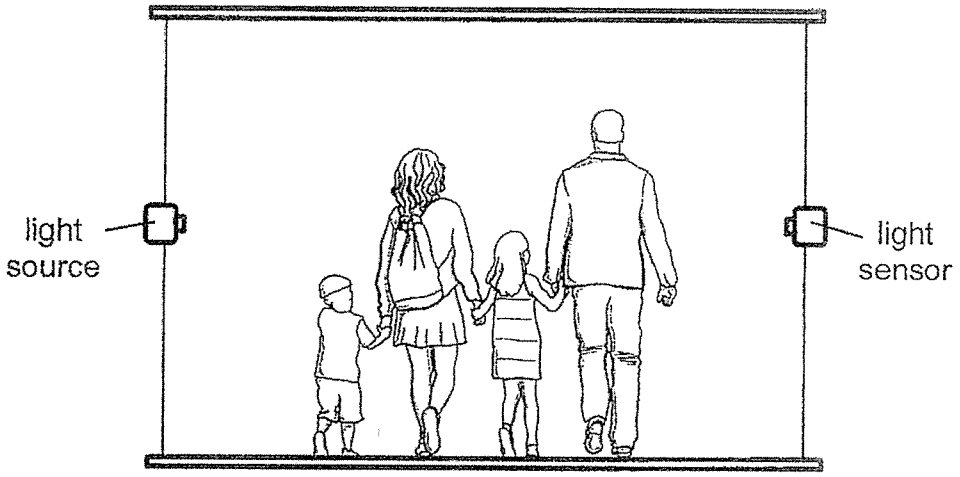
(b) Allen was given another bar magnet.



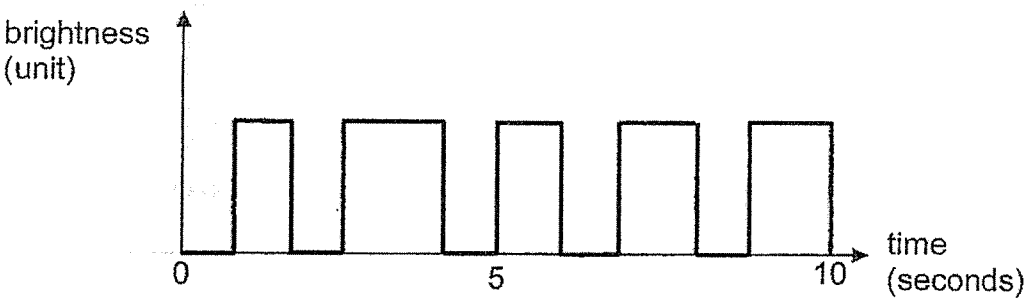
Describe what he should do to confirm that the rod chosen in **(a)** is the magnet. [2]

SCORE

37 The diagram below shows a device using a light sensor and a light source to count the number of visitors passing through the entrance of an exhibition hall.



As the visitors pass between the light source and the sensor, they block light from reaching the sensor. The data recorded is shown in the graph below.



(a) Based on the graph, how many visitors entered the hall in 10 seconds? [1]

_____

(b) State a property of light used by the device to count the number of visitors. [1]

_____

_____

(c) The disadvantage of the device is that it may count fewer visitors than it should.

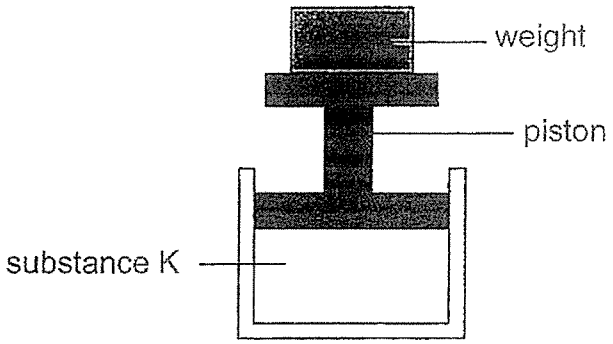
State how this is possible. [1]

_____

_____

SCORE

38 Jim filled a plastic syringe with 80 cm^3 of substance K. He sealed one end of the syringe. He then loaded weights on top of the piston as shown below.



For every weight he added, he recorded the volume of substance K in the syringe. The table below shows the results.

Weights added (g)	Volume of substance K in the syringe (cm^3)
0	80
50	66
100	54
150	47

(a) **(i)** Based on the results, how did the weights added on the piston affect the volume of substance K in the syringe? [1]

_____

_____

(ii) State how the mass of substance K changes when the piston was pushed down by the weight. [1]

_____

(b) Jim repeated the experiment by filling 80 cm^3 of water in the sealed syringe.

What could be the volume of water in the syringe when a 150 g weight is placed on top of the piston? [1]

_____

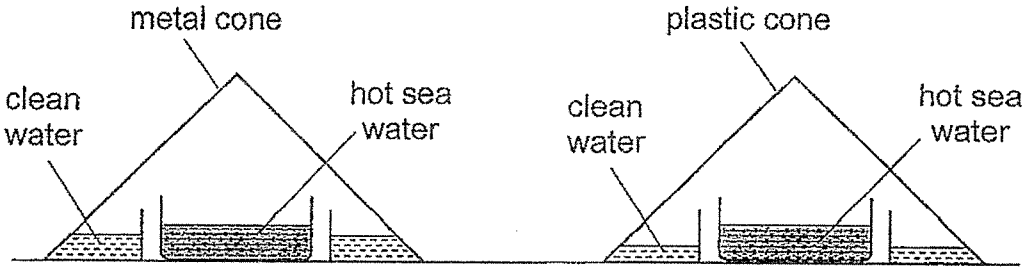
(c) Give a reason for your answer in **(b)**. [1]

_____

_____

SCORE

39 Ibrahim heated some sea water and poured equal amount into two identical containers. He placed two similar cones, made of plastic and metal, over the containers of hot sea water. After an hour, he observed some clean water collected at the base of each cone as shown.

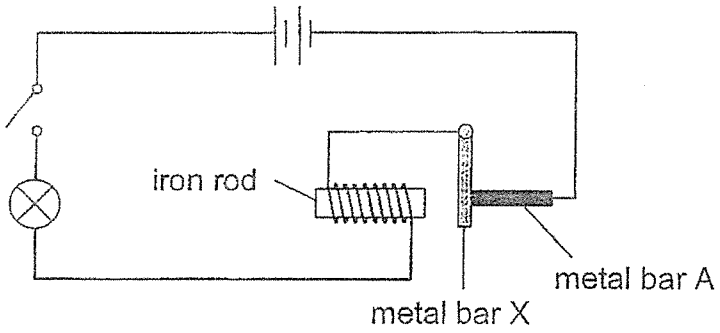


(a) Explain how the clean water was collected. [2]

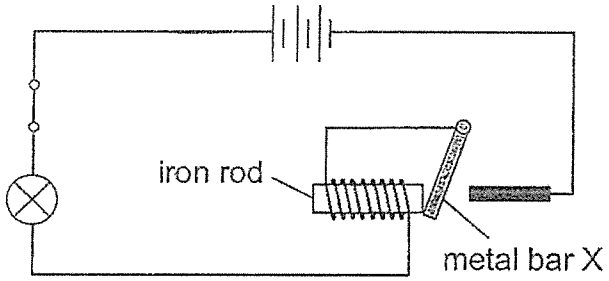
(b) Ibrahim observed that there was more clean water collected in the metal cone than in the plastic cone. Explain his observation. [1]

SCORE

40 Taylor set up a circuit as shown. When he closed the switch, the bulb lit up brightly.



When Taylor added another battery to the circuit and closed the switch, he observed that metal bar X moved away from metal bar A and touched the iron rod as shown. The bulb did not light up.



(a) Explain why bar X moved towards the iron rod when Taylor added another battery to the circuit. [2]

(b) State two properties of the material of metal bar X that allow the circuit to work. [2]

(c) Explain how Taylor's circuit would help to prevent the bulb in the circuit from fusing when too many batteries are added. [1]

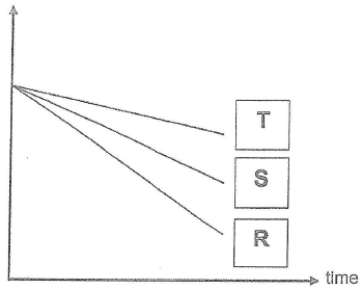
End of Section B

SCORE	

SCHOOL : PEI CHUN PUBLIC SCHOOL
LEVEL : PRIMARY 5
SUBJECT : SCIENCE
TERM : 2024 END OF YEAR EXAMINATION

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

29a	Concept: Observation of trend from line graph. From graph: The amount of mould R increased for all 3 temperatures that the strawberries were kept at. You need to compare the growth of the mould, not the amount. (growth of mould = increase in the amount of mould) As the temperature increases, the mould growth increases.
29b	Concept: Conditions needed for mould to grow. Mould needs oxygen to grow.
29c	1 or 2 fresh strawberry and 1 glass jar
29d	Mould reproduces by spores.
30a	Concept: Digestion is the process where food is broken down into simpler substances to be absorbed into the bloodstream. Digestion is the breaking down of food into simpler substances that can be absorbed into the bloodstream.
30b	Concept: Food cut into smaller pieces have larger exposed surface and can be digested faster. The food in set-up B have larger surface area in contact with the digestive juices, thus the food can be digested faster when we chewed our food into smaller pieces.
31a	Concept: Function of water-carrying tubes. Name: water-carrying tubes Function: Transport water from the roots to all parts of the plant
31b i	Number of leaves on the plant
31b ii	Measure the amount of water left in the beakers after a fixed period of time/ at the end of the experiment.

32a	Concept: Function of stomata The leaves lost water vapour through the stomata. Note: The stomata are tiny openings on the leaves. They do not release water vapour. They allow water vapour to leave through them.
32b	Since the leaves have more stomata on the lower surface, more water vapour is lost from the bottom surface.
32c	
33a	Concept: Processes in reproduction in flowering plants Pollination and fertilisation
33b	Concept: Advantage of dispersal by explosive action/ splitting of fruit. The seeds of fruit X can be dispersed by the fruit itself and does not depend on other external factors such as wind.
33bi	The seeds of fruit X can be dispersed by the fruit itself and does not depend on other external factors such as wind.
33bii	Point 1: State the relationship of temperature and time taken for fruit to split. When the temperature increases, fruit X takes shorter time to split. Point 2: State the relationship of temperature and distance that the seeds are dispersed.
34a	As the <cause> increases, the <effect> increases/ decreases. As the weight added increases, the distance d decreases.
34b	thickness of the strip length of the strip
34ci	Concept: Relating the use of the materials to their physical properties. A. It bent the most when weights were added on it. / It is the most flexible.
34cii	Concept: Relating the use of the materials to their physical properties. A water hose needs to be waterproof. It is waterproof.
35a	Concept: Temperature is a measurement of how hot an object is. Temperature is a measurement of how hot an object is.
35bi	Concept: Temperature of a substance decreases when it loses heat to its surroundings. The hot water lost heat to the surroundings.
35bii	The temperature (of water) in set-up Y decreases faster than that in set-up X.
35biii	Concept: Poor conductors of heat allow heat to flow through less easily / slowly.

	Air is a poor conductor of heat, so it can reduce heat loss from the person's body (to the surroundings).
36a	Concept: The pull (or attraction) of a magnet is strongest at its poles. Point 1: Describe observation from experiment. When end A of rod P was brought to the centre of rod Q, the force of attraction was stronger than that in diagram 1 Point 2: State that the poles have the strongest magnetic pull. The pull of magnets is strongest at its poles.
36b	Concept: Only magnets can repel each other when the like poles are facing each other. Point 1: Describe the action He should bring the one pole of the bar magnet close to ends A and B of rod P. Point 2: Describe the observation to confirm that rod P is a magnet If either end A or B repels the bar magnet, rod P must be a magnet.
37a	Concept: Light travels in a straight line. When a visitor is between the light source and the sensor, he blocks the light from reaching the sensor. The light sensor will not detect any light and the reading is 0 units. 5 visitors
37b	Light travels in straight lines.
37c	Concept: Light can be partially or completely blocked by an object. The visitors may walk side by side when entering. OR Visitors who are shorter than the height that the light sensor is placed will not be counted.
38ai	As the <cause> increases, the <effect> increases/ decreases. As the weights added on the piston increases, the volume if substance K in the syringe decreases.
38aii	Concept: Mass of substance remains even as its volume changes. The mass of substance K remains the same.
38b	80 cm^3
38c	The water (in the syringe) cannot be compressed/ has a definite volume.
39a	Concept: Condensation is a change in state of water from a gas to a liquid due to heat loss.

	The hot sea water evaporated to form warm water vapour. The warm water vapour touched the cooler inner surface of the cone, lost heat and condensed into tiny water droplets.
39b	Concept: Metals are good conductors of heat. Plastics are poor conductors of heat. Metal is a better conductor of heat so water vapour can condense faster.
40a	Concept: Number of batteries in series affects strength of electromagnet. The iron bar became a stronger electromagnet and attracted bar X.
40b	For the circuit to work: • the circuit must be closed when metal bar X is touching metal bar A. • metal bar X can be attracted by the electromagnet. Bar X is an electrical conductor and is a magnetic material.
40c	The circuit is open/ Current cannot flow through the circuit when bar X is attracted to the electromagnet.