PRIMARY 4 MID-YEAR EXAMINATION 2016

Name : _____ ( )

Class : Primary 4 ( )

Parent's Signature : _____

Date: 12 May 2016

Time: 1 hour 45 minutes

Marks: _____ / 56

SCIENCE

BOOKLET A

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

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

Follow all instructions carefully.

Answer all questions.

Booklet A (28 x 2 marks)

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

1. Which one of the following is/are true about life cycles?

   A: All living things have a life cycle.

   B: The life cycle of a human is a four-staged cycle.

   C: The duration of the life cycle is similar for all insects.

   D: The young looks like its adult in the life cycle of all living things.

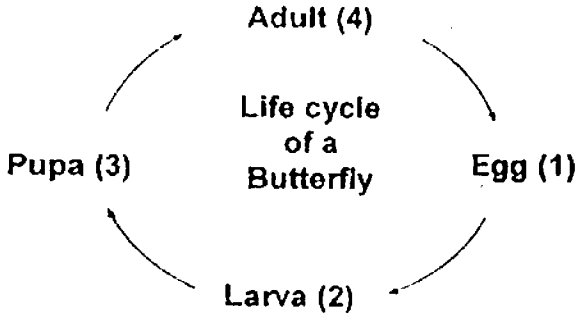
   (1) A only

   (2) A and D only

   (3) B and C only

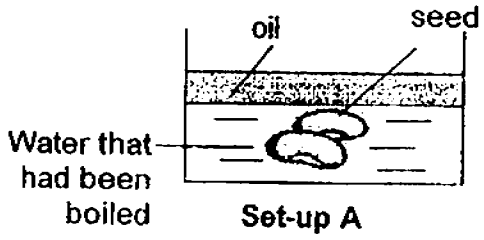
   (4) B, C and D only

2. The diagram below shows the life cycle of a butterfly.

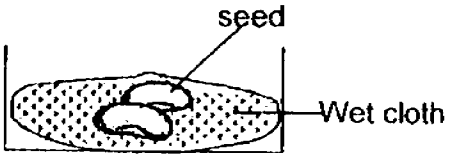


Which stage of the butterfly, (1), (2) (3) or (4) shown above is harmful to a plant?

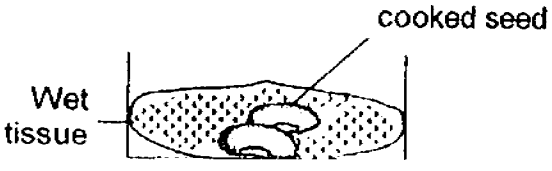
3. Study the following set-ups which were placed in a classroom. Which of the following set-ups allowed the seeds to germinate?



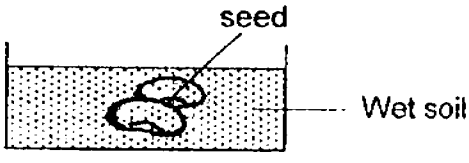
Set-up A



Set-up B



Set-up C



Set-up D

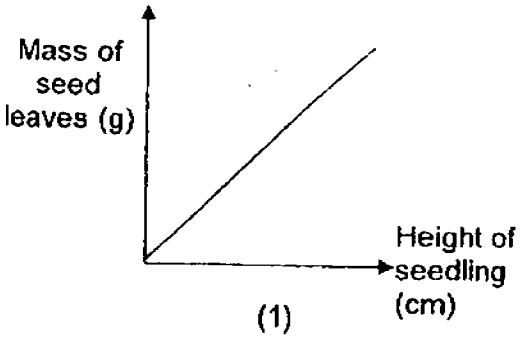
(1) Set-ups B and D only

(2) Set-ups B and C only

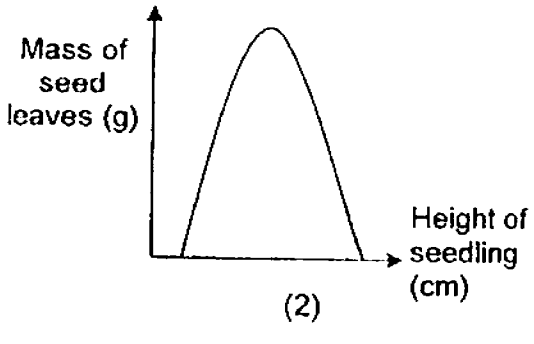
(3) Set-ups A, B and C only

(4) Set-ups A, C and D only

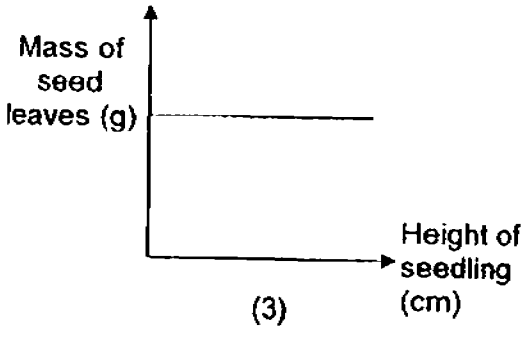
4. Which one of the following graphs below correctly shows the relationship between the mass of the seed leaves and the height of the seedling?



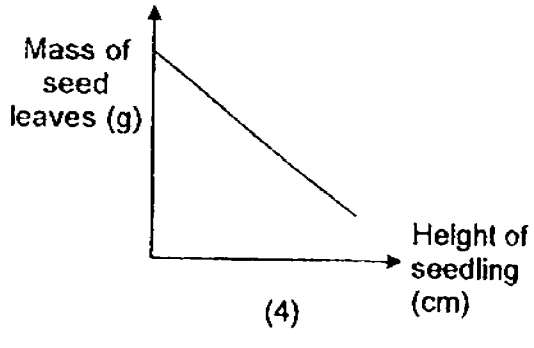
(1)



(2)

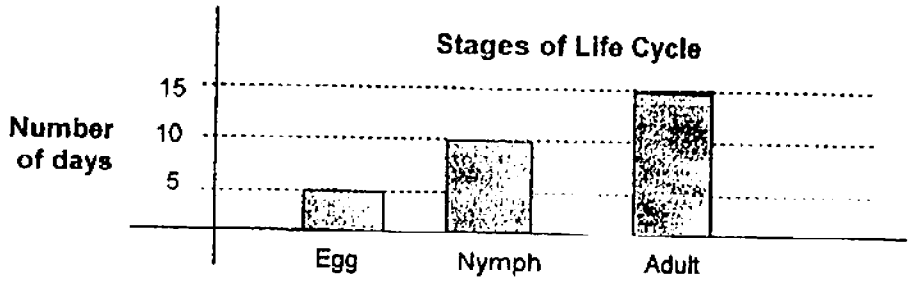


(3)



(4)

5. The graph below shows the number of days in each stage of the life cycle of an insect.



Based on the graph above, which one of the following statements is true?

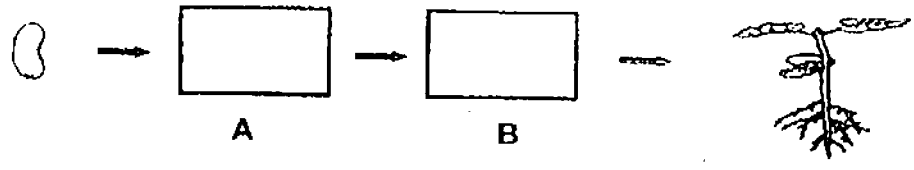
(1) The insect spends most of its life as a nymph.

(2) The insect's life cycle takes 25 days to complete.

(3) It takes 5 days for the insect to hatch from an egg.

(4) The hatched nymph takes 15 days to become an adult.

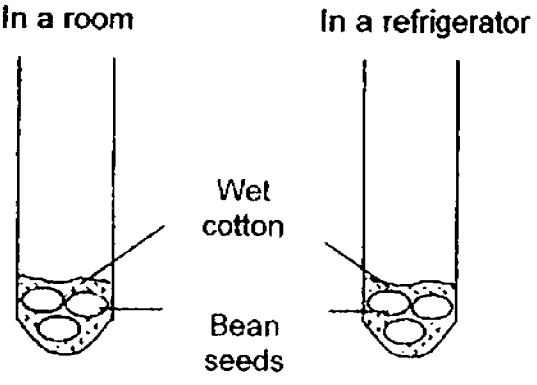
6. The diagram below shows the growth of a young plant with two missing pictures, A and B.



Which one of the following shows the correct pictures for **A** and **B**?

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

7. James set up an experiment as shown below. After a few days, he noticed that the bean seeds placed in the room had germinated but not those in the refrigerator.



From this experiment, we can conclude that seeds need _____ to germinate.

(1) air

(2) light

(3) water

(4) warmth

8. Which of the following are light sources?

A: sun

B: mirror

C: moon

D: lightning

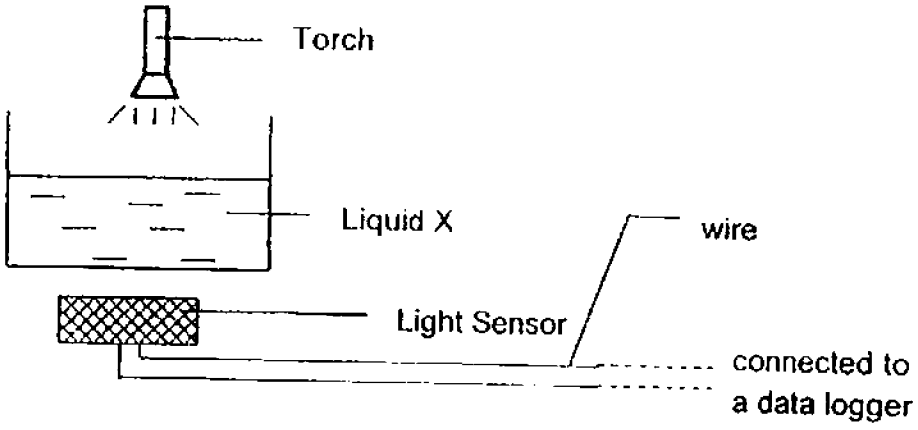
(1) A and B only

(2) A and D only

(3) A, B and D only

(4) A, B, C and D

9. Amy wanted to find out the amount of light that passed through Liquid X. She conducted the experiment with the following set-up.



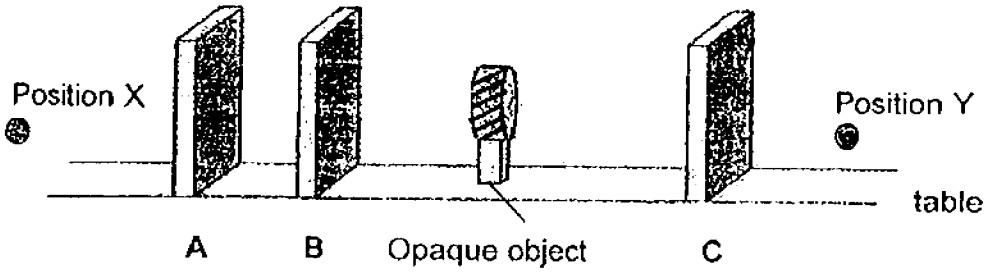
Then, she repeated the experiment with Liquids Y and Z and recorded the readings in the table below.

	Liquid X	**Liquid Y**	**Liquid Z**
Amount of light sensed (lux)	220 lux	400 lux	0 lux

What liquids could **X**, Y and **Z** be?

	X	Y	Z
(1)	Tap water	Chocolate milk	Apple juice
(2)	Chocolate milk	Apple juice	Tap water
(3)	Tap water	Apple juice	Chocolate milk
(4)	Apple juice	Tap water	Chocolate milk

10. Siow Ming carried out an investigation in a lighted room. He placed different materials A, B and C and an opaque object on a table as shown in the diagram below.

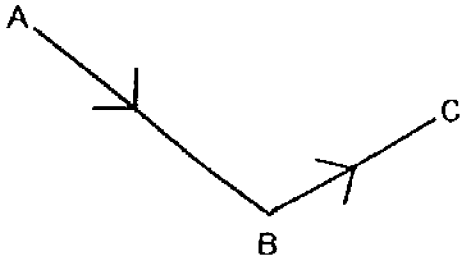


When viewed from position X, the opaque object was seen clearly. When viewed from position Y, the opaque object was seen as a blurred image.

What are the possible materials **A, B** and **C**?

	A	B	C
(1)	frosted paper	clear glass	clear plastic sheet
(2)	clear glass	clear plastic sheet	cardboard
(3)	clear plastic sheet	frosted paper	cardboard
(4)	clear plastic sheet	clear glass	frosted paper

11. In the diagram below, the arrows indicate the path of light that allows a person to see an object.



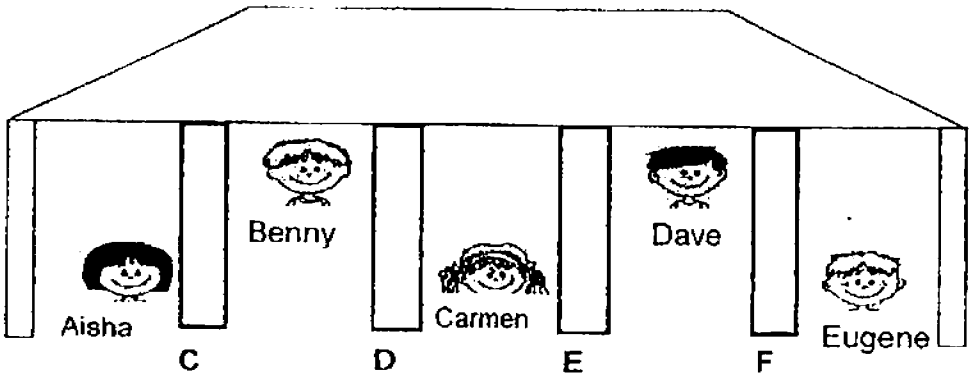
What could A, B and C represent?

	A	B	C
(1)	Object	Eyes	Light source
(2)	Light source	Object	Eyes
(3)	Eyes	Object	Light source
(4)	Light source	Eyes	Object

12. A company produces 4 types of materials C, D E and F with the properties shown in the table below.

Allows light to pass through	Does not allow light to pass through
C D	E F

An architect uses the above materials to build 4 different walls for a playhouse. He asks five children to stand behind the walls, as shown in the diagram below.



Which one of the following is true?

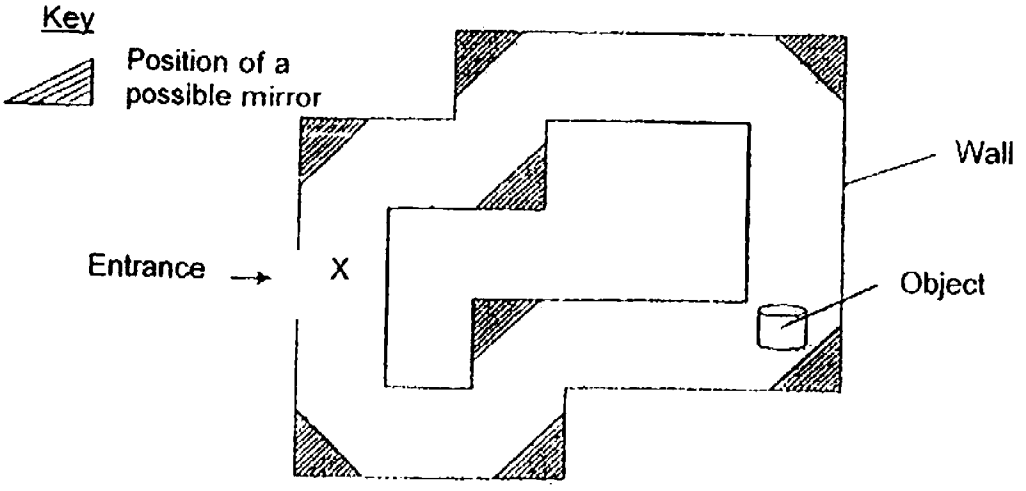
(1) Benny can see Dave.

(2) Eugene can see Aisha.

(3) Aisha cannot see Benny.

(4) Eugene cannot see Dave.

13. The diagram below shows an open air maze seen from the top view. The walls are made of cement. Paul is standing at position X shown below.



What is the least number of mirrors needed for him to see the object?

(1) Two mirrors

(2) Three mirrors

(3) Four mirrors

(4) Five mirrors

14. Which one of the following is/are examples of matter?

A: Air

B: Rain

C: Heat

D: Shadow

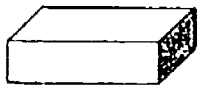
(1) A only

(2) A and B only

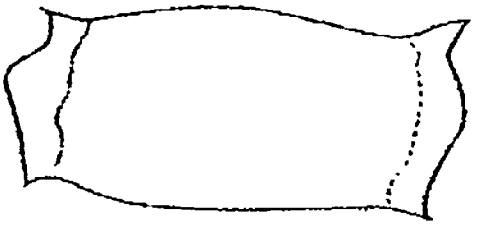
(3) C and D only

(4) A, B and C only

15.



1 kg brick



1 kg cushion

Which one of the following statements about the two objects shown above is true?

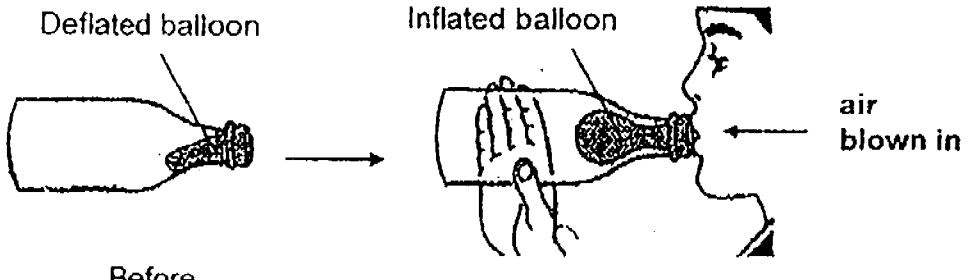
(1) Both objects have the same mass.

(2) The cushion is lighter than the brick.

(3) Both objects occupy the same amount of space.

(4) The brick can be compressed while the cushion cannot.

16. Tom blew into a deflated balloon in a bottle. After a while, he found it hard to inflate the balloon further even though there was enough space in the bottle.



Which one of the following explains why Tom was not able to inflate the balloon fully?

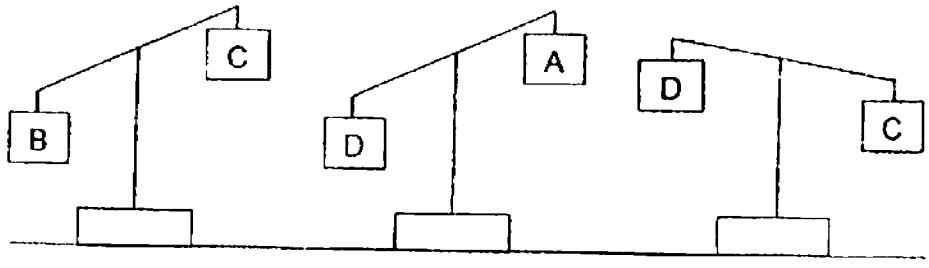
(1) The air in the bottle has a definite volume.

(2) The air in the balloon has no definite shape.

(3) The air in the bottle cannot be compressed further.

(4) The air in the balloon does not have a definite volume.

17. Kelly compared 4 different objects **A, B, C** and **D** on balances as shown below.



Which one of the following statements is true?

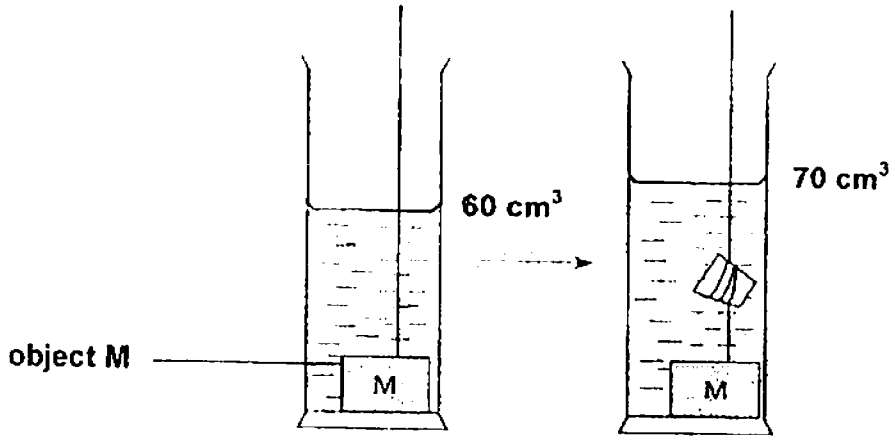
(1) B has a smaller mass than D.

(2) C has a smaller mass than A.

(3) B has a greater mass than A.

(4) A has a greater mass than D.

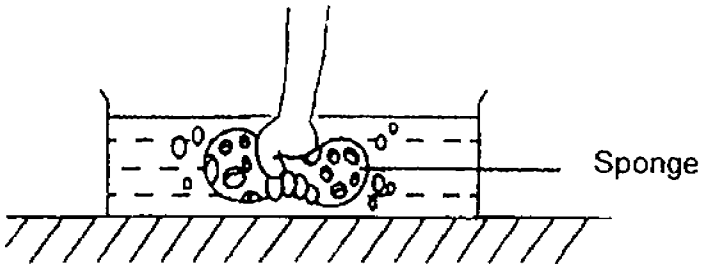
18. Mariam wanted to find the volumes of object M and a stopper. She first dropped object M into a measuring cylinder with 30 cm^3 of water. Then, she tied a stopper to object M as shown below.



What are the likely volumes of **object M** and the **stopper**?

	object M (cm^3)	stopper (cm^3)
(1)	30	10
(2)	30	70
(3)	60	70
(4)	60	10

19. Shirley pressed a sponge in the tub of water as shown below. Bubbles were observed escaping from the sponge.



Which one of the following statements explains the escaping bubbles?

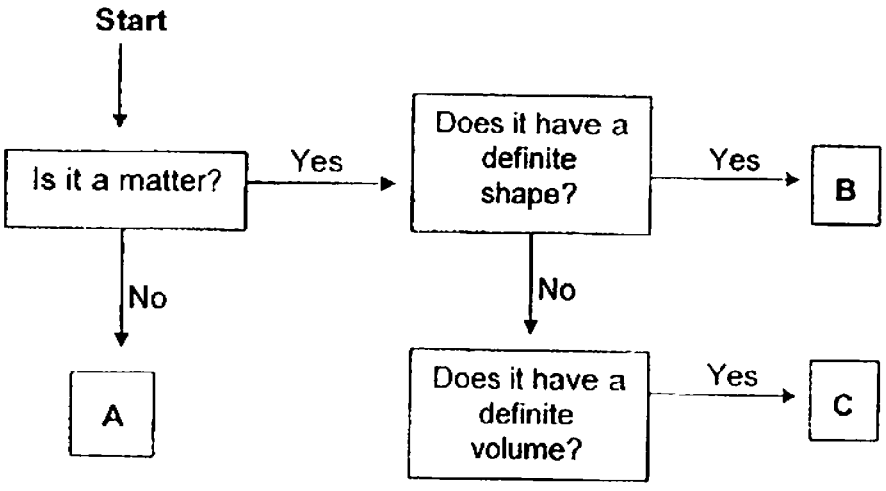
(1) Air trapped in the sponge was released.

(2) Water trapped in the sponge was released.

(3) Air trapped in the sponge was compressed.

(4) Water absorbed in the sponge was compressed.

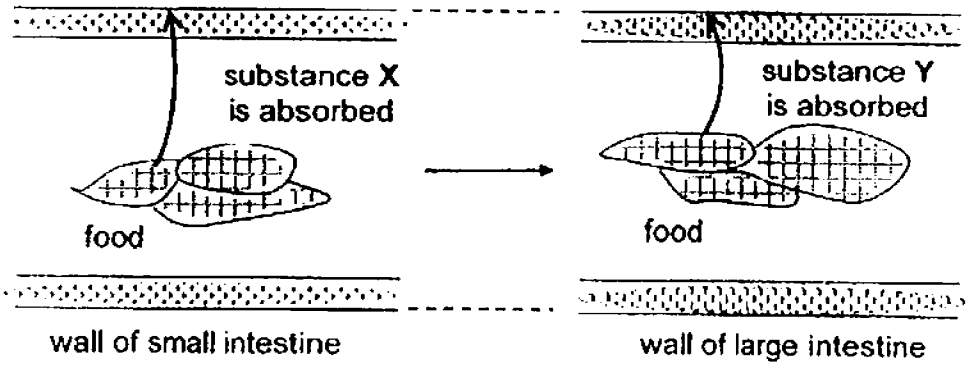
20. Study the flowchart below carefully.



Identify A, B and C.

	A	B	C
(1)	noise	needle	wind
(2)	wind	fork	air
(3)	noise	spoon	saliva
(4)	saliva	milk	spoon

21. Below is a diagram of food found in the small and large intestines.



What are substances X and Y?

	X	Y
(1)	water	digested food
(2)	digested food	water
(3)	air	undigested food
(4)	undigested food	air

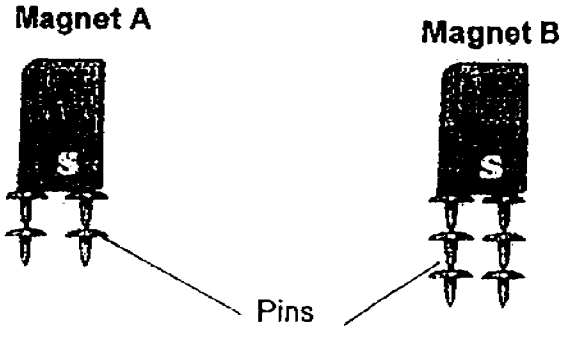
22. The table below shows the different functions of the various parts of a land plant.

A: makes food for the plant
B: holds the plant firmly to the ground
C: supports and spreads out the branches with leaves
D: transports food, water and mineral salts to all parts of the plant

Which one of the following parts of the plant is matched correctly?

	Part of Plant	Functions
(1)	Leaf	A and B
(2)	Stem	C and D
(3)	Roots	A and C
(4)	Fruit	B and D

23. Wei Ling conducted a test using two magnets, A and B.



Based on the observation shown above, what can she conclude from the experiment?

(1) A magnet is strongest at its poles.

(2) The pins are definitely made of iron.

(3) Magnet A is stronger than Magnet B.

(4) Magnet B is stronger than Magnet A.

24. Which one of the following will not cause a magnet to lose some or all of its magnetism?

(1) Washing the magnet.

(2) Hammering the magnet.

(3) Heating the magnet over a flame.

(4) Dropping the magnet down a flight of stairs.

25. The leaf of the plant below closes when an insect lands on it.

Which characteristic of the plant is observed?

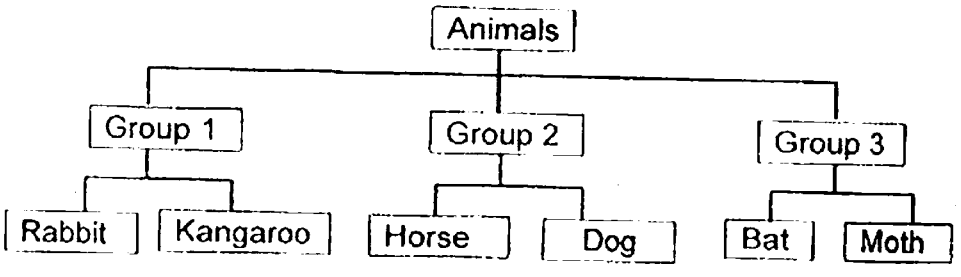
(1) The plant can grow.

(2) The plant can reproduce.

(3) The plant can respond to changes around it.

(4) The plant needs air, food and water to survive.

26. Study the classification table below.



The animals have been grouped according to _____.

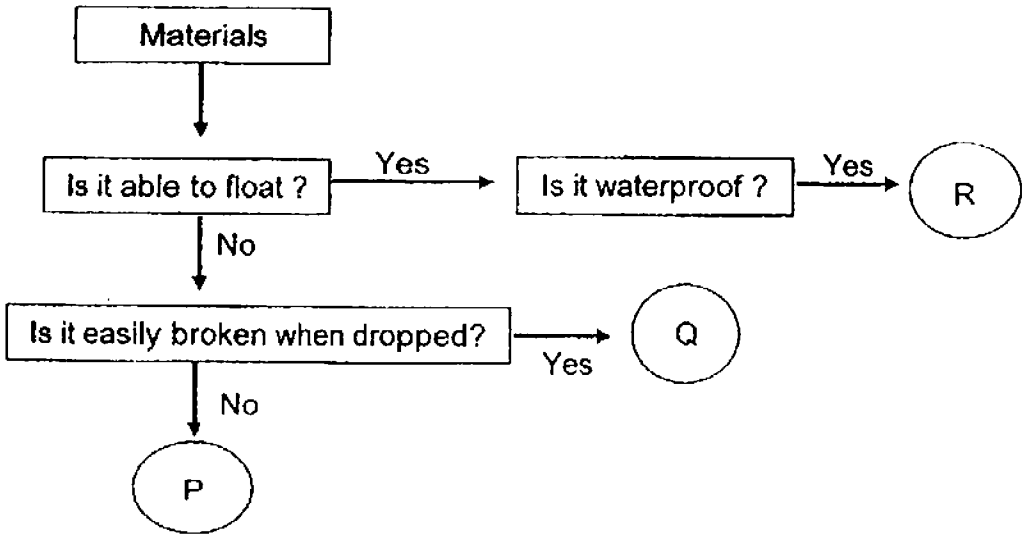
(1) their shape

(2) the food they eat

(3) the way they move

(4) their body covering

27. Study the flowchart below.



What materials can P, Q ,R be?

	P	Q	R
(1)	Metal	Glass	Paper
(2)	Glass	Metal	Plastic
(3)	Paper	Plastic	Glass
(4)	Metal	Glass	Plastic

28. Figure X shows some fish in a fish bowl. Figure Y shows some fish in a can bought from a supermarket.

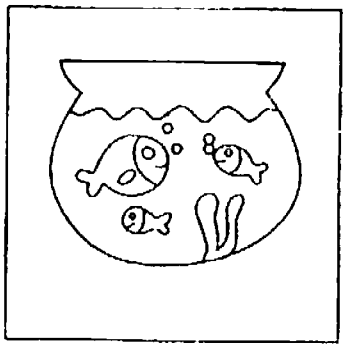


Figure X

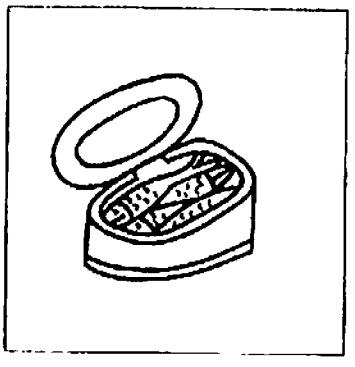


Figure Y

	Fish in Figure X	Fish in Figure Y
A:	Alive	Once alive
B:	Can grow	Cannot grow
C:	Need food	Do not need food
D:	Do not respond to changes around them	Respond to changes around them

How are the fish in **Figure X** different from the fish in **Figure Y**?

(1) A and B only

(2) A, B and C only

(3) B, C and D only

(4) A, B, C and D

End of Booklet A

Section B

For questions 29 to 41, write your answers clearly in the spaces provided.

29. At a vegetable farm, Mr Tan carried out an experiment using fertiliser on 5 similar potted plants, A,B,C,D and E for a period of 2 weeks.

Pot	Amount of fertiliser given weekly (ml)	Amount of water given daily (ml)	Height of plant (cm) at start of experiment	Height of plant (cm) at end of experiment
A	0	250	5	10
B	10	250	5	20
C	20	250	5	35
D	30	250	5	38
E	40	250	5	38

a) What is the aim of Mr Tan's experiment? [1]

_____

b) Using the results shown above, state the least amount of fertiliser that would ensure the maximum growth of plant. [1]

_____

c) State a reason why the height of the plant in pot A increases even when no fertiliser is provided. [1]

_____

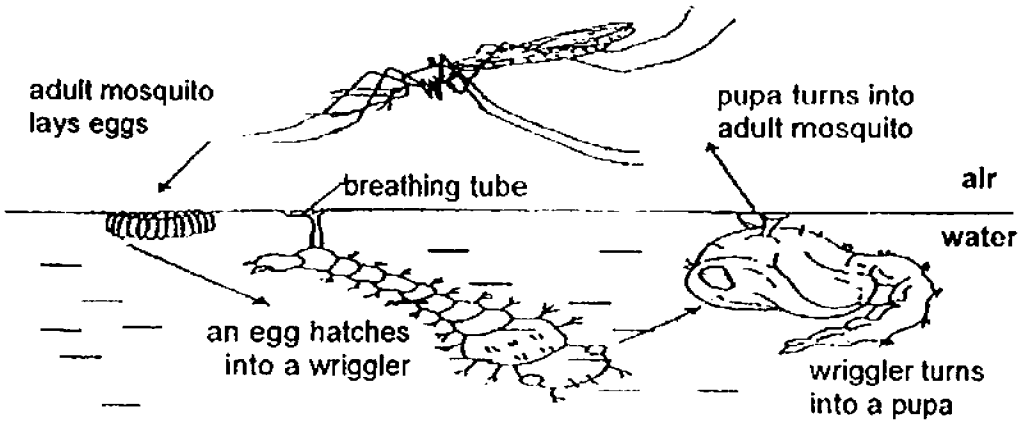
_____

d) If Mr Tan has another similar potted plant F, in which he provides 25ml of fertiliser, what could be the height of the plant at the end of 2 weeks? [1]

_____

_____

30. During the hotter months, a high number of Singaporeans may contract dengue fever, a disease caused by the Aedes mosquito.



A teacher asks 2 pupils, Amelia and Britney, to suggest ways to stop mosquitoes from breeding in a pond. Their suggestions are as follows:

Amelia	Spray oil on the water surface.
Britney	Use a water pump to produce bubbles to ensure that the water is not stagnant.

a) From the diagram above, how many stages are there in the life cycle of the Aedes mosquito? [1]

_____

b) Name another insect that has a similar life cycle as the mosquito. [1]

_____

c) Study the diagram of the wriggler shown above. How does Amelia's suggestion kill the wrigglers? [1]

_____

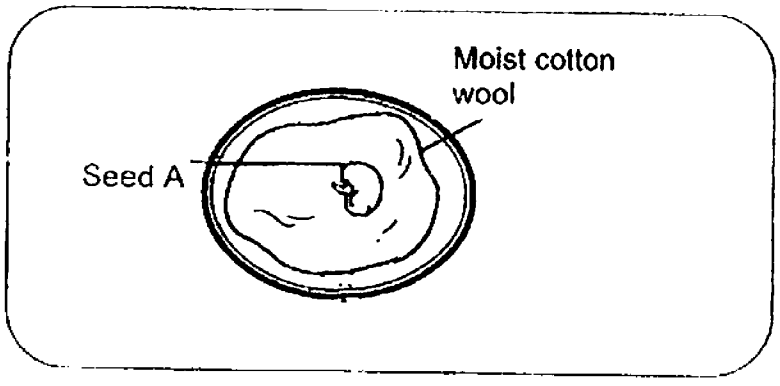
_____

d) The teacher says that Britney has a safer suggestion as it does not harm the living things in the pond. Suggest another safe way to stop the breeding of mosquitoes. [1]

_____

_____

31. Larry has a seed, A. He placed it in a dark cupboard as shown below.

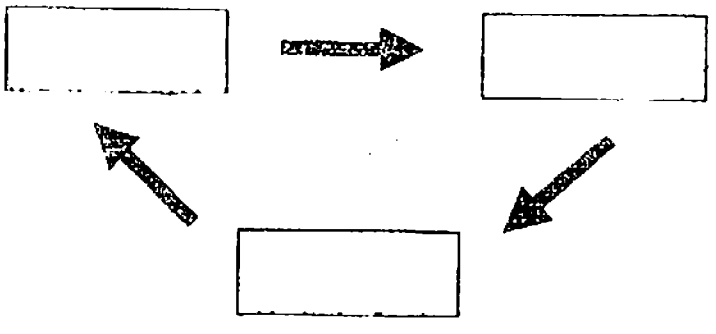


a) Seed A germinated. Explain why. [1]

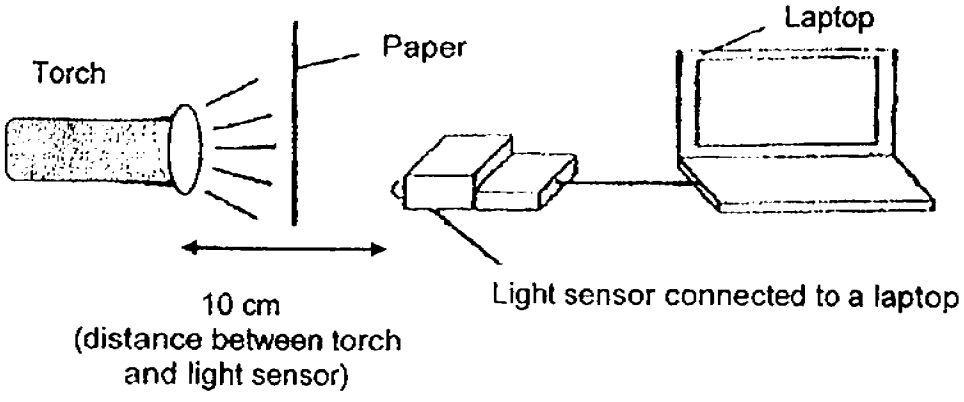
_____

_____

b) Write the stages of the life cycle of a plant in the diagram below. [1]



32. Zachary wanted to find out if the number of sheets of paper affects the amount of light passing through it. He measured the amount of light that was able to pass through a piece of paper with a light sensor as shown below.



He then increased the number of sheets of paper used. The table below shows the results of his experiment.

a) Fill in the missing value, X, in the table shown below. [1]

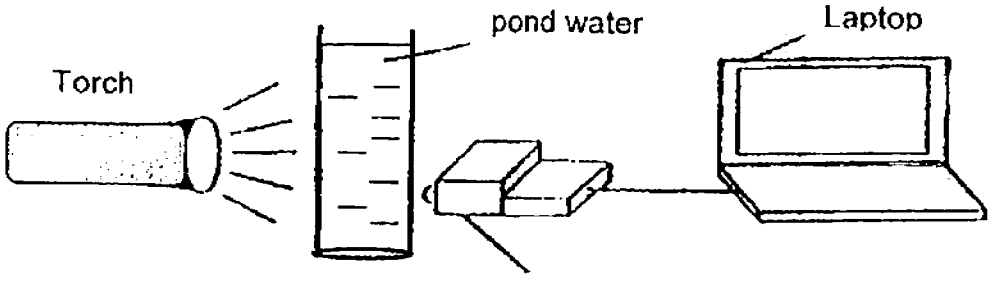
Number of sheets of paper used	1	2	3	4	5
Amount of light received by the light sensor (lux)	100	80	X: ____	40	20

b) State the changed variable in Zachary's experiment. [1]

c) From the above experiment, what is the relationship between the amount of light received and the number of sheets of paper? [1]

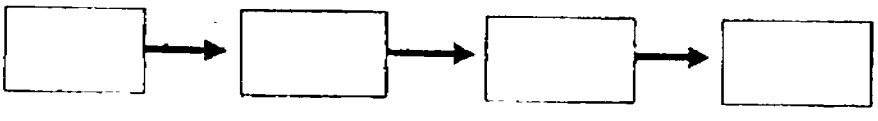
d) If the torch is shifted left to 20cm away from the light sensor, how will this change affect the amount of light received by the light sensor? [1]

33. David collected four cylinders of water from four different ponds A,B,C and D. He measured the amount of light that passed through the four cylinders of water using a light sensor. The table below shows the data collected.



Pond	Amount of light detected
A	300 lux
B	150 lux
C	420 lux
D	690 lux

a) Arrange the above data, starting from the least polluted pond to the most polluted pond. [1]



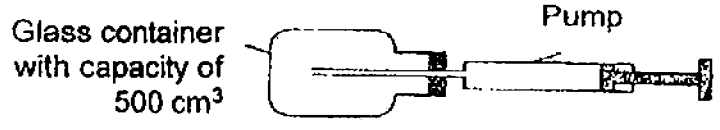
Least polluted pond

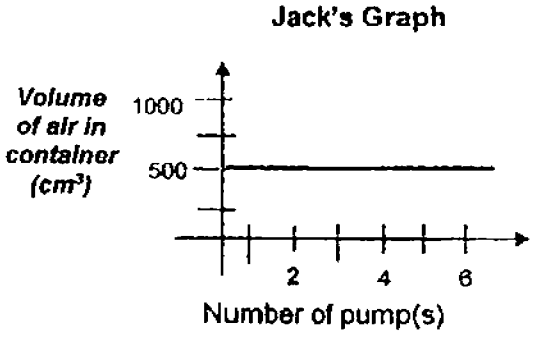
Most polluted pond

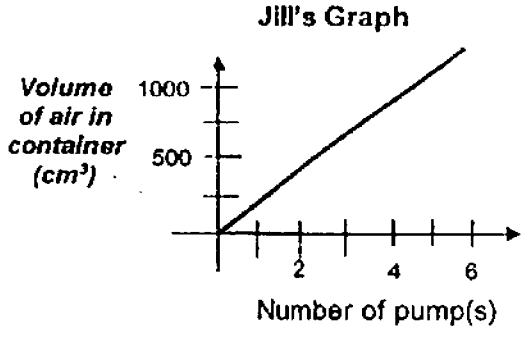
b) Plants need sunlight to make food. In which pond, A,B,C or D, would fully submerged plants grow best? Explain your choice. [2]

34. Mrs Goh had a glass container with a capacity of 500 cm^3. She fitted a pump on the container. Each time she pushed the pump in completely, 100 cm^3 of air would enter the container. Mrs Goh pushed the pump 6 times.

Her students, Jack and Jill, each drew a line graph of the amount of air in the container as shown below.







a) Whose line graph is correctly drawn? Explain why. [2]

_____

_____

_____

b) Using the same set of apparatus, Mrs Goh pumped in 50 cm^3 of water into the container. What would be the volume of air in the container now? [1]

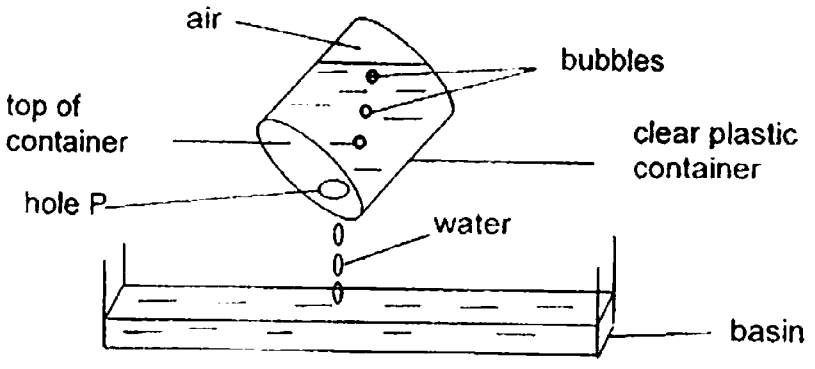
_____

c) Mrs Goh continued to pump water into the container. However, she could not fill the container completely with water. Explain why. [1]

_____

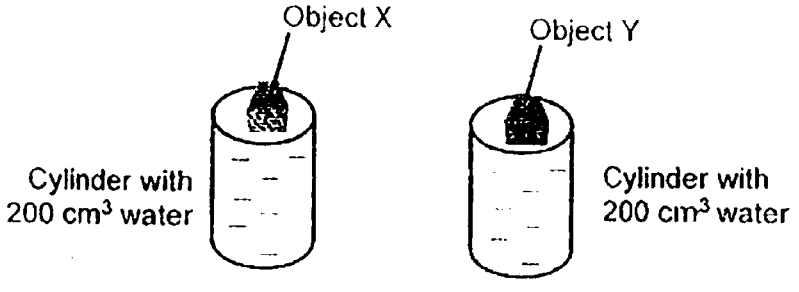
_____

35. Athira has a clear plastic container filled with water. It has a hole on top of the container. She pours the water out as shown below.



a) When water is flowing out of the container, bubbles can be observed rising up to the surface of the water. Explain why. [1]

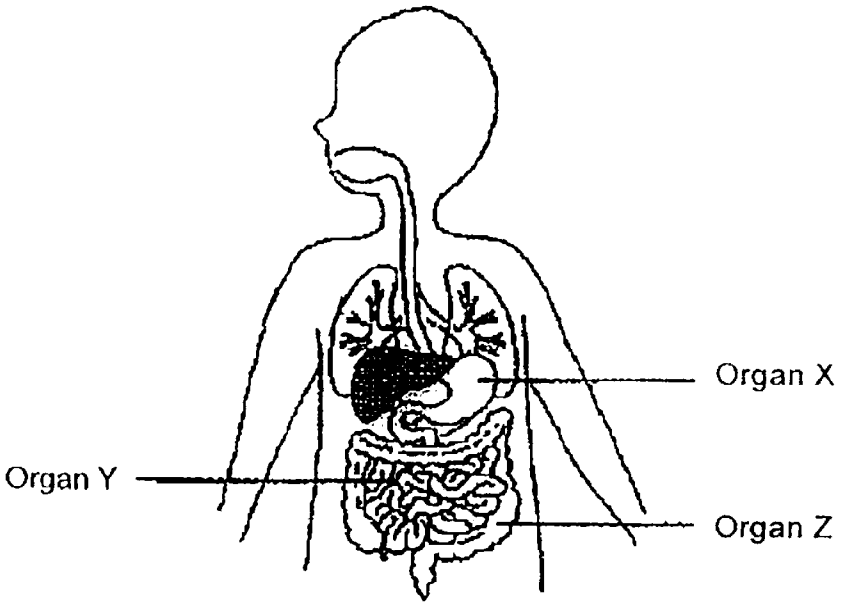
b) In another experiment, Athira released 2 objects, X and Y, each from the same position into a cylinder with 200 cm^3 of water as shown below.



She recorded the time needed for each object to reach the bottom of the cylinder. Object X took 10 seconds while Object Y took 4 seconds. What does this tell us of the mass of Object X compared to Object Y? [1]

c) State the property of matter that is needed for the experiment to be carried out. [1]

36. The diagram below shows the human digestive system.



a) Name organs X and Y. [1]

i) Organ X: _____ ii) Organ Y: _____

b) What is the function of organ Z? [1]

_____

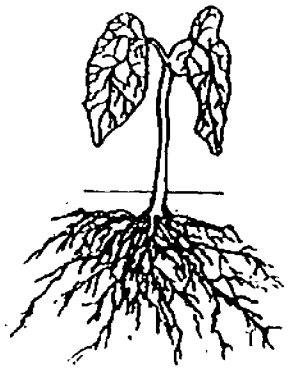
_____

c) Grandma Li has lost many teeth. Explain how fewer teeth affect the speed of the digestion of food, if she chews the same number of times as before? [2]

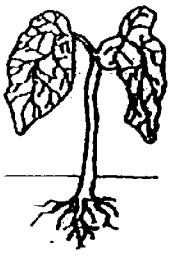
_____

_____

37. Alif has 2 plants, A and B, in his garden as shown below.



Plant A



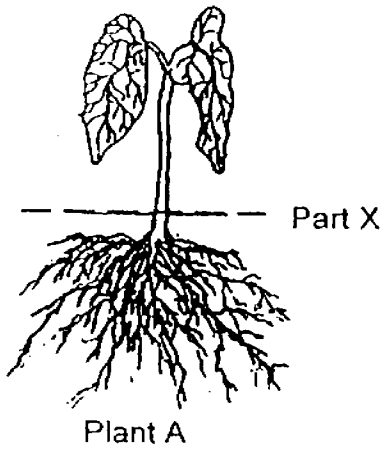
Plant B

a) That night, there was a strong wind that caused Plant B to fall but not Plant A. Explain why only Plant B fell. [2]

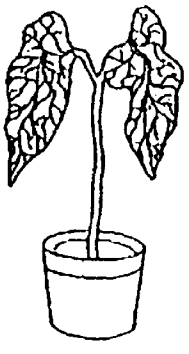
_____

_____

b) Alif replanted the upper part of Plant A into a pot by cutting off at Part X as shown below.



Plant A



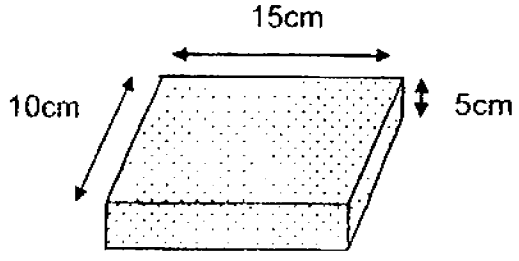
Plant A in pot

A few days later, Plant A withered and died. Explain why. [1]

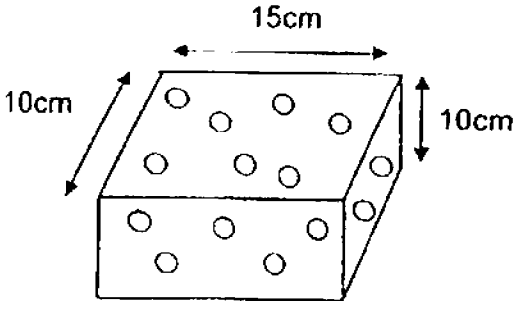
_____

_____

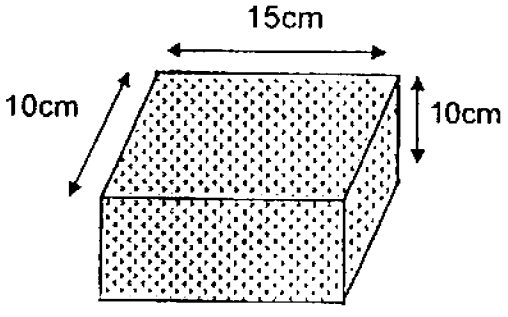
38. Sandra was given a rectangular sponge, a rectangular iron bar and a rectangular container with a lid as shown below.



rectangular container with lid



rectangular sponge

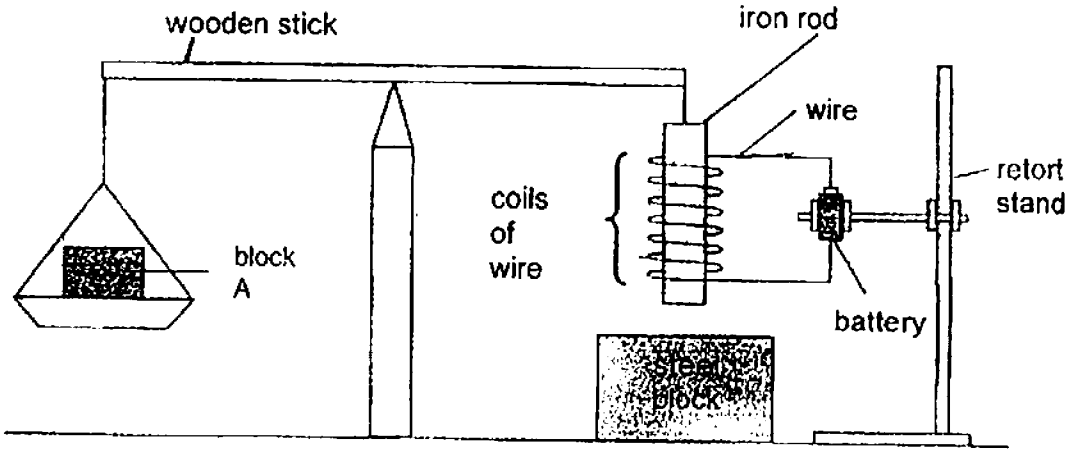


rectangular iron bar

a) Sandra placed the sponge into the container. She discovered that she could close the lid. Explain why. [2]

b) Sandra then removed the sponge and placed the iron bar into the container. She could not close the lid. Explain why. [1]

39. Study the set-up below.

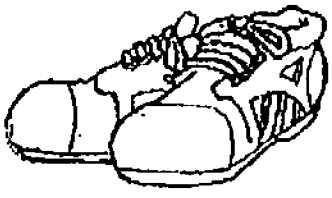


When the wire is not connected to the battery, the wooden stick becomes balanced as shown above.

a) However, when the wire is connected to the battery, the iron rod is pulled downwards towards the steel block. Explain why. [2]

b) If the steel block is replaced by Magnet K and the wire is connected to the battery, the iron rod is pushed upwards, away from the steel block. Give a reason why this happens. [2]

40. John has the following two pairs of shoes.



rubber shoes

wooden shoes

a) Which pair of shoes is more comfortable for running? State two properties of the material you have chosen. [2]

_____

_____

b) John wore the rubber shoes and stepped on a puddle of water. He noticed that his feet were not wet. Explain why. [1]

_____

_____

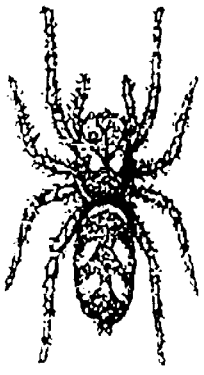
41. The diagram below shows Animal P. Susan wanted to find out if the animal is an insect. She carried out the following steps:

Step A Measured its length.

Step B Checked if it had wings.

Step C Counted the number of legs.

Step D Counted the number of body parts.



Animal P

a) Which 2 steps A,B,C or/and D are used to determine if Animal P is an insect? [1]

_____

_____

b) From the above steps, Susan concluded that Animal P is not an insect. [2]
Give a reason how Animal P is different from an insect.

_____

_____

End of Booklet B

EXAM PAPER 2016 (P4)

SCHOOL : TAO NAN

SUBJECT : SCIENCE

TERM : SA1

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

29)a)He wanted to find out how the amount of fertiliser affects the height of the plant.

b)30ml of fertiliser.

c)The plant could still make food without fertiliser.

d)The height of the plant is 37cm high.

30)a)There are four stages.

b)A mealworm beetle.

c)When you spray oil on the surface of the water, it prevents air from going into the pond, so the larva and pupa could breathe.

d)Breed fishes inside the pond to eat the wrigglers and pupae.

31)a)It was provide with moisture, warmth and oxygen.

b)Adult → seed

young plant

32)a)60

b)The sheets of paper.

c)The more the sheets of paper, the lesser light received.

d)The distance is longer so the amount of light received by the light sensor is lesser.

33)a)D→ C→ A→ B

b)The most amount of light is able to pass through the water and the plants will be able to make the most amount of food.

34)a)Jack's graph. Air does not have a definite volume and can be compressed.

b)450cm3.

c)Air is occupying space in the glass container.

35)a)Air is entering the container.

b)Object X has smaller mass than Object Y.

c)Matter has mass.

36)a)i)Stomach ii)Small intestine

b)It is to absorb water from the undigested food.

c)The digestion of food is slower as the teeth chew the food into bigger pieces than last time.

37)a)Plant B had lesser roots than Plant A , so the roots of Plant A anchored the plant more firmly to the ground than the roots in Plant B.

b)Plant A had no roots to absorb water for the entire plant.

38)a)A sponge can be compressed because it has many air spaces in it.

b)A iron bar is an solid. It cannot be compressed and does not have any air spaces in it.

39)a)The iron rod is magnetised and it became a magnet and it attracted the steel block.

b)The like poles of the electromagnet and Magnet K are facing each other and the magnets repelled each other.

40)a)Rubber shoes. It is flexible and waterproof.

b)Rubber is waterproof.

41)a)Step C and Step D.

b)Animal P has two body parts and eight legs while insects has three body parts and six legs.