Name : _____ ( )

Class : Primary 4 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 4

Semestral Assessment 1

SCIENCE

BOOKLET A

14 May 2015

Total Time for Booklets A and B: 1 hour 45 minutes

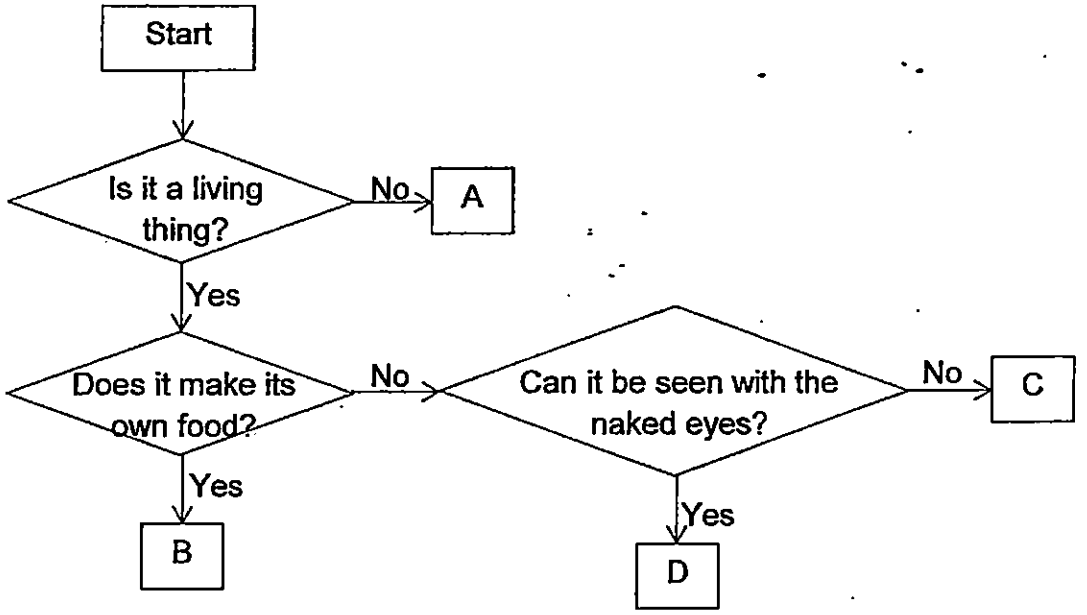
30
~~40~~ questions
60 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

This paper consists of 18 printed pages.

Section A (30 x 2 marks = 60 marks)
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

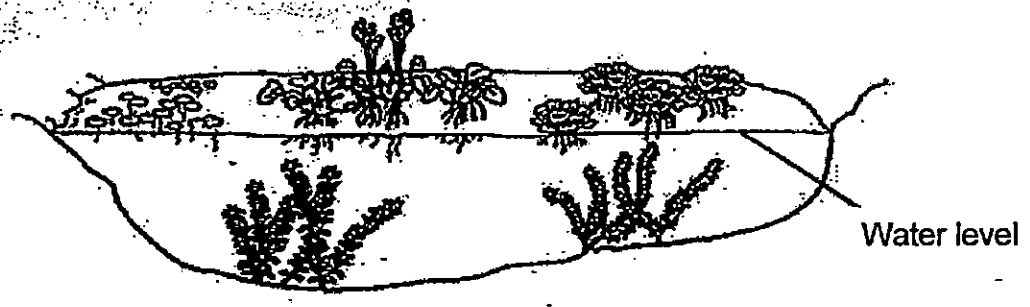
1. Study the flowchart below.



Which letter, A, B, C or D, of the flowchart best represents yeast?

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

2. The diagram below shows plants that can be found in a pond.



How can these plants be classified into two groups?

(1) Ferns and Mosses
(2) Water plants and land plants.
(3) Floating plants and underwater plants
(4) Plants with roots and plants without roots.

3. Which one of the following statements about living things is true?

(1) All living things need food to survive.
(2) All living things can survive without water.
(3) All living things are made up of plants and animals only.
(4) All living things reproduce by giving birth to their young.

4. Amy placed 2 pots of similar plants, Pot A in the sun, and Pot B in the shade. She watered them with the same amount of water daily. After a few days, she observed that the plant in Pot B started to wither. Amy repeated the experiment and observed the same result.

What can Amy conclude from her experiment?

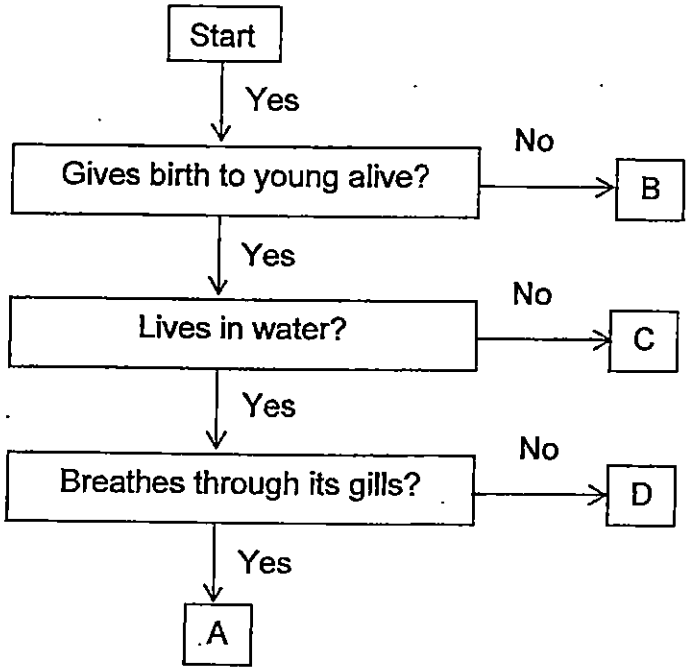
(1) Plants can grow.
(2) Plants need air to survive.
(3) Plants need water to survive.
(4) Plants need light to survive.

5. Water enters a plant through its roots. Where does the water go to after entering the plant?

A Fruits
B Stems
C Leaves
D Flowers

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

6. The flowchart below shows some characteristics of 4 animals.



Which letter, A, B, C or D, represents the dolphin?

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

7. Tricia carried out an experiment to observe the stages of growth of a plant from a seed to an adult. She recorded her observations over a period of time as shown below.

A White flowers bloom
B Shoot grows upwards
C Leaves start to develop
D Root grows downwards
E Fruits starts to appear

Which of the following correctly shows the order in which the seed develops into an adult plant?

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

8. Study the diagrams below. Kenny placed a baby terrapin of the same size into each bowl of water and placed them in his room. He fed the terrapins with the same amount of food daily.

Terrapin A

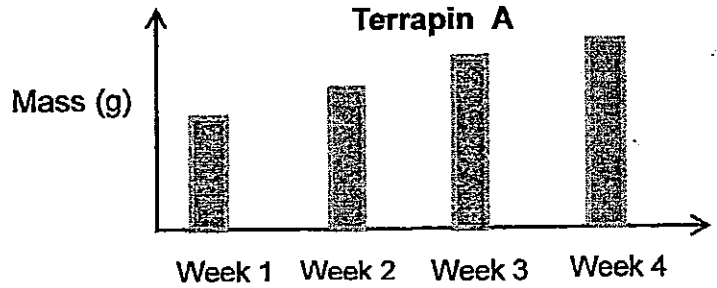
Terrapin B

Terrapin C

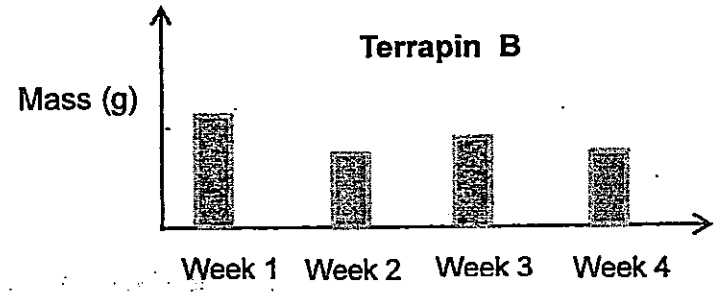
Terrapin D

Kenny recorded the mass of the 4 terrapins daily for 4 weeks. He then plotted different graphs with the results as shown below.
Which terrapin is most likely to have been given the right food?

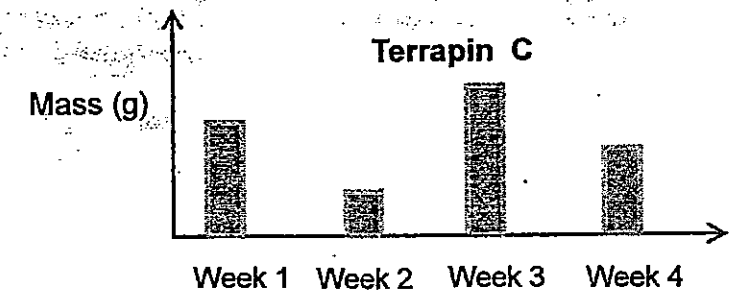
(1)



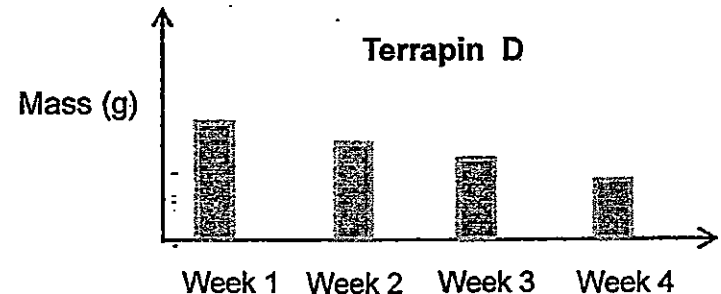
(2)



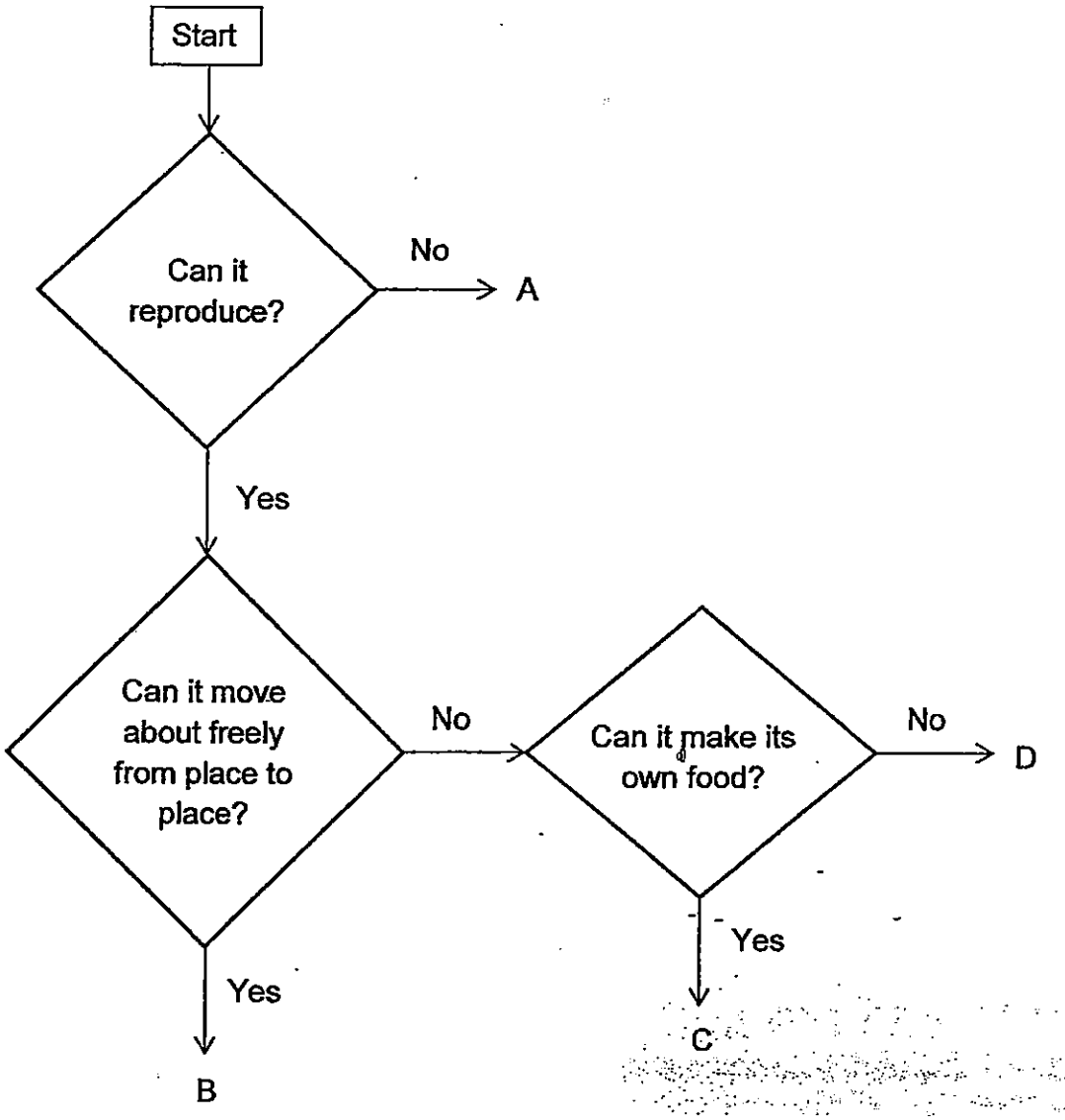
(3)



(4)



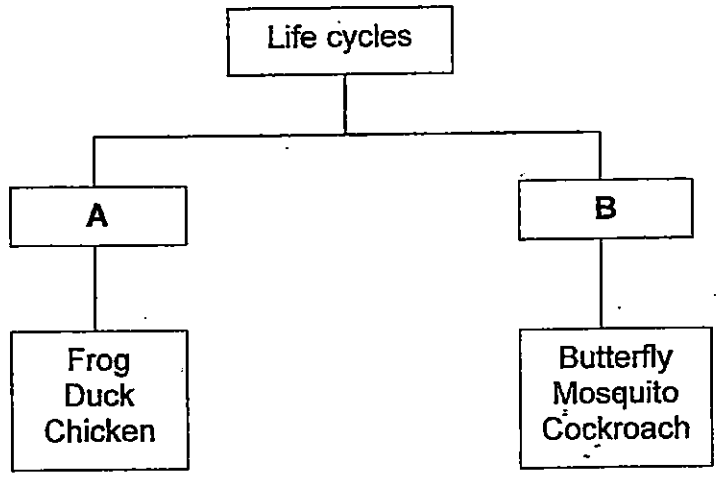
9. Study the flowchart below.



Which of the following, A, B, C and D, best represents a plant?

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

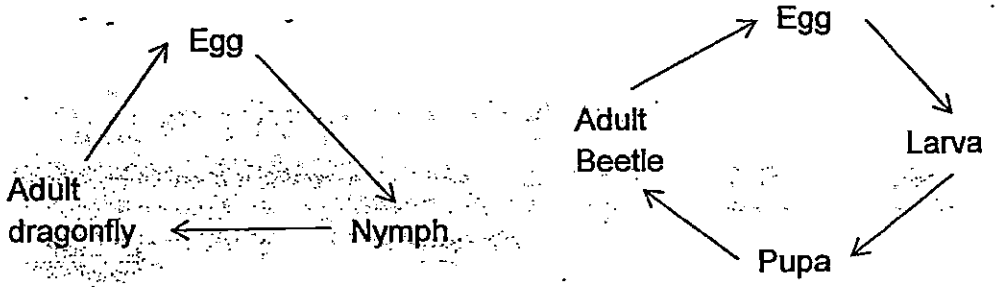
10. The chart below shows the classification of some animals according to their number of stages in their life cycles.



Which one of the animals above is in the wrong group?

(1) Duck
(2) Chicken
(3) Butterfly
(4) Cockroach

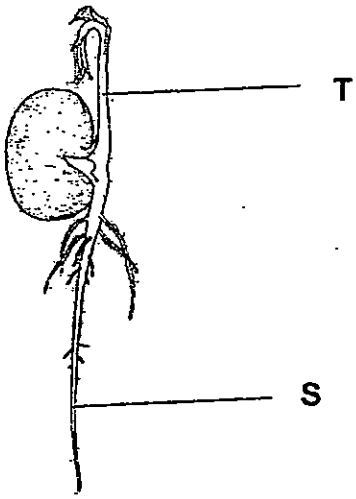
11. The diagram below shows the life cycles of a dragonfly and a beetle.



Based on the life cycles shown above, which one of the following statement about the dragonfly and beetle is **not** true?

(1) Both their young resemble the adult.
(2) Both their young moults several times in their life cycle.
(3) The adult dragonfly has feelers but the adult beetle does not.
(4) The young of the dragonfly spends part of its life cycle in water whereas the young of the beetle does not.

12. The diagram shows a seedling.



Which one of the following best represents the functions of parts, S and T, as it develops?

	Part S	Part T
(1)	Supports the plant	Absorbs water for the plant
(2)	Makes food for the plant	Helps the plant stand upright
(3)	Absorbs water for the plant	Supports the plant
(4)	Absorbs mineral salts for the plant	Makes food for the plant

13. The table below shows information of 4 animals, W, X, Y and Z.

Characteristics	W	X	Y	Z
4 stages	✓		✓	
Its young live on land	✓	✓		✓
Moults during one of its stages	✓		✓	✓

Which one of the following animals is most likely a housefly?

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

14. Diana made 1 paper toy boat and 1 plastic toy boat for an experiment. She placed the 2 toy boats into a big tub of water at the same time. A short while later, the paper boat started to sink.

What property of materials was she investigating?

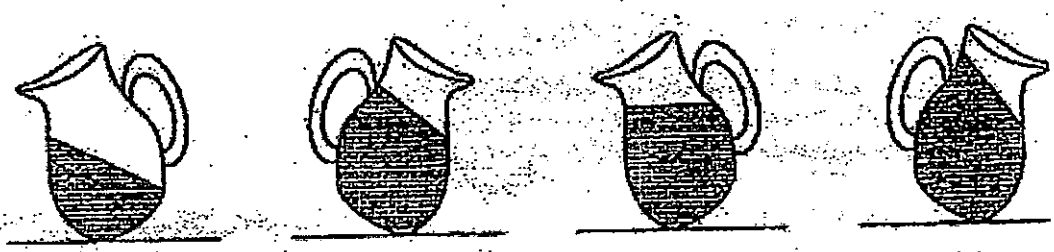
(1) Strength
(2) Waterproof
(3) Transparency
(4) Flexibility

15. Which one of the following objects will float on water?

A Glass marble
B Wooden ruler
C Ceramic spoon
D Plastic paper clip

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

16. Pauline poured 300 ml of water into 4 similar jugs and she tilted the jugs in various positions on the table.
Which one of the following diagrams correctly shows the water level in the jug after 1 min?



(1) (2) (3) (4)

17. Figure 1 shows a measuring cylinder containing a certain amount of water. Figure 2 shows the same measuring cylinder when Object X is placed into it.

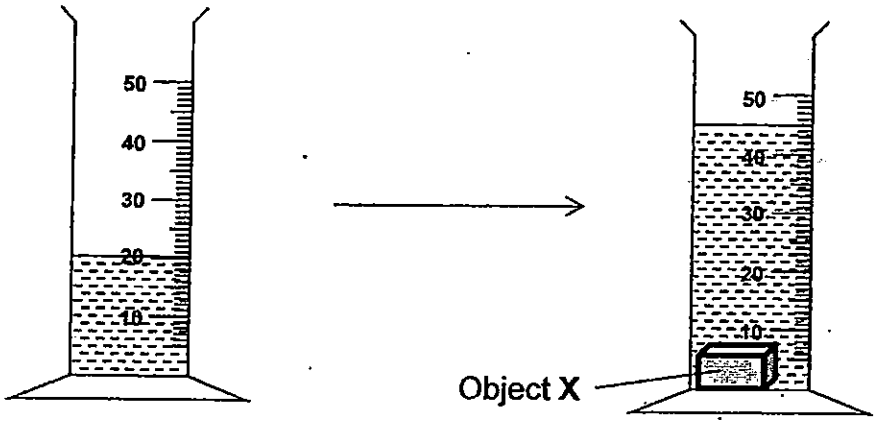


Figure 1 **Figure 2**

What is the volume of Object X?

(1) 15 cm^3
(2) 20 cm^3
(3) 25 cm^3
(4) 45 cm^3

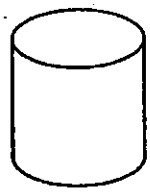
18. Henry measured the volume and mass of a fully pumped basketball. He then continued to pump some more air into the ball and measured the volume and mass of the basketball again.

Which of the following statements would be true?

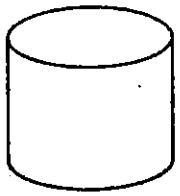
A The volume of air in the basketball was the same for both measurements.
B The volume of air in the basketball decreased at the second measurement.
C The mass of air in the basketball was the same for both measurements.
D The mass measured the second time was greater than the mass measured the first time.

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

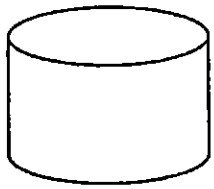
19. Kelly has 500 cm^3 of air and 500 cm^3 of orange juice. She wants to transfer all the air and orange juice into one sealed container. Which of the following containers would be able to hold all the air and orange juice?



Container A
Capacity : 500 cm^3



Container B
Capacity: 950 cm^3



Container C
Capacity: 1200 cm^3

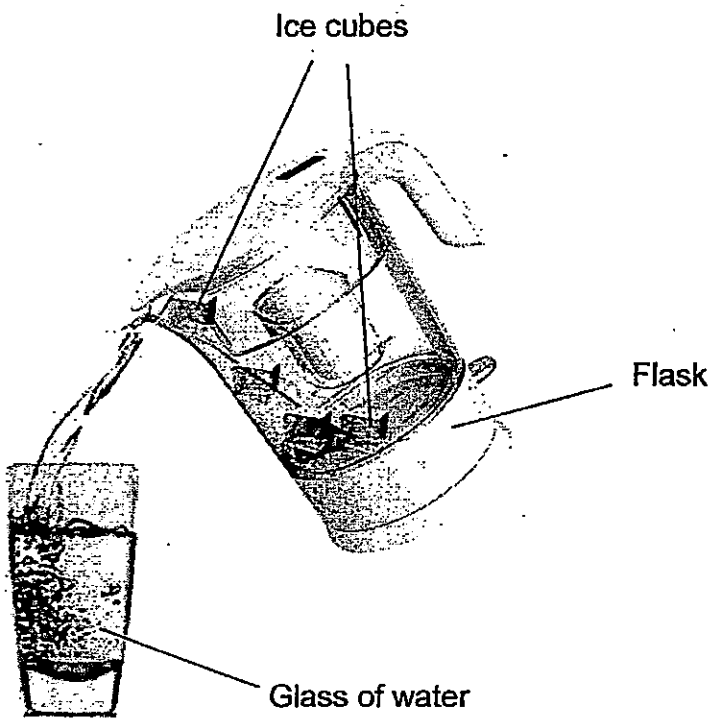
(1) C only
(2) A and B only
(3) B and C only
(4) A, B and C

20. Sarah used the lever balance to compare the mass of a tennis ball, a book and a teddy bear.

Arrange the mass of the ball, book and bear in **ascending** order starting from the **lightest to the heaviest.**

(1) Book, Bear, Ball
(2) Ball, Book, Bear
(3) Ball, Bear, Book
(4) Bear, Book, Ball

21. Jason wanted to transfer the iced water in his flask into a glass as shown below.

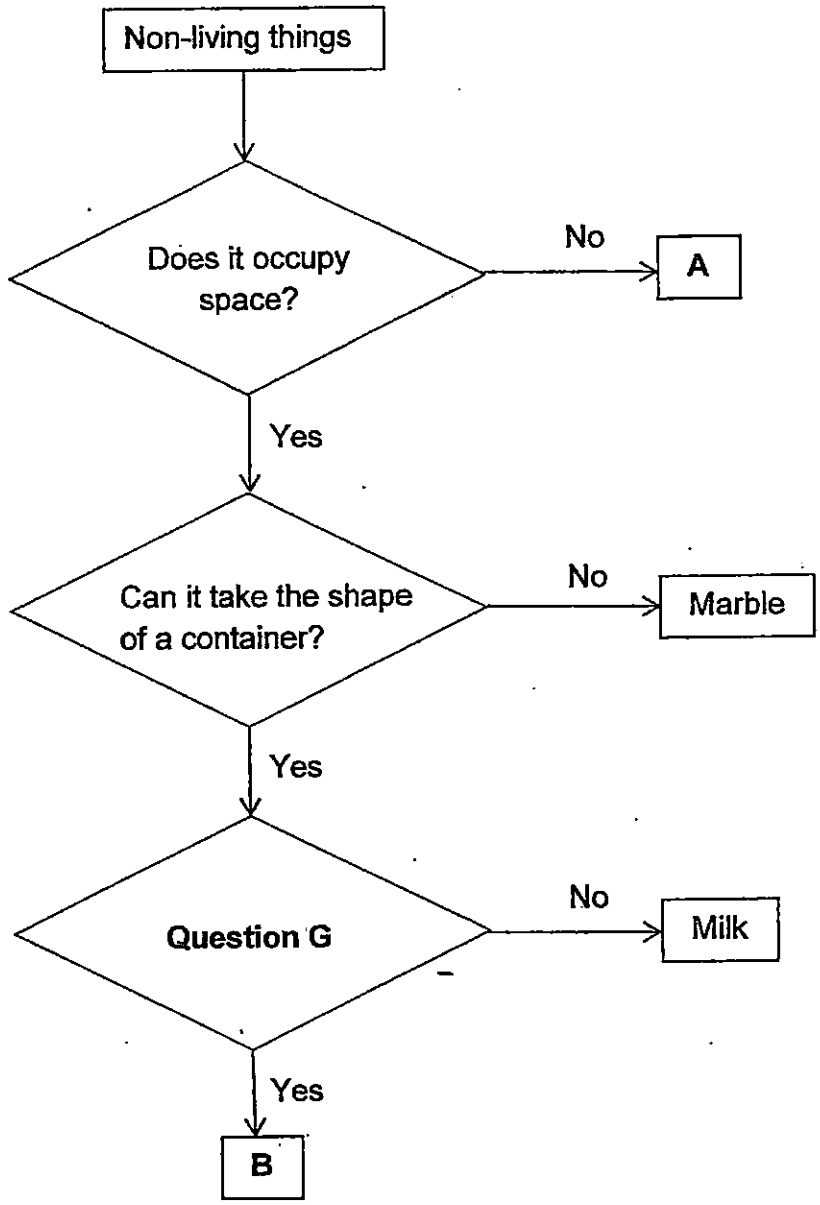


As he was pouring the water, an ice cube blocked some of the water from flowing out into the glass. What does this show?

A Water has a definite volume.
B The ice cube cannot be compressed.
C Water occupies space in the glass so the ice cubes could not flow out of the flask.
D The ice cubes have a definite shape and could not fit through the opening of the flask.

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

22. Study the flowchart below.



Which one of the following best represents, A, B and Question G?

	A	B	Question G
(1)	Steam	Smoke	Can it be compressed?
(2)	Shadow	Steam	Can it be compressed?
(3)	Sunlight	Oxygen	Does it have a definite volume?
(4)	Smoke	Sunlight	Does it have a definite volume?

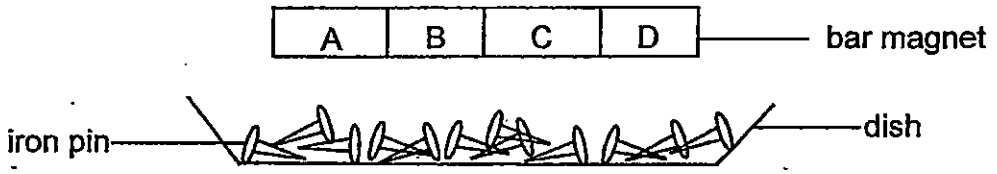
23. Michael classified the some materials according to their magnetic properties in the table below.

Magnetic Material	Non-magnetic Material
Copper	Wood
Steel	Glass

Which one of the following is **wrongly** classified?

(1) Copper
(2) Glass
(3) Steel
(4) Wood

24. Leah lowered a bar magnet into a dish of iron pins and recorded the number of pins attracted to the different parts of magnet, A, B, C and D, as shown below.

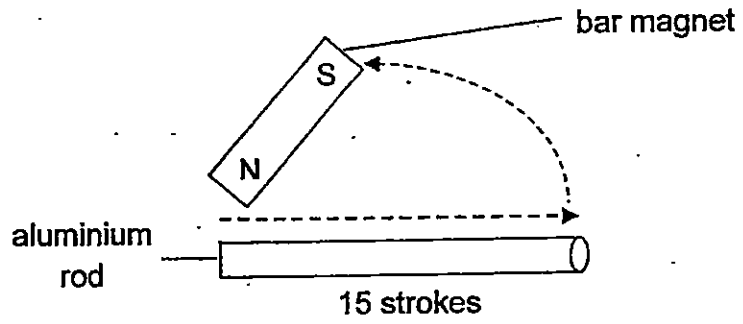


Which one of the following is most likely the aim of Leah's experiment?

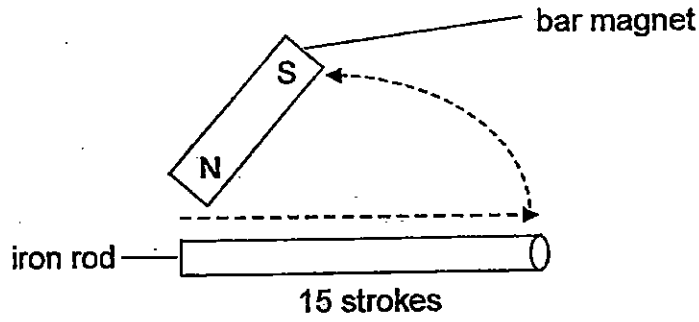
(1) To find out which are the north and south poles of the magnet.
(2) To find out which part of the magnet attracts the most number of pins.
(3) To find out if the shape of a magnet affects the number of pins attracted.
(4) To find out if the distance between the magnet and the pins affects the number of pins attracted to the magnet.

25. Joan wanted to make a temporary magnet by the 'Stroking method'. She wanted to find out if the number of strokes on the rod will affect the strength of the temporary magnet.

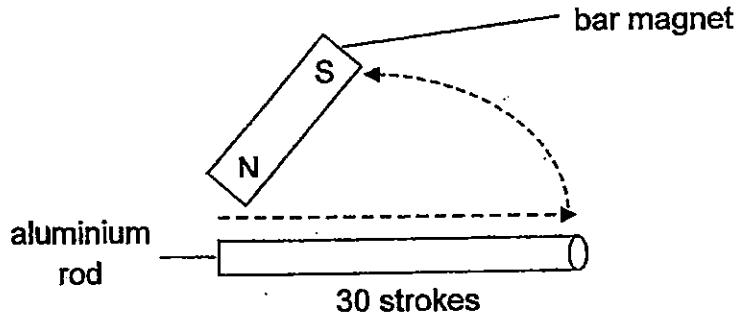
A



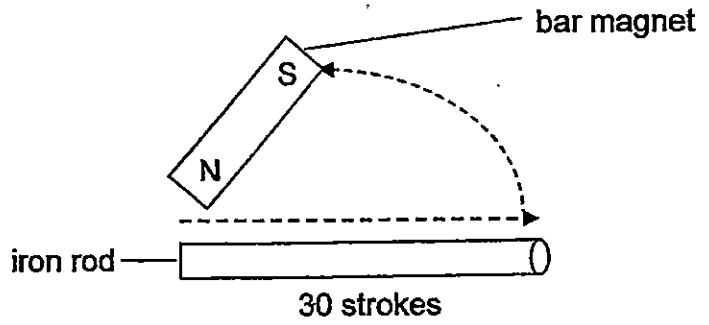
B



C



D

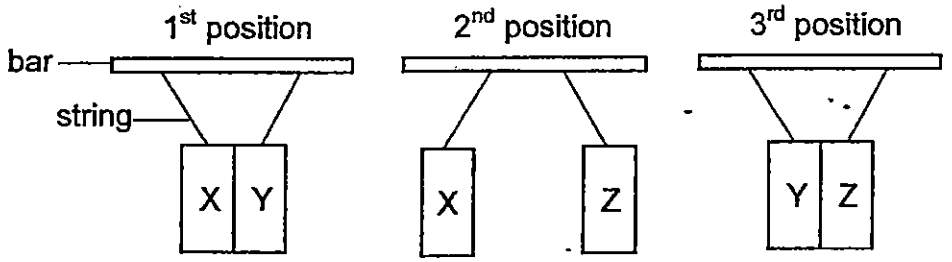


Which of the two set-ups should she use in order to conduct a fair experiment?

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

26. Chandra was given 3 objects, X, Y and Z, which consisted of magnets and magnetic objects.

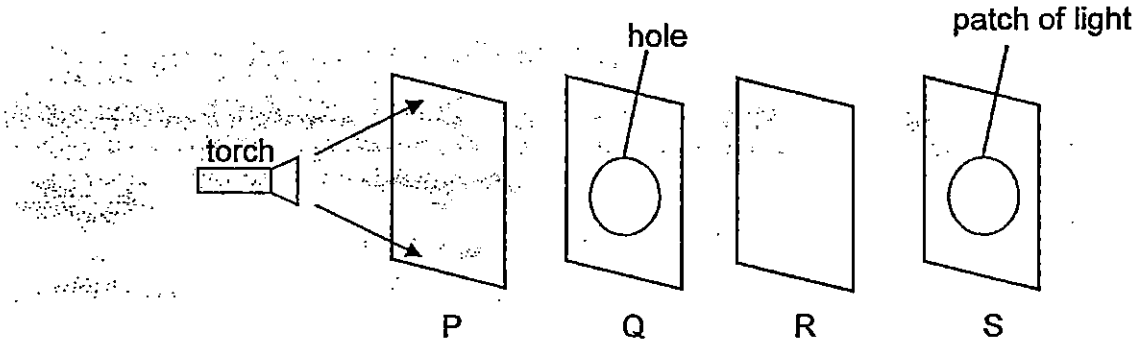
He hung the objects on a bar using strings and placed them in different positions as shown below.



Based on the results, which of the following materials is best represented by X, Y and Z?

	X	Y	Z
(1)	Magnet	Magnetic material	Magnetic material
(2)	Magnetic material	Magnet	Magnet
(3)	Magnetic material	Magnet	Magnetic material
(4)	Magnet	Magnetic material	Magnet

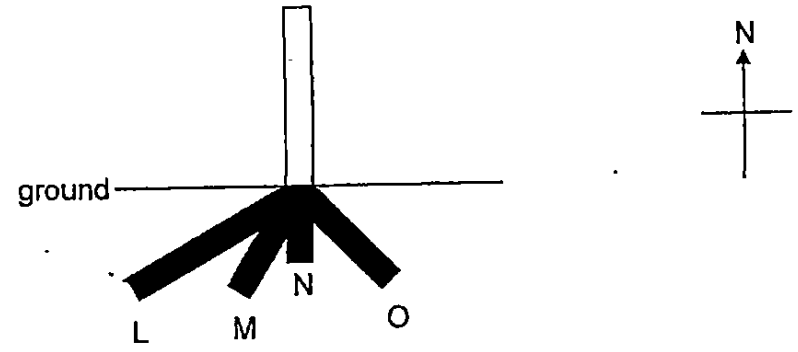
27. Kaey set up her experiment with sheets made of different materials, P, Q, R and S, as shown in the diagram below. She cut a hole on material Q and a patch of light can be seen on sheet S when the torch is switched on.



Which of the following materials are sheets, P, Q, R and S, most likely made of?

	P	Q	R	S
(1)	glass	frosted glass	wood	steel
(2)	glass	steel	frosted glass	wood
(3)	frosted glass	steel	frosted glass	glass
(4)	frosted glass	glass	wood	frosted glass

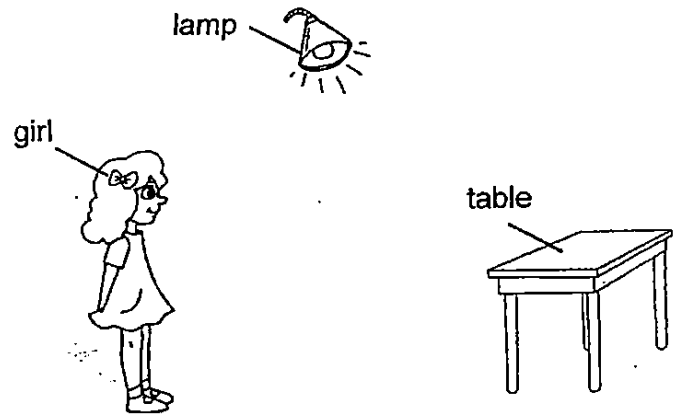
28. The diagram below shows shadows, L, M, N and O, cast by a pole at different times of the day.



Which one of the following best represents the shadow cast at 12 noon?

(1) L
(2) M
(3) N
(4) O

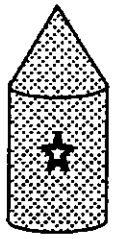
29. The diagram belows shows a girl looking at a table when the lamp is switched on.



Which one of the following shows the path that makes it possible for the girl to see the table?

(1) lamp → girl → table
(2) lamp → table → girl
(3) girl → table → lamp
(4) table → lamp → girl

30. A wooden block had a cone-shaped top and a cylindrical bottom. A star-shaped mark was made on the surface of the block as shown in the diagram below.



If Elaine shines a torch at the wooden block from different directions, which one of the following shadows would **not** be formed by the block?

(1)

(2)

(3)

(4)

End of Booklet A

Name : _____ ( )

Class : Primary 4

CHIJ ST NICHOLAS GIRLS' SCHOOL

SIMPLE IN VIRTUE
GOSPEL
STEADFAST IN DUTY
穆 纯 义 坚

Primary 4
Semestral Assessment 1
SCIENCE

BOOKLET B

14 May 2015

Booklet A	60
Booklet B	40
Total	100

Total Time for Booklets A and B: 1 hour 45 minutes

14 questions
40 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This paper consists of 16 printed pages.

_____

Parent's Signature/Date

Section B (40 marks)
For questions 31 to 44, write your answers in this booklet.

The number of marks available is shown in the brackets at the end of each question or part question.

31. Some organisms are grouped in the classification table below based on certain characteristics. [2]

A	B
Rose Plant Balsam Plant Grass	Moss Rabbit's foot fern Ladder fern

(a) Give a possible heading for A and B.

A:_____

B:_____

(b) Study the diagram of Organism Y below.

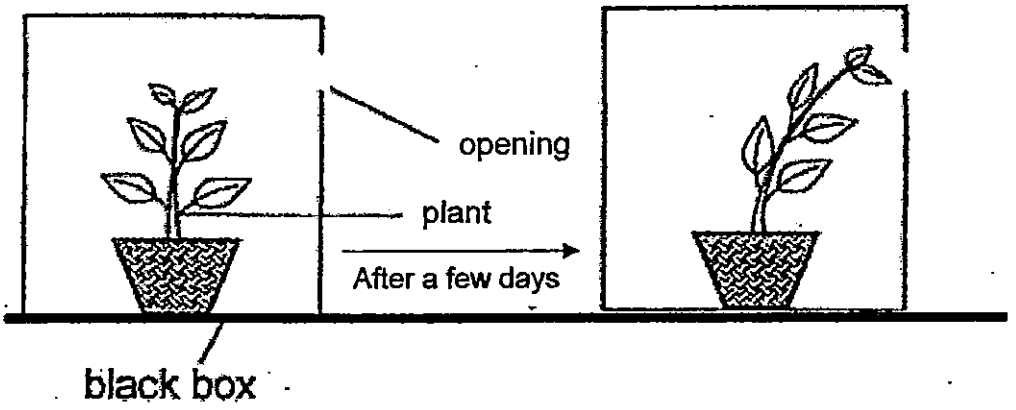
Organism Y

Based on the classification table above, in which group, A or B, could Organism Y be classified under? Explain your answer. [1]

_____

_____

32. Lily placed a potted plant in a cardboard box with a small opening and left it in the garden for a week.



(a) After a week, Lily observed that the plant had grown towards the opening. State the characteristic of living things based on the above experiment. [1]

_____

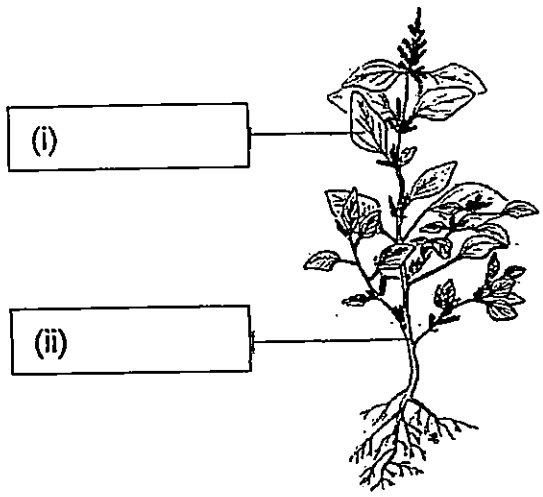
_____

(b) Without removing the box, what can Lily do to make the plant grow upright naturally again? [1]

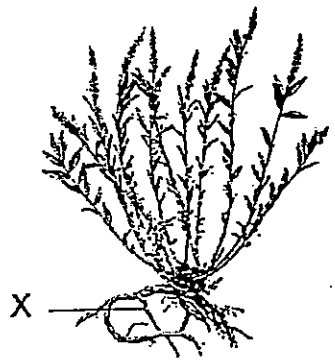
_____

_____

33. The diagram below shows two plants, C and D.



Plant C

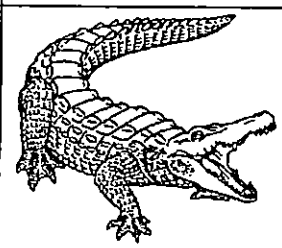
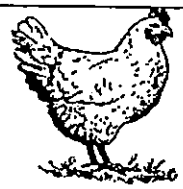


Plant D

(a) Label the plant parts (i) and (ii) of plant C. [2]

(b) State the function of part X of plant D. [1]

34. Refer to the table below.

Group W	Group X	Group Y	Group Z
 Penguin	 Zebra	 Crocodile	 Salamander
 Chicken	 Rabbit	 Clownfish	 Frog

(a) The animals have been grouped according to their type of body coverings. Write suitable headings for groups, W, X, Y and Z. [2]

Group W: _____

Group X: _____

Group Y: _____

Group Z: _____

(b) Based on the diagrams above, state one difference in the characteristics of the 2 animals in Group Y. [1]

_____

_____

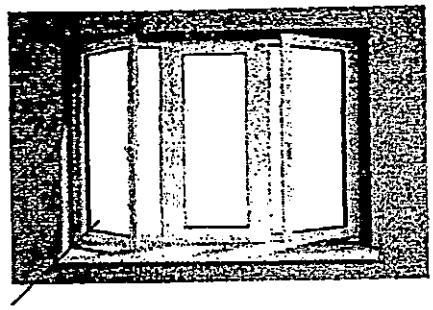
(c) Based on the diagrams above, other than having the same body covering, state 1 other similarity in characteristics between the 2 animals in Group W. [1]

_____

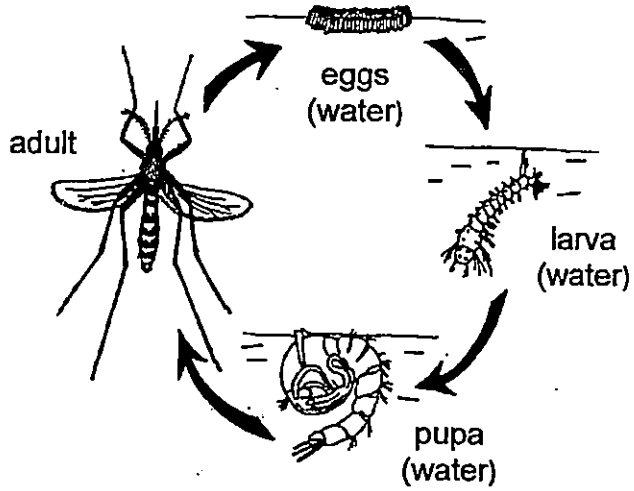
_____

35. The National Environment Agency (NEA) has recently reported a rise in the number of dengue cases in Ang Mo Kio. Some of the potential mosquito breeding grounds at home are shown below.

(a) Put a **tick (✓)** in the correct box to indicate whether it is a potential mosquito breeding ground. [1]

Potential mosquito breeding grounds	**Yes (✓)**
(i) flower vase 	
(ii)  windows	
(iii) waste paper bin 	
(iv) roof gutter 	

(b) The diagram below shows the life cycle of the mosquito.



Officers from NEA sprayed a layer of oil in the drains. At which stage(s) of the life cycle of a mosquito could the officers from NEA get rid of the mosquito easily through this method? [1]

_____

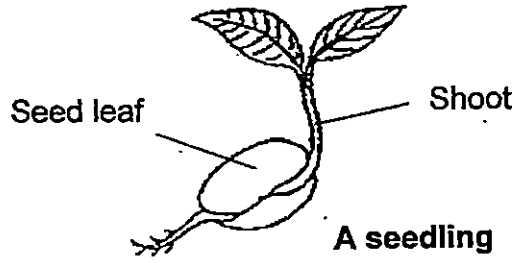
_____

(c) Explain your answer in part (b). [1]

_____

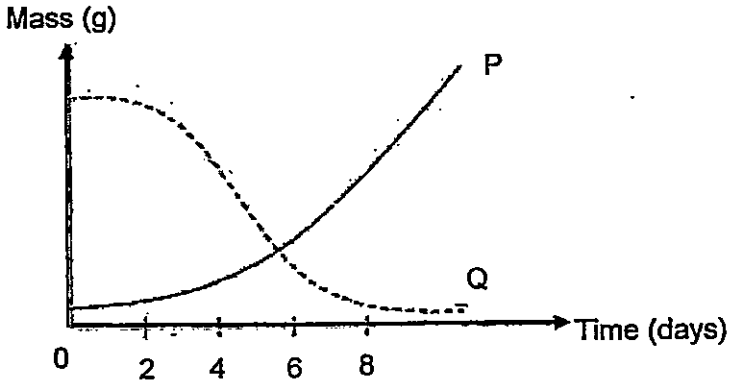
_____

36. Joe carried out an experiment on the germination of a red bean plant as shown below.



A seedling

He plotted a graph to show changes in the mass of the seed leaf and the shoot over a period of eight days as shown below.



(a) Which curve, P or Q, shows the changes in mass of the seed leaf during the experiment? Explain your answer. [1]

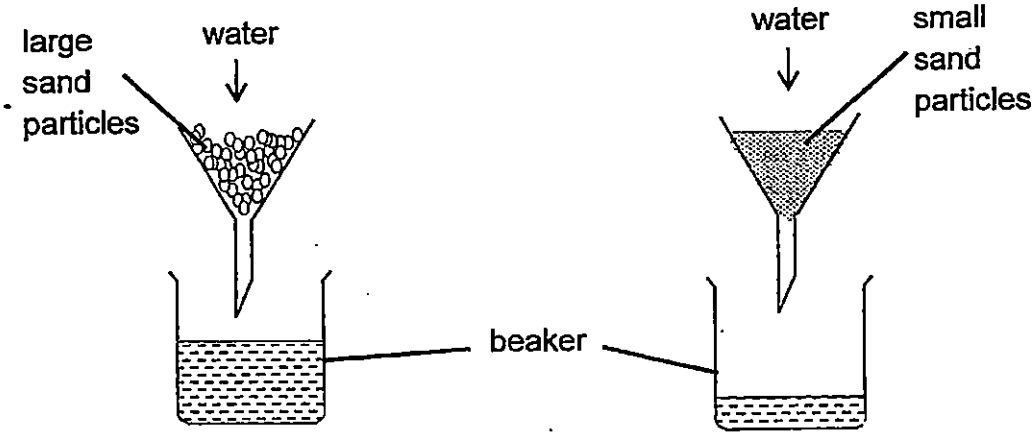
(b) What would happen to the seed leaf after day 8? [1]

(c) How did the seedling get its food from day 8 onwards? [1]

37. Perry wanted to keep some colourful guppies as pets. He wanted to bring them to school so that his friends can look at the guppies too. He went into a shop to look for a suitable tank for his guppies.

Based on what Perry wanted to do, suggest the best material for the tank he is looking for to keep his guppies. Explain your choice [2]

38. Amanda conducted an experiment to find out how fast water can flow through different types of sand as shown below. She poured an equal amount of water into each funnel which contained an equal amount of 2 different sand samples. She then observed the amount of water collected in each beaker after 5 mins.



Set-up A **Set-up B**

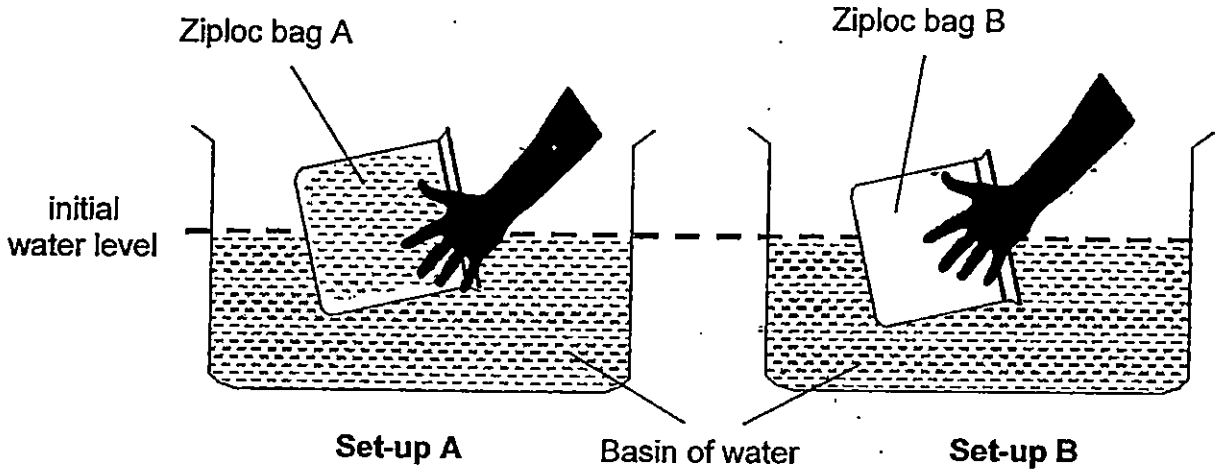
(a) As Amanda poured the water into the funnels in both set-ups, she observed bubbles on the surface of the water before it passed through the sand samples in each of the funnel. Give a reason for her observation.

[1]

(b) She observed that after five minutes, the total volume of water collected in Set-up A was more than Set-up B. Explain why is this so. [1]

(c) What properties of a matter does this experiment show? [1]

39. Russell filled up ziploc bag A with $30cm^3$ of water and ziploc bag B with $30cm^3$ of air. He sealed the two bags and pushed them into a basin of water in each of the set-ups, A and B, as shown below.



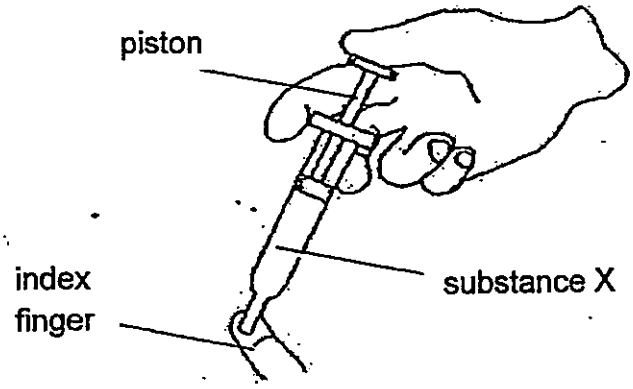
The table below shows the final height of the water levels in the basins for set-ups, A and B, when both bags were pushed to the bottom of the basins.

Set-ups	Initial height of water level in basin (cm)	Final height of water level in basin (cm)
A	20	26
B	20	23

(a) Explain why the initial height of water levels in the basins for both set-ups, A and B, has to be the same. [1]

(b) Based on the results shown in the table above, explain the difference in the final height of water levels in both set-ups, A and B. [2]

40. Renee prepared 2 identical syringes and filled 1 with substance X and the other with substance Y. She placed her index finger to cover the syringe and pushed the piston in as shown below.



She recorded the distance moved by the piston for each syringe in the table shown below.

Substance	**X**	**Y**
Distance moved by the piston (cm)	0.4	0

(a) Based on the table shown above, suggest what substances, X and Y, may be. [1]

Substance X: _____

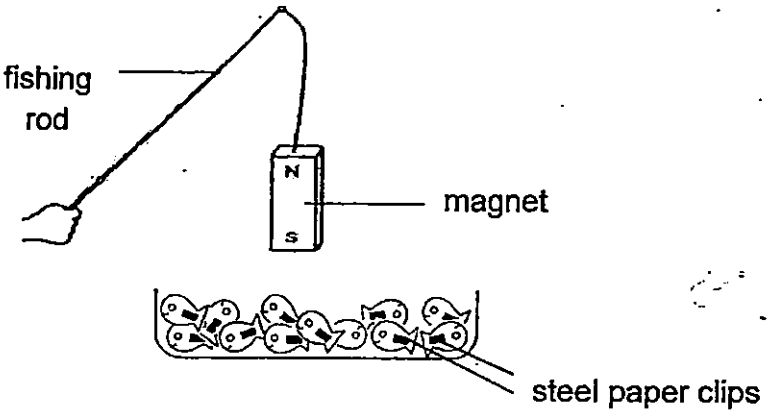
Substance Y: _____

(b) Based on the results shown on the table above, write down 2 properties of substance Y [2]

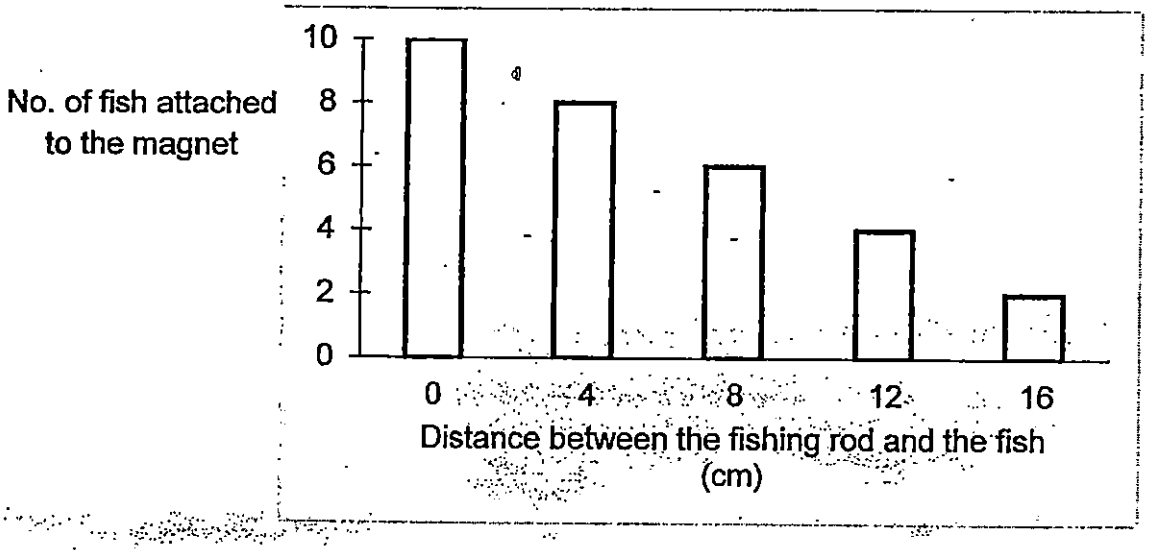
Property 1: _____

Property 2: _____

41. Jolene made a simple toy as shown in the diagram below. She made a fishing rod by tying a bar magnet to the end of a string. She cut out some cardboard fish and attached a steel paper clip to each of the fish.
The South pole of the magnet was facing the cardboard fish.



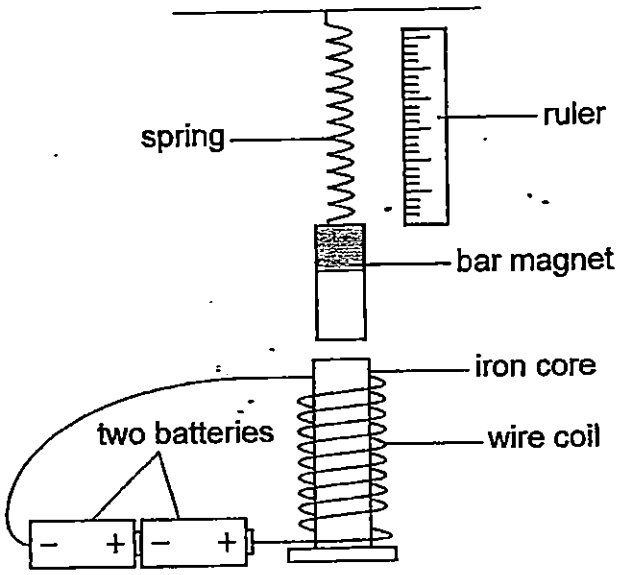
She recorded the number of fish that were attached to the magnet at different distances and drew a bar chart as shown below.



(a) Predict the number of fish that would be attracted to the magnet when the rod is 20 cm away from the fish. Give a reason for your prediction. [1]

(b) Jolene turned the magnet around such that the North pole of the magnet was facing the fish. When the North pole of the magnet was 4 cm away from the fish, how many fish would most likely be attracted to the magnet? [1]

42. In the set-up below, the length of the spring changes when the batteries are connected to both ends of the wire.

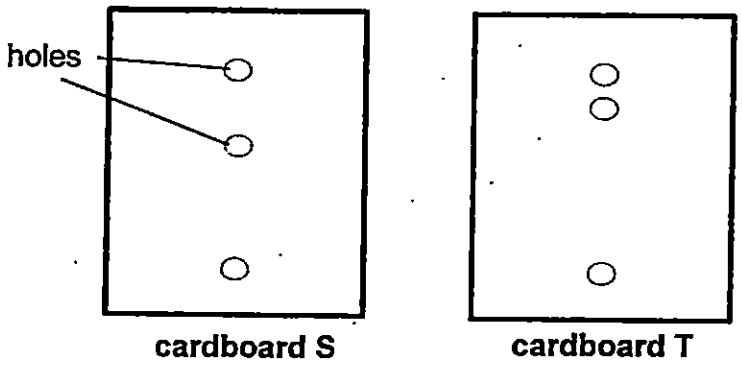


(a) The spring becomes shorter when the batteries were connected to both ends of the wire. Give a reason for this observation. [1]

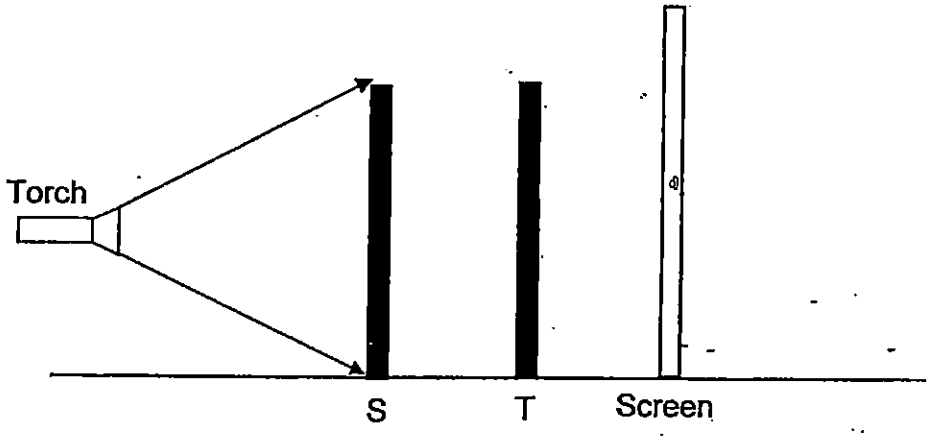
(b) One battery was removed from the set-up. Will the length of the spring remain the same, become longer or shorter? [1]

(c) Without removing the battery, and using the same items in the diagram above, state one other way you can change the set-up to get the same observation in (b). [1]

43. Rachel carried out the following experiment in a dark room. She had two similar size cardboards, S and T, with holes as shown below.



She placed cardboard S and T in a straight line between a torch and a screen as shown in the diagram below.

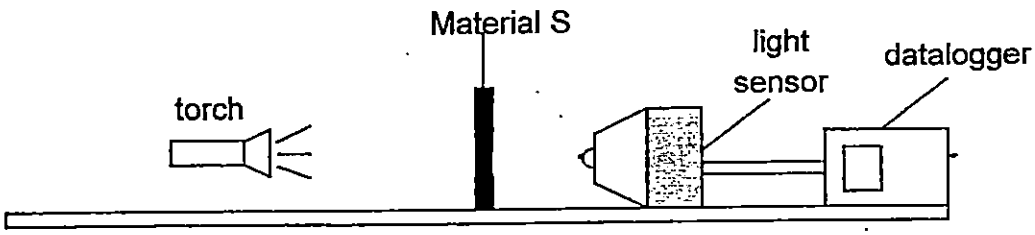


(a) How many circular spots of light would Rachel see on the screen? [1]

(b) What is the aim of Rachel's experiment? [1]

(c) If Rachel replaced cardboard S with a clear plastic sheet, how many circular spots of light would Rachel see on the screen? [1]

44. Study the experimental set-up shown below. Quinie wanted to find out the degree of transparency of materials, S, T, U and V. She set up her experiment in a dark room as shown below.



She recorded the amount of light that passed through material S and repeated the experiment with materials, T, U and V.
The table below shows the results of her experiment.

Material	Amount of light (lux)
S	110
T	150
U	50
V	90

(a) Give an example of a variable that Quinie should keep constant in her experiment. [1]

_____

_____

(b) Arrange the materials, **S, T, U, V,** according to their degree of transparency, starting with the most transparent to the least transparent in the table below.

Materials			
Most transparent →			Least transparent

(c) Based on Quinie's observation, which material could she use to make stage curtains? Give a reason for you answer. [2]

_____

_____

END

SCHOOL : CHIJ ST NICHOLAS GIRLS SCHOOL RED
SUBJECT : SCIENCE
TERM : SA1

Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q9	Q 10
3	3	1	4	4	4	4	1	3	4
Q 11	Q 12	Q 13	Q 14	Q 15	Q16	Q17	Q18	Q19	Q20
1	3	1	2	2	3	3	2	3	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	2	1	2	3	4	2	3	2	4

Q31a. A: flowering Q31a. B: Non- flowering Q31b. B. Organism Y reproduces by spores.

Q32a. Living things respond to changes.
Q32b. She can make a bigger opening on the top of the black box.

Q33a i) Leaves Q33b ii) stem Q33b. Part X helps the plant to absorb water and mineral salt.

Q34a. Group W: Feathers, Group X: Hair, Group Y: Scales, Group Z: Moist Skin
Q34b. The clownfish lives in water but the crocodile lives both in water and on land.
Q34c. They both reproduce by laying eggs.

Q35ai) Flower Vase – YES Q35aiv) roof gutter – YES
Q35b. The larva and pupa stage.
Q35c. Larva and pupa of mosquito breathe through breathing tubes and oil will block the breathing tube and prevent it from breathing in air.

Q36a. Q. The mass of the seed leaf decrease as it provides food for seedling.
Q36b. The seed leaf will shrivel and drop off.
Q36c. The leaves of the seedling starts to develop and starts to make food for the seedling.

Q37. He should use glass. His friends are able to see his guppies, as the material of the tank is transparent.

Q38a. Air trapped between the sand particle escaped to the surface of the water.
Q38b. Large sand particles in setup A had more space in between, so water took a shorter time to flow into the beaker. Q38c. Matter occupies space.

Q39a. The experiment should be fair.
Q39b. A has higher water level than B as water in Ziploc A cannot be compressed but air in Ziploc B can be compressed. So Ziploc A occupies more space than B.

Q40a. Substance X: air Q40a. Substance Y: Water
Q40b. Property 1 : Y cannot be compressed. Q40b. Property 2: Y has no definite shape.

Q41a. O. The magnetic strength of the magnet is not strong enough to attract from 20cm.
Q41b. 8 fishes.

Q42a. The two magnets' like poles are facing each other, making both of the magnets to repel.
Q42b. Longer. As one battery was removed so the magnetic strength or electromagnet becomes weaker.
Q42c. She can uncoil some of the wire coils.

Q43a. Z. Q43b.To see if light travels in a straight line. Q43c. 3.

Q44a. The distance of the torch from the material should be kept constant.
Q44b. T→S→V→U
Q44c. V. V is the least transparent and a stage curtain has to least transparent.