

**PRIMARY 4 SCIENCE**  
**SEMESTRAL ASSESSMENT 1**  
**2017**

**BOOKLET A**

**Date : 8 May 2017**  
**Duration : 1 h 45 min**

**Name : \_\_\_\_\_ (     )**

**Class: Primary 4 (     )**

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.**  
**FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**Booklet A consists of 20 printed pages including this cover page.**

**Section A (28 x 2 marks = 56 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 (1, 2, 3 or 4) on the Optical Answer Sheet provided.

1. Which of the following examples show a living thing responding to surrounding changes?

- A The leaves of a plant moving with the wind.
- B The leaves of a plant falling as they are cut.
- C The leaves of a plant turning green in summer.
- D The leaves of a plant unfolding in the morning sun.

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

2. Which of the following statements correctly state the similarities between a dog and a rose plant?

- A Both can grow
- B Both can reproduce.
- C Both can make their own food.
- D Both can move from place to place on their own.

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

3. June observed some plants in school. She could tell that the plants were flowering plants even though she did not see any flowers on them.

Which one of the following observations could have helped her?

- (1) The plant has strong stems.
- (2) The leaves of the plants were colourful.
- (3) There were spores on the underside of the leaves.
- (4) There were fruits hanging at the ends of branches.

4. Mohammad observed two organisms and noticed these characteristics.

| Characteristics observed       | organism P | organism Q |
|--------------------------------|------------|------------|
| has legs                       | No         | Yes        |
| has wings                      | No         | Yes        |
| breathes through gills         | Yes        | No         |
| has a hard outer covering      | No         | Yes        |
| gives birth to its young alive | No         | No         |

Based on his observations, which one of the following best represents organism P and Q?

|     | organism P | organism Q |
|-----|------------|------------|
| (1) | mammal     | reptile    |
| (2) | amphibian  | bird       |
| (3) | fish       | insect     |
| (4) | reptile    | bird       |

5. Min Mei observed and took notes of an unknown animal H.

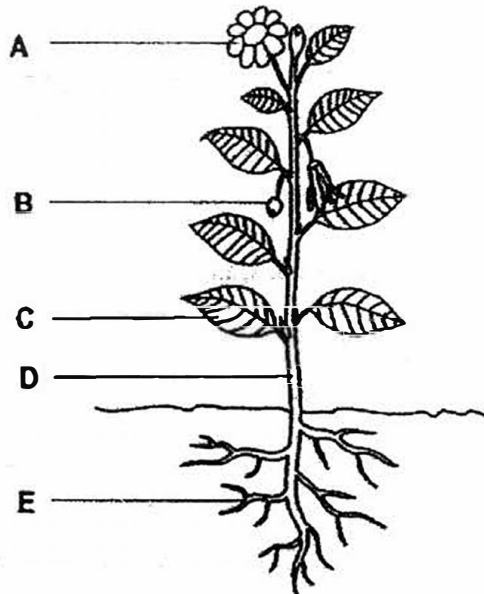
Animal H has the following characteristics:

- scales
- a tail
- reproduces by laying eggs

Based only on her observations, which group(s) of animals can animal H be classified as?

- (1) reptile only
- (2) reptile or fish only
- (3) insects or fish only
- (4) amphibian or fish only

Refer to the diagram below to answer question 6 and question 7.



6. The table below shows the functions of part C and part D, of the plant.

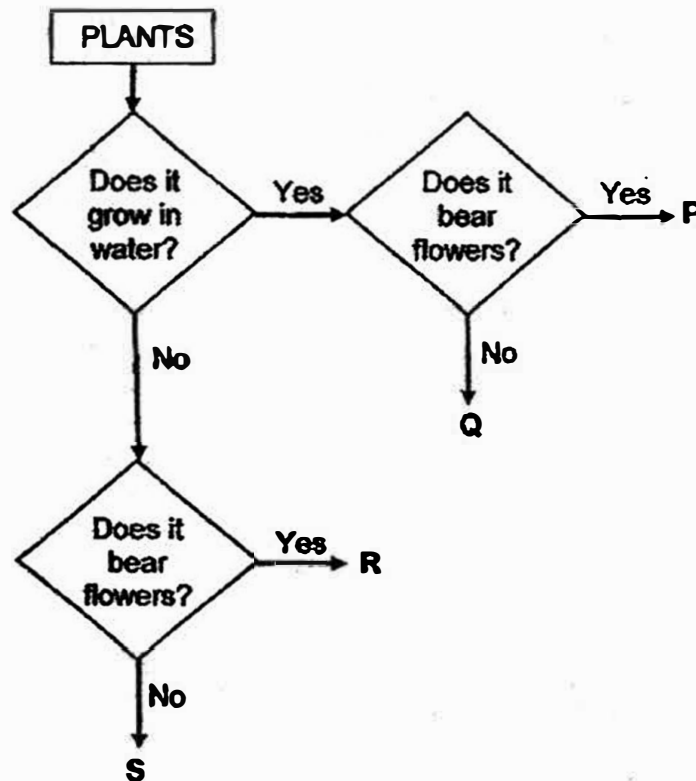
Which one of the following is correctly matched?

|     | part C                        | part D                      |
|-----|-------------------------------|-----------------------------|
| (1) | becomes a fruit               | makes food                  |
| (2) | attracts animals              | holds plant upright         |
| (3) | makes food                    | anchors plant to the ground |
| (4) | has tiny holes to take in air | carries food and water      |

7. Which one of the following correctly identifies the parts that can be found in all plants?

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

8. Study the flowchart below.



Based on the flowchart, which plant is most likely a bird's nest fern?

- |             |             |
|-------------|-------------|
| (1) plant P | (2) plant Q |
| (3) plant R | (4) plant S |

9. Which one of the following statements about the human organ systems is correct?

- (1) The muscular system takes air into our body.
- (2) The respiratory system gives our body shape.
- (3) The skeletal system removes excess water from our body.
- (4) The circulatory system carries useful substances to all parts of our body.

10. Four pupils made the following statements about the digestive system.

|         |                                                                                        |
|---------|----------------------------------------------------------------------------------------|
| Joel    | Food in the stomach will be digested further.                                          |
| Hashi   | The mouth, stomach and small intestine help to break down food.                        |
| Dominic | The digestive system does not remove excess water from digested food.                  |
| Shirley | The digested food, which turns into waste, is passed out of the body through the anus. |

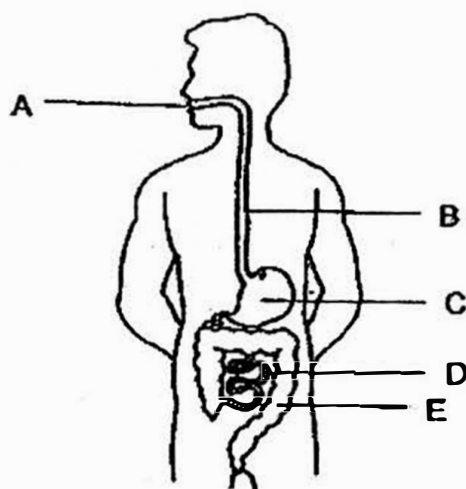
Which of the following pupils have made the correct statement?

- |                           |                              |
|---------------------------|------------------------------|
| (1) Joel and Hashi only   | (2) Hashi and Shirley only   |
| (3) Joel and Dominic only | (4) Dominic and Shirley only |

11. Which one of the following incorrectly classifies the organs in the body systems?

|     | digestive system | circulatory system | respiratory system |
|-----|------------------|--------------------|--------------------|
| (1) | anus             | blood vessel       | lungs              |
| (2) | stomach          | heart              | nose               |
| (3) | gullet           | blood              | windpipe           |
| (4) | small intestine  | lungs              | nose               |

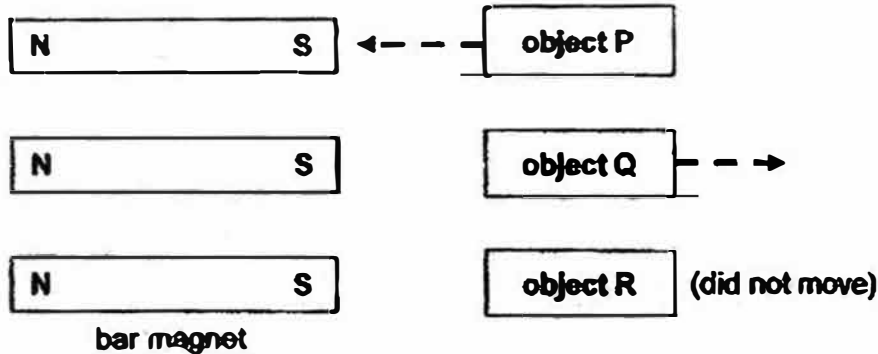
12. Study the diagram of the human digestive system shown below.



Which parts of the digestive system produce digestive juices?

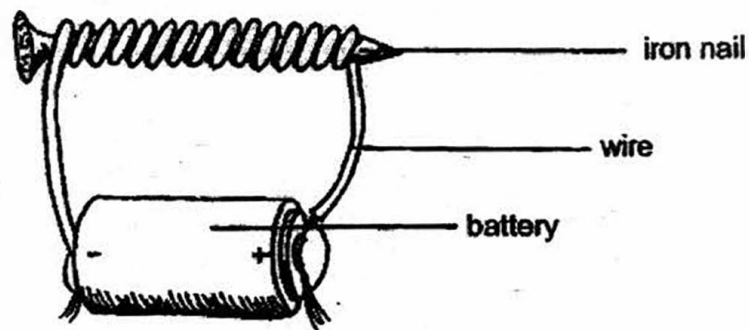
- |                     |                     |
|---------------------|---------------------|
| (1) A, B and E only | (2) A, C and D only |
| (3) B, C and E only | (4) C, D and E only |

13. Ravi brought one end of a bar magnet near to three objects and observed what happened next. He drew arrows to indicate the direction the objects moved.



Based on his observations, which of the object(s) is/are definitely a magnet(s)?

- (1) object P only
  - (2) object Q only
  - (3) object P and Q only
  - (4) object Q and R only
14. Sarah set up an electromagnet using an iron nail, a wire and a new battery. The electromagnet was able to attract 10 steel clips.



Sarah then tried to attract some metal pins which were similar in size and mass as the steel clips. She found that the electromagnet could not attract any of the metal pins.

What is a possible reason why the electromagnet did not attract the pins?

- (1) The iron nail was too big.
- (2) There should be more batteries used.
- (3) The pins were made of a non-magnetic material.
- (4) There were not enough coils of wire around the iron nail.

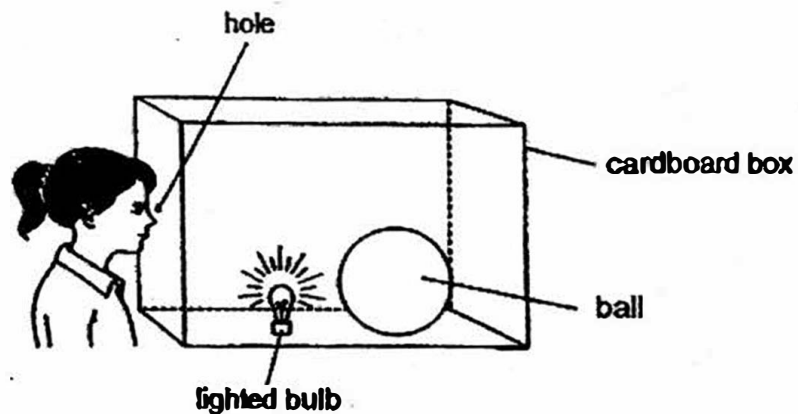
15. Study the classification table below.

| Group A | Group B |
|---------|---------|
| sun     | fan     |
| star    | box     |
| firefly | pen     |

How were the objects in group A and B classified?

|     | Group A                           | Group B                            |
|-----|-----------------------------------|------------------------------------|
| (1) | objects that give off light       | objects that do not give off light |
| (2) | objects that are magnetic         | objects that are non-magnetic      |
| (3) | objects that do not occupy space  | objects that occupy space          |
| (4) | objects that cannot cast a shadow | objects that can cast a shadow     |

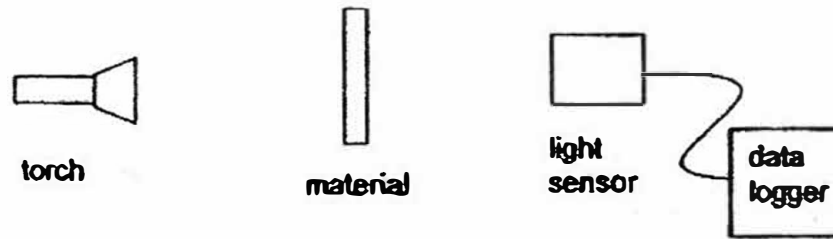
16. A ball and a lighted bulb were placed inside a cardboard box as shown below. The box has a small opening at one side. Lisa looked through the hole and could see the ball inside the box.



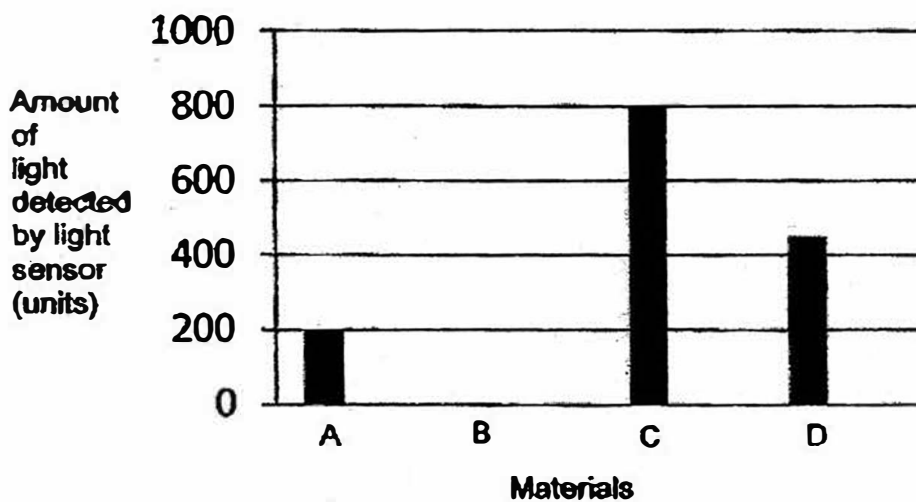
Which one of the following correctly explains why Lisa is able to see the ball inside the box?

- (1) Her eyes are a source of light.
- (2) The ball gives off light that is reflected into her eyes.
- (3) Light from the bulb falls onto the ball and is reflected into her eyes.
- (4) Her eyes reflected light from the bulb to the ball and enters her eyes.

17. Shi Ting connected a light sensor to a data logger as shown below.



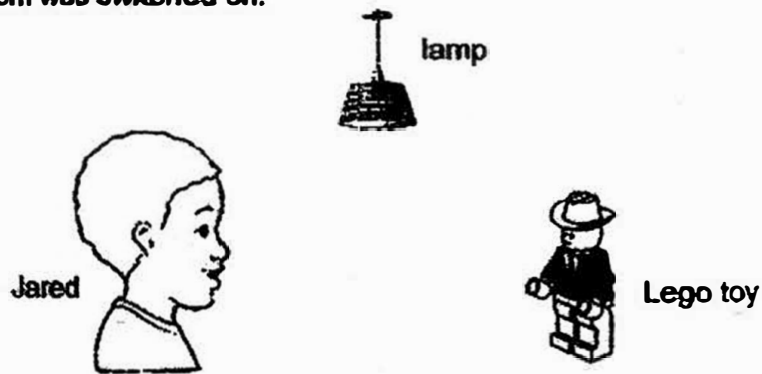
She tested four different materials to find out which material would allow the least amount of light to pass through. The graph below shows the results of her experiment.



Based on the results in the graph, which one of the following materials should Shi Ting choose to make a fish tank so that she could see her fish the clearest?

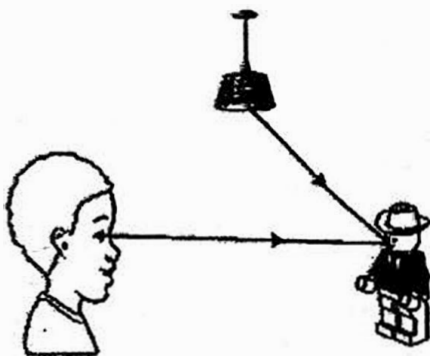
- (1) material A
- (2) material B
- (3) material C
- (4) material D

18. Study the picture below. Jared could see his Lego toy when the lamp in his room was switched on.

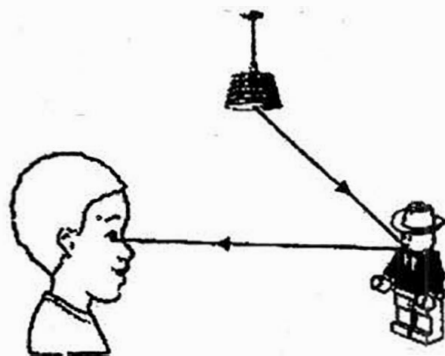


Which one of the following diagrams correctly shows the path of light which allows Jared to see the Lego toy?

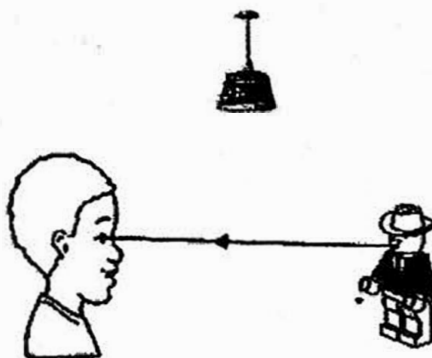
(1)



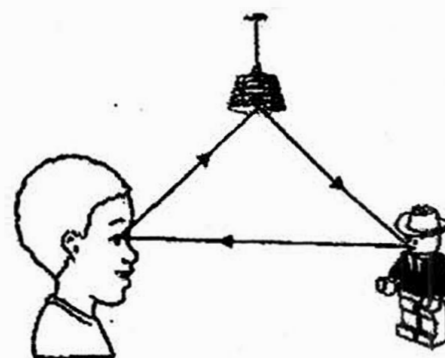
(2)



(3)

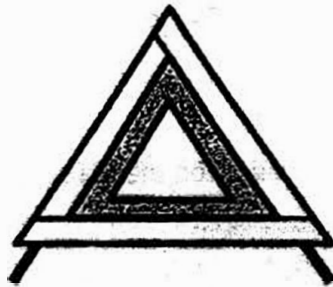
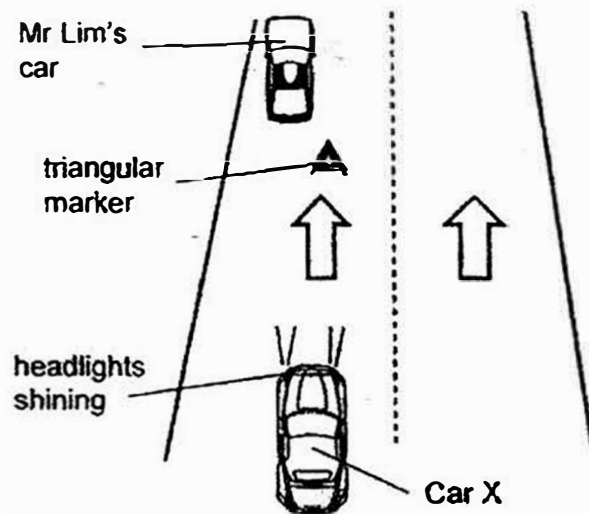


(4)



19. Study the diagrams below.

Mr Lim's car broke down by the side of the road on a dark night. To avoid an accident, he placed a triangular marker some distance away so that the approaching vehicles can see the marker from a distance.



triangular marker

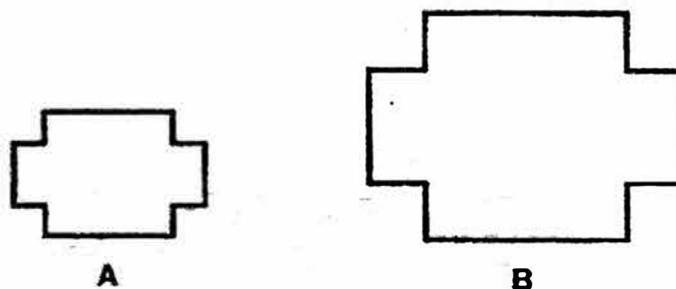
Which of the following properties of light correctly explain how the driver in car X can see the triangular marker from a distance?

- A Light is blocked by the triangular marker.
- B Light is reflected by the triangular marker.
- C Light is absorbed by the triangular marker.
- D Light travels in a straight line to the triangular marker.

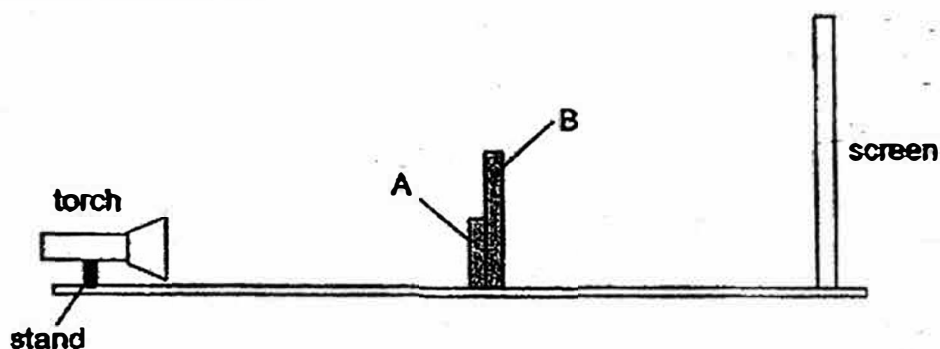
- (1) A and B only
- (3) B and D only

- (2) A and C only
- (4) C and D only

20. Ella had two cut-out shapes, A and B, of different sizes, as shown in the diagram. They are made of different materials.



She placed A in front of B as shown in the diagram below and shone a torch in front of them.



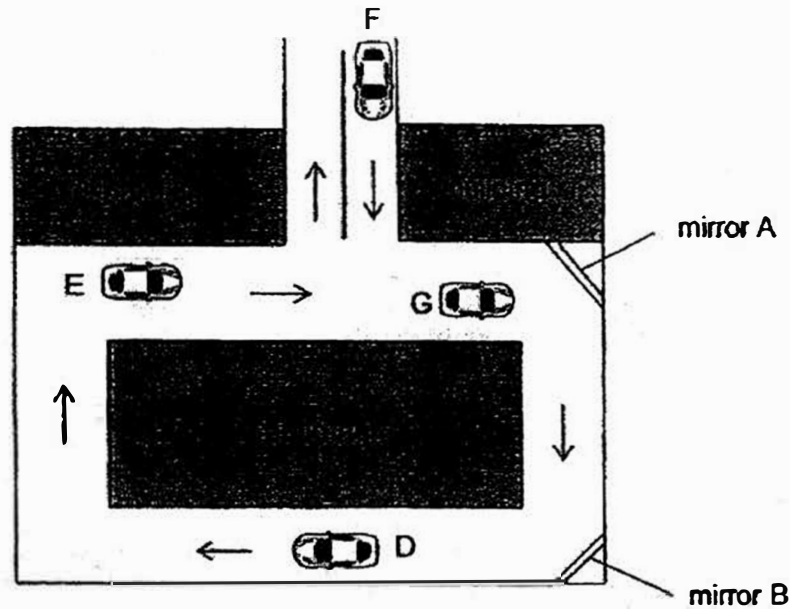
Ella observed the following shadow on the screen.



Based on the observations above, which of the following materials could object A and B be most likely made of?

|     | object A               | object B     |
|-----|------------------------|--------------|
| (1) | tracing paper          | wood         |
| (2) | frosted glass          | cardboard    |
| (3) | clear coloured plastic | steel sheet  |
| (4) | wood                   | tissue paper |

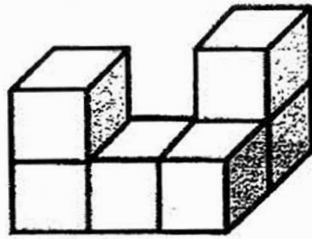
21. The diagram below shows the top view of a road leading to tall buildings in the city. Mirrors were placed at some corners of the road for the purpose of road safety.



Using mirrors A and B only, which one of the following statements is false?

- (1) The driver in car G cannot see car F.
- (2) The driver in car F cannot see car E.
- (3) The driver in car D cannot see car E.
- (4) The driver in car G cannot see car D.

22. The diagram below shows toy R which Colin was playing with. Toy R is made of a material which does not allow light to pass through.



toy R

Colin shone a torchlight on toy R. When he changed the position of the torchlight, different shadows were formed.

Which one of the following shadows could **not** be formed by toy R?

(1)



(2)



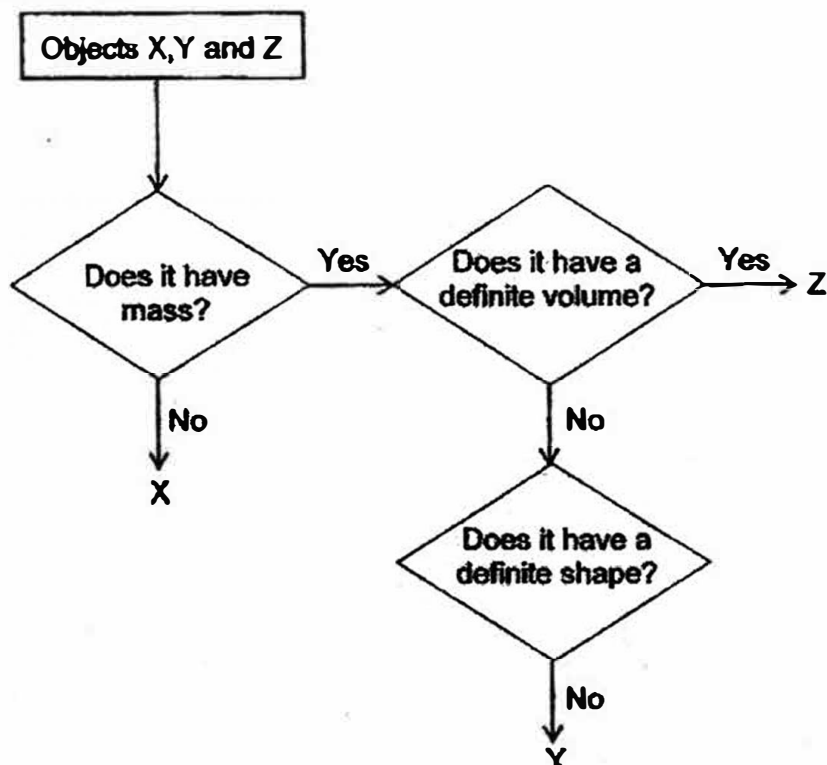
(3)



(4)



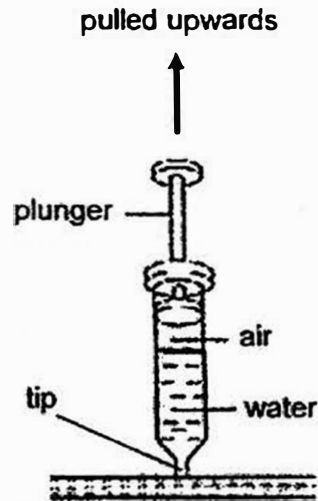
23. Objects, X, Y and Z, have been classified in the flowchart below based on their properties.



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

|     | X       | Y     | Z     |
|-----|---------|-------|-------|
| (1) | water   | air   | paper |
| (2) | air     | light | milk  |
| (3) | thunder | air   | honey |
| (4) | light   | milk  | stone |

24. Yi Wei filled a syringe with some tap water. She noticed that there was some air in the syringe too. Yi Wei then blocked the tip and pulled the plunger of the syringe upwards as shown in the diagram below.



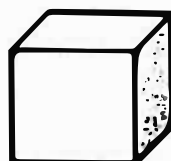
Which one of the following correctly describes what would happen to the volume and mass of the air and water in the syringe when she pulled the plunger?

|     | Volume of water | Volume of air | Mass of water and air in the syringe |
|-----|-----------------|---------------|--------------------------------------|
| (1) | increase        | decrease      | increase                             |
| (2) | decrease        | increase      | same                                 |
| (3) | same            | increase      | same                                 |
| (4) | same            | same          | same                                 |

25. Rahim carried out experiments using a lever balance and the following blocks of materials.

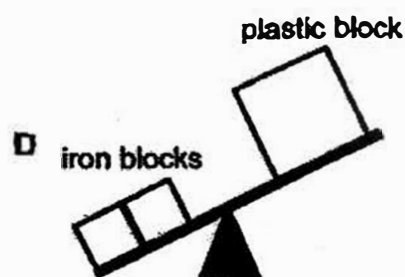
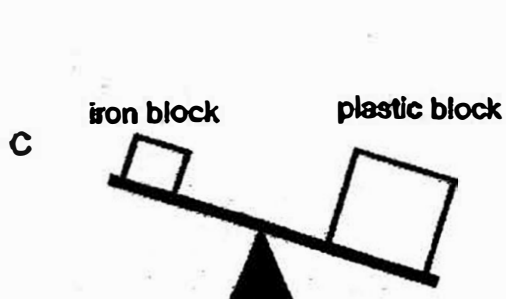
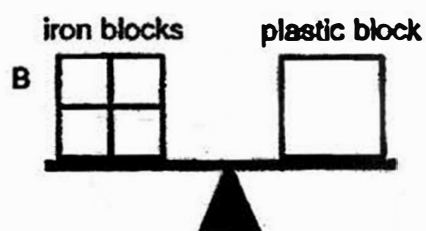
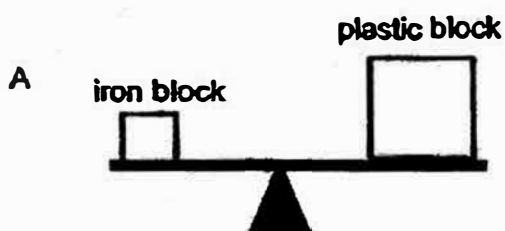


Iron block  
500g  
100cm<sup>3</sup>



Plastic block  
500g  
400cm<sup>3</sup>

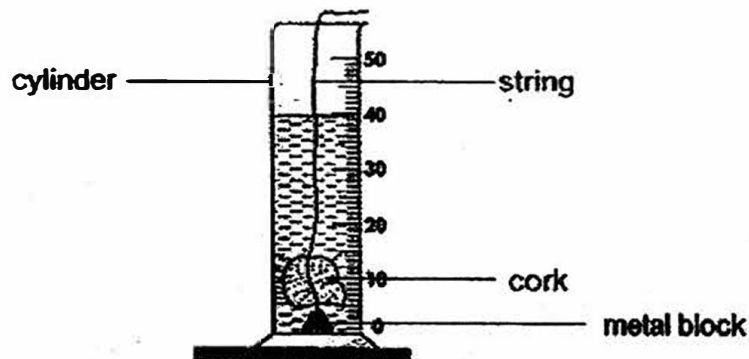
Which of the following shows the correct observations?



- (1) A only  
(3) A and D only

- (2) B only  
(4) B and C only

26. Siti wanted to find out the volume of a cork that was tied to a metal block which she had dropped into a cylinder of water as shown in the diagram below.



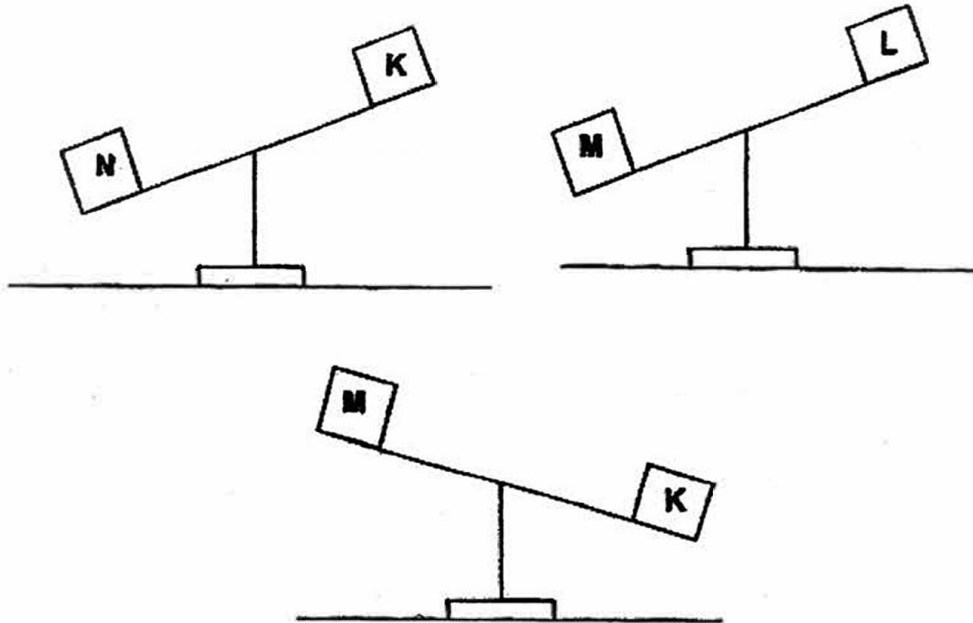
The following measurements, W, X, Y and Z, were taken.

- W      Volume of water
- X      Volume of metal block
- Y      Volume of water and metal block
- Z      Volume of water, metal block and cork

Which one of the following combinations of measurements given to Siti will not allow her to find the volume of the cork?

- (1)      X and Z only
- (2)      Y and Z only
- (3)      W, X and Z only
- (4)      W, Y and Z only

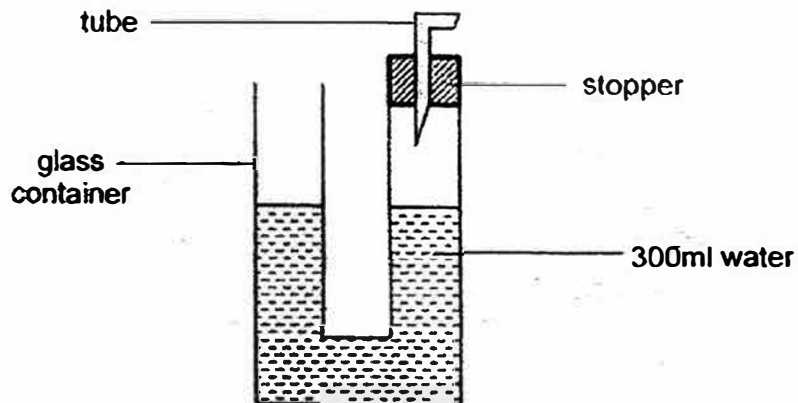
27. Wei Ling used a lever balance to carry out an experiment with 4 different blocks, K, L, M and N. The diagrams below show her observations.



Which one of the following statements is correct?

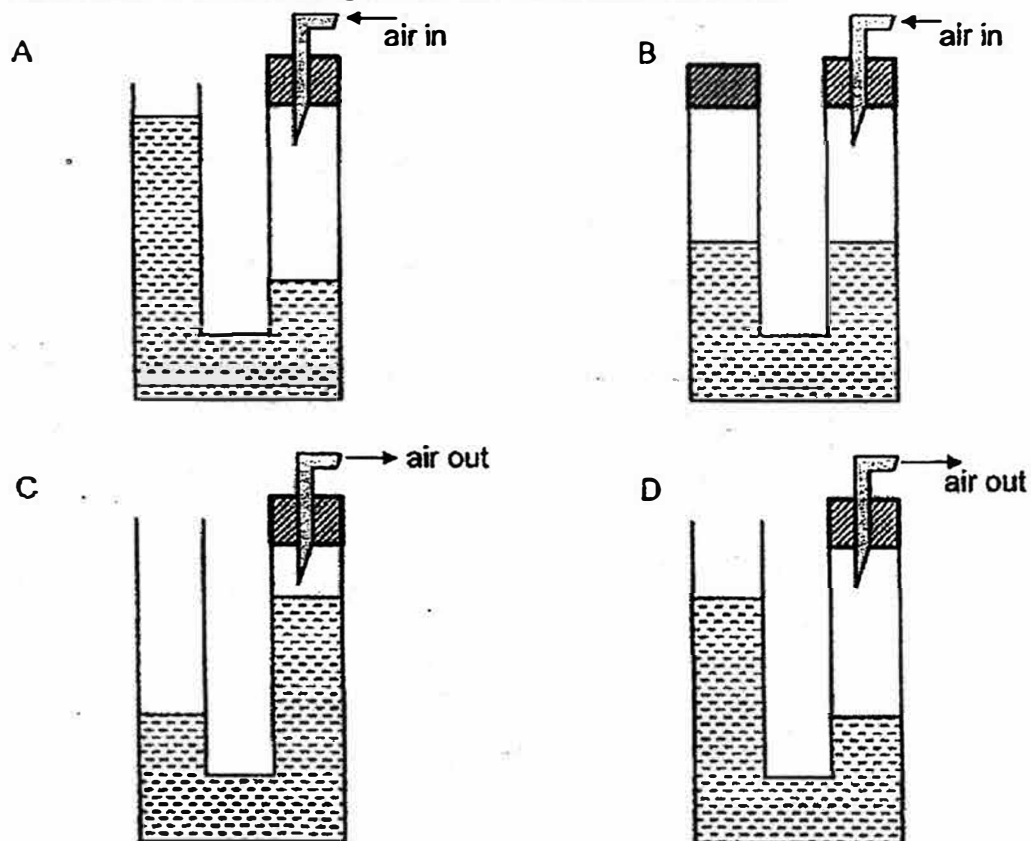
- (1) ~~L~~<sup>M</sup> has the greatest mass.
- (2) N has smaller mass than L.
- (3) K has greater mass than M.
- (4) M has greater mass than N.

28. An experiment was done using a U-shaped glass container with a tube attached to one arm of the glass container. The glass container was filled with 300 ml of water as shown in the diagram below.



Air can be pumped in or drawn out of the glass container through the attached tube.

Which one of the following shows the correct observations?



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

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

**PRIMARY 4 SCIENCE**  
**SEMESTRAL ASSESSMENT 1**  
**2017**

**BOOKLET B**

**Date : 8 May 2017**

**Duration : 1 h 45 min**

**Name : \_\_\_\_\_ (     )**

**Class: Primary 4 (     )**

**Marks Scored:**

|                    |  |            |
|--------------------|--|------------|
| <b>Booklet A:</b>  |  | <b>56</b>  |
| <b>Booklet B :</b> |  | <b>44</b>  |
| <b>Total :</b>     |  | <b>100</b> |

**Any query on marks awarded should be raised by 18 May 2017. We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.**

**Parent's signature: .....**

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.  
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**Booklet B consists of 17 printed pages including this cover page.**

**Section B (44 marks)**

Write your answers to questions 29 to 41 in the spaces provided.

29. Syahirah found a caterpillar on a plant and observed it for 3 weeks. She recorded her observations in her Science journal. Based on her journal entries, state the characteristic of living things which was observed.

Three days ago I found some tiny pellets on a leaf and my Science teacher said I had found some butterfly eggs! Here is a drawing I made for one of the eggs.



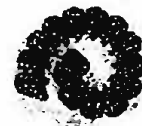
- (a) Characteristic of living things shown by the butterfly laying eggs: [1]

The caterpillars have emerged and they have big appetites for leaves! This caterpillar is eating a leaf.



- (b) Characteristic of living things shown by the caterpillar: [1]

The caterpillars are interesting! When I gently poke one of them with a stick, it curls up immediately!



- (c) Characteristic of living things shown by the caterpillar: [1]

Something has happened! The caterpillars are much bigger and longer. They are stuck to the tree branches.



- (d) Characteristic of living things shown by the caterpillar: [1]

30. Study the diagram of the two plants, X and Y, below.



plant X



plant Y

- (a) Based only on the diagram above, which plant will most likely bear fruits? Give a reason for your answer. [1]

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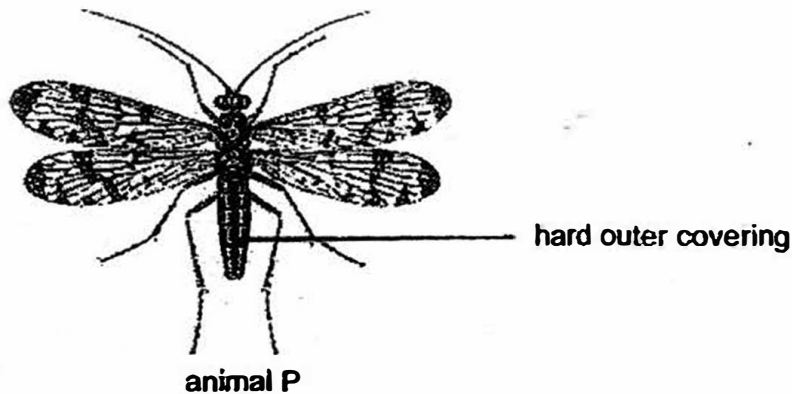
- (b) Jerome observed a third plant, plant Z. It has no flowers or spores. He concluded that it was a non-flowering plant. Explain why Jerome's conclusion is wrong. [1]

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- (c) Besides flowering and non-flowering plants, Jerome classified plant X, Y and Z in another way. Complete the headings for his classification table below. [1]

| (i)     | (ii)               |
|---------|--------------------|
| plant X | plant Y<br>plant Z |

31. Observe animal P shown in the diagram below.



- (a) Based on the diagram above, which group of animals does animal P belong to? [1]

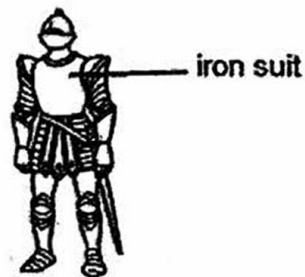
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- (b) Based on the characteristics of animal P, give 2 other reasons for your answer in (a). (Do not mention hard outer covering) [2]

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

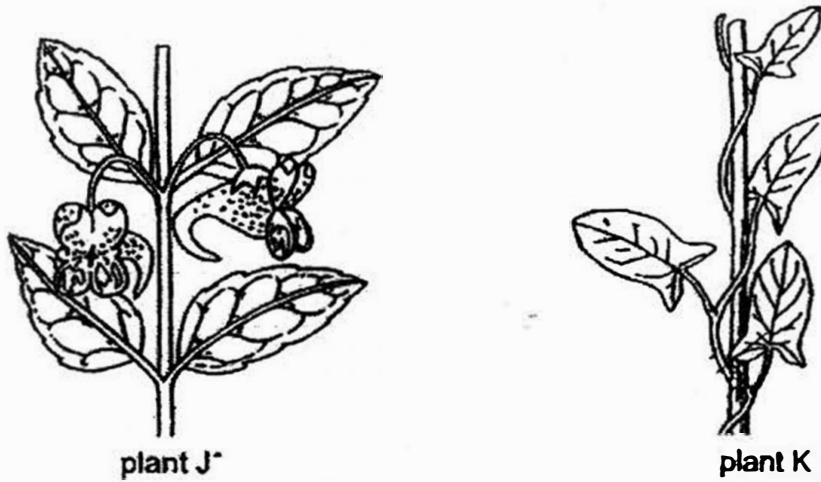
In ancient times, a knight would wear a suit made of iron to cover their bodies before going to fight in a battle.



- (c) In what way is the outer covering of animal P and the iron suit similar in function? [1]

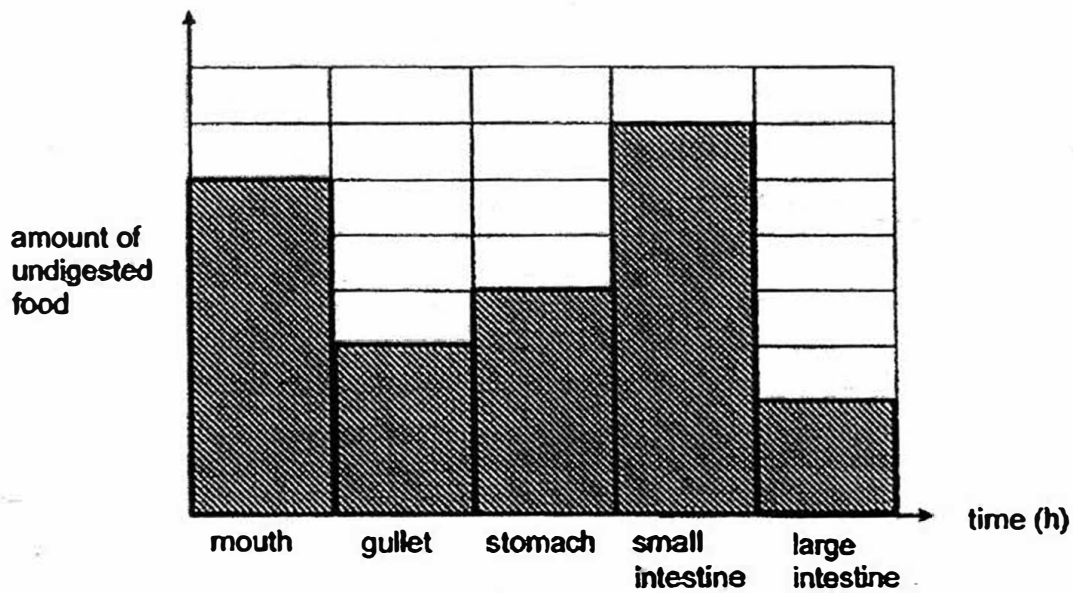
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32. The diagram below shows two plants, J and K. Plant K is climbing up a pole.



- (a) Label the stems on each plant. [1]
- (b) Based only on the diagram, describe a difference between the stem in plant J and the stem in plant K. [1]
- 
- 
- (c) State one function of the stems in plant J and K [1]
-

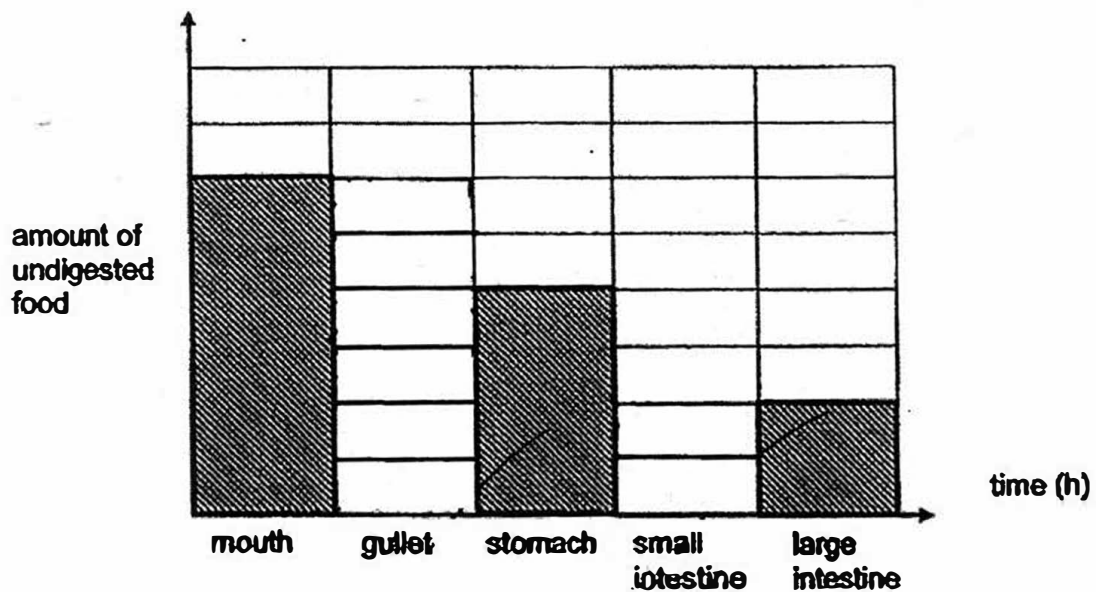
33. Darius ate a plate of chicken rice for recess. He plotted a graph to show what he expects the amount of undigested food to be just before it leaves each part of his digestive system.



Darius asked his teacher to check his graph. Mrs Lee pointed out that the amount of undigested food in the gullet and small intestine are incorrect.

- (a) Complete the bar graph below to correctly show the amount of undigested food at the following parts: [2]

- (i) gullet  
(ii) small intestine



- (b) Our organ systems work closely together to help us function properly.  
How do the digestive system and circulatory system work together? [2]

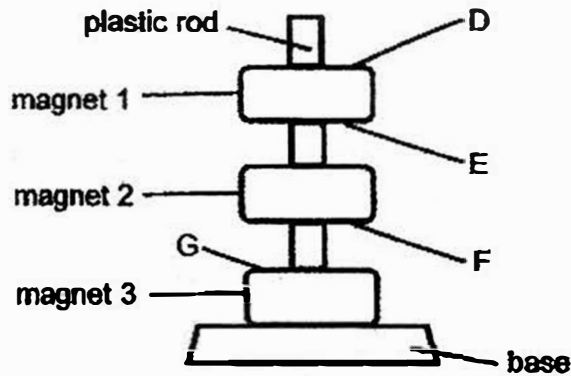
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34. The diagram below shows a toy with three ring magnets which pass through a smooth plastic rod.



- (a) Identify the poles of the ring magnets as indicated by D, E, F and G. [2]

D : \_\_\_\_\_

E : \_\_\_\_\_

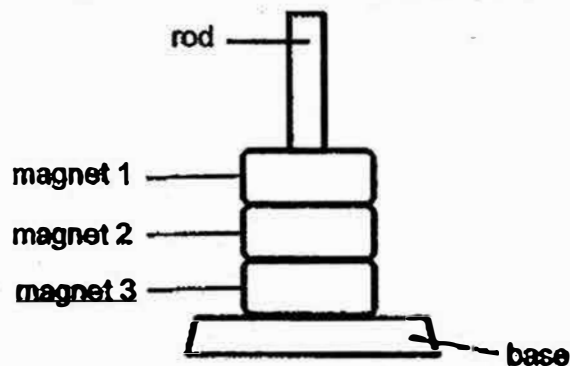
F : \_\_\_\_\_

G : \_\_\_\_\_

- (b) State a property of magnets which is shown in the diagram above. [1]

\_\_\_\_\_

Without adding or taking away any parts of the toy, Ravi made a change to one of the magnets and observed that it now looks like this.

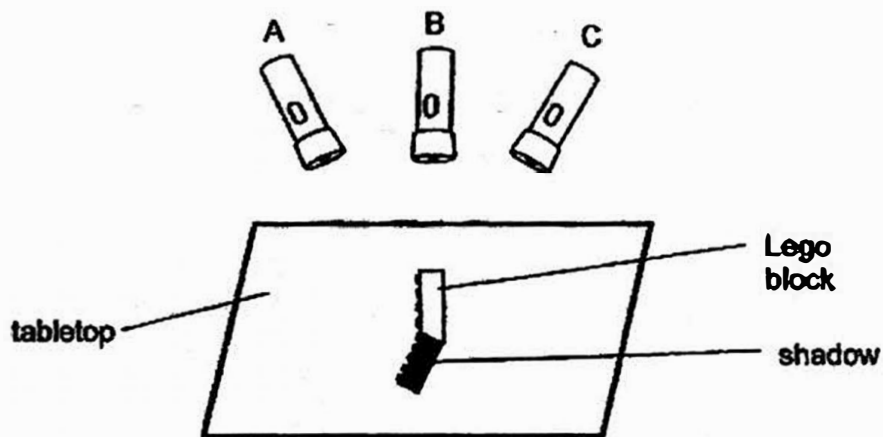


- (c) What was the change that Ravi made? [1]

\_\_\_\_\_

35. Nigel and his friends did an experiment with three torchlights and a piece of Lego block on a tabletop. They wanted to find out how the position of the torchlight affects the length and position of the shadow formed by the Lego block. They placed all three torchlights 10 cm away from the Lego block.

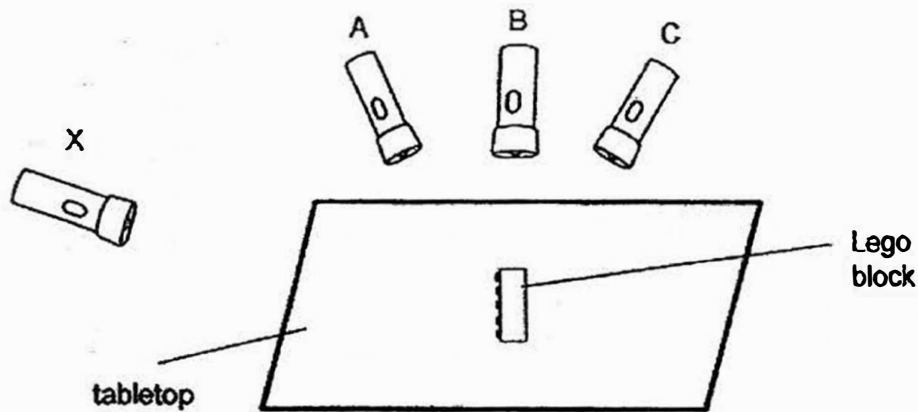
The diagram shows a side view from above.



- (a) Which torchlight was switched on to form the shadow as shown in the diagram above? [1]

---

Nigel held a fourth torchlight, labelled X, at a distance of 25 cm away from the Lego block as shown in the diagram below.



- (b) When only torchlight X was switched on, Nigel noticed 2 changes to the shadow formed as compared to the shadow he had seen earlier.

What were the **two** changes that he most likely noticed? [2]

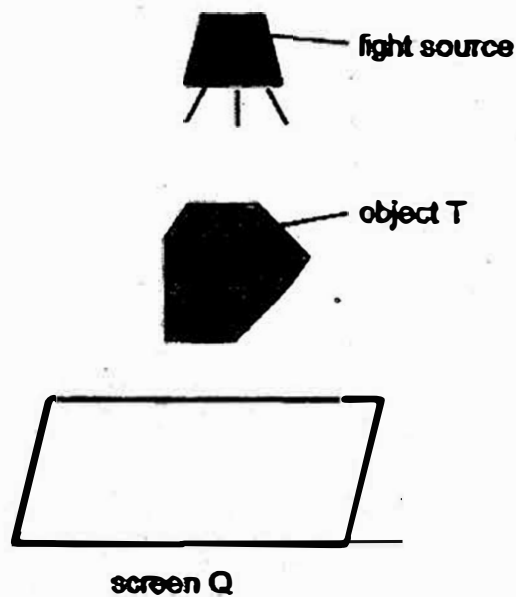
(i) \_\_\_\_\_

(ii) \_\_\_\_\_

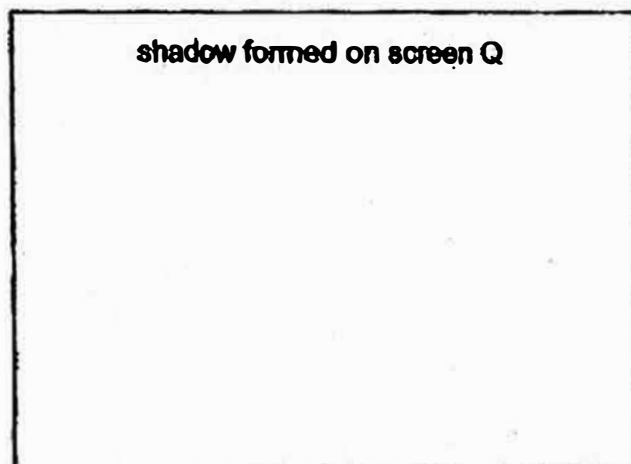
36. Georgia did an experiment using object T.



Object T was placed directly under a light source in a dark room. A shadow was formed on screen Q.



In the box below, draw the shadow of object T which was formed on screen Q. [2]



37. Olivia and Sean each has a puppet, X and Y, of similar size and height.

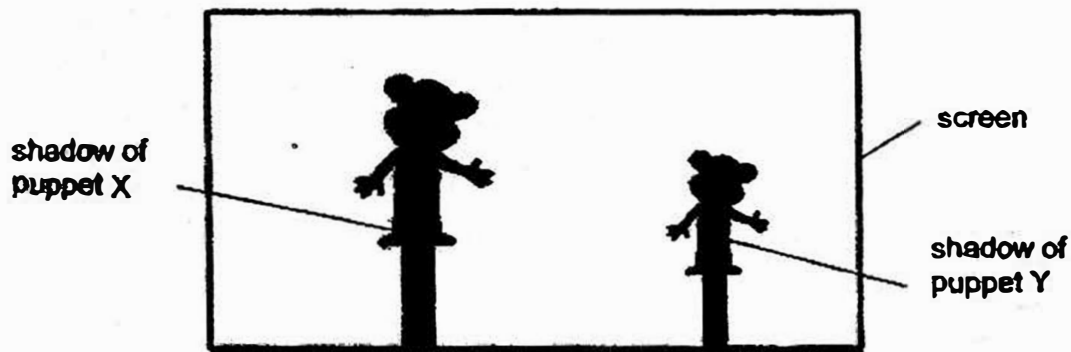
Olivia's puppet X



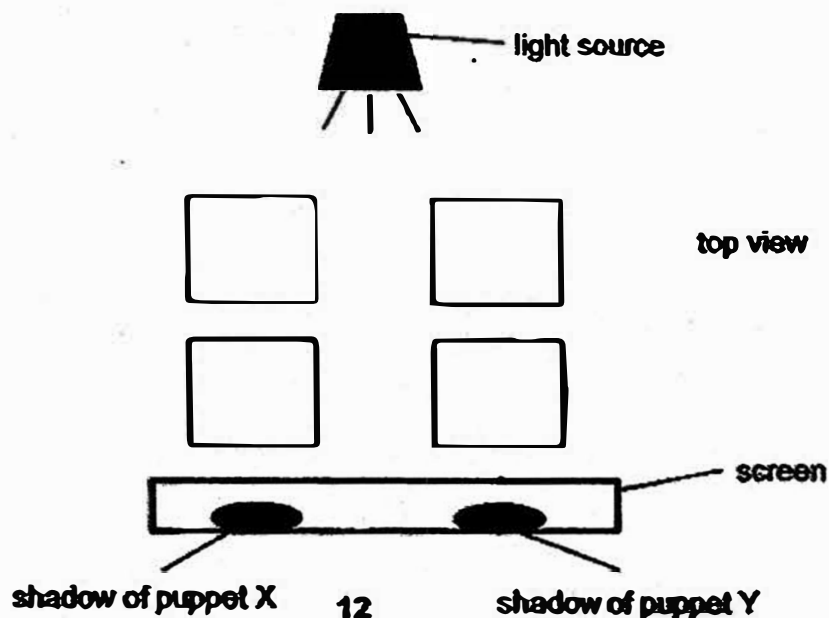
Sean's puppet Y



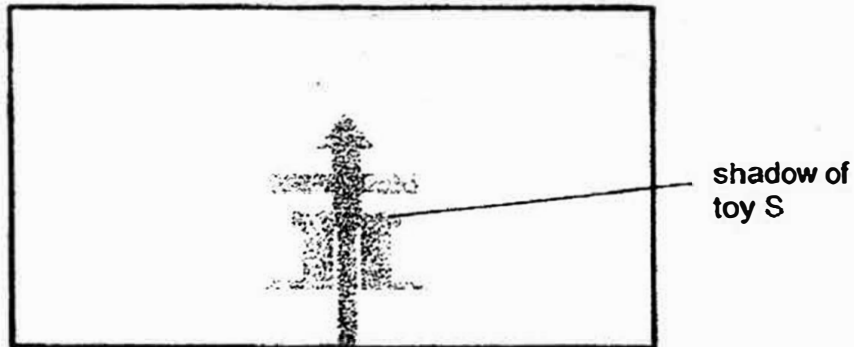
Both children went behind a screen to play with their puppets. The lamp was shining brightly behind the children.



- (a) Based on the shadows formed, write the letters X and Y in the correct boxes provided to represent the position of Olivia's and Sean's puppets behind the screen. [1]



Olivia stood behind the screen again, holding another toy S this time.



- (b) Sean observed that toy S cast a **lighter shadow** than puppets X and Y on the screen. Give a reason why the shadow was lighter. [1]

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- (c) Based on the setup above, state 2 properties of light that explains how the shadows were formed. [2]

(i) 

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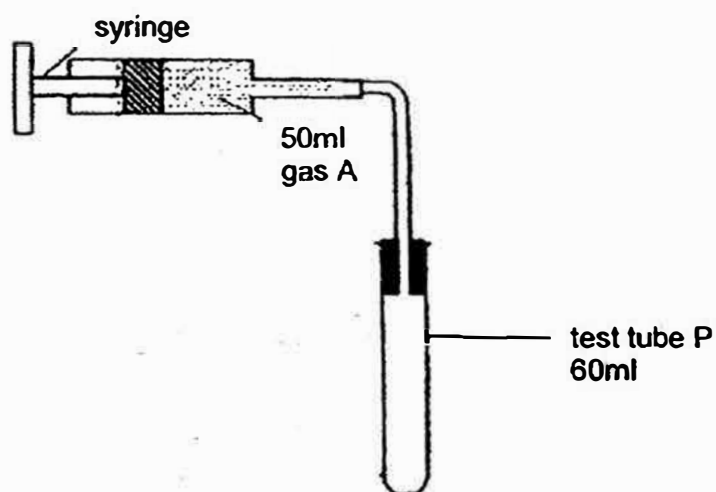
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(ii) 

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38. Teck Wai has a syringe containing 50 ml of gas A. He pumped all the gas A into a 60 ml test tube, test tube P.



- (a) What will be the amount of space that gas A occupies in test tube P? [1]

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Teck Wai repeated the experiment with a smaller 30ml test tube, test tube Q.

- (b) What will be the volume of gas A in test tube Q? [1]

---

- (c) Write down the property of gas A that is demonstrated in Teck Wai's experiment. [1]

---



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39. Finn filled a bottle to the brim with water. He then dropped a marble into the bottle and noticed that the water in the bottle overflowed.

(a) Explain his observation. [1]

---

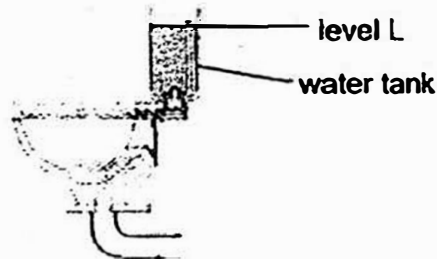


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A water tank is attached to every toilet bowl. The water tank is filled with water to level L. After every flush, water enters the water tank and re-fills to level L. However, Finn wanted to use less water for each flush.



Finn has the following items.

empty bottle

sand



- (b) Using the items above, describe what Finn could do so that he would use less water to flush the toilet. [1]

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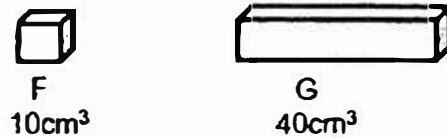
(c) Explain your answer in part (b). [1]

---



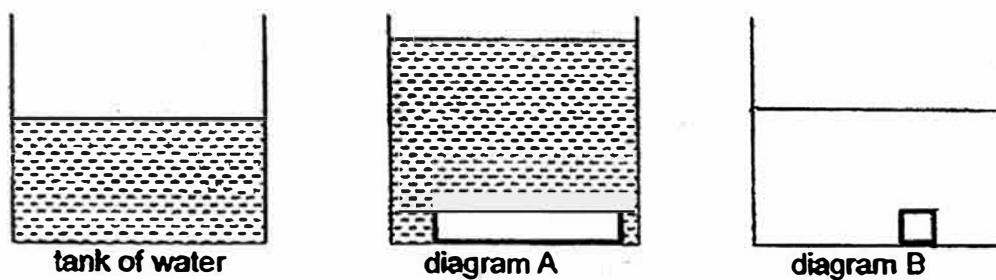
---

40. Two solid blocks, F and G, of different sizes, are made of the same material.

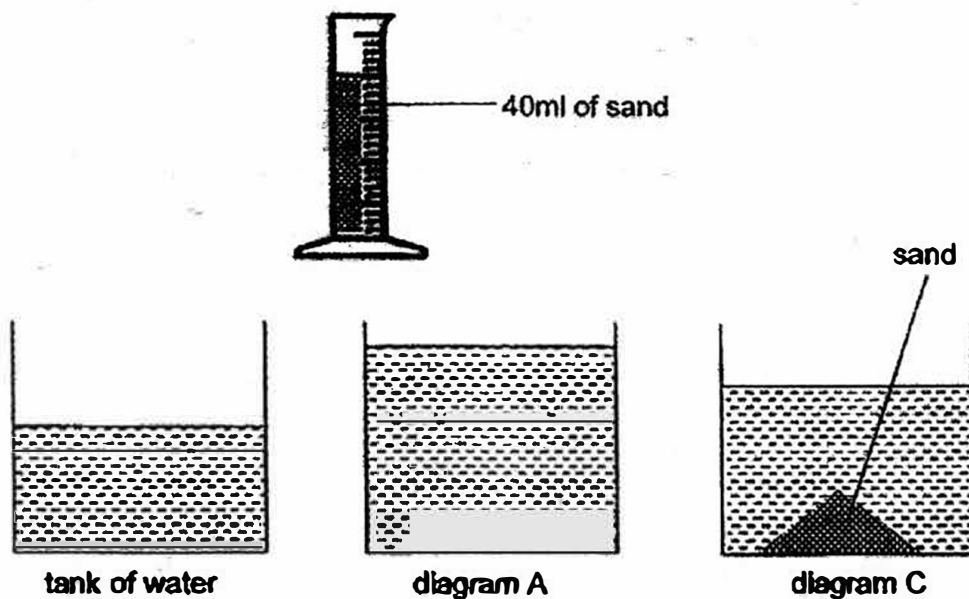


They were dropped into a tank of water separately. Block G sank into the water and the water level rose as shown in diagram A below.

- (a) Draw the water level in diagram B when block F was dropped into the tank of water. [1]



Using a measuring cylinder, 40 ml of sand was measured and poured into the tank of water. The new water level is shown in diagram C.



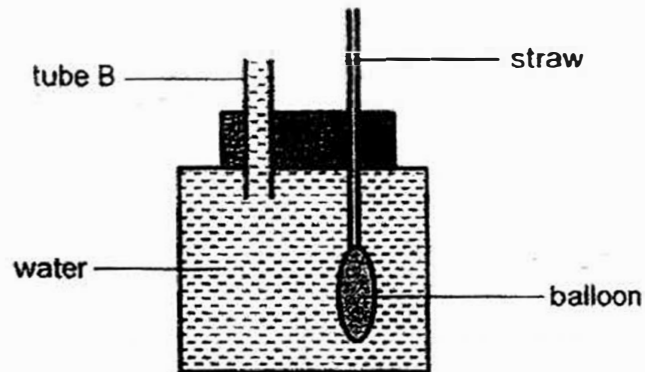
- (b) Explain why the water level in diagram A and C are not the same. [1]

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41. Emily filled a container with water as shown below.



Emily blew 5 times into the straw which was attached to the opening of balloon. She covered the opening of the straw with her thumb after every blow.

- (a) Write down 2 observations that Emily would make. [2]

(i) \_\_\_\_\_

(ii) \_\_\_\_\_

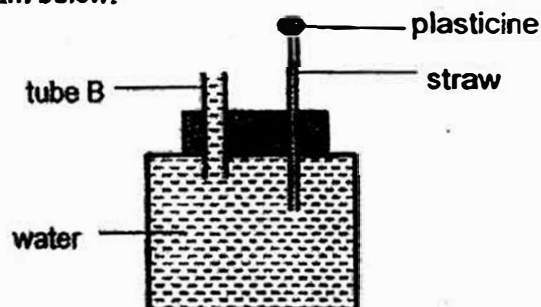
- (b) Explain the observations above. [2]

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Using the same container, Emily did a similar setup. This time, the balloon was removed and the end of the straw was covered with a ball of plasticine as shown in the diagram below.



- (c) What will happen if Emily pumped water into tube B? [1]

\_\_\_\_\_

**SCHOOL : NANYANG PRIMARY SCHOOL**

**LEVEL : PRIMARY 4**

**SUBJECT : SCIENCE**

**TERM : 2017 SA1**

**CONTACT :**

**SECTION A**

| Q 1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 |
|-----|----|----|----|----|----|----|----|----|-----|
| 2   | 1  | 4  | 3  | 2  | 4  | 3  | 4  | 4  | 1   |

| Q 11 | Q12 | Q13 | Q14 | Q15 | Q16 | Q17 | Q18 | Q19 | Q20 |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 4    | 2   | 2   | 3   | 1   | 3   | 3   | 2   | 3   | 4   |

| Q 21 | Q22 | Q23 | Q24 | Q25 | Q 26 | Q27 | Q28 |
|------|-----|-----|-----|-----|------|-----|-----|
| 4    | 2   | 3   | 3   | 3   | 1    | 3   | 1   |

**SECTION B**

|      |                                                                                                                                                     |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Q29) | (a) Living things reproduce<br>(b) Living things need food to survive<br>(c) Living things respond to changes around them<br>(d) Living things grow |
| Q30) | (a) Plant Y. It has flowers on it.<br>(b) Plant Z is a young plant.<br>(c) i. no fruits<br>ii. have fruits                                          |
| Q31) | (a) insects<br>(b) i. six legs<br>ii. a pair of antennas<br>(c) it protects animal P.                                                               |

|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |  |  |   |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--|--|---|
| Q32) | (a) plant J-stem, plant K-stem<br>(b) plant J's stem is able to hold the plant upright while plant K's stem needs to climb up a pole.<br>(c) Transport food and water.                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |  |  |   |
| Q33) | (a) {gullet same as mouth, small intestine same as large intestine}<br>(b) The small intestine in the digestive system breaks down food into simpler substances. The digested food gets absorbed into the bloodstream. The blood carries the digested food to all parts of the body.                                                                                                                                                                                                                                                                                                                             |   |  |  |   |
| Q34) | (a) N, S, N, N<br>(b) Like poles repel<br>(c) He flipped magnet 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |  |  |   |
| Q35) | (a) C<br>(b) i. The shadow formed was longer<br>ii. the shadow is at the right of the block                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |  |  |   |
| Q36) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |  |  |   |
| Q37) | (a) <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>X</td></tr></table> <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td> </td></tr></table><br><table border="1" style="display: inline-table; vertical-align: middle;"><tr><td> </td></tr></table> <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>Y</td></tr></table><br>(b) Toy S was made of translucent material while puppets X and Y were made of opaque material.<br>(c) i. Light travels in a straight line.<br>ii. Light can be blocked by objects. | X |  |  | Y |
| X    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |  |  |   |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |  |  |   |
|      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |  |  |   |
| Y    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |  |  |   |
| Q38) | (a) 60ml<br>(b) 30ml<br>(c) Gas A can be compressed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |  |  |   |
| Q39) | (a) Both marble and water have definite volume and occupy space. When the marble is dropped into the bottle, the water is displaced and overflows.<br>(b) Put sand in the bottle and place the bottle into the water tank.<br>(c) The bottle of sand occupies space in the water tank and this reduces                                                                                                                                                                                                                                                                                                           |   |  |  |   |

|      |                                                                                                                                                                                                                                                                        |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | the amount of water used to refill water tank to level L.                                                                                                                                                                                                              |
| Q40) | <p>(a) -</p> <p>(b) There are air spaces in the sand, water can occupy these air spaces, therefore water level in diagram C will be lower than water level in diagram Q.</p>                                                                                           |
| Q41) | <p>(a) (i) Water overflows</p> <p>(ii) Balloon becomes bigger</p> <p>(b) The air inflates the balloon, causing it to occupy more space. Water has a definite volume and therefore gets displaced and overflows from Tube B.</p> <p>(c) The plasticine will pop off</p> |