

METHODIST GIRLS' SCHOOL (PRIMARY)

Founded in 1887



PRIMARY 4 END-OF-YEAR EXAMINATION 2010 SCIENCE BOOKLET A

Total Time : 1 hour 45 minutes.

INSTRUCTIONS TO CANDIDATES

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

Name: _____ ()

Class: Primary 4. _____

Date: 11 October 2010

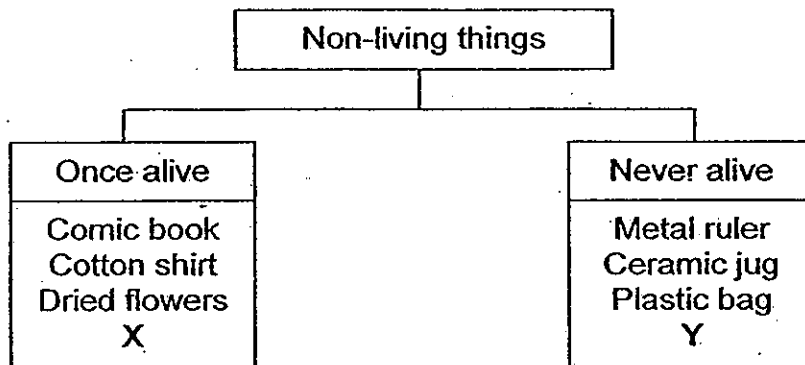
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|----------------|--------------|
| Booklet A | / 50 |
| Booklet B1 | / 20 |
| Booklet B2 | / 20 |
| Practical Test | / 10 |
| TOTAL | / 100 |

This booklet consists of 14 printed pages.

Section A: (25 x 2 marks)

For each question, four options are given. Choose the most suitable option and shade your answer in the Optical Answer Sheet (OAS) provided.

1. The chart below shows 6 non-living things which are classified according to common characteristics.



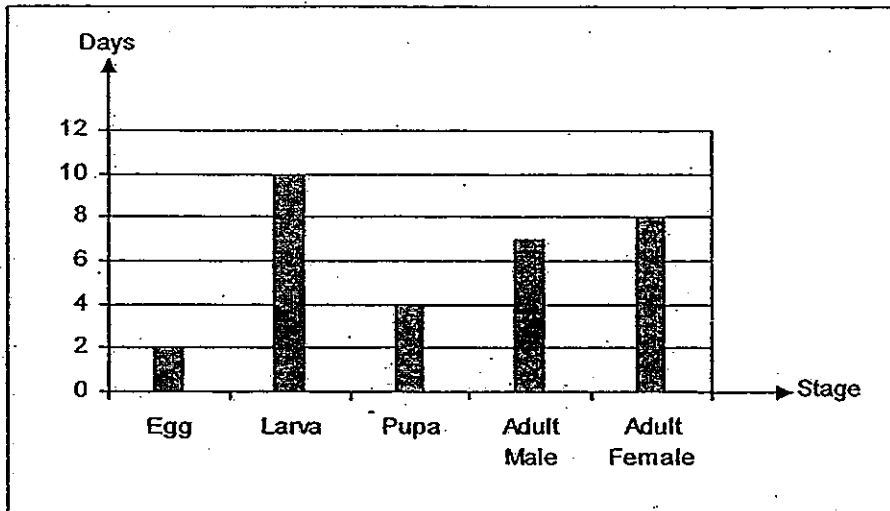
Which of the following objects could X and Y be?

| | X | Y |
|-----|-----------------|--------------|
| (1) | Leather shoes | Silk shirt |
| (2) | Woollen sweater | Clay pot |
| (3) | Cotton dress | Wooden ruler |
| (4) | Woollen sweater | Wooden ruler |

2. Study the following pairs of animals in the table below. Which one of the following pairs describes the similarities and differences correctly?

| | Pairs of animals | Similarities | Differences |
|-----|---------------------|-----------------------------|-------------------------------------------------------|
| (1) | Spider Cockroach | Both have three body parts. | The spider has 8 legs while the cockroach has 6 legs. |
| (2) | Pigeon Bat | Both can fly. | The pigeon is a bird while the bat is a mammal. |
| (3) | Dolphin Shark | Both are fish. | The dolphin has lungs but the shark has gills. |
| (4) | Snake Eel | Both do not have legs. | The snake is a mammal while the eel is a fish. |

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



How many stages are there in the life cycle of the insect above?

- (1) 5
 - (2) 2
 - (3) 3
 - (4) 4
4. How are the young of the grasshopper and the butterfly similar?



- A : They moult
- B : They have no wings.
- C : They become pupa..
- D : They resemble their parents.

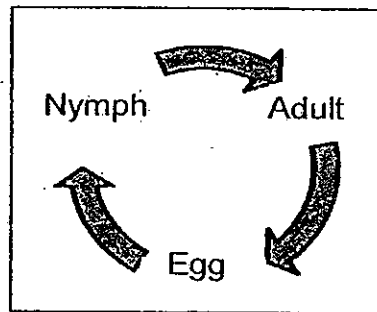
- (1) A and B only
- (2) B and C only
- (3) B, C and D only
- (4) A, B, C and D

5. Which of the following statements are false?

| | |
|---|-----------------------------------------------------------------------------------------------------------------|
| A | All plants grow from seeds. |
| B | The flower protects the seeds. |
| C | Some seeds can be kept alive for a long time before they grow into young plants. |
| D | The fruit grown from a seed taken from the parent plant will taste the same as the fruit from the parent plant. |

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

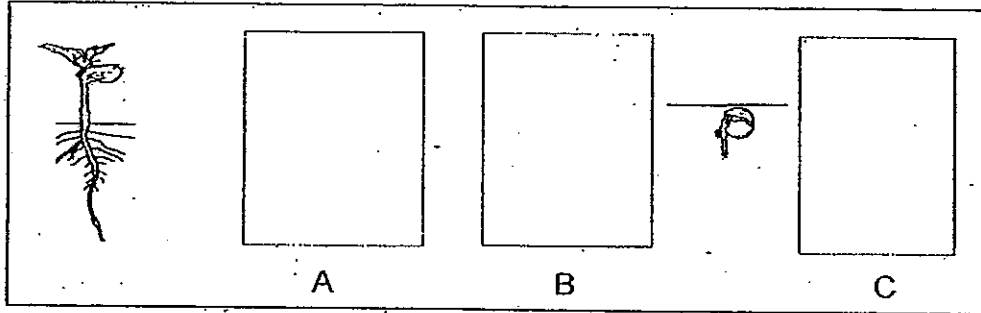
6. The diagram below shows the life cycle of a cockroach.



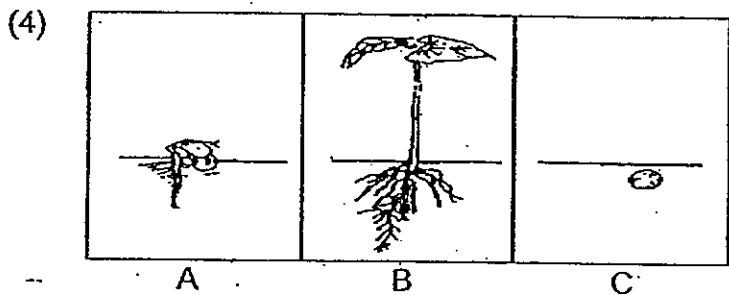
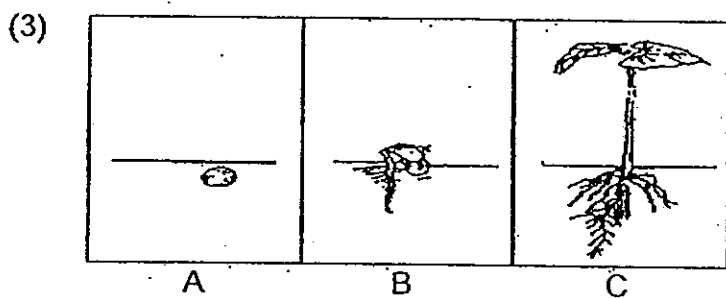
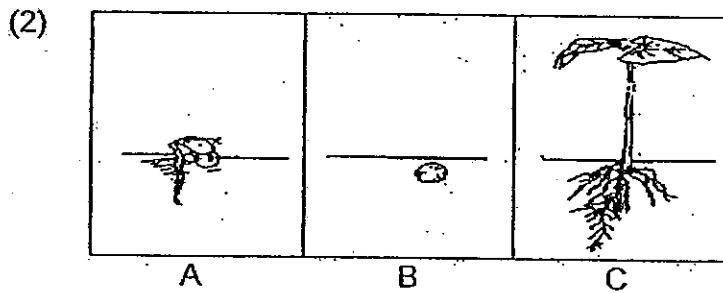
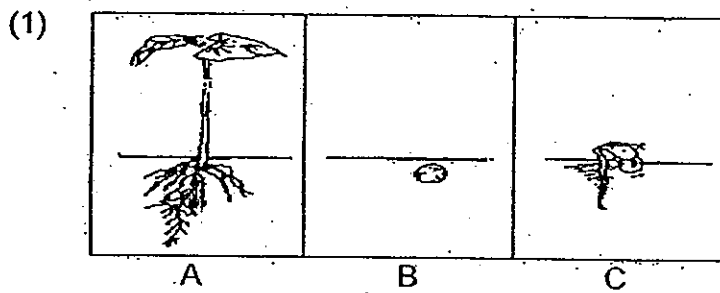
Which one of the following animals has a similar life cycle as above?

- (1) Moth
- (2) Beetle
- (3) Mosquito
- (4) Grasshopper

7. The diagram below shows the growth of a young plant with three stages A, B and C missing.



Which one of the following shows the correct stages for A, B and C?



8. What is the main function of the large intestine?

- (1) It removes digested food from the body.
- (2) It allows water to be passed into the blood.
- (3) It removes undigested food out of the body.
- (4) It allows digested food to be passed into the blood.

9. Jack places three similar potted plants, X, Y and Z in his garden. The table below shows the types of soil used and the amount of water given to each plant daily.

| Material | Pot X | Pot Y | Pot Z |
|-----------------|--------|--------|-------------|
| Type of soil | sand | clay | garden soil |
| Amount of water | 250 ml | 250 ml | 250 ml |

Jack is trying to find out if _____.

- (1) plants need water to grow well
- (2) plants need sunlight to grow well
- (3) the type of soil affects the growth of the plant
- (4) the amount of water used will affect the growth of the plant

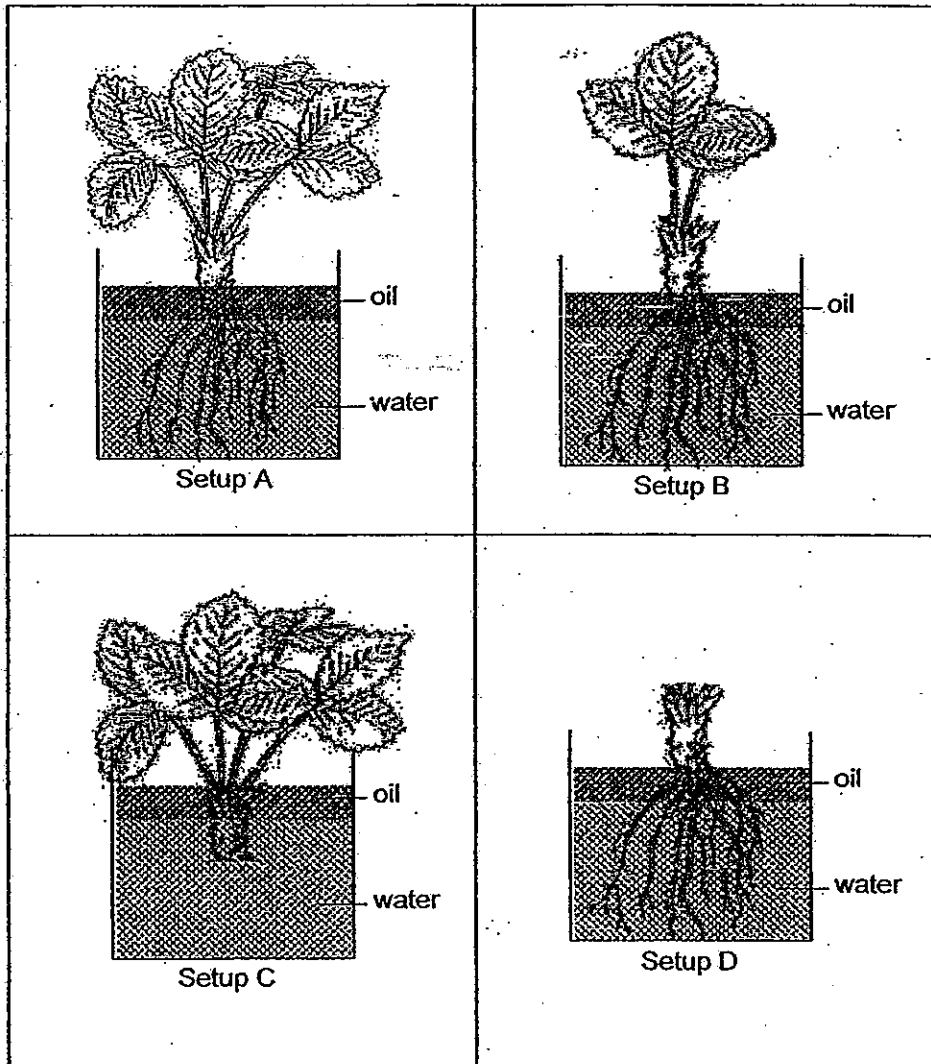
10. Digestive juices are produced by the _____.

- A : gullet
- B : stomach
- C : salivary glands
- D : small intestine

Which of the above is correct?

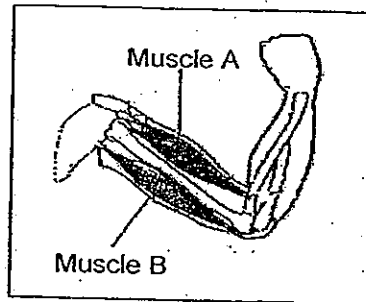
- (1) A, B and C only
- (2) A, C and D only
- (3) B, C and D only
- (4) A, B, C and D only

11. Jane wanted to find out if the roots of the plant absorb water. Which two of the following setups would she select for the test?



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

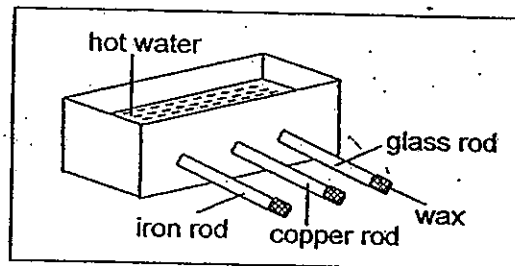
12. Study the diagram below.



What happens to the muscles when the arm is lifted up as shown in the diagram above?

- (1) Both muscles A and B are relaxed.
 (2) Both muscles A and B are contracted.
 (3) Muscle B is contracted while Muscle A is relaxed.
 (4) Muscle A is contracted while Muscle B is relaxed

13. Mrs James carried out an experiment using three similar rods of different materials. Each rod has the same amount of wax coated at one end. The metal container is filled with hot water as shown in the diagram below.



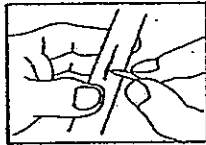
Based on the experiment above, her pupils made the following statements regarding the aim of the experiment:

| Pupil | Statement |
|---------|---------------------------------------------------------|
| Abu | It is to show that water cannot conduct heat. |
| Benny | It is to compare how well each rod conducts heat. |
| Chai Li | It is to show that wax will melt at high temperature. |
| Deepthi | It is to compare how well the wax sticks to each other. |

Who is correct?

- (1) Aby
 (2) Benny
 (3) Chai Li
 (4) Deepthi

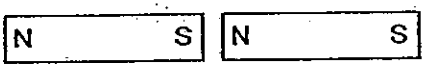
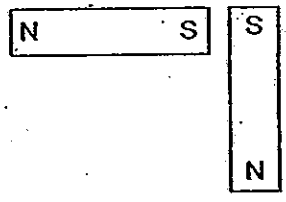
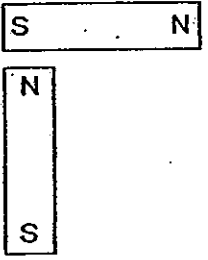
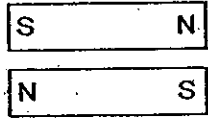
14. Alice can easily scratch a wooden stick with an iron nail.



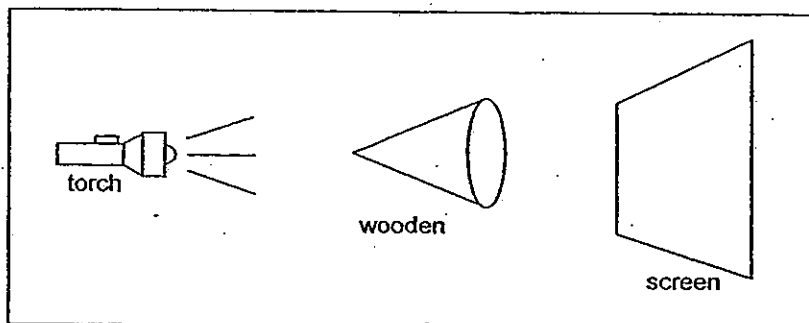
This shows that the iron nail is _____ than the wooden stick.

- (1) harder
- (2) heavier
- (3) stronger
- (4) more flexible

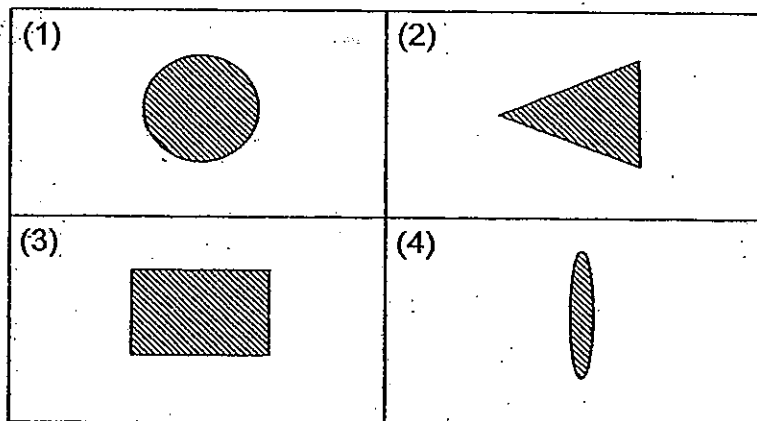
15. Which one of the following will the two magnets push each other away?

| | |
|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| (1)  | (2)  |
| (3)  | (4)  |

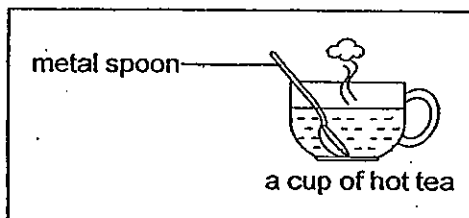
16. Mary shines a torch on the wooden cone as shown below.



Which one of the following shows the shadow of the wooden cone on the screen?



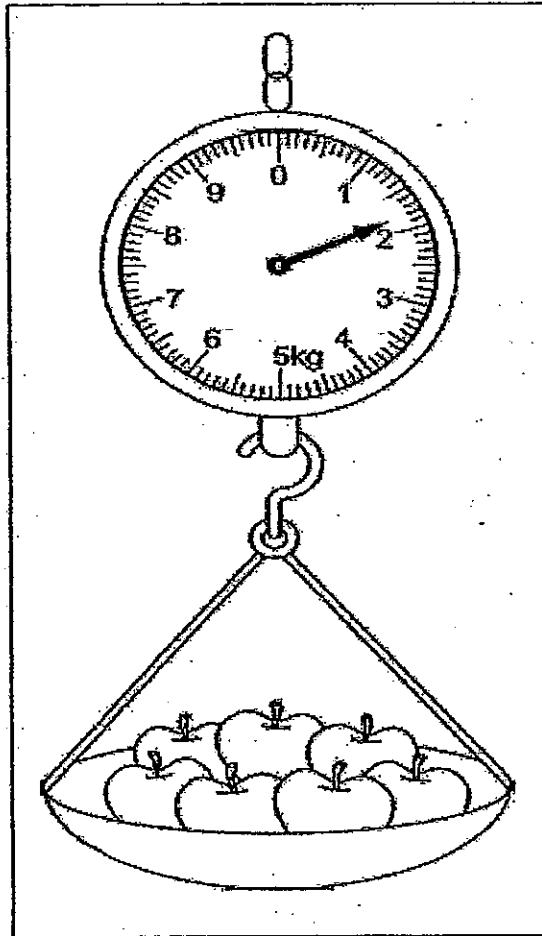
17. Rachel places a metal spoon in a cup of hot tea as shown in the diagram below.



The spoon becomes hotter after a while. Which one of the following explains this?

- (1) The cup loses heat to the hot tea.
- (2) The spoon loses heat to the hot tea.
- (3) The hot tea gains heat from the spoon.
- (4) The spoon gains heat from the hot tea.

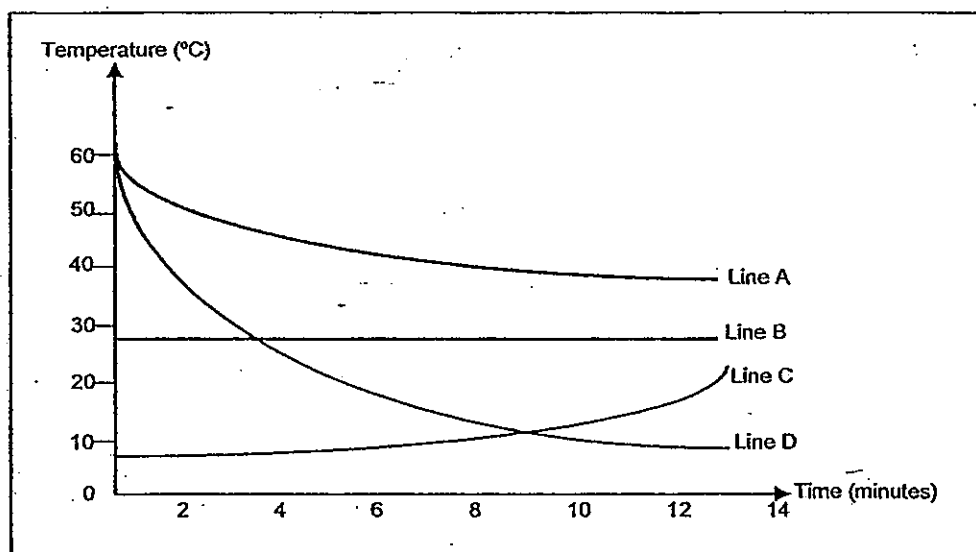
18. The reading on the weighing scale below shows that the mass of the apples is _____ kg.



- (1) 1.6
- (2) 1.8
- (3) 2.0
- (4) 2.2

Refer to the graph below to answer questions 19 and 20.

The graph below shows the changes in temperature of four beakers of water over a period of 14 minutes.






19. Which line A, B, C or D in the graph above represents a beaker of ice cold water left in a room?

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

20. The change in temperature of a beaker of water at 60°C is represented by line D. Which of the following **best** explains what could have happened?

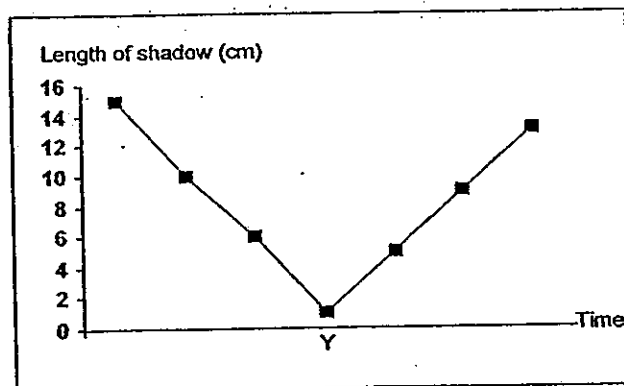
- (1) Ice cubes were added into the beaker of water.
- (2) The beaker of water was left to cool at room temperature.
- (3) 20ml of boiling water was added into the beaker of water.
- (4) A fan was switched on and placed near the beaker of water.

21. Jenny measured the volume and mass of three balls made of different materials. She recorded the results in the table below.

| Ball | Volume (cm ³) | Mass (g) |
|------------------------------------------------------------------------------------------|---------------------------|----------|
| Ball A  | 50 | 500 |
| Ball B  | 150 | 300 |
| Ball C  | 200 | 300 |

Based on the information given, which of the following statements is **incorrect**?

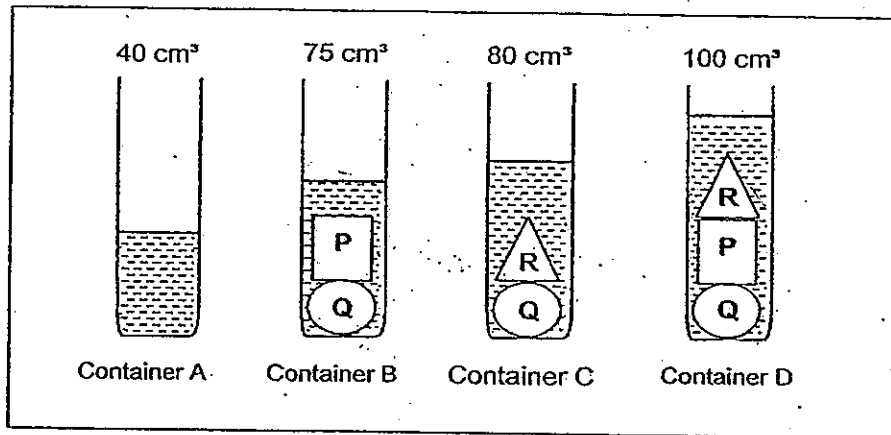
- (1) A smaller object occupies less space than a bigger object.
 - (2) Objects that are of different sizes can have the same mass.
 - (3) Objects that are of different sizes occupy different amount of space.
 - (4) Objects that occupy less space are lighter than objects that occupy more space.
22. The line graph below shows the lengths of the shadow of a 10 cm stick measured at different times in a day.



What time would Point Y **most likely** represent?

- (1) 6.15 a.m.
- (2) 10.20 a.m.
- (3) 1.05 p.m.
- (4) 4.10 p.m.

23. Ali set up four containers, A, B, C and D as shown below.



What is the volume of object Q?

- (1) 15 cm³
- (2) 20 cm³
- (3) 35 cm³
- (4) 40 cm³

24. Four similar iron nails, A, B, C and D were each stroked by a magnet. The table below shows the number of times the nails were stroked and the number of paper clips each iron nail attracted afterwards.

| Iron nails | Number of times the iron nail was stroked | Number of paper clips attracted |
|------------|-------------------------------------------|---------------------------------|
| A | 15 | 12 |
| B | ? | 5 |
| C | 10 | 8 |
| D | ? | 16 |

How many times were iron nails B and D stroked?

| | Iron nail B | Iron nail D |
|-----|-------------|-------------|
| (1) | 5 | 20 |
| (2) | 12 | 8 |
| (3) | 6 | 13 |
| (4) | 20 | 5 |

25. Clara wanted to find the volume of Object A. She set up the experiment as shown in Diagram 1.

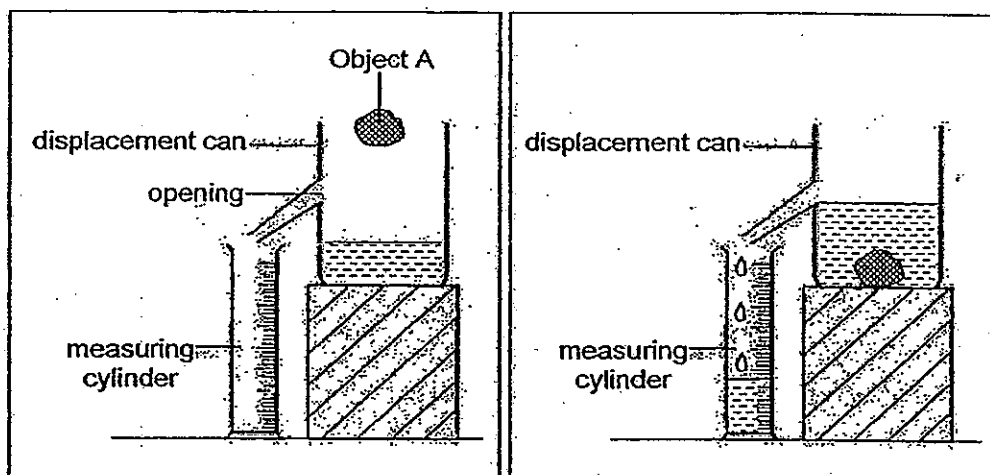


Diagram 1: Before experiment

Diagram 2: During experiment

Her friend said that the amount of water collected in the measuring cylinder as shown in Diagram 2 is not an accurate volume of Object A.

Which of the following can be done to improve on the result of the experiment?

| | |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------|
| (1) | Measure the amount of water left in the displacement can in Diagram 2. |
| (2) | Repeat the experiment three times and take the average volume of water in the measuring cylinder. |
| (3) | Subtract the amount of water in the measuring cylinder from the total amount of water in the displacement can. |
| (4) | Ensure that the water level in the displacement can in Diagram 1 is just below the opening of the can before the start of the experiment. |

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PRIMARY 4 END-OF-YEAR EXAMINATION 2010 SCIENCE BOOKLET B1

Total Time : 1 hour 45 minutes

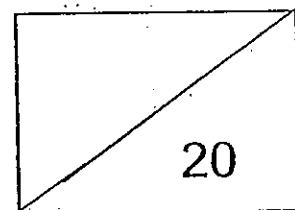
INSTRUCTIONS TO CANDIDATES

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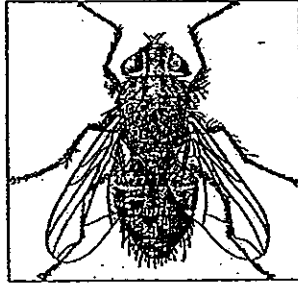


This booklet consists of 7 printed pages.

Section B1 : (20 marks)

Write the answers in the blanks provided.

26. Study the picture of the animal shown below carefully and tick the box/boxes that describe/s it.



(a) The animal is an insect because it has _____ (2m)

- a pair of wings
- three pairs of legs
- three body parts
- has a pair of feelers

(b) Give a reason why a spider is not an insect. (1m)

27. Sam fed four young bullfrogs, W, X, Y and Z, with different numbers of crickets every day. The other conditions were kept exactly the same. The masses of each of the four bullfrogs were taken every week. The results are shown in the table below.

| Bullfrog | Number of crickets eaten everyday | Mass of bullfrog (g) | | | |
|----------|-----------------------------------|----------------------|----------------------|----------------------|----------------------|
| | | 1 st week | 2 nd week | 3 rd week | 4 th week |
| W | 4 | 31 | 31 | 32 | 33 |
| X | 7 | 31 | 32 | 33 | 35 |
| Y | 13 | 31 | 33 | 36 | Dead |
| Z | 22 | 31 | 34 | Dead | - |

- (a) What is the most suitable number of crickets that Sam should give to the bullfrogs if he wants to increase their masses the fastest without harming them? (1m)

- (b) Bullfrogs Z and Y died in the 3rd week and 4th week respectively. Explain clearly how the two bullfrogs could have died. (1m)

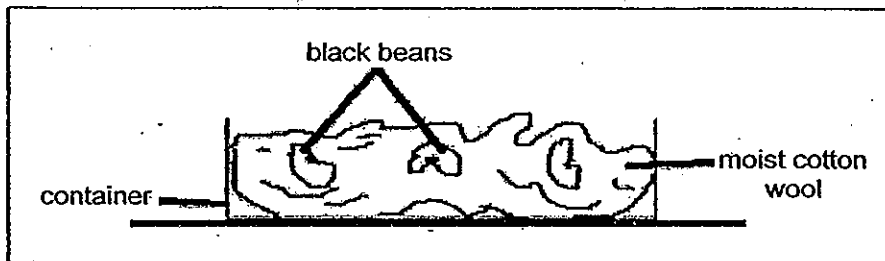
28. The butterfly and the cockroach are both insects.

- (a) State one similarity and one difference between the life cycles of the butterfly and the cockroach. Write your answers in the table below. (2m)

| Similarity | Difference |
|--------------------------------|---------------------------------|
| (i) _____ _____ _____ | (ii) _____ _____ _____ |

- (b) As the cockroach develops into an adult stage, some changes can be seen. State one of the changes apart from a change in size. (1m)

29. Alex wanted to investigate the best temperature for seed germination. He created five setups A, B, C, D and E. He placed some black beans on a moist cotton wool as shown in the diagram below.



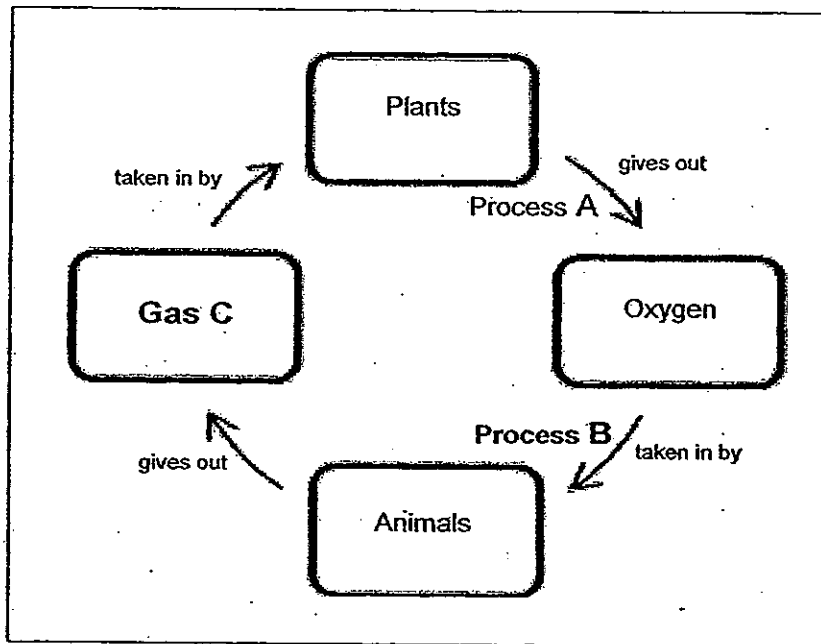
| Setup | A | B | C | D | E |
|-------------|---------|--------|-------|-----------|------|
| Location | Freezer | Fridge | Room | Warm room | Oven |
| Temperature | 4 °C | 10 °C | 28 °C | 35 °C | 80°C |

- (a) Name two variables that Alex must keep the same during the experiment. (1m)

- (b) In which two setups did the black bean seeds grow into young plants? (1m)

- (c) Name three conditions that would allow the bean seeds to grow healthily into young plants. (1m)

30. Study the diagram below and answer the following questions.



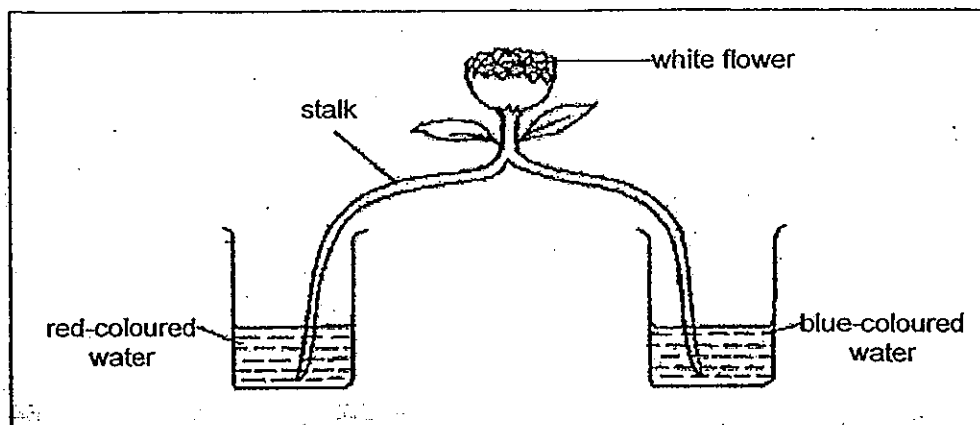
The diagram shows the different gases taken in and given out by the plants and animals.

(a) Name the process that takes place at A. (1m)

(b) Name Process B. (1m)

(c) What is the gas C that is taken in by the plants? (1m)

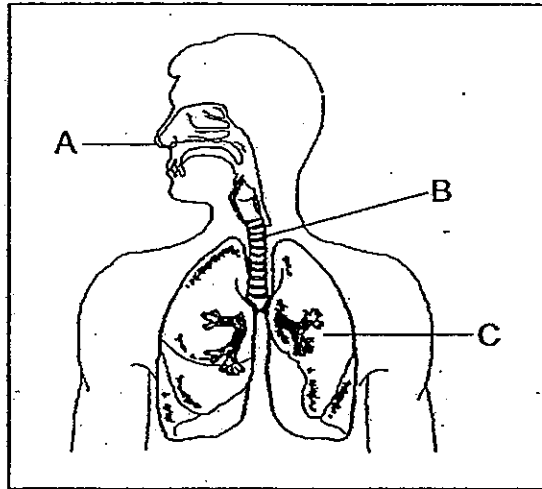
31. The flower stalk of a white carnation was cut and each part was put into a beaker of coloured water as shown in the diagram below.



- (a) What do you think will happen to the flower after one day? (1m)

- (b) Explain your answer to Part (a). (1m)

32. Study the diagram below.



(a) Label the organs in the respiratory system. (2m)

A : _____
B : _____
C : _____

(b) Name the part of the skeletal system which protects the lungs and the heart. (1m)

(c) How does the air that we breathe in become free from dust and foreign particles before it enters the lungs? (1m)

METHODIST GIRLS' SCHOOL (PRIMARY)

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PRIMARY 4 END-OF-YEAR EXAMINATION 2010 SCIENCE BOOKLET B2

Total Time : 1 hour 45 minutes

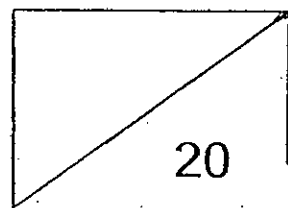
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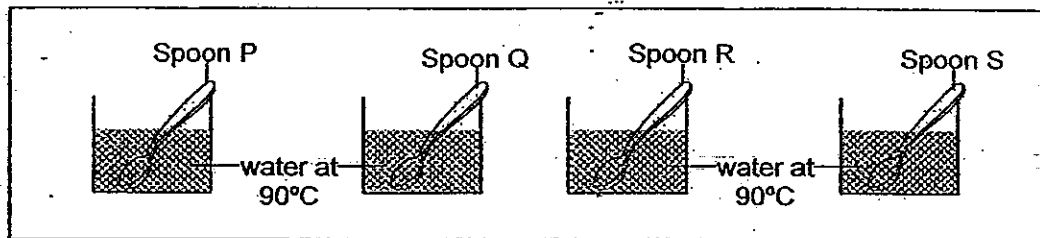


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Section B2 : (20 marks)

Write the answers in the blanks provided.

33. Pauline prepared four beakers with the same amount of water at 90°C. She then placed spoons P, Q, R, S into each beaker as shown in the diagram below. The four spoons are of the same size but are made from different materials.



She measured the temperature of the water in each beaker at four equal intervals over a period of half an hour.

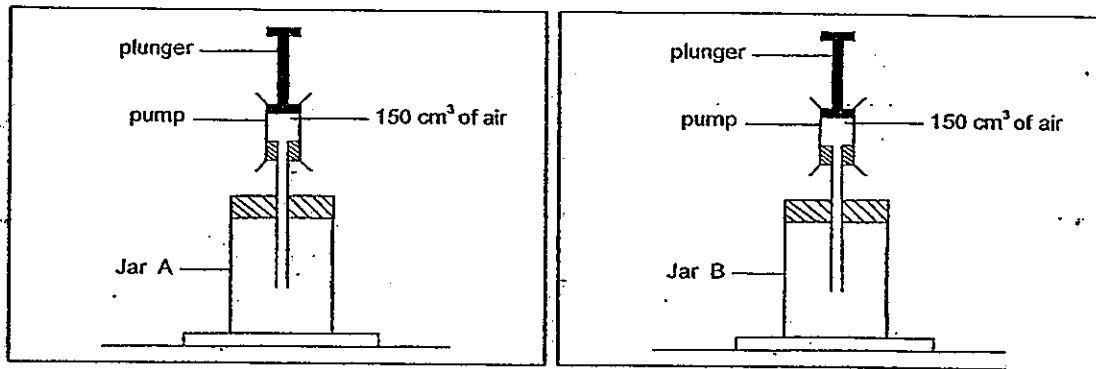
| Beakers containing | Temperature of water (°C) | | | |
|--------------------|---------------------------|------------|------------|------------|
| | 10.00 a.m. | 10.10 a.m. | 10.20 a.m. | 10.30 a.m. |
| Spoon P | 90 | 80 | 70 | 60 |
| Spoon Q | 90 | 70 | 50 | 40 |
| Spoon R | 90 | 80 | 65 | 55 |
| Spoon S | 90 | 85 | 75 | 65 |

- (a) Give a reason why the temperature of the water decreased over the half hour. (1m)

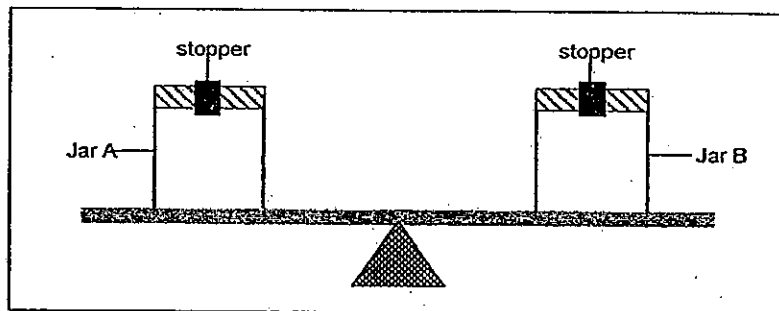
- (b) Based on the table above, arrange the spoons (P, Q, R and S) from the best to the poorest conductor of heat. (1m)

| | | | |
|------------------------|--|--|---------------------------|
| | | | |
| Best conductor of heat | | | Poorest conductor of heat |

34. Two similar jars, A and B can contain 200 cm^3 of air each. A pump is then connected to each jar and 150 cm^3 of air is pumped into it as shown in the diagram below.



Both jars are then placed on a balance as shown in the diagram below.



- (a) State one observation you would make when another 60 cm^3 of air is pumped into Jar A. (1m)

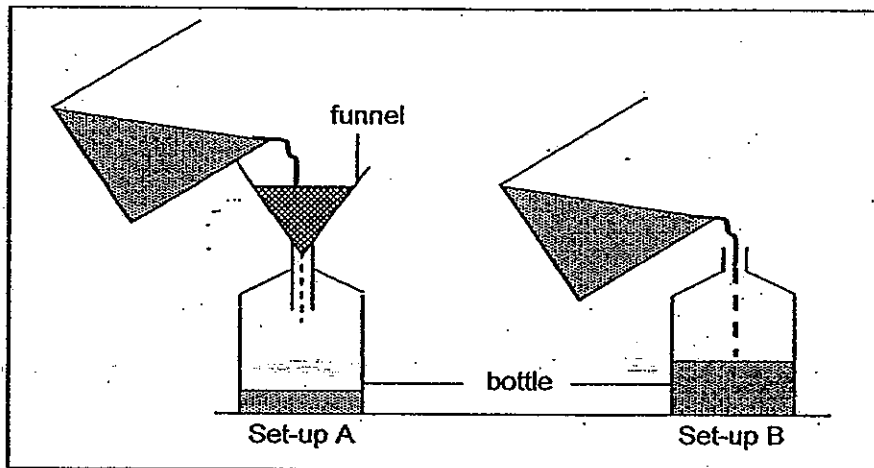
- (b) What is the volume of the air in Jar A now? (1m)

- (c) State two properties of air that are shown in the experiment above. (1m)

(i) _____

(ii) _____

35. Candy poured oil into two similar bottles using two set-ups, A and B as shown in the diagram below.



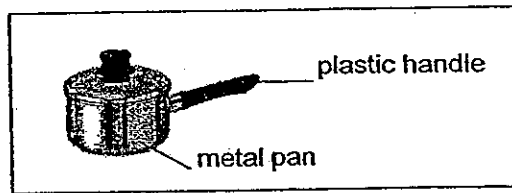
Candy repeated the experiment three times and noticed that the bottle in Set-up B always filled up faster than Set-up A.

- (a) Give a reason why the bottle in set-up B filled up faster than set-up A on all three occasions? (1m)

- (b) Why did she repeat the experiment three times? (1m)

- (c) Based your answer in (a) and using the same apparatus, how could Candy improve the experiment in Set-up A so that the bottle would fill up more quickly? Explain your answer. (1m)

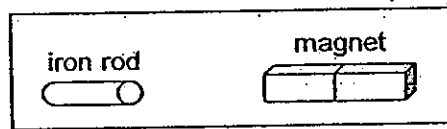
36. The diagram below shows a cooking pot.



(a) The handle is made of plastic because it is a _____ conductor of heat. (1m)

(b) The pan is made of metal because it is a _____ conductor of heat. (1m)

37. Sandy placed a magnet near an iron rod as shown in the diagram below.

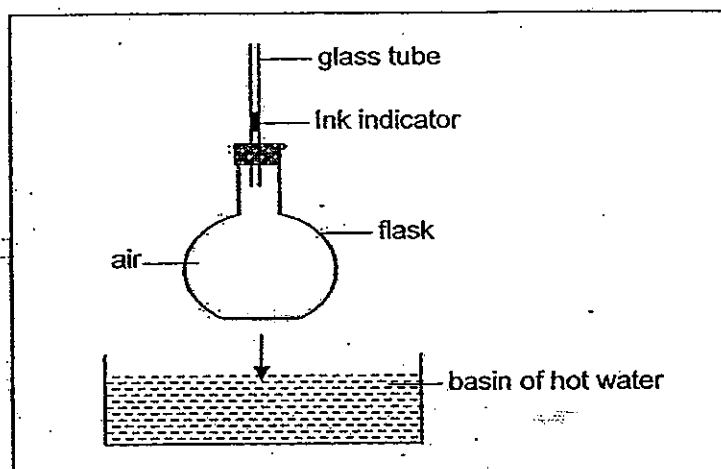


She observed that the iron rod moved towards the magnet.

(a) She concluded that the magnet exerted a _____ on the iron rod. (1m)

(b) Susan's observation showed that iron is a _____ material. (1m)

38. The diagram below shows a flask and a basin of hot water. Air is trapped inside the flask by the ink indicator.



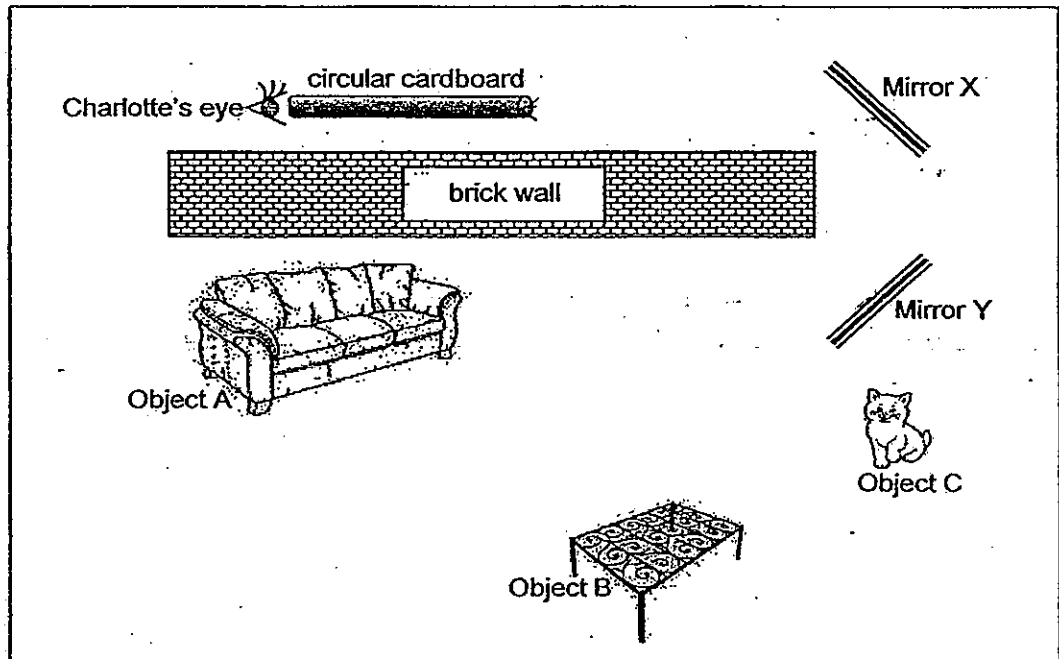
When the flask is lowered into the hot water, it is observed that the ink indicator falls at first and then rises.

- (a) Explain why the ink indicator first fell? (1m)

- (b) What is the reason for the ink indicator to rise after falling? (1m)

- (c) What would you do in order for the ink indicator to fall again? (1m)

39. Charlotte looked through a circular cardboard into Mirror X. Mirror Y was fixed to help her see what was on the other side of the wall as shown in the diagram below.

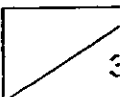


- (a) (i) Which object, A, B or C would she see? (1m)

- (ii) In the diagram above, draw arrows to show how Charlotte could see the object that you mentioned above. (1m)

the path of light that help

- (iii) State the property of light that supports your answer in (ii). (1m)



40. Max learnt that when vinegar is mixed with baking soda, a certain kind of gas is produced. He wanted to investigate if changing the temperature of the vinegar would affect the time taken for the gas to be produced.

He prepared the set-up as shown in Diagram A.

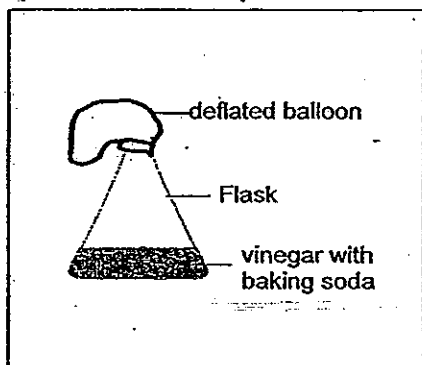


Diagram A

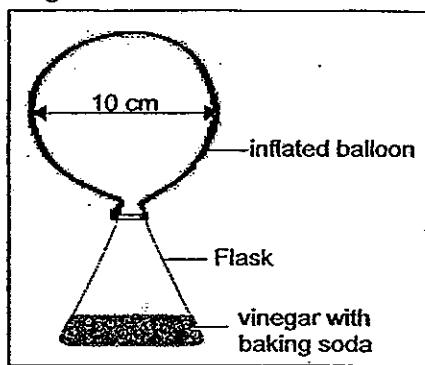


Diagram B

The balloon in the setup inflates when the gas is produced as shown in Diagram B. He repeated his experiment with vinegar of different temperature. He recorded his results as shown in the table.

| Experiment | Temperature of vinegar ($^{\circ}\text{C}$) | Time taken for balloon to inflate (sec) |
|------------|-----------------------------------------------|-----------------------------------------|
| 1 | 20 | 10 |
| 2 | 60 | 6 |
| 3 | 8 | 20 |

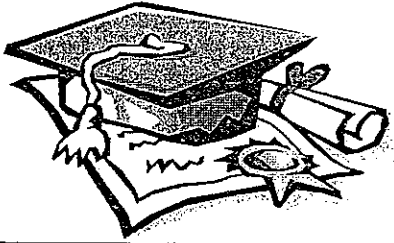
- (a) From the table, how does the temperature of the vinegar affect the time taken to inflate the balloon? (1m)

- (b) If Max used 15 ml of vinegar and 2 g of baking soda for the first experiment, how much vinegar and baking soda should he use for experiment 2 and 3 in order to ensure a fair test? (1m)

(i) vinegar : _____ ml

(ii) baking soda : _____ g



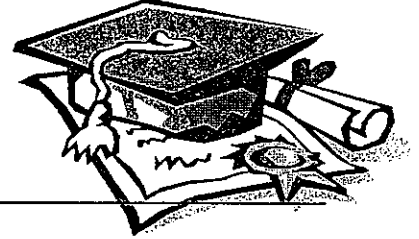


ANSWER SHEET

EXAM PAPER 2010

**SCHOOL : MGS PRIMARY
SUBJECT : PRIMARY 4 SCIENCE**

TERM : SA2



| | | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 | Q16 | Q17 |
| 2 | 2 | 4 | 1 | 1 | 4 | 1 | 2 | 3 | 3 | 2 | 4 | 2 | 1 | 2 | 1 | 4 |

| | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| Q18 | Q19 | Q20 | Q21 | Q22 | Q23 | Q24 | Q25 |
| 2 | 3 | 1 | 4 | 3 | 1 | 1 | 4 |

26)a) three pair of legs, three body parts, has a pair of feelers
b) A spider has 8 legs instead of 6.

27)a) 7.
b) Bullfrogs Z and Y could have overeaten.

28)a) i) Both lay eggs. ii) The butterfly has 4 stages but the cockroach 3 stage.
b) They will grow wings.

29)a) Equal amount of cotton wool.
b) C and D.
c) Air water and warmth.

30)a) Photosynthesis b) Respiration c) carbon dioxide

31)a) Half the flower will be red and the other half will be blue.
b) The stalk take in the coloured water and transports it to the while flower.

32)a) A: Nose B: Windpipe C: Lungs
b) The ribcage.
c) The hair in our nose trap dirt and foreign particles.

33)a) The water is losing heat to the spoon.
b) Q, R, P, S

34)a) Jar A will move down but Jar B will move up.
b) 200cm³.
c) i) Air has mass.
ii) Air can compressed.

35)a)There is an opening for air in the bottle to escape thus creating space for the oil to enter easily.

b)To ensure regbility and consistency so as to have more accurate answer.

c)She could poke a hole in the bottle to let the air escape.

36)a)poor b)good

37)a)force b)magnetic

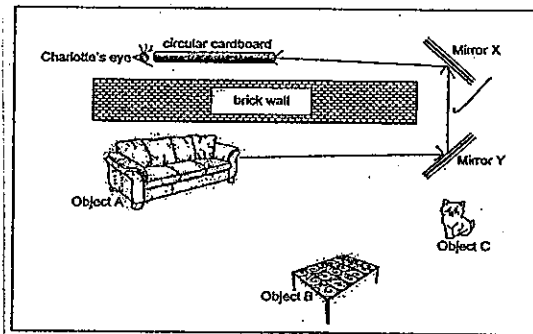
38)a)The flask expanded first and ink indicator fell to take up the space.

b)The air in the flask expanded causing the ink indicator to rise.

c)Change the basin of hot water to a cold basin of water.

39)a)i)A.

ii)



iii)Light travels in a straight line.

40)a)The higher the temperature of the vinegar, the faster the balloon takes to inflate.

b)i)15ml

ii)2g