Name: _____( )

Class: Primary 4 _____

# CHIJ ST NICHOLAS GIRLS' SCHOOL

## Primary 4
## Semestral Assessment 2
## SCIENCE

**BOOKLET A**

**27 October 2017**

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

**28 questions**
**56 marks**

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

***This booklet consists of 20 printed pages.***

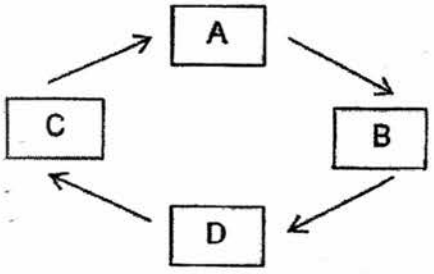
**Section A (28 x 2 marks = 56 marks)**
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4).
**Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

1. A, B, C and D show the stages in the life cycle of a mosquito.

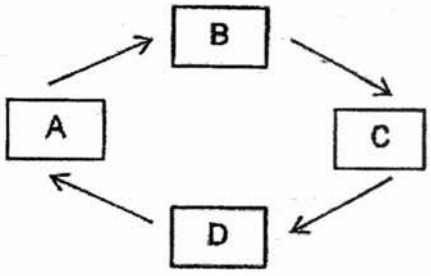
A B C D

Which one of the following shows the life cycle of a mosquito correctly?

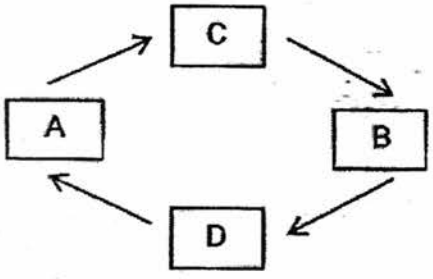
(1)



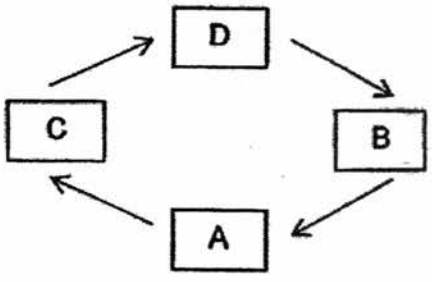

(2)



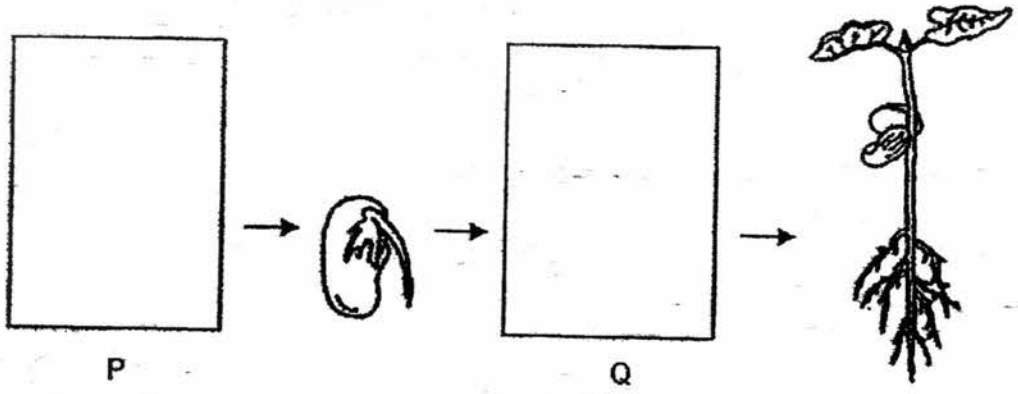

(3)



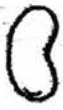

(4)



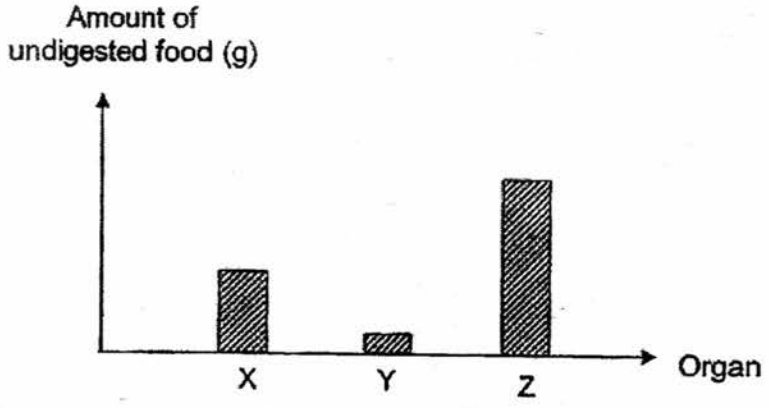
2. The diagram below shows the growth of a young plant with two missing stages P and Q.




Which one of the following shows the correct stages for P and Q?

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

3. The graph below shows the amount of undigested food when it first enters organs X, Y and Z.




Based on the graph above, which one of the following correctly identifies organs X, Y and Z?

| | X | Y | Z |
|---|---|---|---|
| (1) | gullet | stomach | small intestines |
| (2) | small intestines | large intestines | gullet |
| (3) | stomach | small intestines | large intestines |
| (4) | large intestines | gullet | stomach |

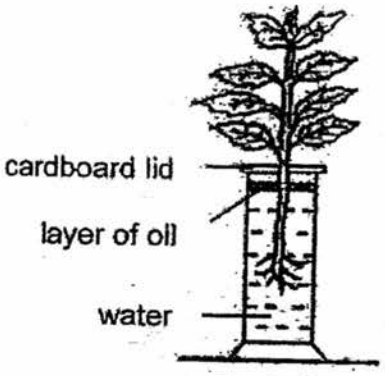
4. Seeds P, Q, R and T from the same plant are placed under the conditions shown in the table below.

| seed | conditions | | | |
|---|---|---|---|---|
| | air | water | light | temperature (°C) |
| P | Yes | No | Yes | 10 |
| Q | Yes | No | No | 15 |
| R | Yes | Yes | No | 25 |
| T | No | Yes | Yes | 32 |

Which one of the following seeds will germinate?

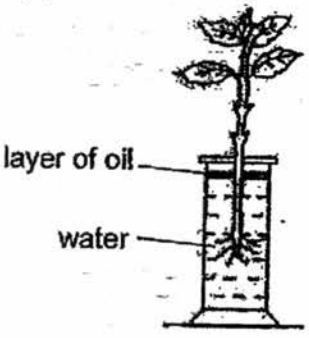
(1) P
(2) Q
(3) R
(4) T

5. Tammy wanted to find out if the roots of a plant absorb water. She set up an experiment as shown in the diagram below.

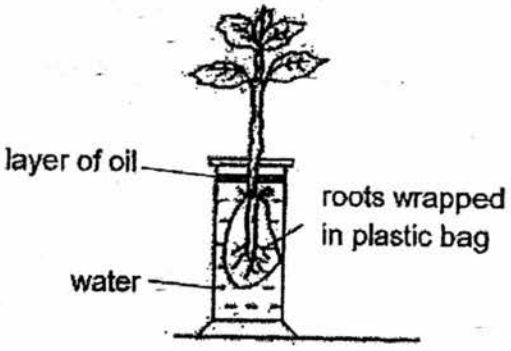



Which one of the following should she choose as a control set-up for her experiment?

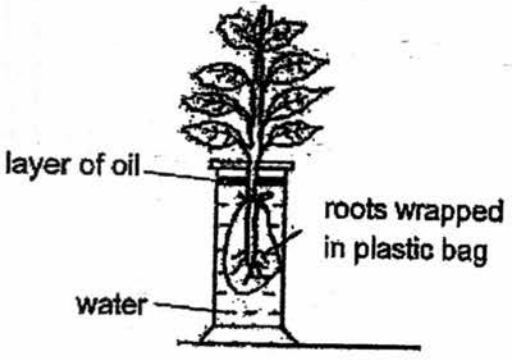
(1)



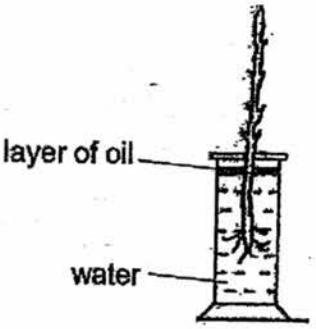

(2)



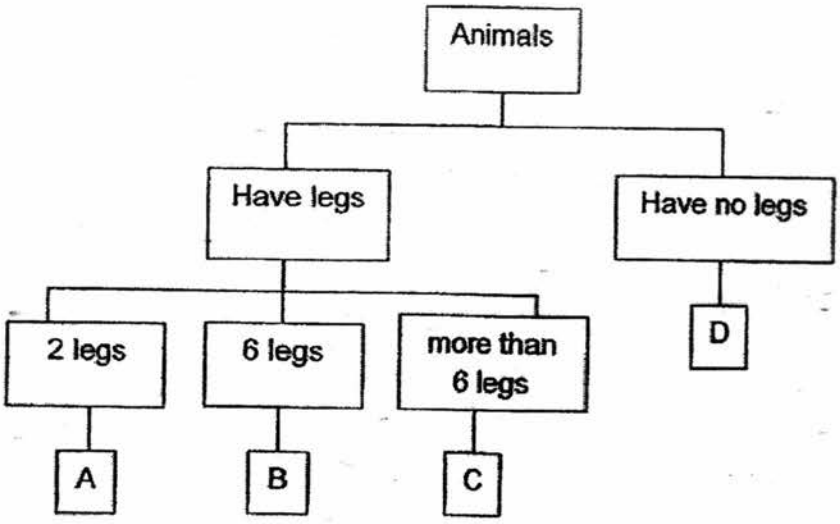

(3)




(4)



6. Study the chart below.

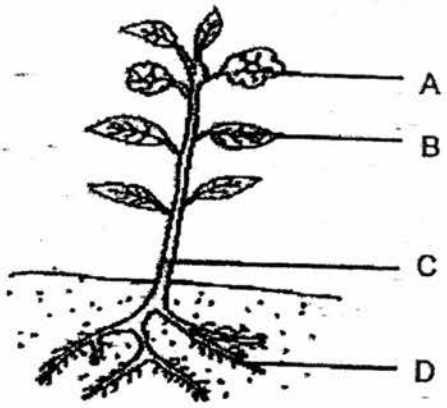



Where would you place animal X in the chart above?

animal X

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

7. Which one of the following plant parts A, B, C or D helps to keep the plant upright?




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

8. Study the classification table below.

| Group A | Group B | Group C |
|---|---|---|
|  cow |  eagle |  beetle |
|  frog |  penguin |  ant |

The animals are grouped according to _____.

(1) their body covering
(2) the place they live in
(3) the way they reproduce
(4) the number of legs they have

9. Elaine wanted to find out if sunlight is needed for a plant to grow.

| Set-up | Location | Amount of water given to plant (ml) | Number of seeds |
|---|---|---|---|
| A | dark room | 100 | 5 |
| B | field | 100 | 3 |
| C | dark room | 50 | 3 |
| D | field | 100 | 5 |

Which two set-ups should Elaine use for her investigation?

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

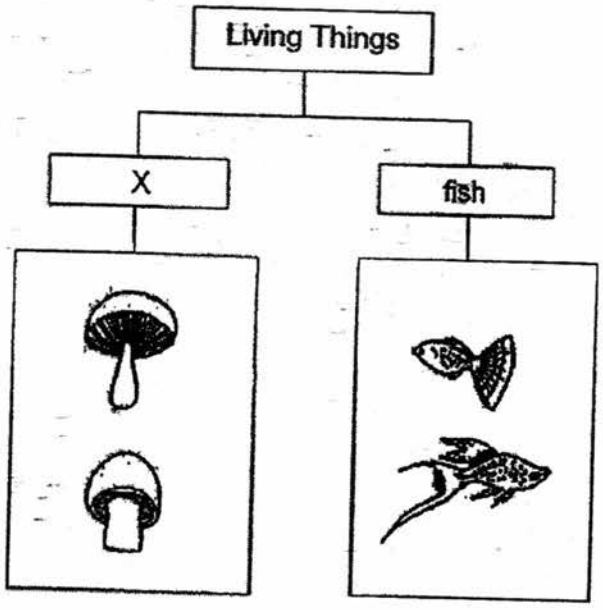
10. Animal Y has the following characteristics.

It stays in water.
It does not lay eggs.
It provides milk for its young.
It has hair as its outer covering.

Which animal group does Animal Y most likely belong to?

(1) Fish
(2) Reptile
(3) Mammal
(4) Amphibian

11. The table below shows how some living things can be grouped.



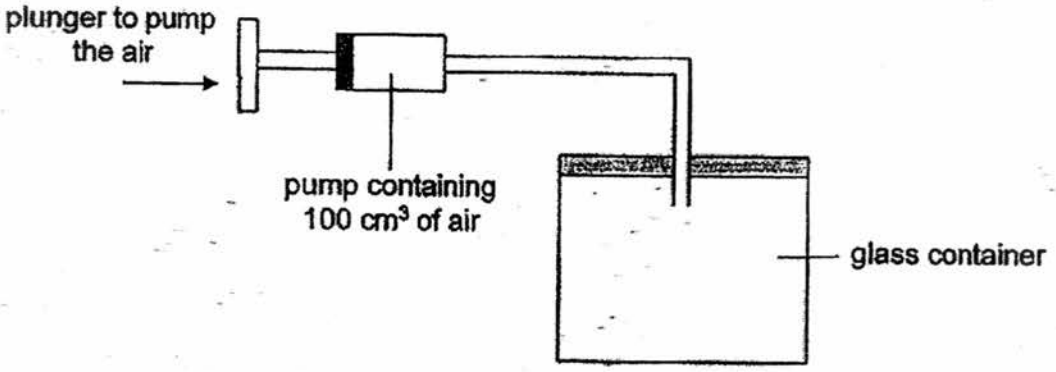

Which one of the following is the most suitable heading for group X?

(1) fungi
(2) insects
(3) bacteria
(4) mammals

12. Matter is anything that has mass and occupies space.
Which one of the following is <u>not</u> a matter?

(1) air
(2) soil
(3) water
(4) shadow

13. The capacity of the glass container shown below is 800 $cm^3$. Sarah pumped 100 $cm^3$ of air into the glass container.




**What is the final volume of the air in the glass container?**

(1) 100 $cm^3$

(2) 700 $cm^3$

(3) 800 $cm^3$

(4) 900 $cm^3$

14. **Which one of the following is a source of light?**

(1)

candle flame

(2)

yellow leaf

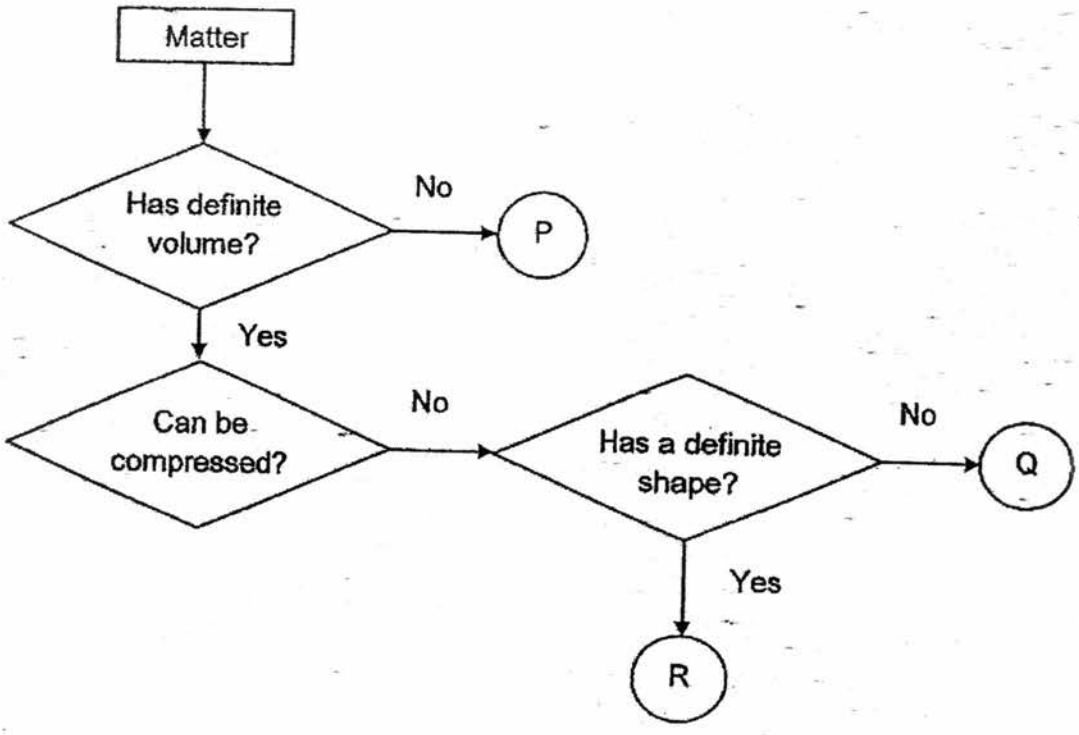
(3)

moon

(4)

orange

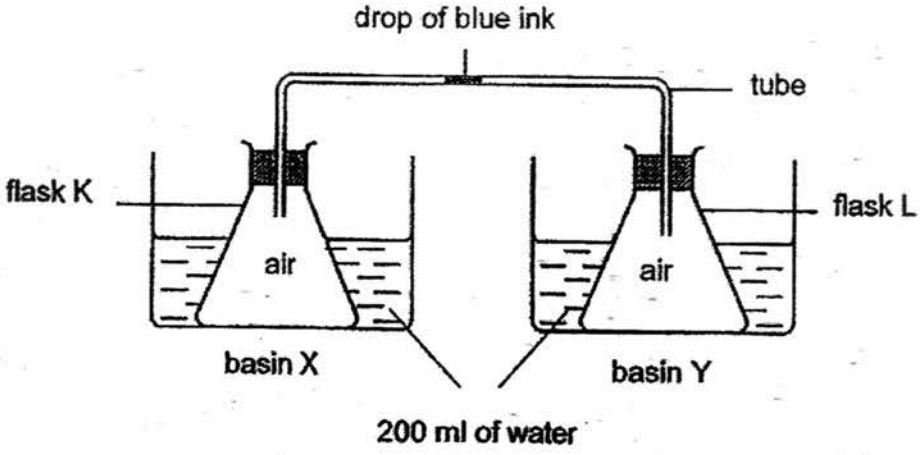
15. Study the flow chart below.




Which one of the following best represents P, Q and R?

| | P | Q | R |
|---|---|---|---|
| (1) | oxygen | ice cube | water |
| (2) | water vapour | milk | book |
| (3) | air | water vapour | pencil |
| (4) | light | water | chair |

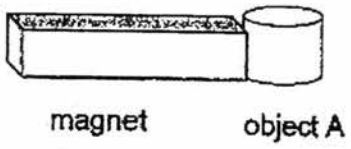
16. Study the diagram below carefully.




Which one of the following shows the possible temperature of the water in basins X and Y, and the movement of the blue ink in the tube?

| | Temperature of the water in basin X | Temperature of the water in basin Y | Movement of blue ink drop in tube |
|---|---|---|---|
| (1) | 90 °C | 5 °C | Move towards flask K |
| (2) | 90 °C | 5 °C | Move towards flask L |
| (3) | 25 °C | 25 °C | Move towards flask K |
| (4) | 5 °C | 90 °C | Move towards flask L |

17. Object A was attracted to the magnet as shown in the diagram below.

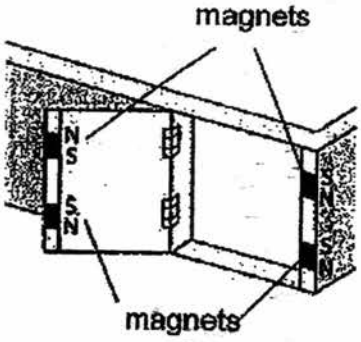



Object A is made of _____.

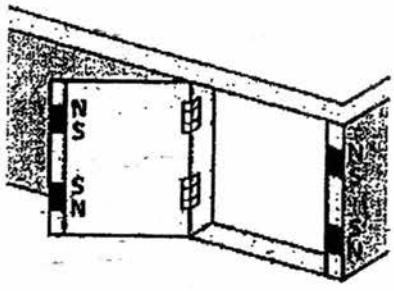
(1) steel
(2) wood
(3) plastic
(4) rubber

18. Which one of the following arrangement of the four magnets will allow the cabinet door to be shut most tightly?

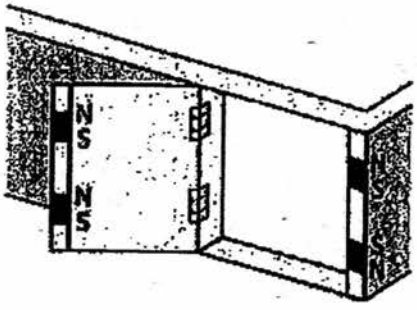
(1)



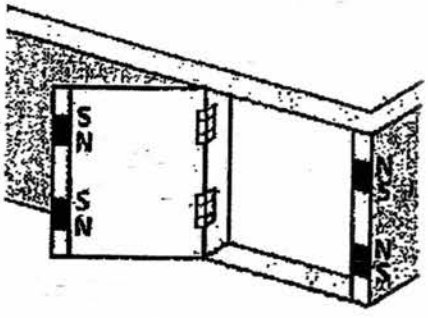

(2)



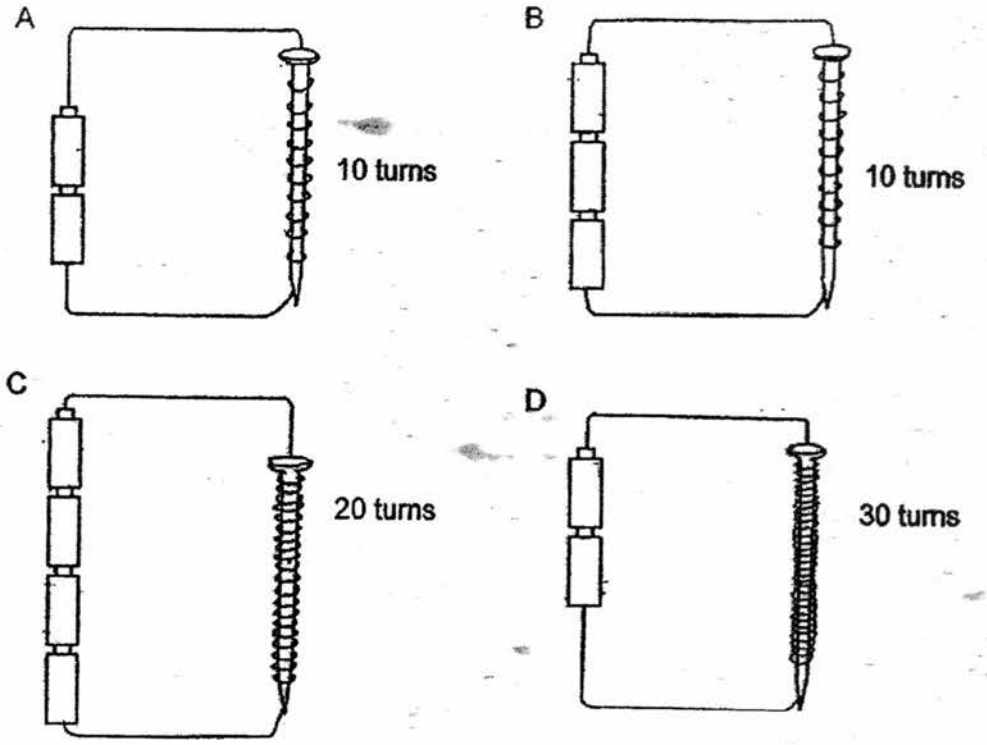

(3)




(4)



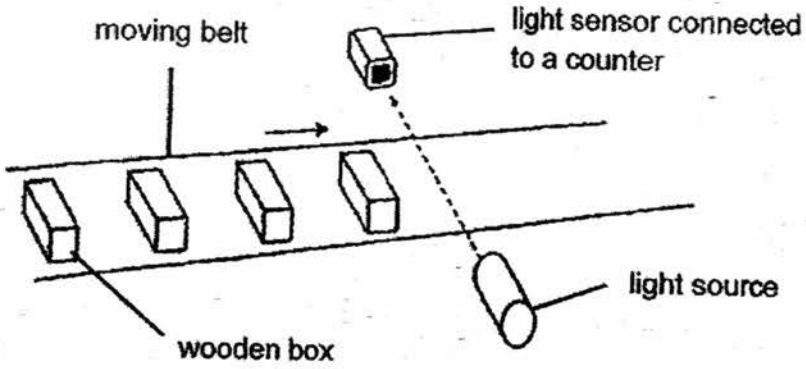
19. Tze Sun wants to find out if the number of coils of wires around the iron nail affects the magnetic strength of an electromagnet.



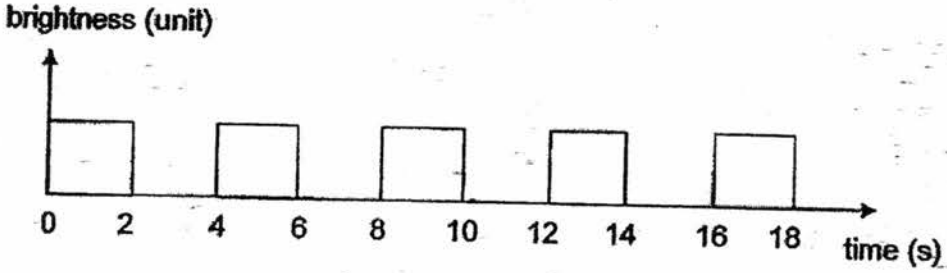

Which two set-ups should he use?

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

20. The diagram below shows a light sensor used to count the number of wooden boxes on a moving belt.



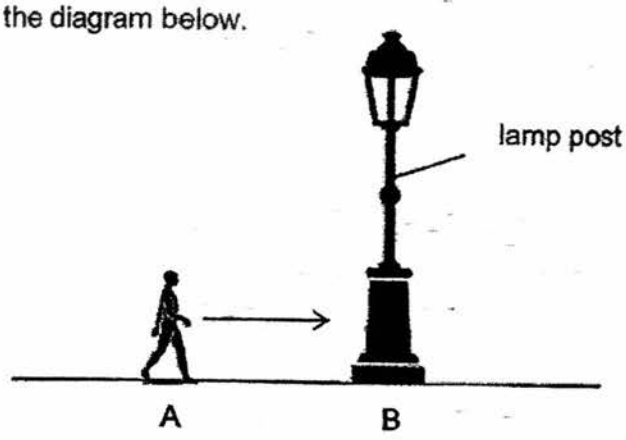

When the wooden box is between the light sensor and the light source, it blocks the light from the light source from reaching the light sensor. The results are recorded in the graph below.




Based on the graph, how many wooden boxes passed the sensor in 18 seconds?

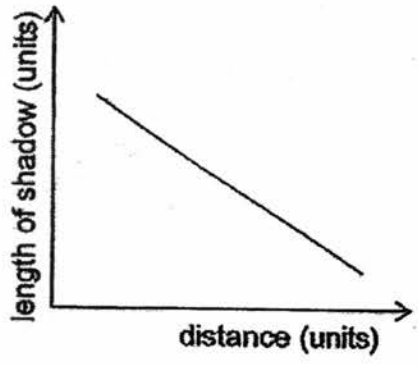
(1) 4
(2) 5
(3) 9
(4) 18

21. Study the diagram below.

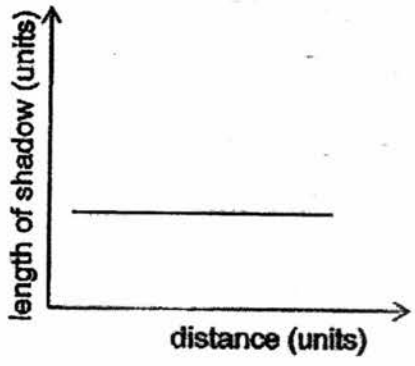



Which one of the following graphs correctly shows the length of Tom's shadow as he walks from position A to B?

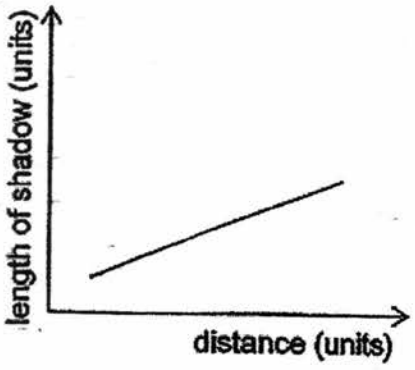
(1)



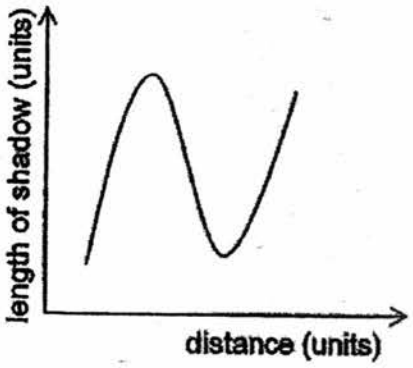

(2)



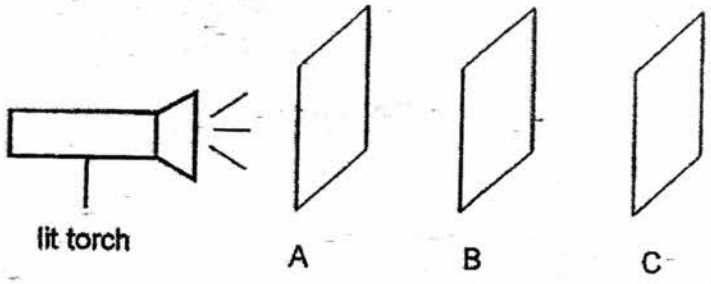

(3)




(4)



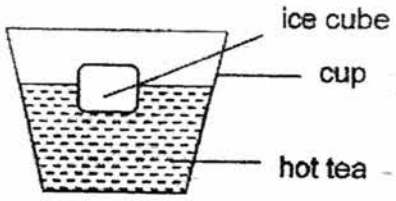
22. Ben conducted an experiment in a dark room with the set-up shown below.




Light from the torch could be seen on material B but not on material C.
Which one of the following best represents materials A, B and C?

| | Material A | Material B | Material C |
|---|---|---|---|
| (1) | metal sheet | frosted glass | cardboard |
| (2) | clear glass | cardboard | clear plastic sheet |
| (3) | cardboard | clear glass | metal sheet |
| (4) | clear plastic sheet | tracing paper | frosted glass |

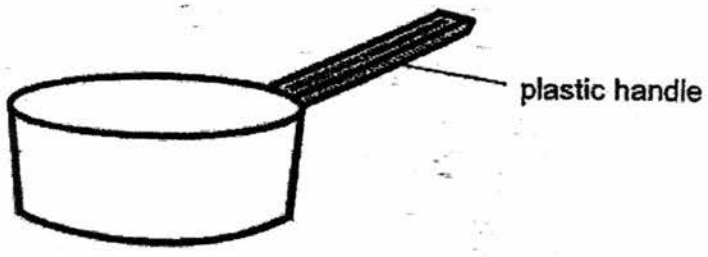
23. Siew Mei placed an ice cube in a cup of hot tea as shown below.




Which one of the following statements is true?

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

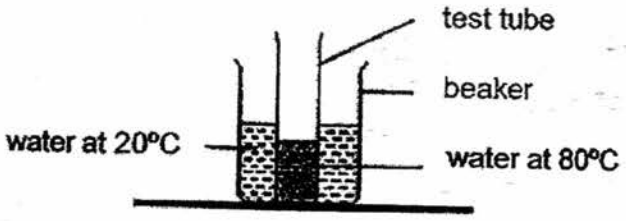
24. The diagram below shows a frying pan with a plastic handle.




Simon is able to hold the hot frying pan using the plastic handle. This is because plastic is a _____.

(1) light material
(2) flexible material
(3) poor conductor of heat
(4) good conductor of heat

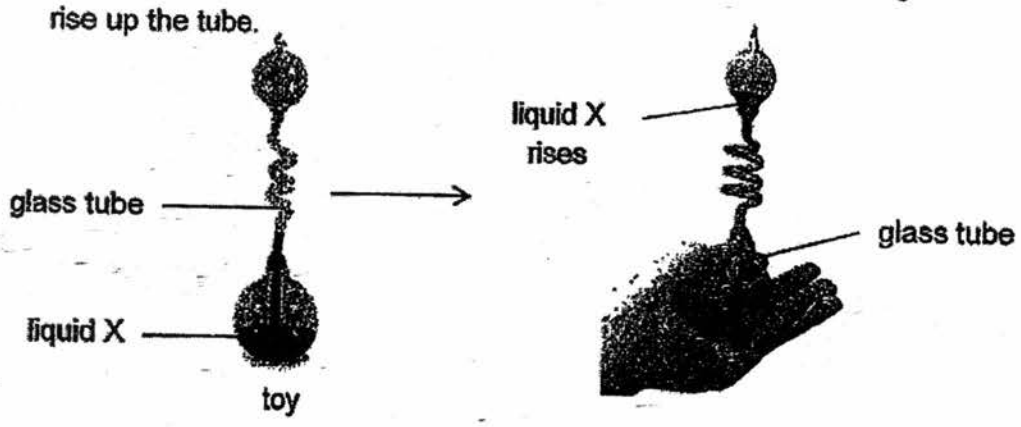
25. Ravi placed a test tube into a beaker of water as shown in the diagram below.




What would happen to the temperature of the water in both the test tube and the beaker after three minutes?

| | Temperature of water in the beaker | Temperature of water in the test tube |
|---|---|---|
| (1) | decrease | decrease |
| (2) | increase | decrease |
| (3) | decrease | increase |
| (4) | increase | increase |

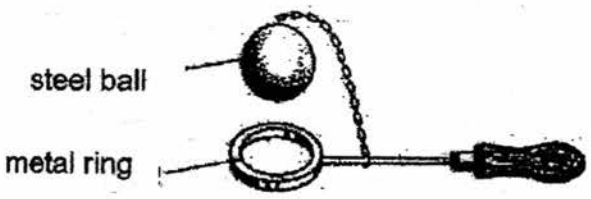
26. Thomas held a toy made of glass in his hand tightly for a minute as shown in the diagram below. He noticed that liquid X in the glass tube begins to rise up the tube.




What caused liquid X in the glass tube to rise?

(1) Liquid X gained heat from the hand and expanded.
(2) The glass tube lost heat to the hand and contracted.
(3) The glass tube lost heat to the surroundings and contracted.
(4) The air in the glass tube gained heat from the hand and expanded.

27. Look at the diagram below. At room temperature, the steel ball could pass through the metal ring. After heating the steel ball, it was unable to pass through the metal ring.




Which one of the following best explains this observation?

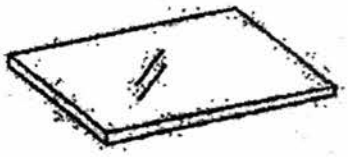
| | Metal ring | Steel ball |
|---|---|---|
| (1) | Expanded | Expanded |
| (2) | Expanded | Remained unchanged |
| (3) | Remained unchanged | Expanded |
| (4) | Remained unchanged | Remained unchanged |

28. Which of the following can be bent easily without breaking?

(1)

a cotton t-shirt

(2)



a ceramic tile

(3)

a plastic fork

(4)

a wooden ruler

**END OF BOOKLET A**

Name: _____ (  )

Class: Primary 4 _____

# Primary 4

## Semestral Assessment 2

## SCIENCE

## BOOKLET B

**27 October 2017**

| | |
|---|---|
| Booklet A | 56 |
| Booklet B | 44 |
| Total | 100 |

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

**13 questions**
**44 marks**

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

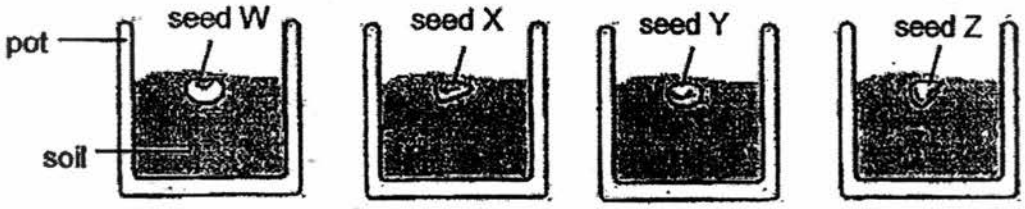
**This paper consists of 14 printed pages.**

_____

Parent's Signature/Date

**Section B (44 marks)**
For questions 29 to 41, 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.

29. Escher carried out an experiment to investigate the growth of four different types of seeds W, X, Y and Z. He put the seeds into four similar pots as shown in the diagram below.




Escher measured the height of the seedlings over four days and recorded the results in the table below.

| Seed | Height of seedling (cm) | | | |
|---|---|---|---|---|
| | Day 1 | Day 2 | Day 3 | Day 4 |
| W | 0 | 2 | 4 | 7 |
| X | 0 | 4 | 5 | 6 |
| Y | 0 | 3 | 6 | 10 |
| Z | 0 | 1 | 3 | 5 |

(a) Based on the results shown, which seed W, X, Y or Z grew the fastest? [1]

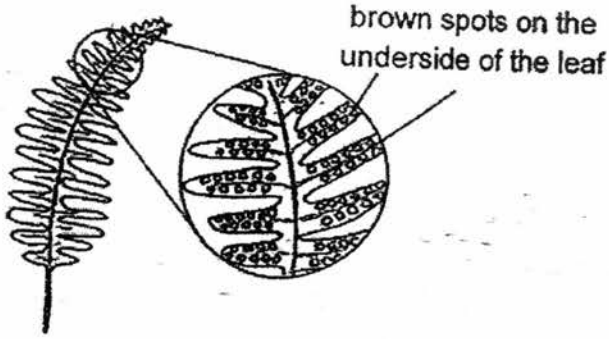
_____

(b) For the experiment to be fair, tick (✓) the variables that should remain the same. [2]

| Variables | (✓) |
|---|---|
| Number of seeds in each pot | |
| Amount of water | |
| Amount of soil | |
| Type of seeds | |
| Location of pot | |

30. Study the diagram below.

plant A




magnified view of a leaf of plant A

(a) What could be the brown spots on the underside of the leaf of plant A? [1]

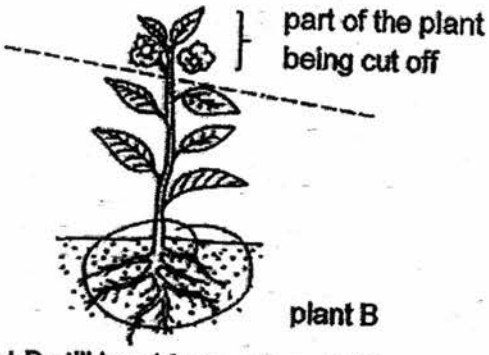
_____

(b) What is the function of these brown spots? [1]

_____

_____

Look at the diagram below. The upper part of plant B was cut off. The dotted line shows where the cut was made to the plant.



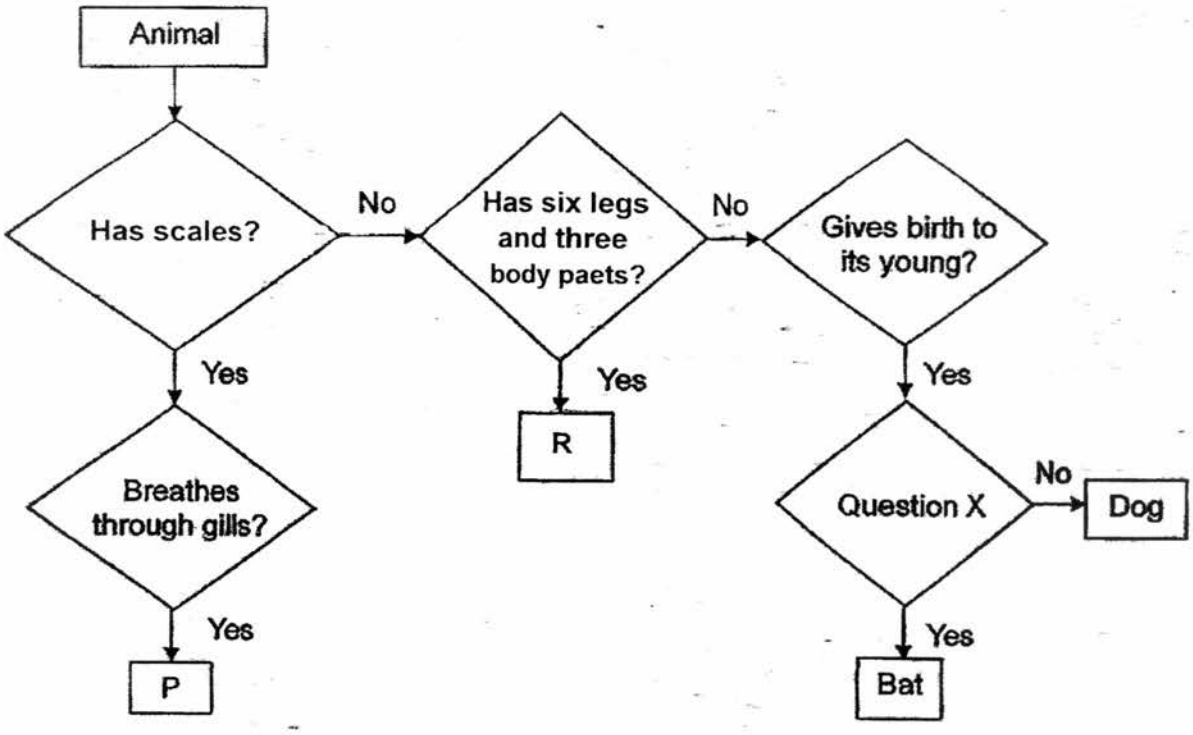

plant B

(c) Would plant B still be able to survive? Give a reason to support your answer. [1]

_____

_____

31. Study the flow chart below.




(a) Based on the flow chart above, state all the characteristics of animal R. [1]

_____

_____

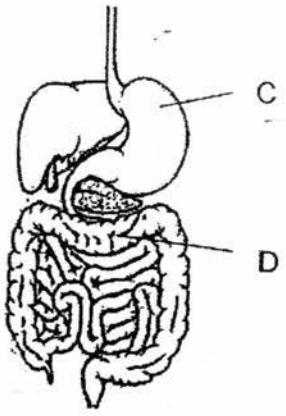
(b) What could animal R be? [1]

_____

(c) Which one of the following could Question X be? Put a tick (✓) in the correct box below. [1]

| Questions | Tick (✓) |
|---|---|
| Does it have an outer covering of hair? | |
| Does it breathe through moist skin? | |
| Can it fly? | |

32. The diagram below shows part of the human digestive system.




(a) What is the substance in C that helps to break down food into simpler substances? [1]

_____

_____

(b) What happens to the undigested food in D? [1]

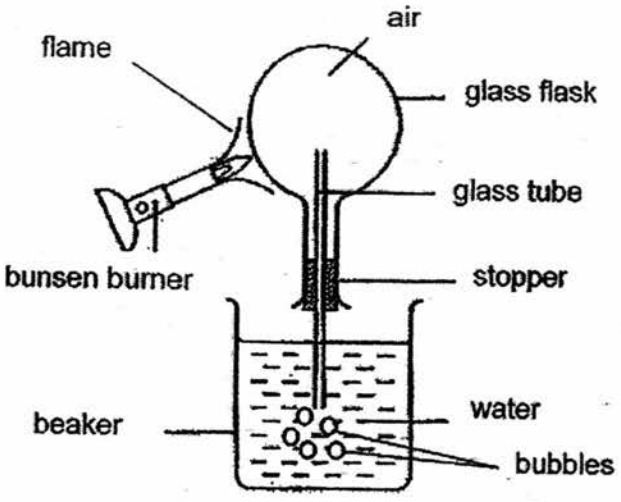
_____

_____

(c) Which system works with the digestive system to transport digested food to the other parts of the body? [1]

_____

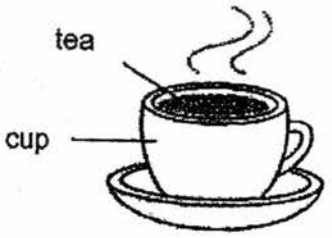
33. Amrita placed an inverted glass flask near a bunsen burner for a few minutes as shown below.




(a) Explain why bubbles were observed in the beaker of water when the glass flask was heated. [2]

(b) State what could be observed when the bunsen burner was turned off. [1]

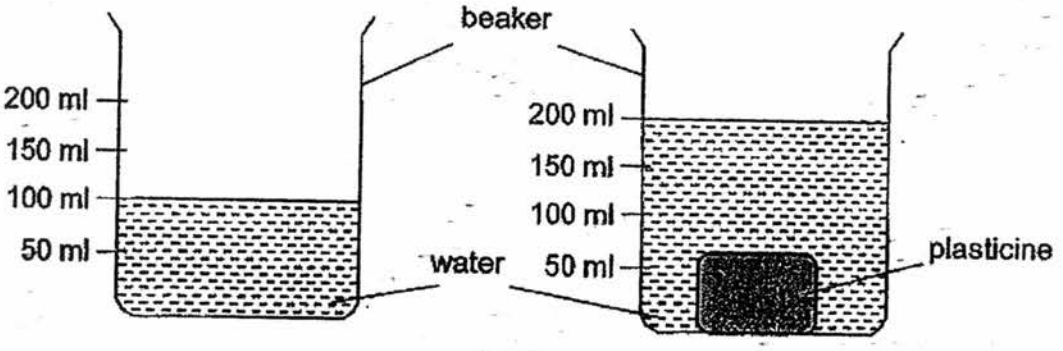
34. The diagram below shows a cup of tea.




(a) Tick (✓) the correct state for the following things. [2]

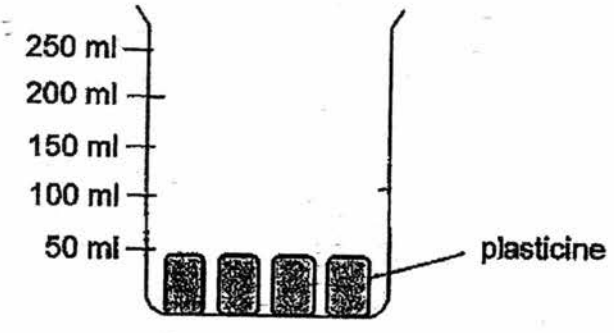
| Things | States of matter | | |
|---|---|---|---|
| | Solid | Liquid | Gas |
| Tea | | | |
| Cup | | | |

Alif placed a block of plasticine into a beaker of water in the diagram shown below.

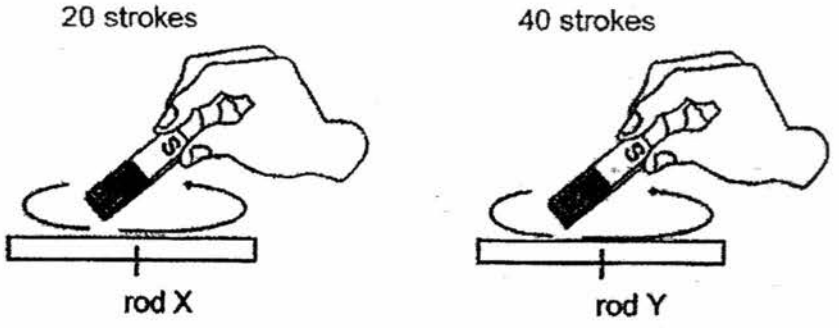



He then removed the block of plasticine and cut it into four pieces.

(b) Draw the water level in the beaker after he placed the four pieces of plasticine back into the beaker of water. [1]



35. Gerard stroked two similar iron rods X and Y with the same magnet as shown in the diagram below.




Both rods became magnets and were used to attract similar metal pins.

(a) Which rod will attract fewer metal pins? Explain your answer. [1]

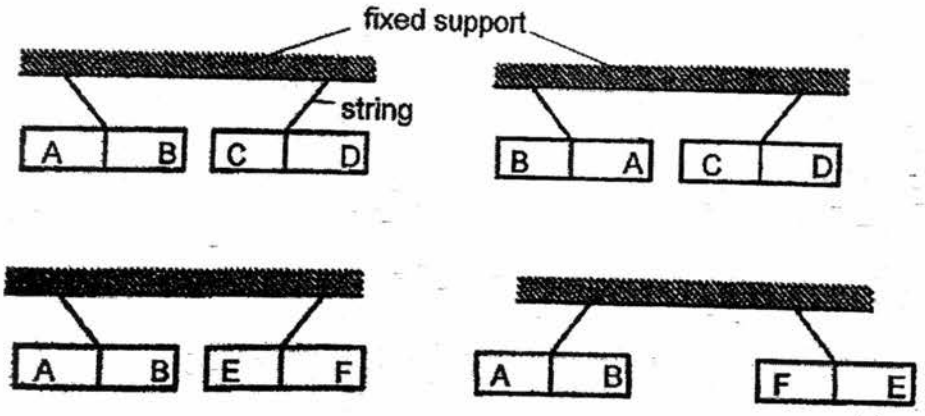
Gerard's brother, John, used the same magnet to stroke rod Z 50 times. He found that rod Z was unable to attract any metal pins.

(b) Give two possible reasons why rod Z could not attract any metal pins. [2]

Reason 1

Reason 2

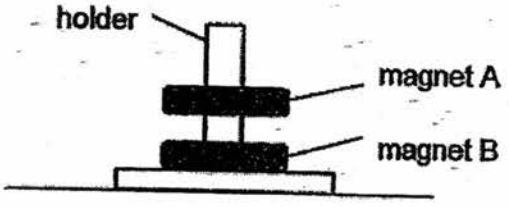
36. Andy wanted to find out which of the three metal bars AB, CD and EF are magnets. He hung each bar from a string and brought them near each other. His results are shown in the diagram below.




(a) What materials are metal bars AB, CD and EF made of? Tick (✓) the correct answer in the boxes provided below. [2]

| Metal Bars | Magnet | Magnetic material | Non-magnetic material |
|---|---|---|---|
| AB | | | |
| CD | | | |
| EF | | | |

Andy placed two ring magnets A and B, through a holder shown below.



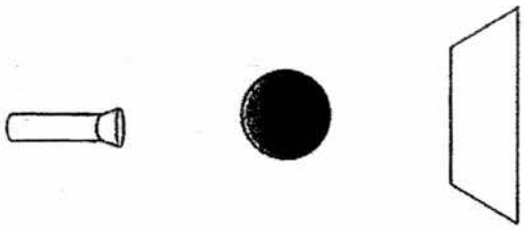

(b) The holder was made of wood and did not attract the magnets. [1]

Wood is a _____ material.

(c) Why was magnet A floating above magnet B? [1]

Magnet B was _____ magnet A.

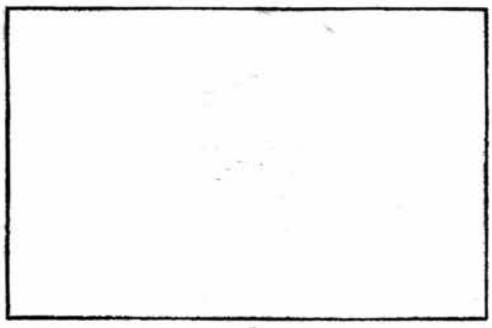
37. Eric shines a torch on a ball and a shadow is formed on a smooth wall.



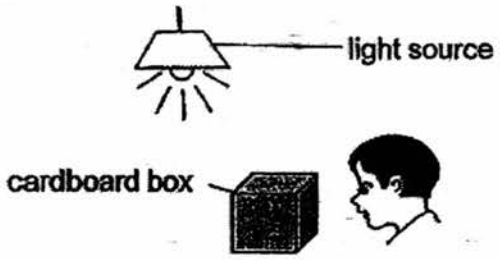
torch ball wall

(a) A shadow is formed when light is _____ by an object. [1]

(b) Draw the shadow of the ball that is formed on the wall in the box below. [1]



Study the diagram below.



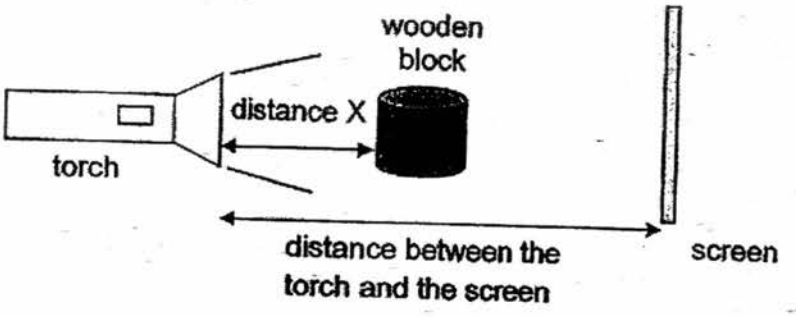

There is a cake in the cardboard box.

(c) Explain why Eric **cannot see** the cake in the cardboard box. [1]

_____

_____

38. Study the diagram shown below.




Catherine wanted to find out if the distance of the wooden block from the torch (distance X) would affect the height of the shadow cast on the screen. Her results are recorded in the table below.

| Distance between the torch and screen (cm) | Distance X (cm) | Height of the shadow (cm) |
|---|---|---|
| 50 | 5 | 42 |
| 50 | 10 | 35 |
| 50 | 15 | ? |
| 50 | 20 | 21 |

(a) What should the height of the shadow be when distance X is 15 cm? [1]

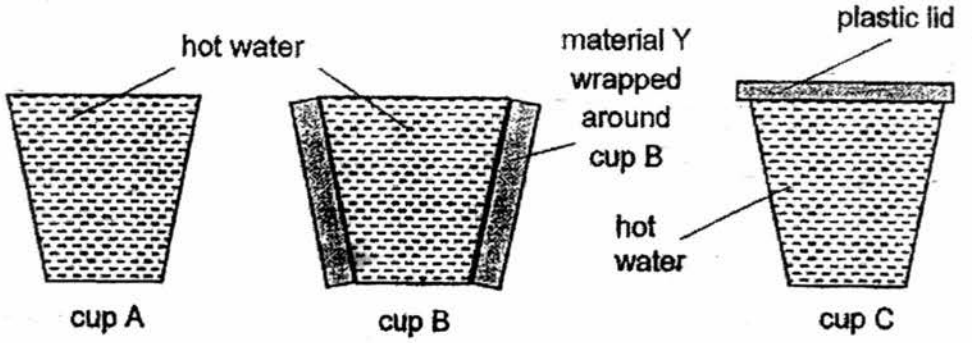
(b) Based on the results shown above, what is the relationship between distance X and the height of the shadow formed on the screen? [1]

(c) Without moving the wooden block, suggest two ways to make the shadow smaller on the screen. [2]

(i)

(ii)

39. Janice wanted to find out which is the best way to keep water warm. She filled three similar paper cups with equal amounts of hot water as shown in the diagram below. The cups were placed on the table in a room.




She measured the temperature of the water in each cup at five-minute intervals and recorded the results in the table below.

| Time (min) | Temperature of water (°C) | | |
|---|---|---|---|
| | Cup A | Cup B | Cup C |
| 0 | 94 | 94 | 94 |
| 5 | 75 | 86 | 80 |
| 10 | 60 | 70 | 65 |
| 15 | 48 | 58 | 51 |
| 20 | 30 | 40 | 35 |
| 25 | 30 | 30 | 30 |

(a) In which cup did the water cool the fastest? Explain your choice. [1]

_____

(b) Based on Janice's results, what can you conclude about material Y? [1]

_____

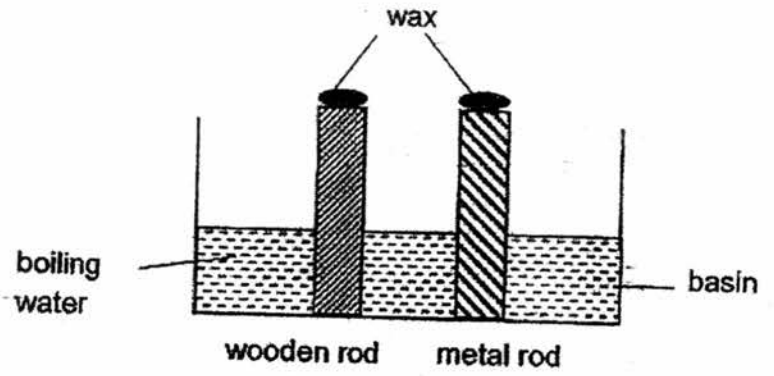
_____

(c) What was the room temperature? Give a reason for your answer. [2]

_____

_____

40. Sarah placed two rods into a basin of boiling water as shown below. Equal amounts of wax were put on both rods.



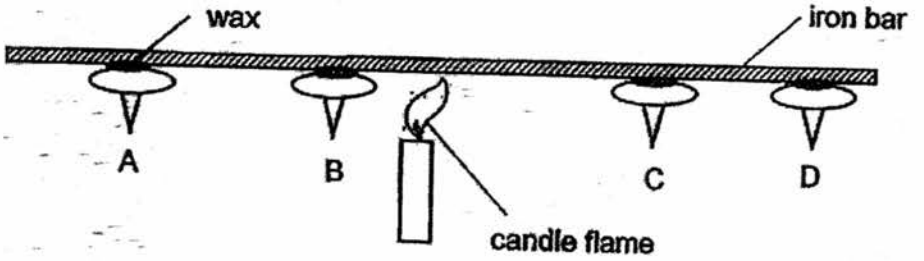

(a) What would Sarah observe after two minutes ? [1]

The wax on the wooden rod melted _____ than the wax on the metal rod.

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

Wood is a _____ conductor of heat than metal.

Four thumbtacks A, B, C and D were attached to an iron bar with the same amount of wax as shown in the diagram below.




(c) Which thumbtack would drop from the rod first? Explain why. [2]

_____

_____

41. Mr Koh weighed four different materials W, X, Y and Z of the same size and thickness. He soaked them in a basin of water for three minutes and weighed them again. He recorded his results in the table below.

| Material | Mass before soaking (g) | Mass after soaking (g) |
|---|---|---|
| W | 15 | 35 |
| X | 25 | 25 |
| Y | 40 | 70 |
| Z | 200 | 200 |

(a) State a property of the material Mr Koh is investigating based on his results. [1]

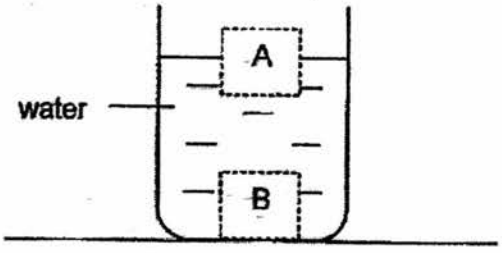
_____

(b) Which material W, X, Y or Z is the most suitable material to be used to make a raincoat? Give **two** reasons to support your answer. [1]

_____

_____

Mr Koh placed two different blocks A and B into a beaker of water as shown below.




(c) Fill in the blanks using the correct words in the box.

| contracts | expands | sinks | floats |
|---|---|---|---|

This experiment shows that block A_____ in water, and block B_____ in water. [2]

**END OF BOOKLET B**

SCHOOL : CHIJ ST NICOLAS PRIMARY SCHOOL

LEVEL : PRIMARY 4
SUBJECT : SCIENCE
TERM : 2017 SA2

CONTACT :

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**SECTION A**

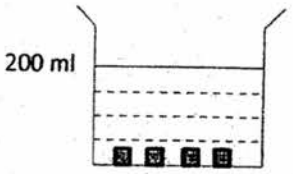
| Q 1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3 | 2 | 3 | 3 | 3 | 3 | 4 | 2 | 3 |

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

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

**SECTION B**

| | |
|---|---|
| Q29) | a) Y<br>b) Number of seeds in each pot √<br>Amount of water √<br>Amount of soil √<br>Type of seeds<br>Location of pot √ |
| Q30) | a) The spore bags<br>b) The function of these brown spots is to help the plant to reproduce.<br>c) Yes because it still have leaves to make food for the plant and its roots can still absorb water for the plants to make food. |
| Q31) | a) It does not have scales and has six legs and three body parts.<br>b) An insect<br>c) Can it fly? √ |

| | |
|---|---|
| Q32) | a) It is the digestive juices<br>b) The water from the undigested food would be absorbed through the walls of D and passed out by the anus.<br>c) The circulatory system |
| Q33) | a) The air in the glass tube gained heat and expanded and it took up more space and so air was pushed out of the glass flask.<br>b) There would be no more bubbles Water may enter the glass tube to raise the water level. |
| Q34) | a) Tea → Liquid<br>Cup → Solid<br>b)<br>  <br> |
| Q35) | a) Rod X as it was stroke lesser times as compared to Y and thus has weaker magnetic strength.<br>b) Reason 1 : He did not stroke it in one direction<br>Reason 2 : He used a different pole |
| Q36) | a) AB → Magnet, CD → Magnetic Material, EF → Magnet<br>b) non-magnetic<br>c) repelling |
| Q37) | a) Blocked<br>b)<br>  <br>c) Light cannot be reflected off the cake and into his eyes. |

| | |
|---|---|
| Q38) | a) 28 cm<br>b) As distance X increases, the height of the shadow decreases.<br>c) i) Move the torch further from the wooden block<br>ii) Move the screen closer to the wooden block. |
| Q39) | a) Cup A. As it reached the room temperature the fastest and lost heat to the surroundings the fastest.<br>b) Material Y is a poor conductor of heat.<br>c) $30^0$C. All set-ups reached $30^0$C at the end of the experiment. There is no heat gain or heat loss as they are at the room temperature. |
| Q40) | a) slower<br>b) poorer<br>c) B. It was the closest to the candle flame so the wax on B would gain heat the fastest. |
| Q41) | a) If Material X, W, Y and Z are waterproof.<br>b) X. It is waterproof and is better than Z.<br>c) floats, sinks |