# MARIS STELLA HIGH SCHOOL (PRIMARY)

## SEMESTRAL ASSESSMENT 2

## SCIENCE

## 2 NOVEMBER 2012

## BOOKLET A

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NAME: _____ (  )

CLASS: Primary 4 (  )

30 questions

60 marks

Total Time for Booklets A & B: 1 h 30 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

## PART I (60 marks)

or each question from 1 to 30, four options are given. One of them is the correct answer. ake your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical nswer Sheet (OAS). (30 x 2 marks)

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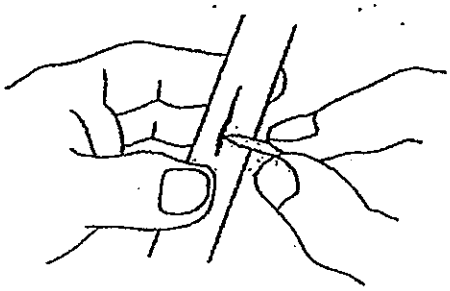
Alice can easily scratch a wooden stick with an iron nail.



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

(1) harder

(2) heavier

(3) stronger

(4) more flexible

Which one of the following substances does **not** have a fixed shape?

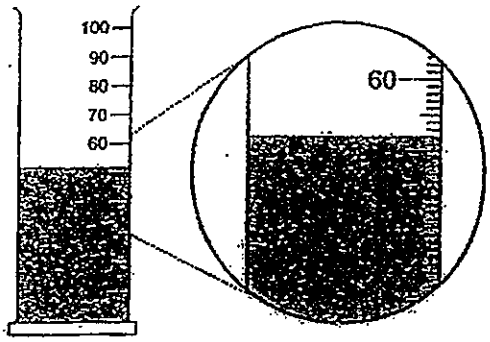
(1) plasticine

(2) pencil

(3) stone

(4) wind

In the diagram, what is the volume of liquid Y?



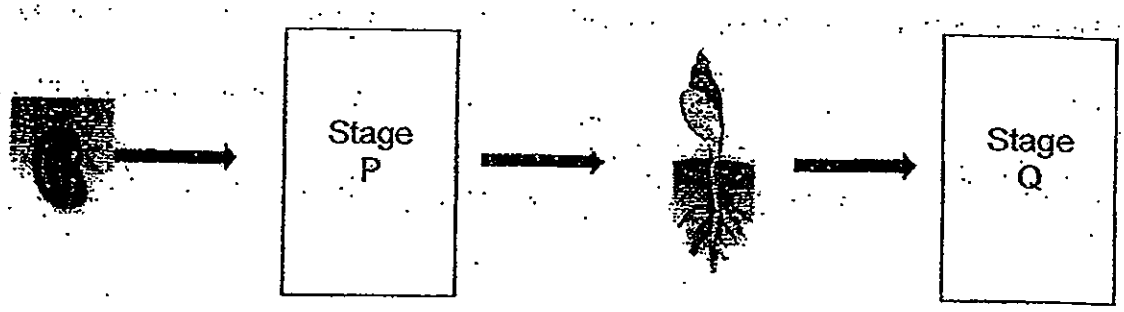

(1) 50 ml

(2) 52 ml

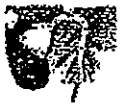
(3) 62 ml

(4) 68 ml

P and Q.




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

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

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

(1) It allows digested food to be passed into the blood.

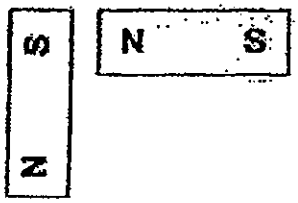
(2) It removes undigested food out of the body.

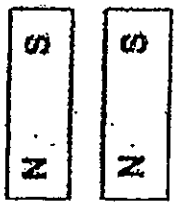
(3) It allows water to be passed into the blood.

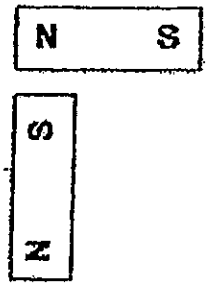
(4) It removes digested food from the body.

In which one of the following will the two magnets push each other away?

(1) 


(2) 


(3) 


(4) 


Which one of the following is NOT a source of heat?

(1) A candle flame

(2) A woollen cap

(3) A lighted bulb

(4) The Sun

Karim places an ice cube into a glass of hot water.

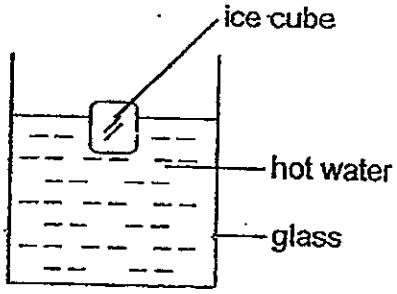
Which one of the following is correct?

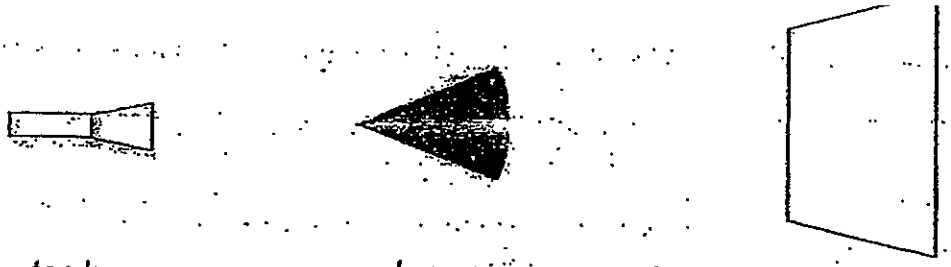
(1) The ice cube loses heat to hot water.

(2) The ice cube does not gain or lose heat.

(3) The hot water loses heat to the ice cube.

(4) The hot water gains heat from the ice cube.






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

(1) 

(2) 

(3) 

(4) 

10. A snail hides itself in its shell when touched.

This shows that the snail is a living thing because it can _____.

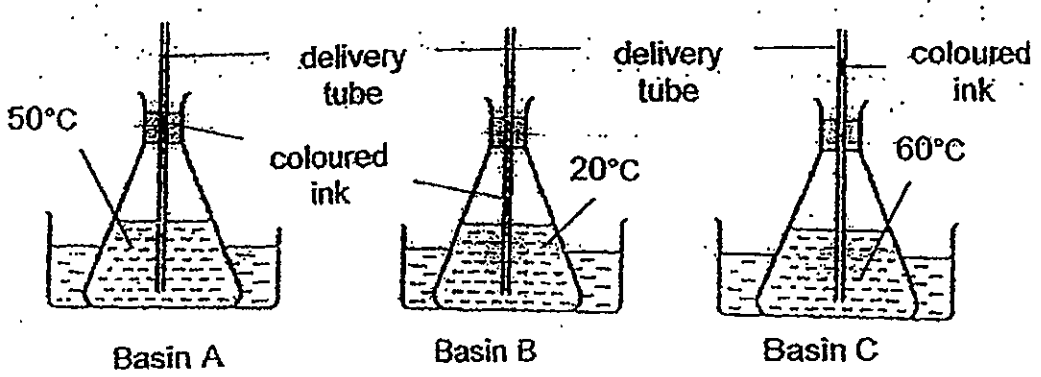
(1) grow

(2) breathe

(3) lay eggs

(4) respond to changes around it

Jonathan set up the experiment as shown below, using three identical conical flask set-ups. The temperatures of the water in each conical flask and basin were different. The coloured ink drop was at different height in each delivery tube at the start of the experiment.




After a while, Jonathan observed that the drop of ink decreased in height for Basin C, while the drop of ink rose more for Basin B than for Basin A.

What is the likely temperature of the water in each basin?

| | A | B | C |
|---|---|---|---|
| (1) | 60°C | 60°C | 30°C |
| (2) | 60°C | 30°C | 70°C |
| (3) | 30°C | 60°C | 30°C |
| (4) | 30°C | 30°C | 70°C |

Which of the following statements are **correct**?

A Water vapour is a non-matter as it does not have a definite volume.

B Shadow is a non-matter as it does not occupy space.

C Water is a matter as it has mass and volume.

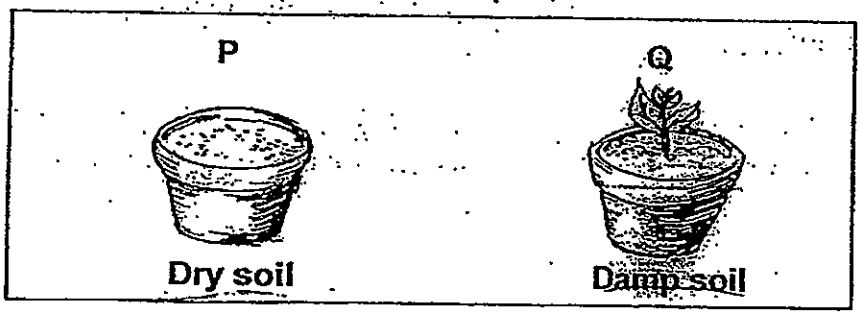
(1) A and B only

(2) B and C only

(3) A and C only

(4) A, B and C

garden under the sun. Pot P contains dry soil and Pot Q contains damp soil. After two days, young plants were found growing in Pot Q but not in Pot P.




What does this experiment show?

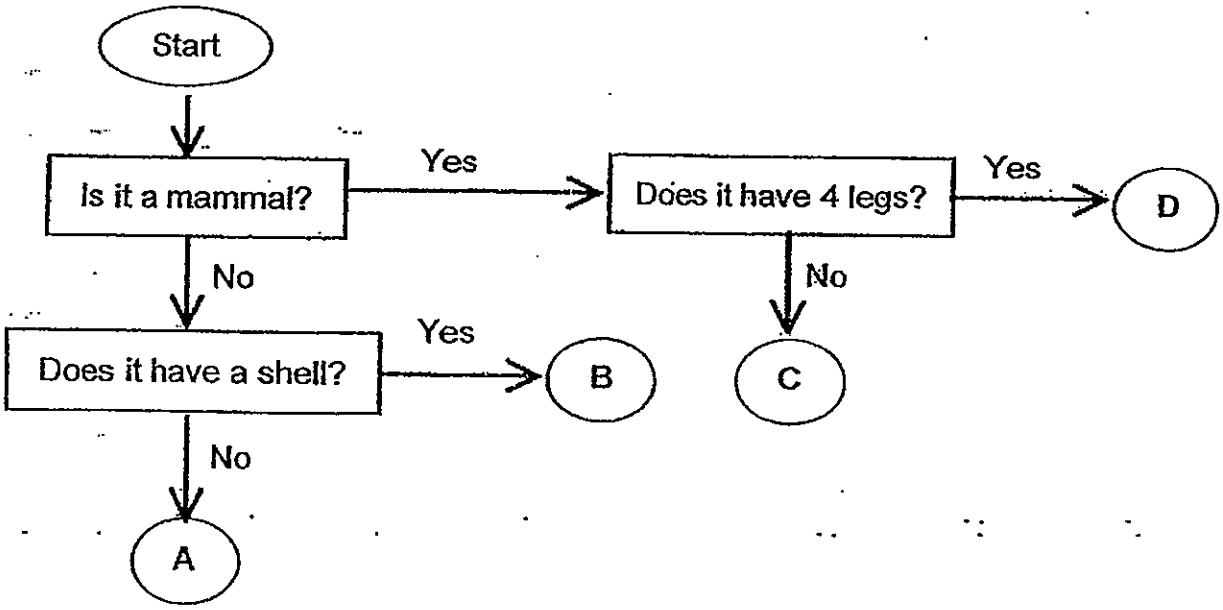
(1) Living things can move by themselves.

(2) Living things need water to survive.

(3) Living things need air to survive.

(4) Living things can reproduce.

14. Study the flow chart below.




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

| | A | B | C | D |
|---|---|---|---|---|
| (1) | Chicken | Turtle | Dolphin | Bear |
| (2) | Earthworm | Cobra | Frog | Squirrel |
| (3) | Pigeon | Snail | Lion | Horse |
| (4) | Silverfish | Tortoise | Whale | Butterfly |



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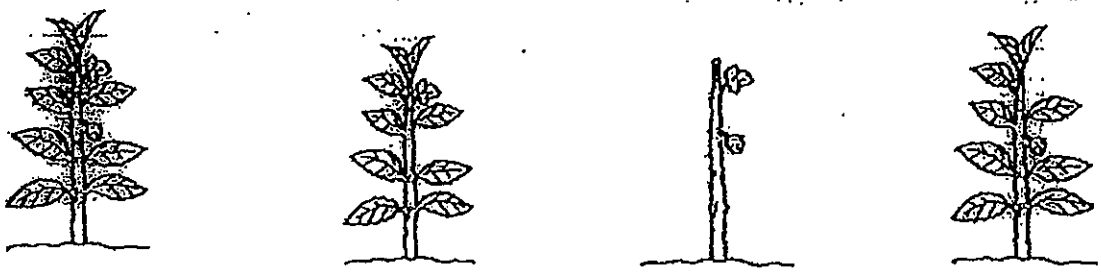
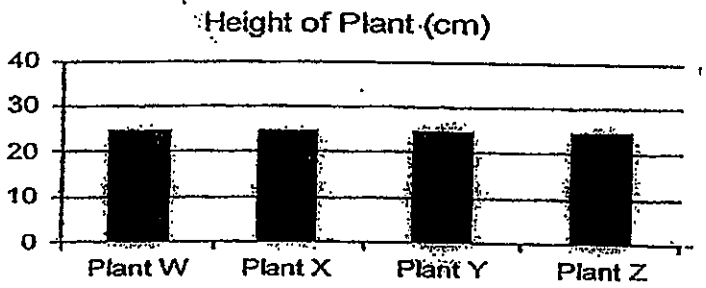
15. Meiting carried out an experiment using four similar plants, W, X, Y and Z planted in a sunny part of the garden. She plucked off the fruit on Plant X, all the leaves on Plant Y and the flower on Plant Z. Plant W was left with all its parts intact, as shown in the four pictures below. She also watered the plants regularly during the experiment.



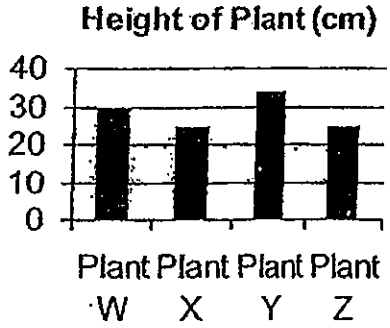
Plant W Plant X Plant Y Plant Z

The graph below shows the height of the plants at the start of the experiment.

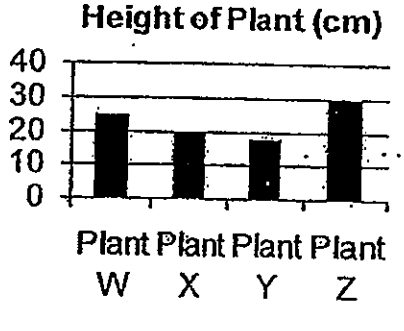



Which one of the following graphs shows the likely change in the height of the four plants after a month?

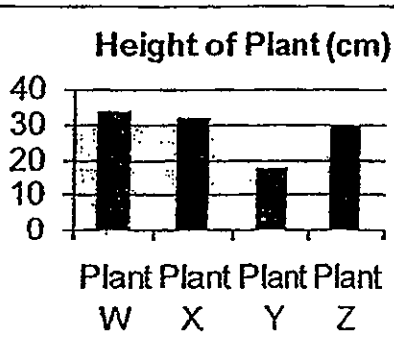
(1)



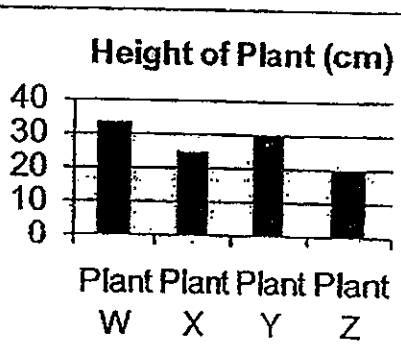

(2)




(3)



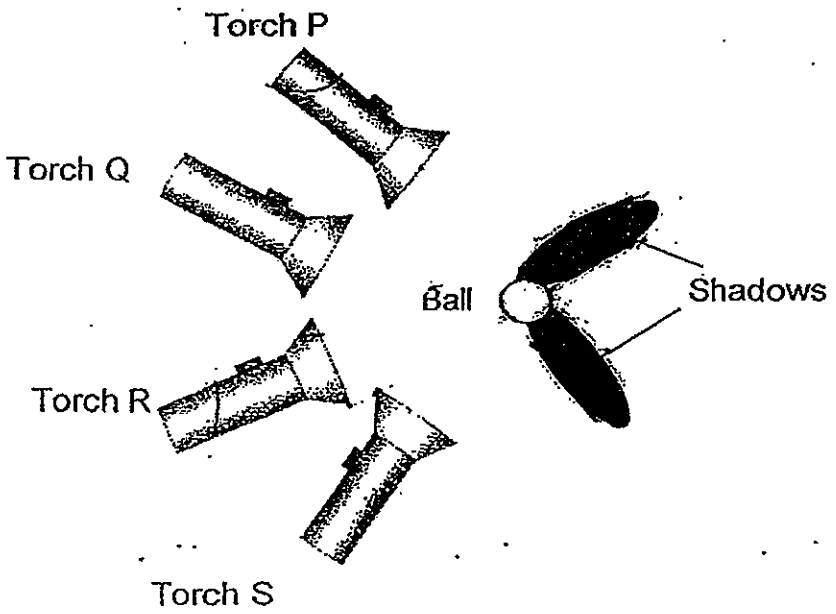

(4)



16. The table below shows the classification of different body parts according to the systems they belong. Which set has an **incorrect** entry?

| | Respiratory System | Circulatory System | Digestive System | Skeletal System |
|---|---|---|---|---|
| (1) | Nose | Heart | Mouth | Ribs |
| (2) | Windpipe | Blood vessels | Gullet | Backbone |
| (3) | Lungs | Heart | Stomach | Spine |
| (4) | Ribcage | Blood vessels | Intestines | Skull |

17. Bryan placed a ball and four identical torches on a table. Out of the four torches, he only switched on two. Shadows were formed, as shown in the diagram below when he looked down at the table from above.




Which two torches did Bryan switch on?

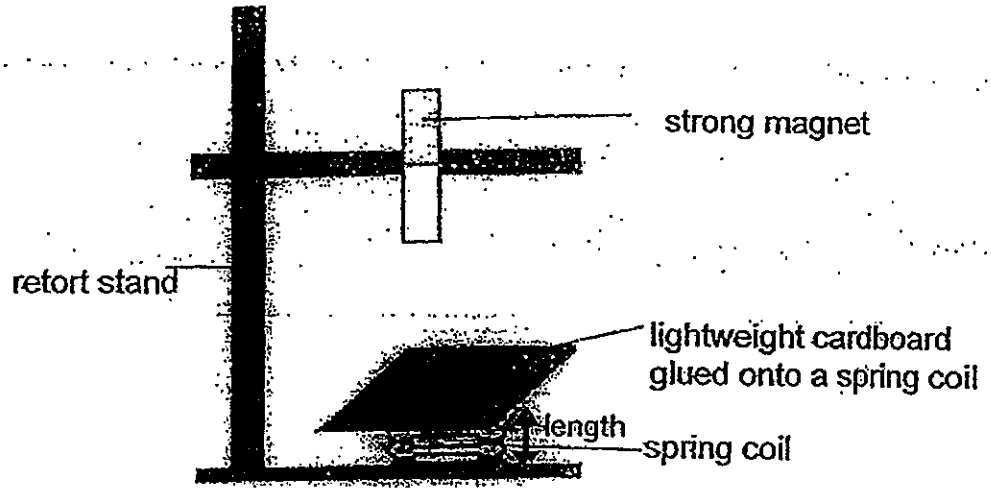
(1) P and Q

(2) P and R

(3) Q and R

(4) R and S

18.




Alvin set up the experiment above.

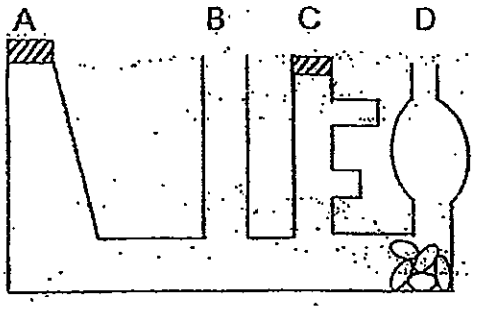
He tested four different objects, A, B, C and D by taping them on the lightweight cardboard. He observed what happened to the length of the spring coil and recorded his observations in the table below.

| [illegible] | [illegible] |
|---|---|
| A | Decreases |
| B | Increases |
| C | Increases |
| D | Decreases |

Based on the observation above, what could objects A, B, C and D be?

| | A | B | C | D |
|---|---|---|---|---|
| (1) | Copper rod | Iron bar | Nickel coin | Gold ring |
| (2) | Steel pin | Iron bar | Nickel coin | Copper rod |
| (3) | Iron bar | Copper rod | Gold ring | Nickel coin |
| (4) | Nickel coin | Iron bar | Copper rod | Gold ring |

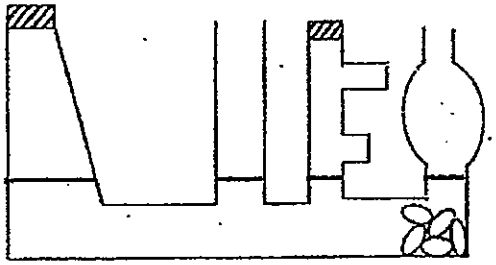
19. The diagram shows a communicating vessel.



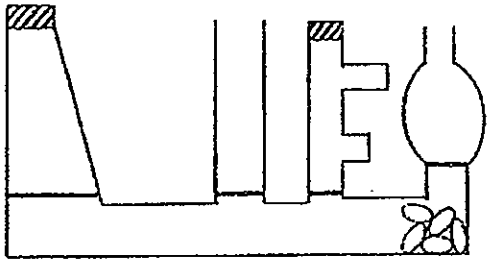

The openings A and C are tightly covered with stoppers. There are also some pebbles at the bottom of vessel D.

200ml of water is poured into the opening at B. Which diagram shows the correct water level?

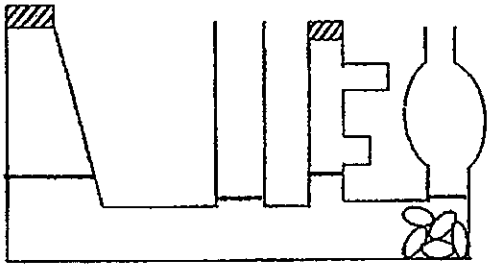
(1)



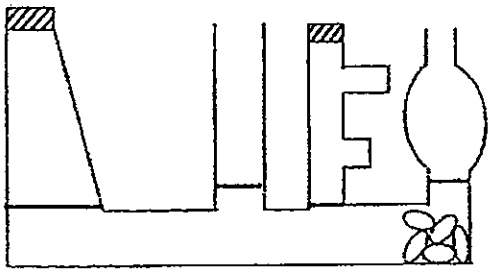
(2)



(3)



(4)





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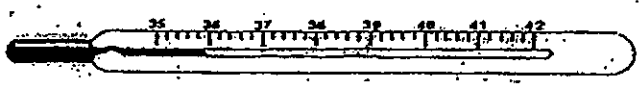
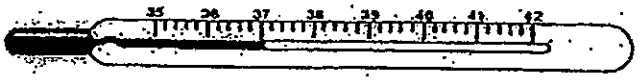
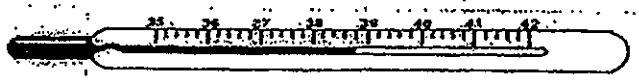
20. Look at the 3 thermometers below.


Thermometer A


Thermometer B


Thermometer C

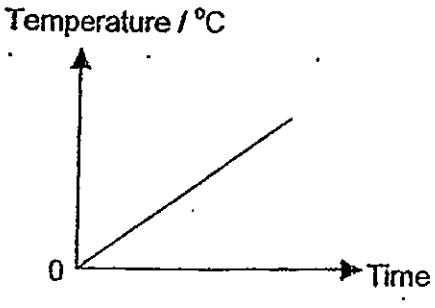
Which of the thermometers correctly show the temperature of a boy on a very cold day and the same boy when he has fever?

| | Temperature of a boy on a very cold day | Temperature of a boy with fever |
|---|---|---|
| (1) | A | B |
| (2) | A | C |
| (3) | B | C |
| (4) | B | B |

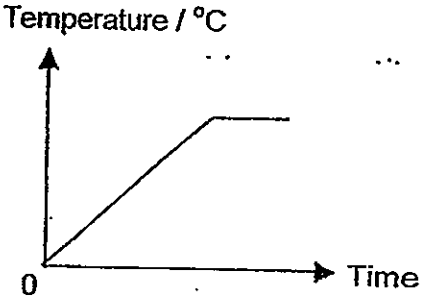
21. Study the graphs below.

Which one correctly shows the change in temperature when Sarah puts a pot of tap water over the fire till it boils?

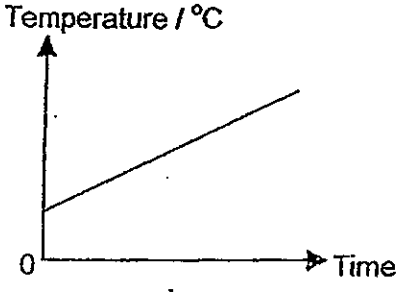
(1)



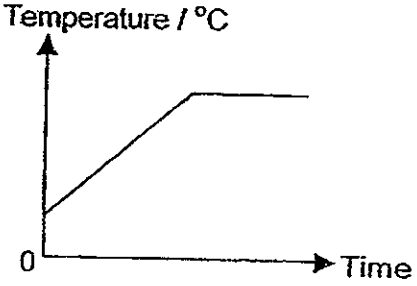

(2)

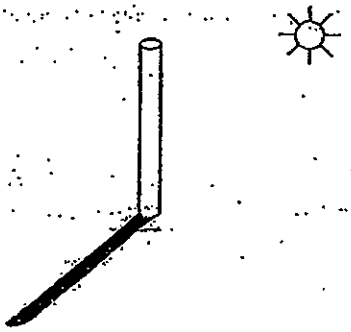



(3)




(4)

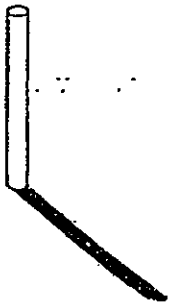




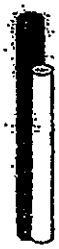
Which one of the following diagrams shows the shadow cast by the same rod at the same place in the evening?

(1)

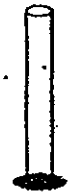
(2)



(3)



(4)



23. Study the diagram carefully.

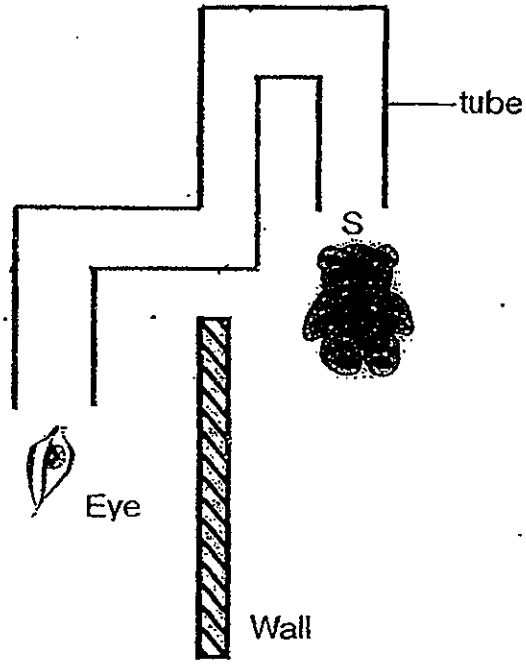
To be able to see the teddy bear placed at S, what is the least number of mirrors required to be placed in the tube?

(1) five

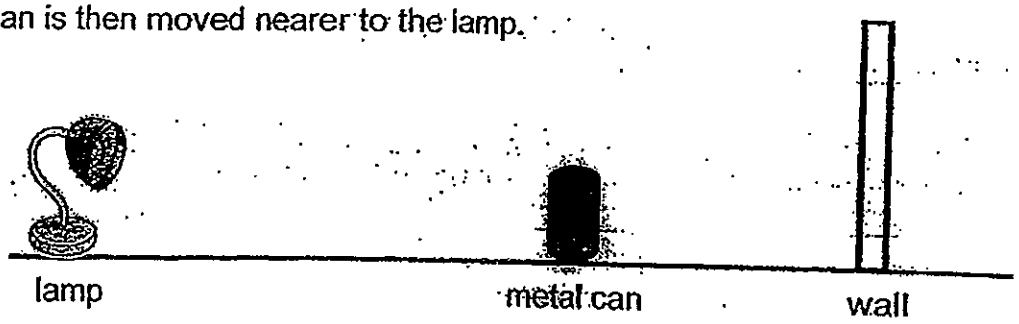
(2) two

(3) three

(4) four



24. A metal can is placed between a lamp and a wall as shown in the diagram. John notices that the shadow of the can is cast on the wall. The can is then moved nearer to the lamp.




Which of the following describe the changes to the shadow?

A The shadow becomes sharper

B The shadow becomes bigger

C The shadow becomes smaller

D The shadow becomes blurred

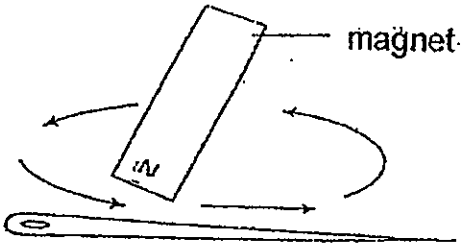
(1) A and B

(2) B and D

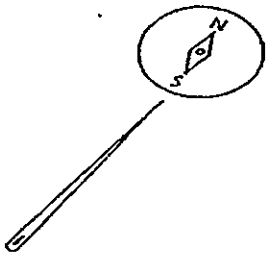
(3) A and C

(4) C and D

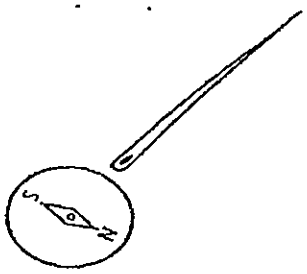
25. Samuel stroke an iron needle for 15 minutes using a bar magnet as shown.
The needle is then placed near a compass.
Which one of the diagrams correctly shows how the compass and needle will interact?



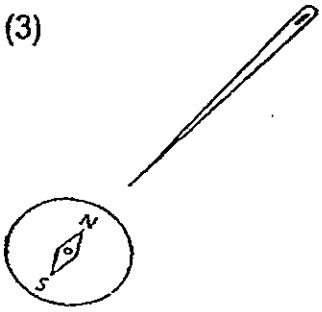

(1)



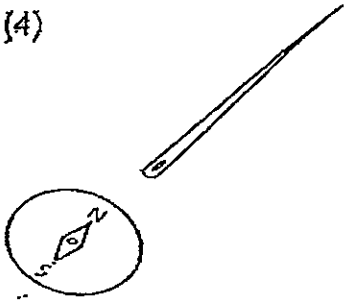

(2)



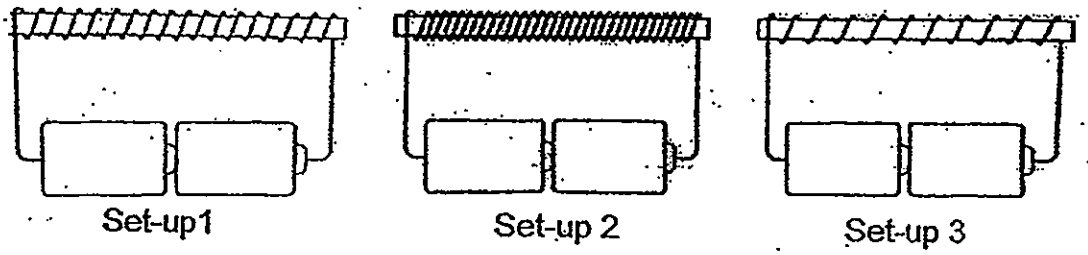

(3)




(4)

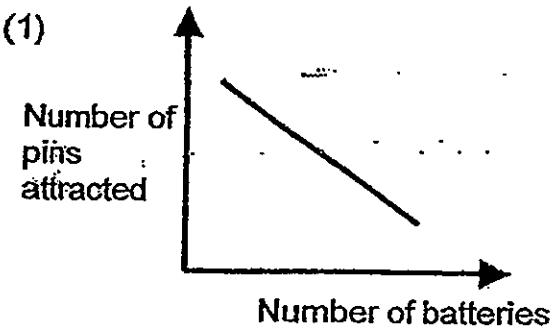


ups below. Each set-up consisted of an iron rod, two batteries and wires coiled around the iron rod.

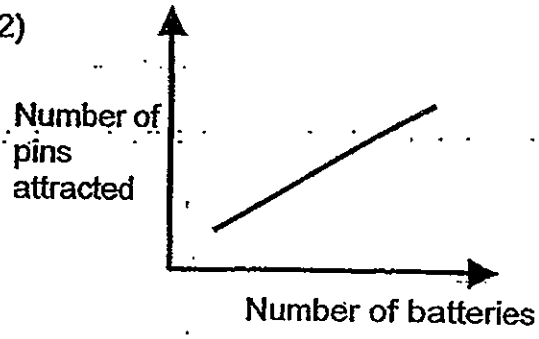



Which of the graph below could be the results of their experiment?

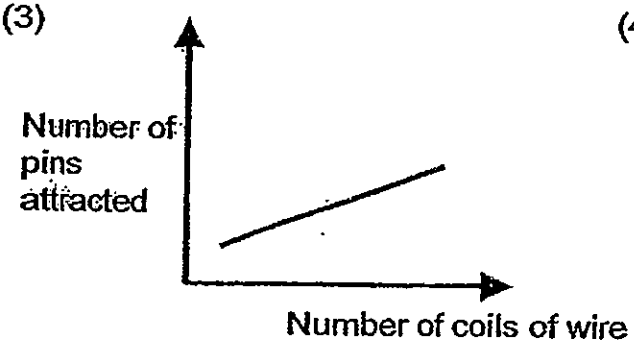
(1)



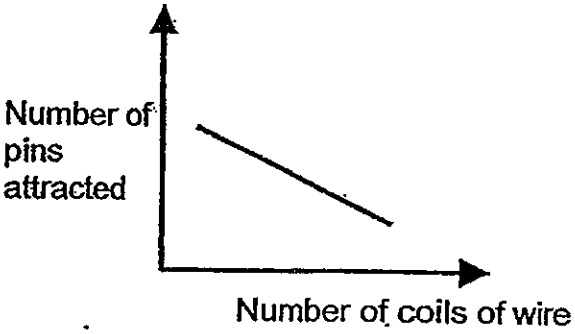

(2)




(3)



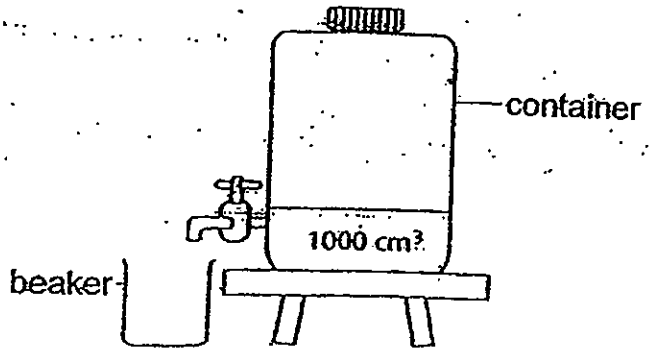

(4)






*(Go on to the next page)*

27. The container below is filled with 1000 $cm^3$ of water.
The container has a capacity of 3000 $cm^3$.

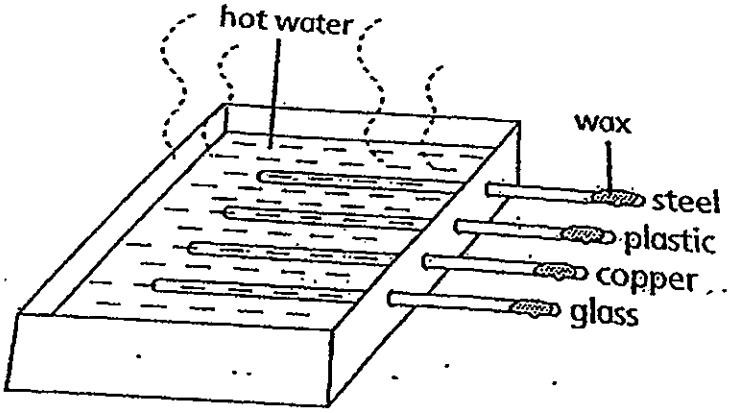



The tap of is turned on and 300$cm^3$ of water is collected in the beaker.
What is volume of the air left in the container now?

(1) 700 $cm^3$
(2) 2000 $cm^3$
(3) 2300 $cm^3$
(4) 3000 $cm^3$

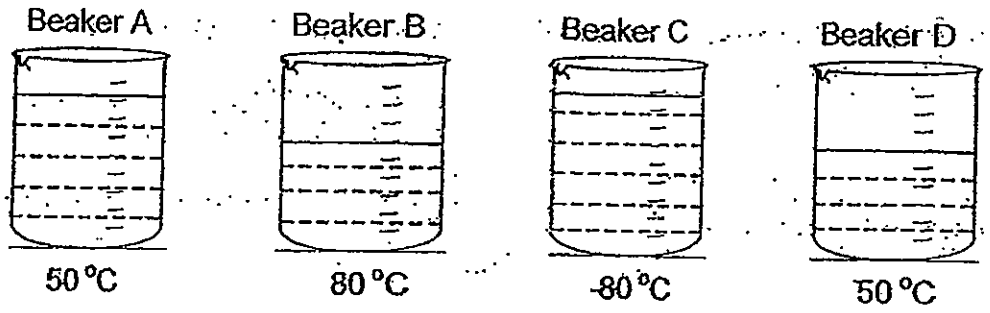
28. Four rods of the same length and thickness but made of different materials are attached to a metal container containing hot water.

One end of each rod is coated with the same amount of wax as shown.




Which of the following correctly shows the order of time the wax takes to melt, starting with the one that melts first?

| | First → | | | Last |
|---|---|---|---|---|
| (1) | Copper | Plastic | Glass | Steel |
| (2) | Glass | Plastic | Copper | Steel |
| (3) | Steel | Plastic | Copper | Glass |
| (4) | Copper | Steel | Glass | Plastic |



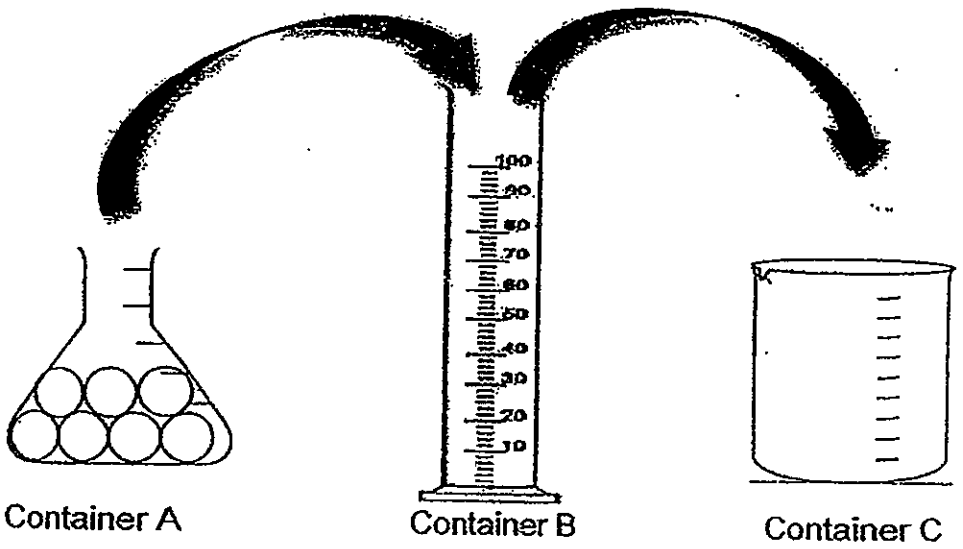

(1) Beaker A

(2) Beaker B

(3) Beaker C

(4) Beaker D

30. Some marbles are transferred from container A to container B and then to container C as shown below.




Which of the following can be concluded based **only** on the observations from the above experiment?

A Marbles have definite volume.

B Marbles have definite shape.

C Marbles have mass.

(1) A and B only

(2) B and C only

(3) A and C only

(4) A, B and C

# MARIS STELLA HIGH SCHOOL (PRIMARY)

## SEMESTRAL ASSESSMENT 2

## SCIENCE

## 2 NOVEMBER 2012

## BOOKLET B

NAME: _____ (  )

CLASS: Primary 4 (  )

14 questions

40 marks

Total Time for Booklets A & B: 1 h 30 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

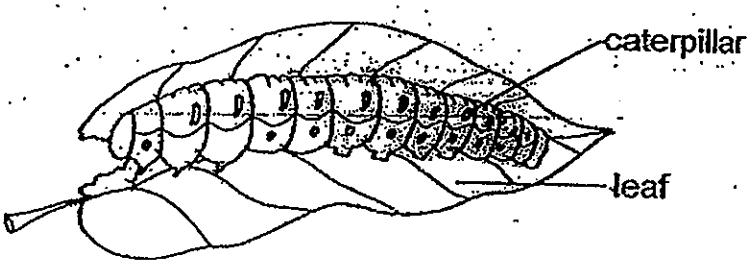
| | |
|---|---|
| BOOKLET A: _____ / 60<br>BOOKLET B: _____ / 40<br>TOTAL: _____ / 100 | 80% |
| PRACTICAL TEST: _____ / 40 | 20% |
| **GRAND TOTAL: _____ / 100** | 100% |

PARENT'S SIGNATURE: _____

## PART II

For questions 31 to 44, write your answers in this booklet. The number of mark available is shown in brackets [ ] at the end of each question or part question. (40 marks)

31.




a) The caterpillar needs food, water and _____ to stay alive. [1]

b) The caterpillar eats leaves and becomes longer after some time.

This shows that it can _____. [1]

32. Susan places a magnet near an iron rod as shown below.


The iron rod moves towards the magnet.

a) The magnet exerts a _____ on the iron rod. [1]

b) Choose the correct word from the box to answer the question below.

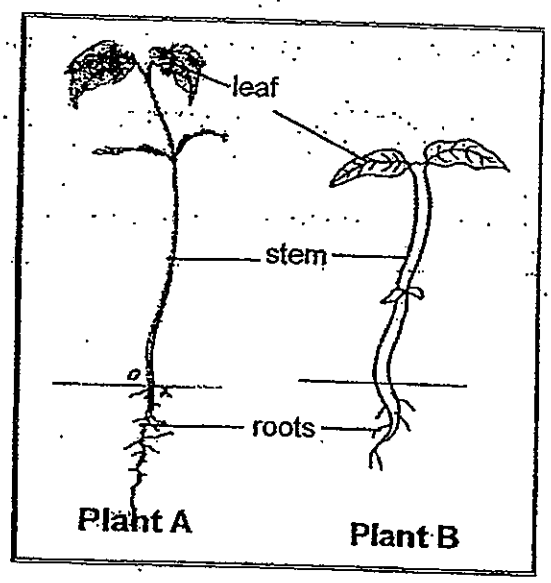
| hard | magnetic | strong |
|---|---|---|

Susan's observation shows that iron is a _____ material. [1]

| | 4 |
|---|---|

(Go on to the next page)

33(a) The diagram on the right shows two plants. [2]

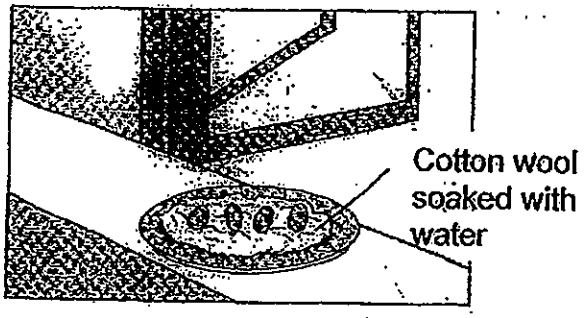



(i) What is one difference between the stem of plant A and the stem of plant B?

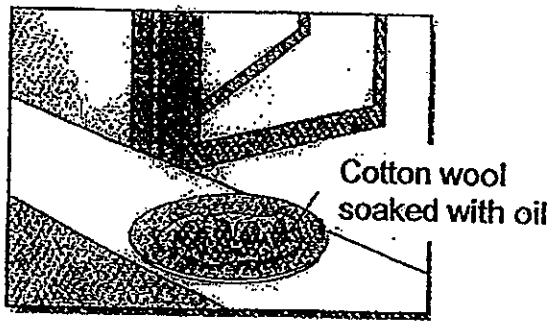
The stem of plant A is _____ the stem of plant B.

(ii) One substance that the roots of both plants take in from the soil is _____.

(b) Arthur placed an equal number of seeds in 2 similar containers near a window as shown.




Set-up A




Set-up B

(i) Predict Arthur's observations of the seeds in Set-ups A and B after 3 days. [1]

_____

_____

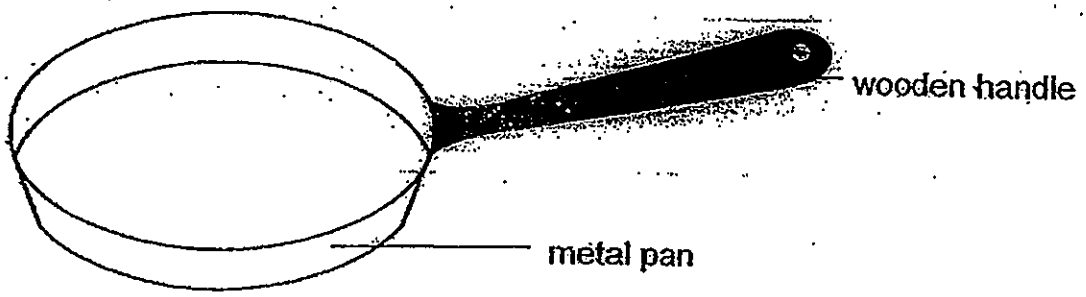
(ii) Suggest a reason why Arthur placed both set-ups near a window. [1]

_____

| | 4 |
|---|---|

*(Go on to the next page)*

34. The diagram below shows a frying pan.




(a) The handle is made of wood because it is a _____ conductor of heat. [1]

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

35. Desmond observed and grouped some living things as shown in the table.

| G | H |
|---|---|
| Guppy | Tree |
| Mosquito | Grass |

What are suitable headings for G and H? [2]

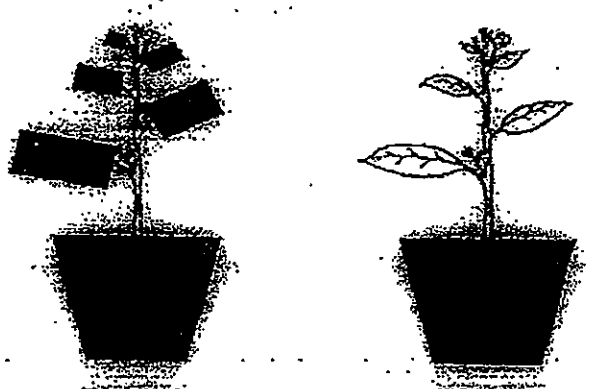
Group G: _____

Group H: _____

36. Harry conducted an experiment on plants.

He prepared two similar potted plants as shown in the diagram below. He covered all the leaves of Plant A with black paper on both surfaces. For one week, both plants, A and B, were placed under the sun and given the same amount of water each day. The growth of the plants was observed.

After one week, Plant B survived while Plant A died.



Plant A Plant B

(a) Write down the changed variable in Harry's experiment. [1]

_____

(b) Besides the 2 similar plants, write down another 2 important variables that Harry has kept constant to ensure that his experiment is fair. [1]

(1) _____

(2) _____

(c) What was the aim of Harry's experiment? [1]

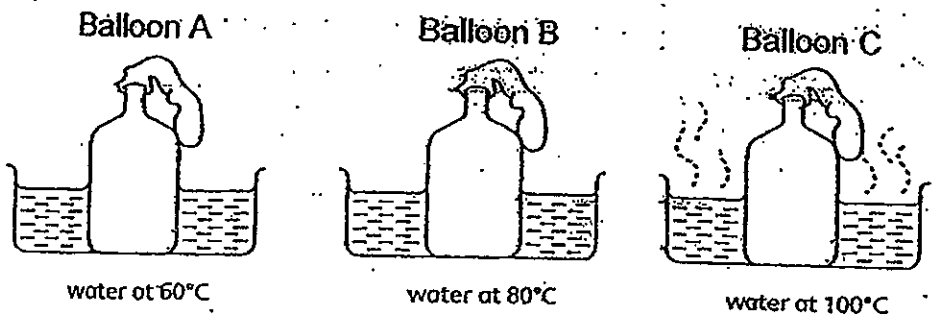
_____

_____

| | 3 |
|---|---|

*(Go on to the next page)*

37. Darren covered the mouth of three identical bottles with identical balloons. He then placed the bottles into three identical containers filled with the same amount of water but at different temperatures. The diagrams below show what Darren's experiment look like at the start of the experiment.




After 2 minutes, Darren noticed that the sizes of the 3 balloons were different.

(a) Arrange the final sizes of the balloons in descending order. [1]

_____

(b) Explain your choice for the biggest balloon. [1]

_____

_____

(c) Will the arrangement for (a) remain the same if the amount of water in the 3 basins is not equal? Give a reason for your answer. [1]

_____

_____

| | 3 |
|---|---|

*(Go on to the next page)*

38. The account below is an extract from Fandi's diary.

| Date | Problem encountered |
|---|---|
| 2nd August | I kept sneezing repeatedly as I was clearing my dusty table. |
| 4th August | I had diarrhoea in the morning due to food poisoning. |
| 11th August | I had difficulties breathing due to the haze. |
| 17th August | My heart was pounding fast after the football game. |
| 23rd August | I had a game of badminton and my arms were aching. |
| 31st August | I fell down and broke my wrist while playing tennis. |

Which systems in Fandi's body were affected in each of the problems mentioned above? Write the name of the respective systems in the table below. [3]

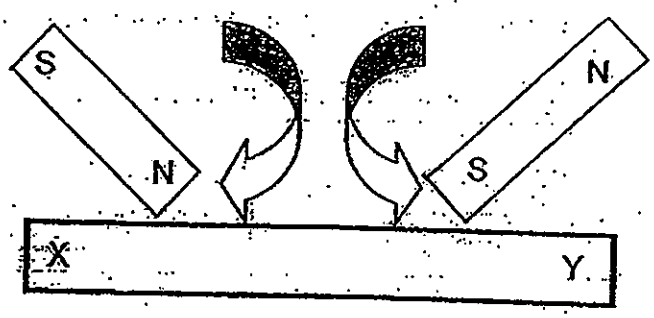
| Date | Body system affected |
|---|---|
| 2nd August | |
| 4th August | |
| 11th August | |
| 17th August | |
| 23rd August | |
| 31st August | |

| | 3 |
|---|---|

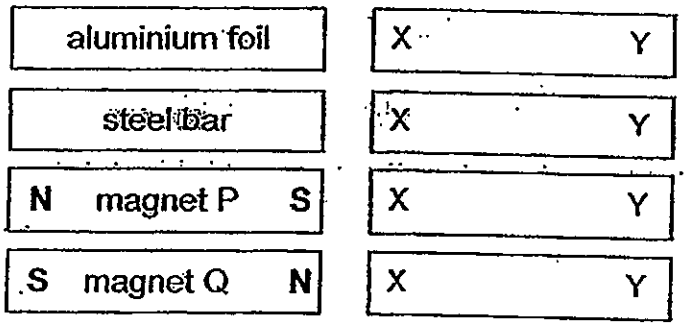
*(Go on to the next page)*

39. Fiona made a temporary magnet by stroking across a piece of iron bar, XY, with 2 bar magnets.

She stroked the iron bar XY in the directions as shown by the arrows in the diagram.




Next, she brought the piece of iron bar XY near the following objects in the direction as shown below.




(a) Use the following terms to describe Fiona's observations of the 4 objects when iron bar XY was brought near them. [2]

| Did not move | Move towards XY | Move away from XY |
|---|---|---|

| Objects | Observations |
|---|---|
| aluminium foil | |
| steel bar | |
| magnet P | |
| magnet Q | |

(b) Suggest 2 methods to make iron bar XY lose its magnetism. [1]

Method 1: _____

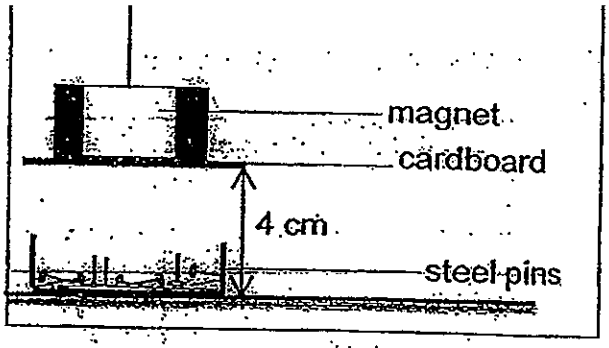
Method 2: _____

| | 3 |
|---|---|

(Go on to the next page)

Peihua wanted to find out if the number of pieces of cardboard pasted under a magnet would affect the number of steel pins it could pick up.

He pasted a piece of cardboard under a magnet and held it at a height of 4 cm above some steel pins as shown.

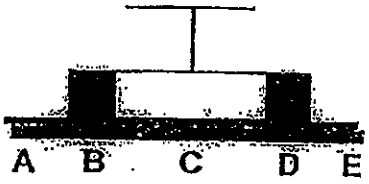



He recorded the number of pins attracted by the magnet. Peihua repeated the experiment with 2, 3 and 4 pieces of cardboard and recorded his observations.

(a) How should Peihua control the following variables if he wanted to conduct a fair experiment? Put a tick (✓) in the boxes below to indicate your answer. [1]

| Variables | Keep the Same | Change |
|---|---|---|
| The magnet | | |
| The type of pins | | |
| The number of pieces of cardboard | | |
| The height of the magnet from the table | | |

(b) When 3 pieces of cardboard were used as shown, 2 pins were attracted.



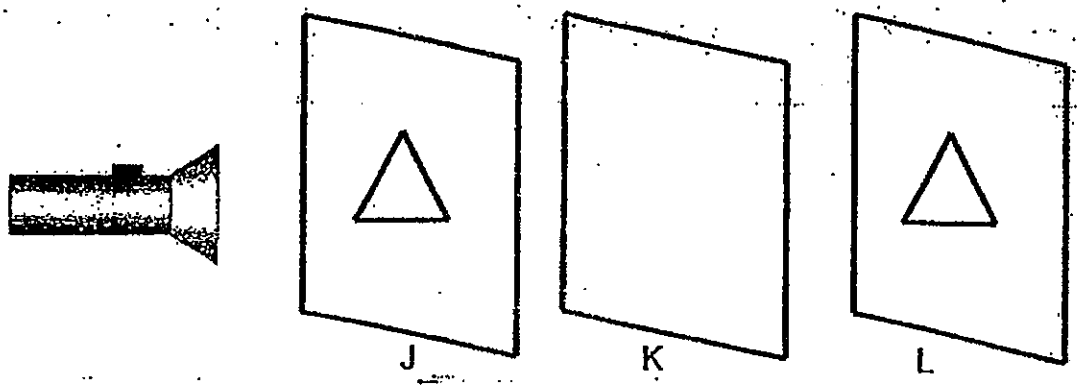

At which positions (A, B, C, D or E) would the pins most likely be found? Give a reason for your answer. [1]

(c) Explain why the steel pins could still be attracted although there were pieces of cardboard between them and the bar magnet. [1]

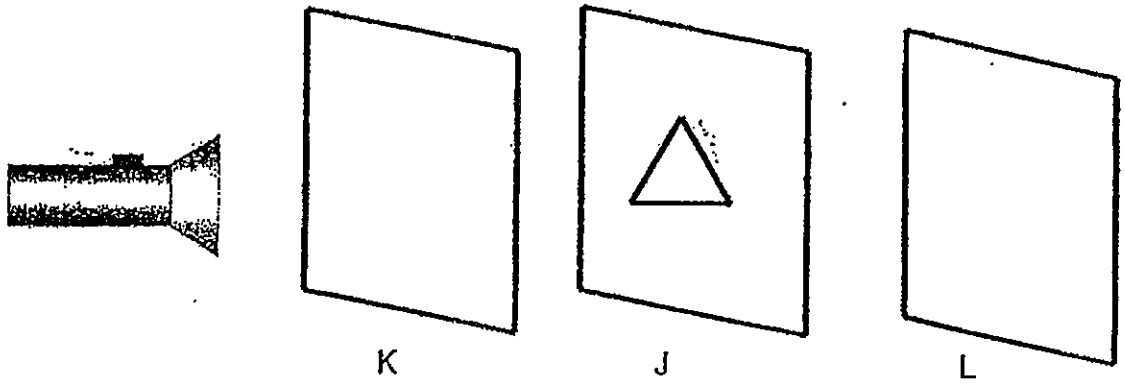
| | 3 |
|---|---|

*(Go on to the next page)*

41. Shawn used three identical sheets of different materials, J, K and L and placed them in a straight line. There was a triangular-shaped cut in the middle of sheet J. When the torch was shone on sheet J, a bright triangular-shaped patch of light appeared on sheet L.




(a) Describe the observation on sheet L if sheets K and J were swapped and sheet K was placed in front of sheet J instead. [1]



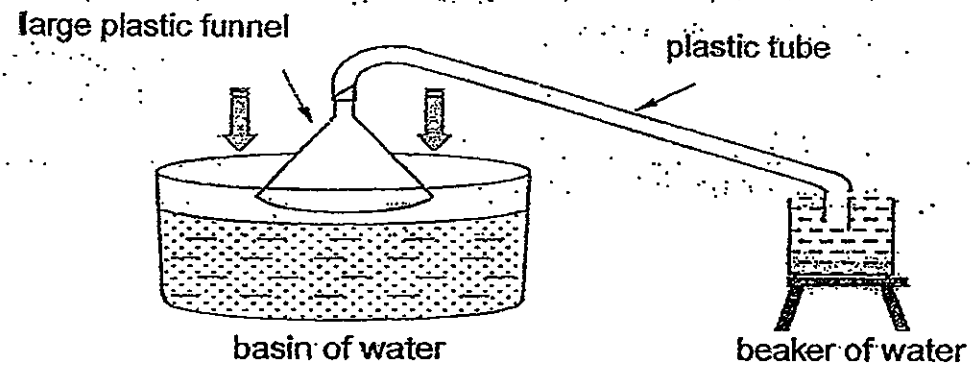

b) In the table below, state whether the 3 sheets J, K and L are made of **"transparent"**, **"translucent"** or **"opaque"** materials. [1]

| Sheets | Transparency Property of Materials |
|---|---|
| J | |
| K | |
| L | |

2

*(Go on to the next page)*

42. Look at the set-up below.



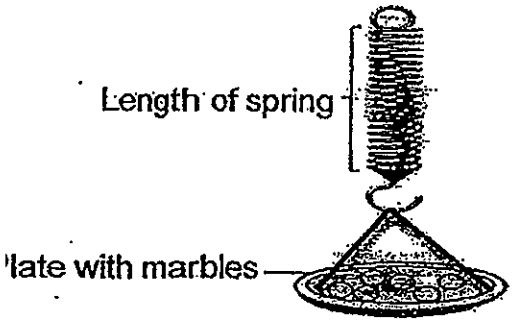

(a) Describe what you will see in the beaker of water when the large funnel is pushed down into the basin. [1]

_____

(b) What does the experiment above tell you about the property of air? [1]

_____

(c) Raymond observed that there had been a change in the length of a spring when marbles were placed on the plate. He recorded the results in the table below.




| Number of marbles | Length of spring (cm) |
|---|---|
| 0 | 1 |
| 1 | 3 |
| 2 | 5 |
| 4 | 9 |
| 6 | 13 |
| 8 | 17 |
| 10 | 21 |

What is the relationship between the length of the spring and the number of marbles on the plate? Give a reason for the relationship described. [2]

_____

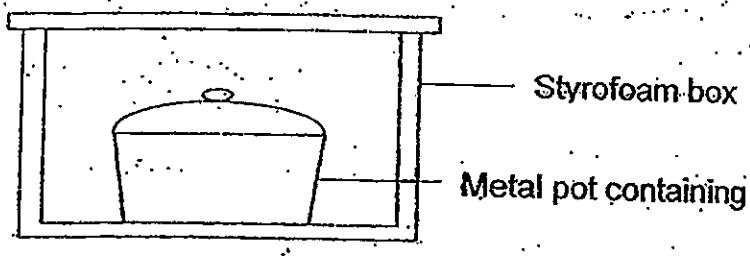
_____

_____

| | 4 |
|---|---|

*(Go on to the next page)*

43. Ally put a metal pot containing some hot food in a Styrofoam box.




When Ally removed the metal pot from the box, the food was still warm.

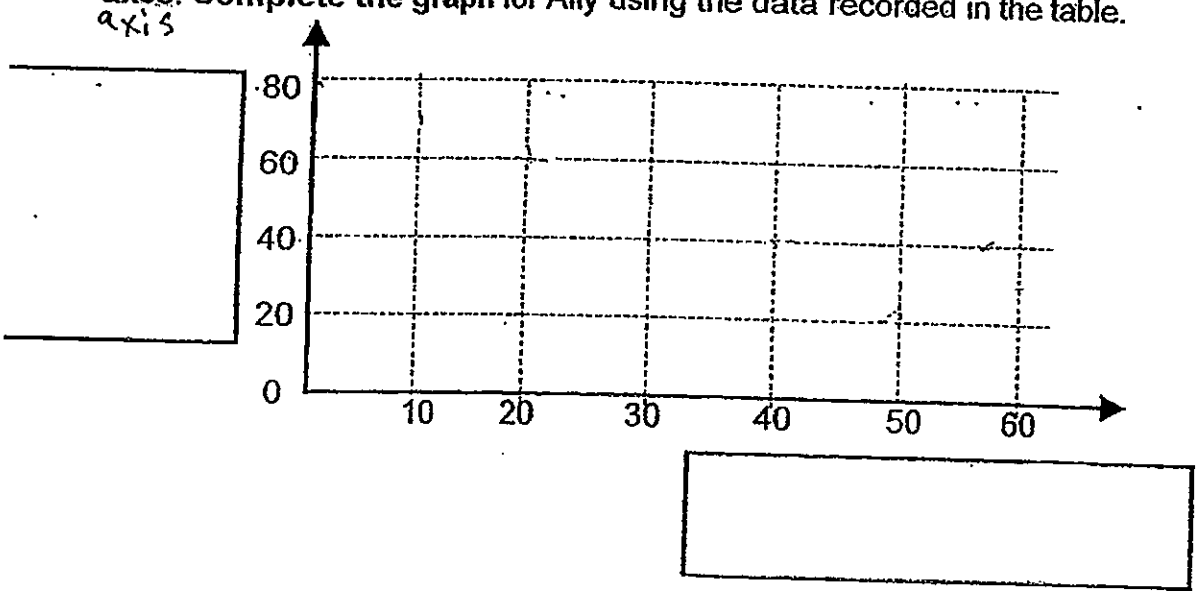
(a) Describe the heat transfer that took place in Ally's set-up. [1]

(b) Without removing the box, suggest another change to the set-up if Ally wants to keep the food warm for a longer period of time. [1]

(c) The table shows the temperature of the food in the pot over a 60-minute period.

| Time (min) | 0 | 10 | 20 | 30 | 40 | 50 | 60 |
|---|---|---|---|---|---|---|---|
| Temperature (°C) | 80 | 70 | 60 | 50 | 40 | 30 | 30 |

Based on the above, Ally drew a line graph up to the 15th minute. **Label the ~~axes~~ axis. Complete the graph** for Ally using the data recorded in the table. [2]

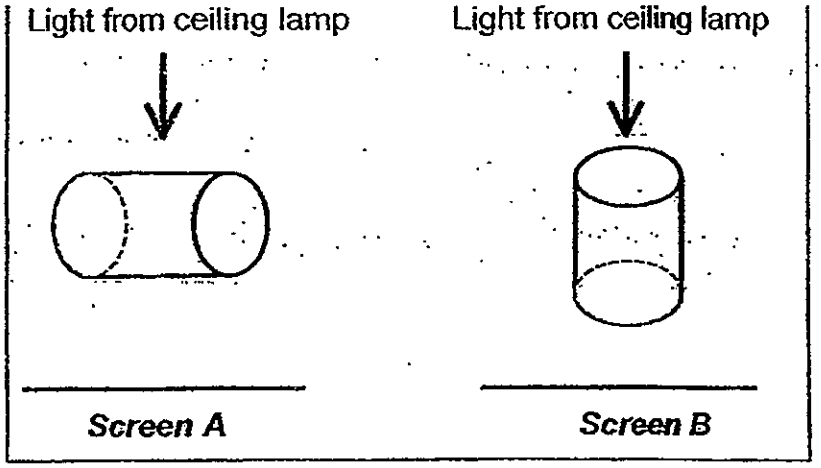



4

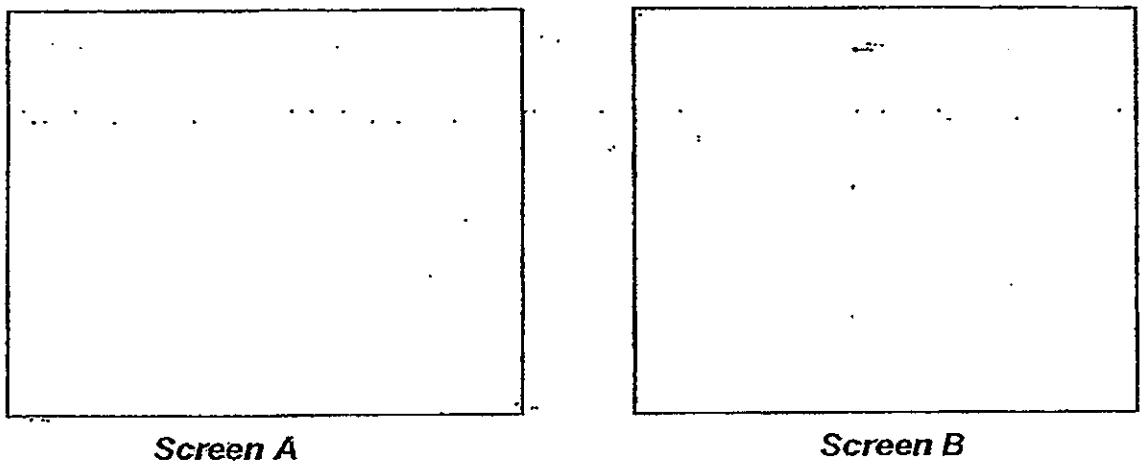
*(Go on to the next page)*

44. Dorothy placed two identical cylinders in different position directly under identical light sources in a dark room.

She saw the shadows formed on screens A and B which were placed below the cylinders.




(a) In the boxes, draw the shadows that Dorothy would observe on each screen. [2]

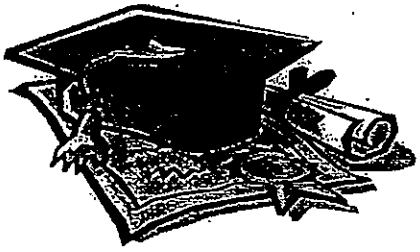



(b) Philip is walking towards his soccer ball on a dark night to retrieve it.

Philip is able to see the soccer ball in between two lamp posts 100m apart.

(i) In the picture above, **draw the light rays** to show how Philip is able to see the soccer ball. [1]

| | |
|---|---|
| | 3 |



# ANSWER SHEET

**EXAM PAPER 2012**

**SCHOOL : MARIS STELLA**
**SUBJECT : PRIMARY 4 SCIENCE**

**TERM : SA2**

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

| Q18 | Q19 | Q20 | Q21 | Q22 | Q23 | Q24 | Q25 | Q26 | Q27 | Q28 | Q29 | Q30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 4 | 3 | 4 | 2 | 4 | 2 | 3 | 3 | 3 | 4 | 3 | 1 |

Booklet B

| No. | Suggested Answer |
|---|---|
| 31a | air / oxigen |
| 31b | grow |
| 32a | pull / force / magnetic force |
| 32b | Magnetic |
| 33a(i) | thinner / longer / taller |
| 33a(ii) | water / dissolved mineral salts / nutrients |
| 33b(i) | The seeds in set-up A have germinated but the seeds in set-up B have not germinated |
| 33b(ii) | So that the seeds can receive warmth to germinate |
| 34(a) | poor / poorer |
| 34(b) | good / better |
| 35 | Group G: Animals / Can move freely on their own / Can move by themselves from place to place / Cannot photosynthesise / Cannot make their own food<br>Group H: Plants / Cannot move freely on their own / Cannot move by themselves from place to place / Can photosynthesise / Can make their own food |
| 36a | The presence of light |
| 36b | Amount of water, Temperature of surrounding, Location of experiment, Type of soil, Duration of experiment |
| 36c | To find out if the presence of light affects the servival of a plant. |
| 37a | C, B, A |
| 37b | The ballon in bottle C. expanded the most as it gained the most heat from the hot water. |
| 37c | No. The amount of water will affect the amount of heat present in the |

| No | Suggested Answer |
|---|---|
| | water. |
| 8 | |

| Date | Body system affected |
|---|---|
| 2nd August | Respiratory system |
| 4th August | Digestive system |
| 11th August | Respiratory system |
| 17th August | Circulatory system |
| 23rd August | Muscular system |
| 31st August | Skeletal system |

19(a)

| Objects | Observations |
|---|---|
| aluminium foil | Did not move |
| steel bar | Moved towards XY |
| magnet P | Moved away from XY |
| magnet Q | Moved towards XY |

19(b)

Drop the magnet many times / Hammer the magnet many times

Heat the magnet (over a flame)

20(a)

| Variables | Same | Change |
|---|---|---|
| The magnet | ✓ | |
| The type of pins | ✓ | |
| The number of pieces of vanguard sheet | | ✓ |
| The height of the magnet from the table | ✓ | |

20(b) B / D / B and D.

Magnetism is strongest at the poles of a magnet so the pins are attracted there.

20(c)

The cardboard is non - magnetic so it allows magnetism to pass through to attract the steel pins.

21(a)

A bright triangular-shaped patch of light will appear on L.

| No | Suggested Answer |
|---|---|
| 41(b) | |

| Sheet | Property |
|---|---|
| J | opaque |
| K | transparent |
| L | opaque |

**42a**

Bubbles _____ will be seen.

**42b**

Air occupies ____space____ / Air has ____volume____

**42c**

The ____greater____ the number of marbles placed on the plate, the longer the spring.

The mass is ____greater____ when there are more marbles so the spring extends ____more____.

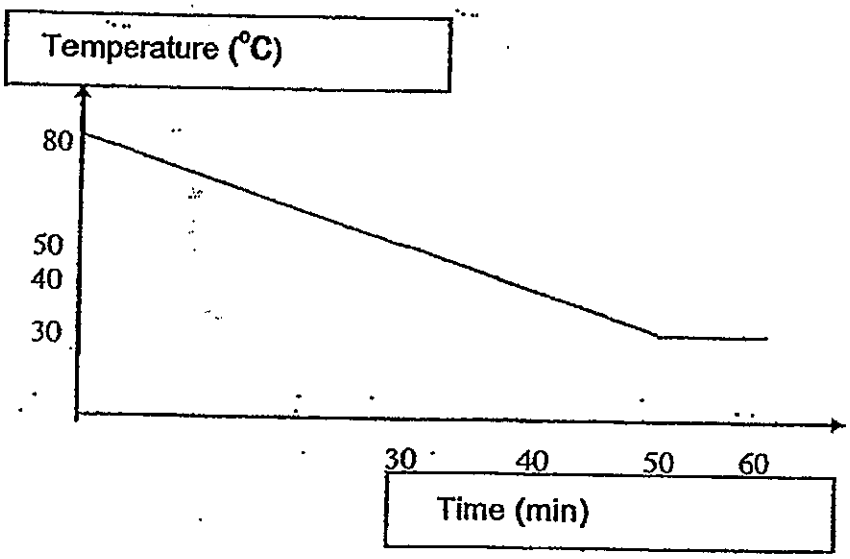
**43a**

The hot food ____lost heat____ to the surrounding ____air____ in the box.

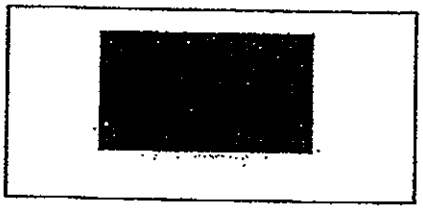
**43b**

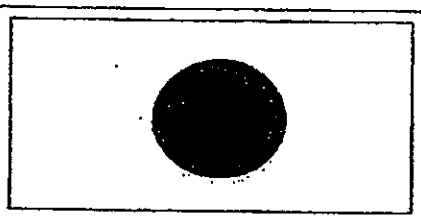
Use a ceramic pot to keep the food.

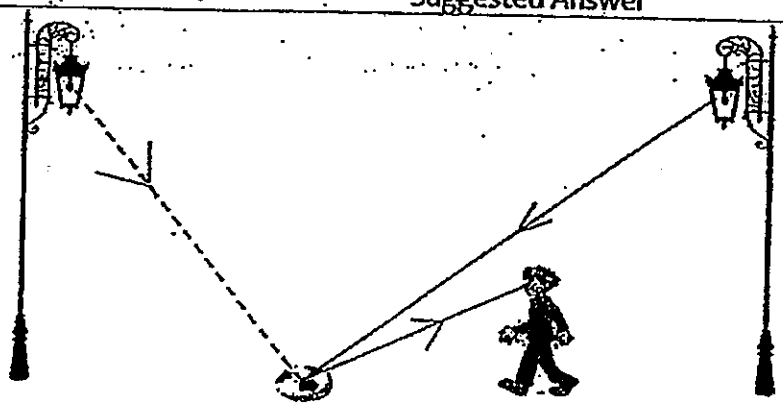
**43c**




**44(a)**





| lo | Suggested Answer |
|---|---|
| (b) |  |