Name : _____ (  )

Class : Primary _____

# CHIJ ST NICHOLAS GIRLS' SCHOOL

SIMPLE IN VIRTUE

STEADFAST IN DUTY

德 纯 义 学

## Primary 4

## Semestral Assessment 2 – 2008

## SCIENCE

BOOKLET A

3rd October 2008

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

**30 questions**
**60 marks**

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

Section A : ( 30 x 2 MARKS )

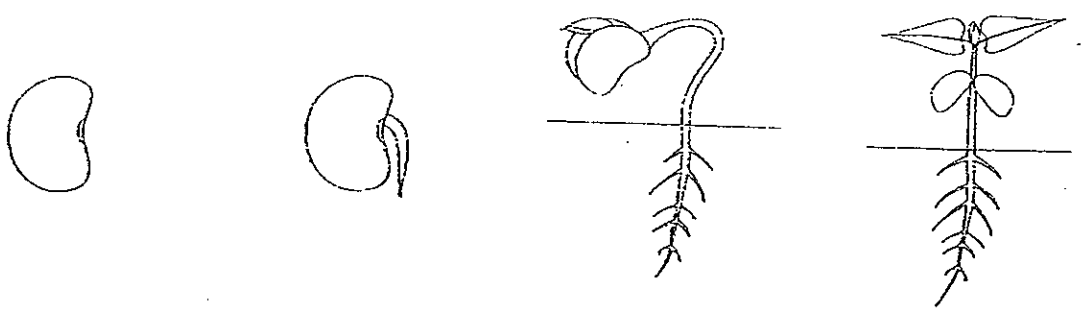
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. Which one of the following shows the correct sequence of the life cycle of a flowering plant?

A : A seed grows.
B : A fruit forms.
C : The plant bears flowers.
D : A seedling becomes an adult plant.
E : The petals wither.

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

2. The diagram below shows the stages in the growth of a seed to a young plant. At which stage is sunlight necessary for it to grow?



A B C D

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

3. The table below shows an experiment carried out by a group of children on 2 plots of land, X and Y. What do you think was the purpose of their experiment?

| Variables | Plot X | Plot Y |
|---|---|---|
| Number of plants | 2 | 14 |
| Types of soil | Garden soil | Garden soil |
| Amount of soil | 2 kg | 2 kg |
| Types of plant | Balsam | Balsam |

The children were trying to find out whether _____.

(1) overcrowding affects plant growth
(2) 2 kg of soil is enough for plant growth
(3) garden soil is suitable for balsam plant
(4) balsam plant grows well in pots or in the garden

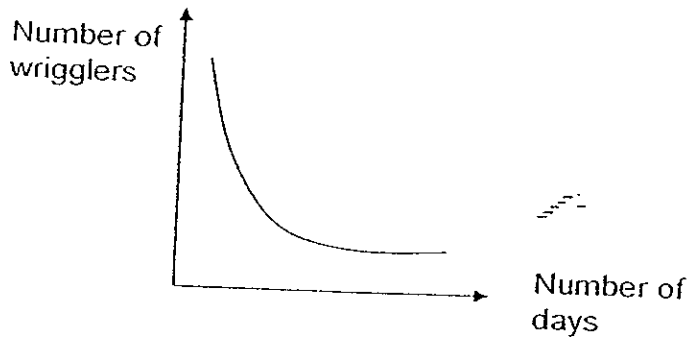
4. Jonathan and Jane planted some green bean seeds with conditions as stated in the table below.

| Tray | Number of seeds | Type of soil | Position of Tray |
|---|---|---|---|
| A | 3 | Damp soil | Freezer |
| B | 3 | Dry soil | Near a windowsill |
| C | 3 | Damp soil | In a cupboard |
| D | 3 | Dry soil | On a table |

In which tray would the seeds most likely germinate?

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

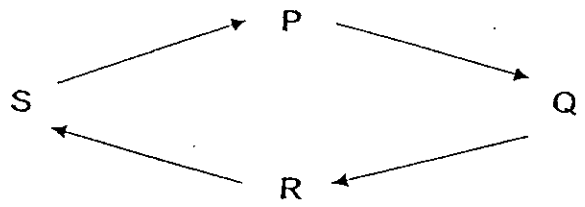
5. The graph below shows the number of wrigglers living in a pond in a garden over a period of time.




Which one of the following reasons is the most likely cause for the change in the population of the wrigglers?

(1) An increase in the volume of pond water.
(2) Some wrigglers have developed into pupae.
(3) A few mosquitoes were added to the garden.
(4) More aquatic plants were planted in the pond.

6. Each letter in the diagram below represents a stage in the life cycle of a butterfly. If P represents the stage of an adult butterfly, what stage does R represent?




(1) egg
(2) larva
(3) pupa
(4) nymph

7. Which of the following comparisons between the life cycles of a cockroach and a frog are correct?

| | Cockroach | Frog |
|---|---|---|
| A: Has 4 stages in the life cycle | No | Yes |
| B: Looks like its parents when young | Yes | Yes |
| C: Lays eggs in water | No | Yes |
| D: The young eats the same food as the adult | Yes | No |

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

8. Mei Ling mixed 2 different types of objects in a bowl and tried to separate them using a magnet. Which of the following sets of objects would she be able to separate using a magnet?

(1) copper wire and paper strips
(2) iron paper clips and steel rods
(3) copper wire and aluminium rods
(4) iron paper clips and aluminium rods

9. If I cut a bar magnet into two pieces, _____.

(1) the pieces will lose their magnetism
(2) the magnetism will become stronger
(3) each piece will become a complete magnet on its own
(4) one piece will become the N-pole and the other the S-pole

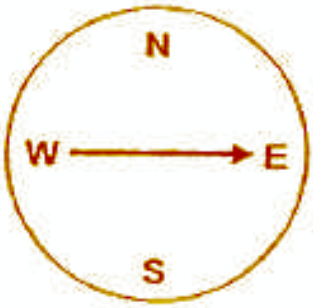
10. The diagram below shows a compass.


Which one of the following diagrams shows the correct position of the compass needle when a bar magnet is placed close to it?


magnet

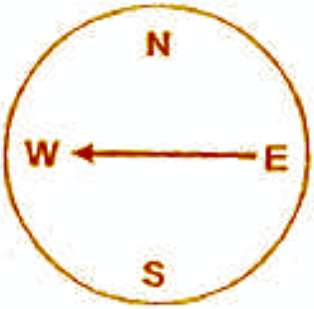

compass

(1)



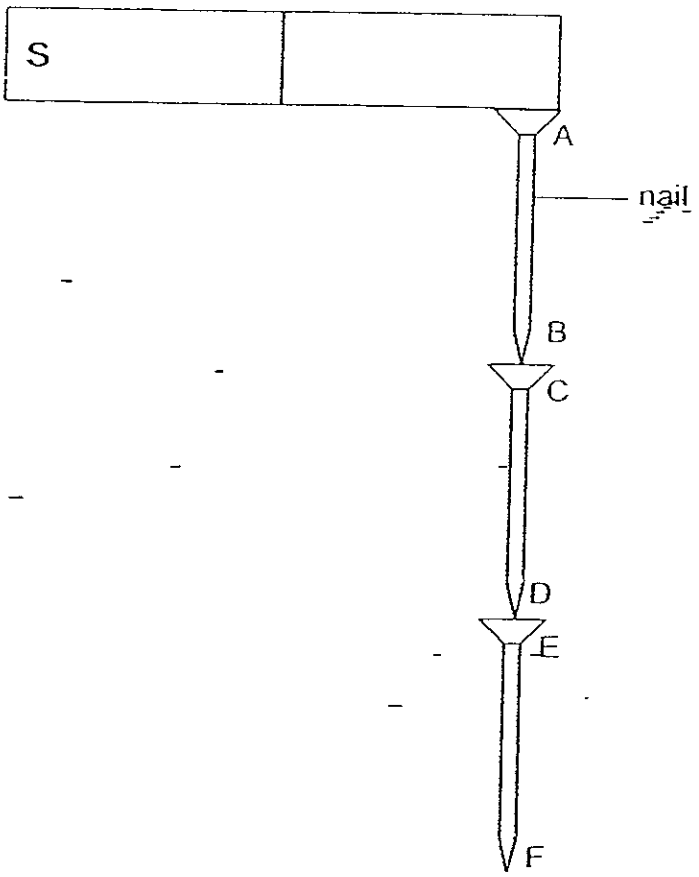

(2)


(3)




(4)

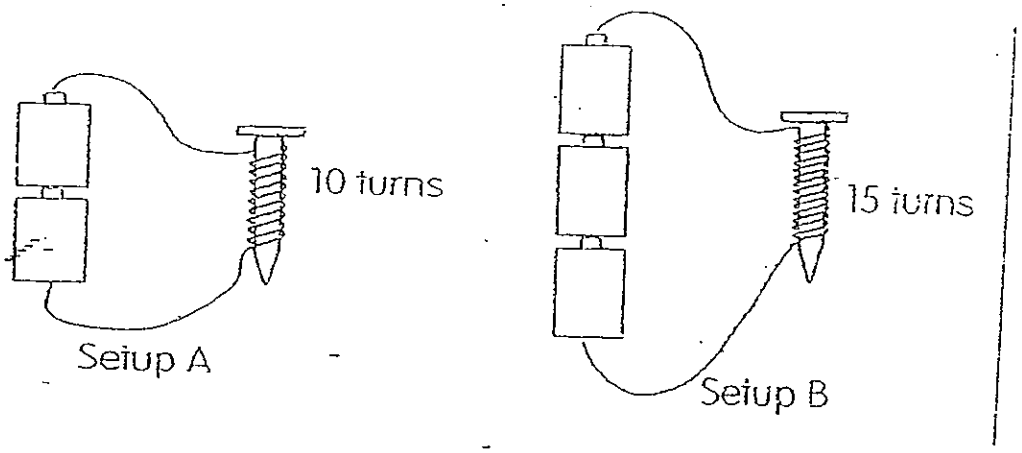
11. A magnet was placed next to a nail. Soon it was observed that more nails could be picked up as shown below.




Which one of the following statements about the magnetised nails is correct?

(1) A is the N-pole.
(2) B and E are like poles.
(3) B, D and F are S-poles.
(4) F will repel D and be attracted to C.

12. Look at the two set-ups below.



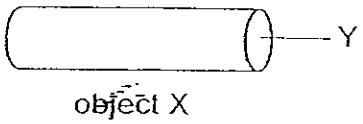

The iron nail in set-up B would attract a greater number of paper clips because _____.

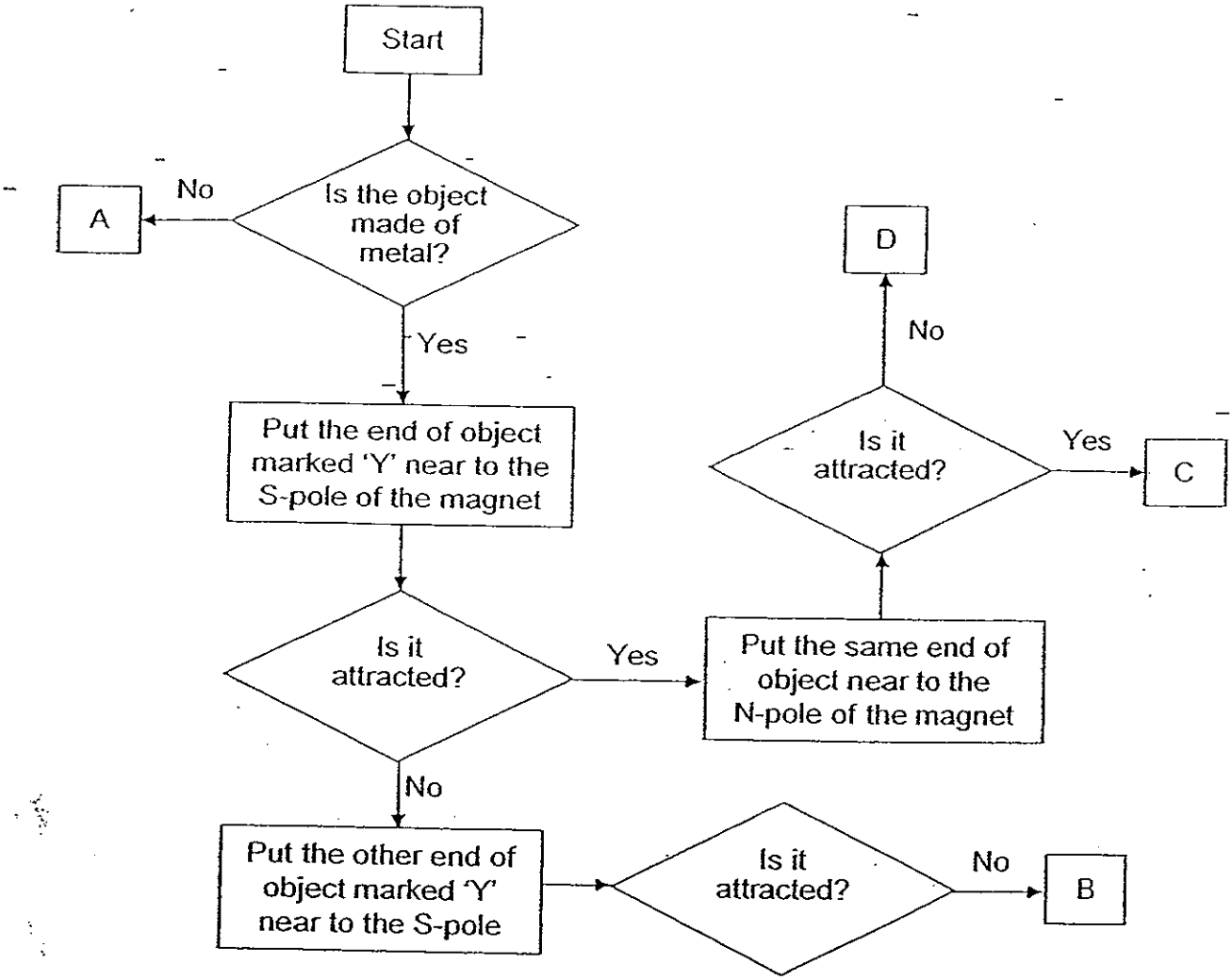
A : the wire in set-up B is longer
B : there are more batteries used in set-up B
C : the wire is coiled more times around the iron nail in set-up B

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

13. The following flow chart shows the process of finding out whether the unknown object, X, shown below is a magnet. The points, A, B, C and D are called 'exit' points.

Veera is given the object and a magnet. She was asked to go through the process of the flow chart beginning from "start".

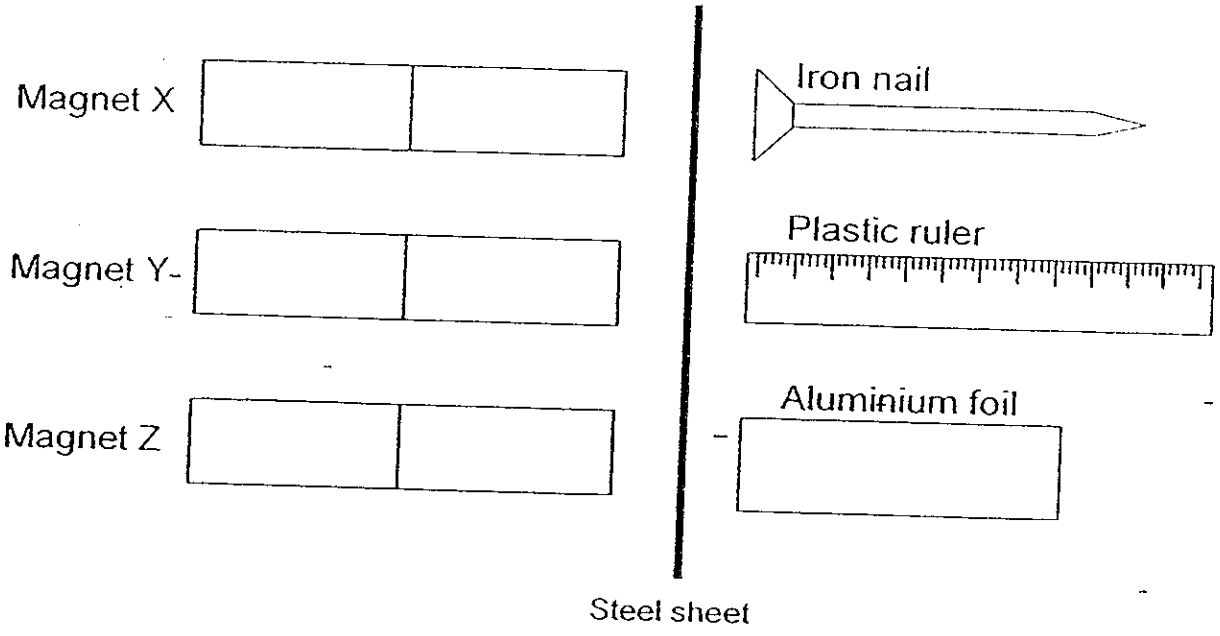



Which 'exit' point would object X end up with if it is a magnet?

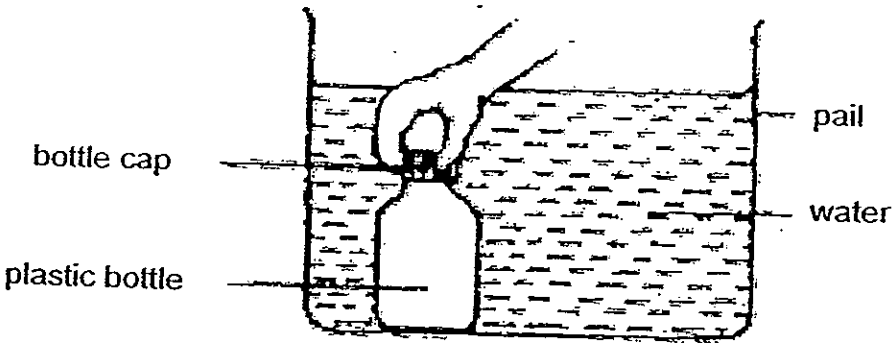
(1) A
(2) B
(3) C
(4) D

14. The diagram below shows 3 magnets, X, Y and Z, placed directly opposite 3 objects, with a thin steel sheet between them. Which magnet(s) would be able to attract the object directly opposite it?




(1) Magnet X only
(2) Magnet X, Y and Z
(3) Magnet Y and Z only
(4) None of the magnets

15. Janice held an empty plastic bottle below the surface of a pail of water. As she removed the bottle cap, which one of the following observations would you expect to see?




(1) Water will flow out of the pail.
(2) The water level in the pail begins to rise.
(3) Air will be trapped in the bottle by the water.
(4) Bubbles of air will be seen coming out from the bottle.

16. The table below shows the properties of substances, A, B, C and D.

| Properties \ Substances | A | B | C | D |
|---|---|---|---|---|
| Has mass | Yes | Yes | Yes | Yes |
| Can be compressed | No | Yes | Yes | No |
| Has a definite shape | No | Yes | No | Yes |
| Has a definite volume | Yes | No | No | Yes |

Which one of the following substances, A, B, C or D represents water vapour?

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

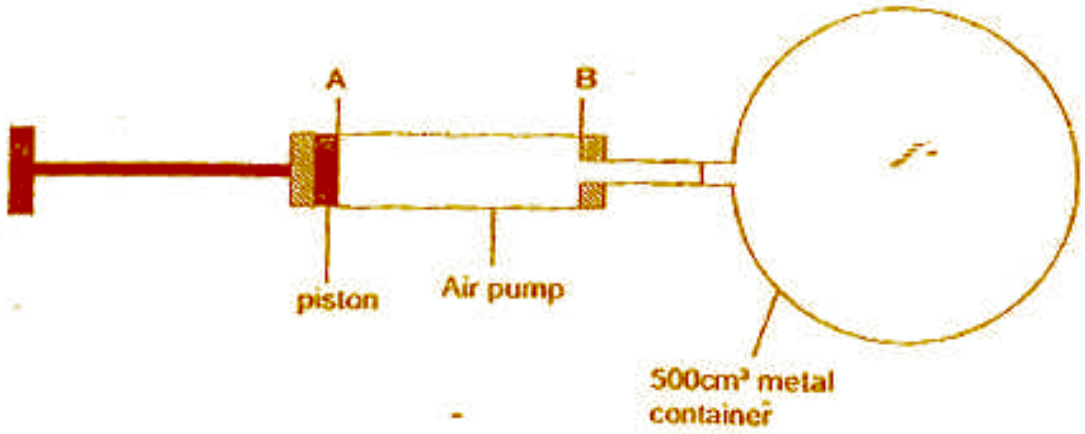
17. Koon Seng measured the volume and mass of 3 balls that are made of different materials. He recorded the results in the table below.

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

Based on the information given, which one of the following conclusions is <u>not</u> true?

(1) Objects of different sizes can have the same mass.
(2) A smaller object occupies less space than a bigger object.
(3) Objects of different sizes occupy different amount of space.
(4) An object that occupies less space is lighter than an object that occupies more space.

18. Study the diagram below. The air pump is connected to a metal container which has a volume of 500cm³. Each time the piston is pushed from A to B, 100cm³ of air is forced into the container. What is the volume of air in the container if the piston is pushed 3 times from A to B?




(1) 100 cm³
(2) 300 cm³
(3) 500 cm³
(4) 800 cm³

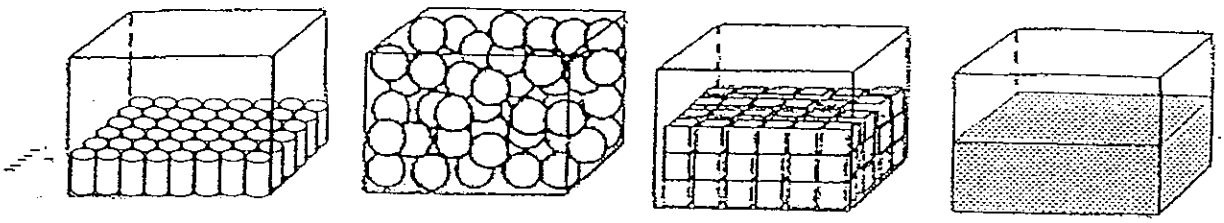
19. Some red candle wax in a metal bowl was heated as shown in the diagram below.


There would be a change in the _____ of the wax after a few minutes.

A : colour
B : state
C : shape

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

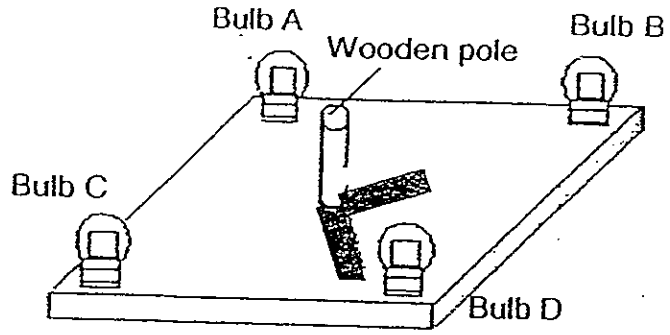
20. The 4 boxes A, B, C and D are of the same size. Each box, with its contents shown below, weighs 150g. If each one of the boxes is filled to the brim with the same original content, arrange the boxes from the **lightest** to the **heaviest**?



A B C D

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

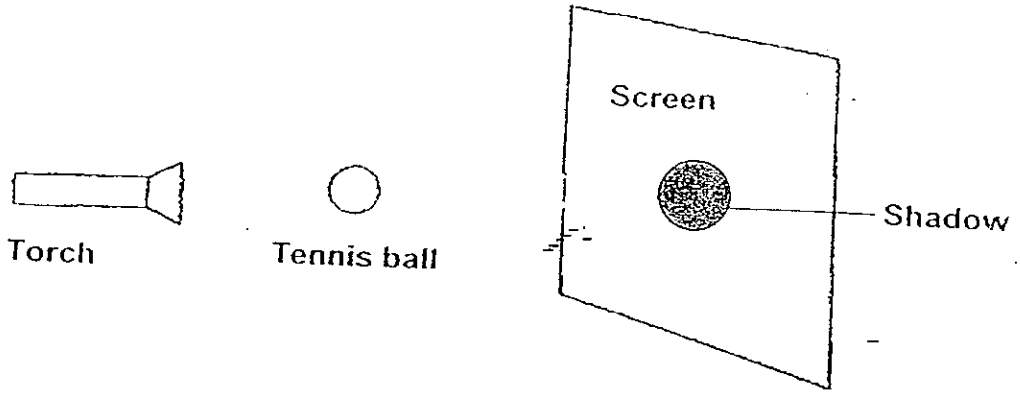
21. A wooden pole is placed in the centre of a square board as shown in the diagram below.




Which of the bulbs have to be switched on such that the shadows of the wooden poles are as shown in the diagram above?

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

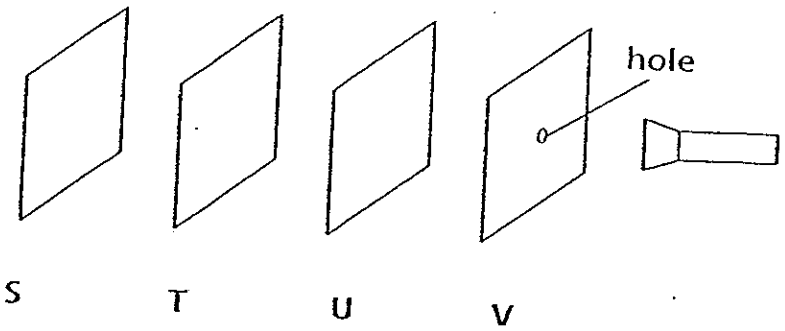
22. Study the diagram below carefully. A shadow of the tennis ball will be formed on the screen when the torch is switched on.




Which one of the statements below about the object and its shadow is correct?

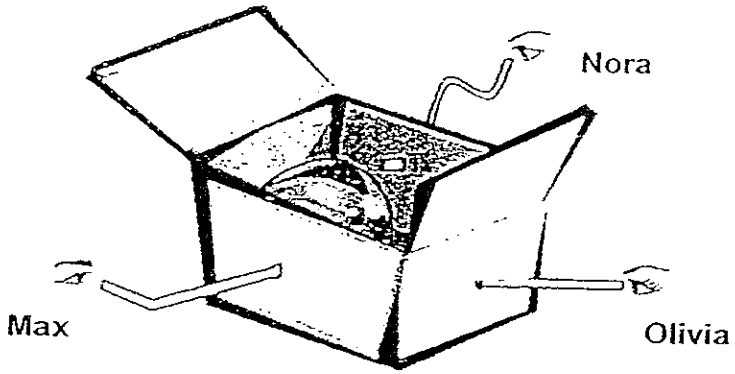
(1) The nearer the object is to the light source, the bigger and sharper the shadow will be.
(2) The nearer the object is to the light source, the smaller and more blur the shadow will be.
(3) The further away the object is from the light source, the smaller and sharper the shadow will be.
(4) The further away the object is from the light source, the bigger and more blur the shadow will be.

23. Alisha has four sheets made of different materials. She arranged the sheets, S, T, U and V in a straight line as shown in the diagram below. When the torch is switched on, she wants a small, bright circular patch of light to be seen on sheet S only. Which one of the following correctly shows the materials that sheets S, T, U and V are made of respectively?




| | Sheet S | Sheet T | Sheet U | Sheet V |
|---|---|---|---|---|
| (1) | Cardboard | Clear plastic | Clear glass | Aluminium foil |
| (2) | Wood | Clear glass | Paper | Wood |
| (3) | Aluminium foil | Mirror | Clear plastic | Cardboard |
| (4) | Mirror | Paper | Wood | Clear glass |

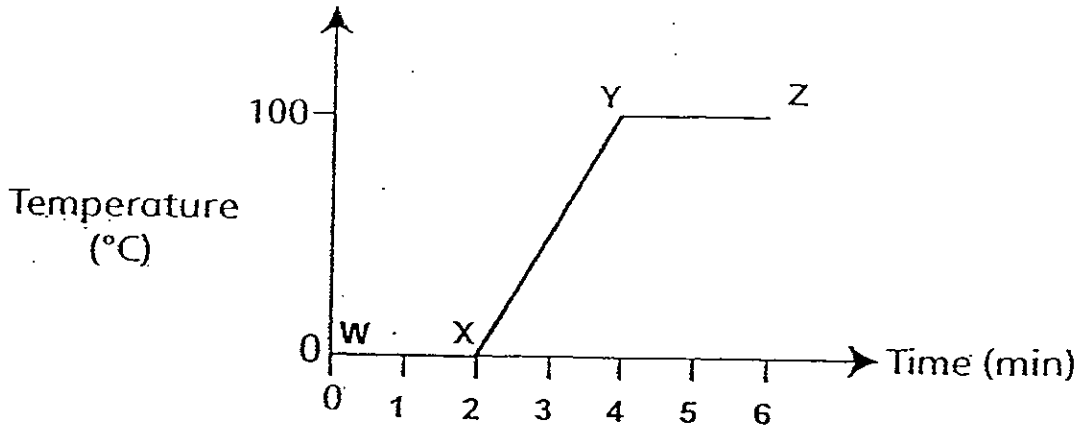
24. The diagram below shows a box with a ball in it. Three different tubes were inserted into the box, one from each side, as shown in the diagram below. Max, Nora and Olivia were trying to look through the tubes to see what was in the box.




Who would be able to see what was inside the box?

(1) Max only
(2) Nora only
(3) Olivia only
(4) All of them

25. Siti placed some ice cubes in a beaker. She heated the beaker of ice cubes for 6 minutes. She plotted the graph as shown below to show the temperature changes of the contents in the beaker over the 6 minutes. Which one of the following statements about her experiment is true?




(1) The substance lost heat between Y and Z.
(2) The substance gained heat between W and Z.
(3) The substance gained heat only between X and Y.
(4) The substance gained heat between W and X but lost heat between Y and Z.

26. A bottle of cold milk was placed in a mug containing hot water. Which of the following statements are correct?


A : The cold milk loses heat.
B : The temperature of the hot water falls.
C : The mug gains heat from the hot water.
D : The hot water gains heat from the cold milk.

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

27. In an experiment, two glass bottles with caps attached were placed in a freezer. One was full of water and the other one was empty. The bottle filled with water cracked but the empty bottle did not. This indicates that _____.


Bottle filled with water


Empty bottle

(1) water expands as it turns to ice
(2) glass expands more than water
(3) water contracts more than glass
(4) water will not freeze in a bottle with the cap on

28. Diagram A below shows a metal strip that is made of 2 different materials, X and Y. After being heated, the metal strip bends into the shape as shown in Diagram B. This is because _____.

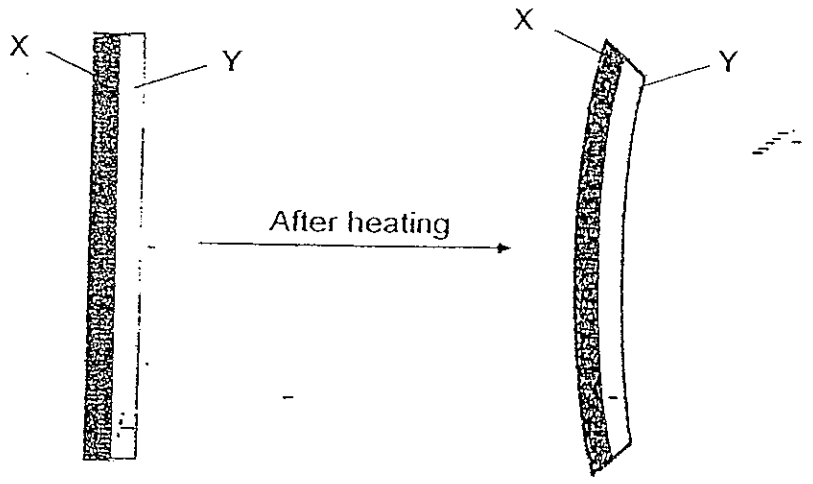


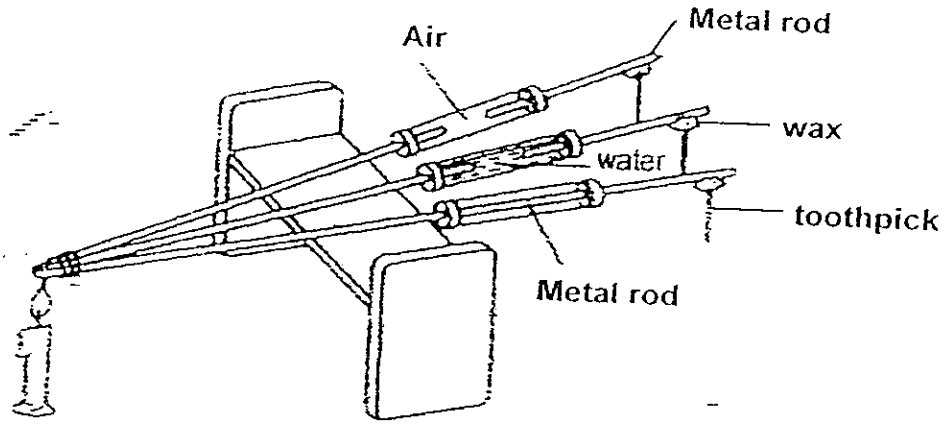

Diagram A Diagram B

(1) material Y has expanded more than material X
(2) material X has expanded more than material Y
(3) material Y has contracted more than material X
(4) material X has contracted more than material Y

29. When a cup of water at 80°C and another cup of water at 50°C are mixed in a large bowl, the temperature of the mixture is most likely to be _____.

(1) 50°C
(2) 60°C
(3) 80°C
(4) 130°C

30. Tracy conducted an experiment using the set-up as shown in the diagram below. The toothpicks were held onto the end of the metal rods by wax. The other ends of the metal rods were then heated by a candle.




Tracy recorded the time taken for the toothpicks to fall from the different rods. The result is shown in the table below.

| Tube filled with | Time taken for the toothpick to drop (minutes) |
|---|---|
| Air | 10 |
| Water | 6 |
| Metal rod | 4 |

What can Tracy conclude from this experiment?

A : Heat flows through matter.
B : Air conducts heat better than water and metal.
C : Metal is the best conductor of heat among the three.
D : Water is the worst conductor of heat among the three.

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

**~~ End of Section A ~~**

Name : _____ (  )

Class : Primary _____

# CHIJ ST NICHOLAS GIRLS' SCHOOL

SIMPLE IN VIRTUE

STEADFAST IN DUTY

德 纯 义 坚

## Primary 4

## Semestral Assessment 2 – 2008

## SCIENCE

BOOKLET B

3rd October 2008

| | |
|---|---|
| Booklet A | 60 |
| Booklet B | 40 |
| Total | 100 |

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

**16 questions**
**40 marks**

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

_____
Parent's Signature/Date

## Section B : (40 marks)

**For questions 31 to 46, write your answers in this booklet.**

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

31. Yan Ling has 3 different types of bean seeds and she wants to find out which type of bean seed germinates most quickly.

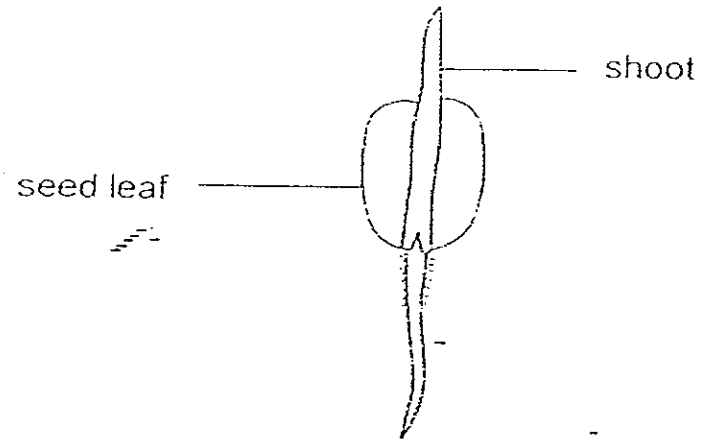
a) Yan Ling thinks that using the same type of soil for each bean seed will make her investigation fair. Is she right? Give a reason for your answer. [1]

b) State 2 other variables that she must keep the same in order to carry out a fair test. [2]

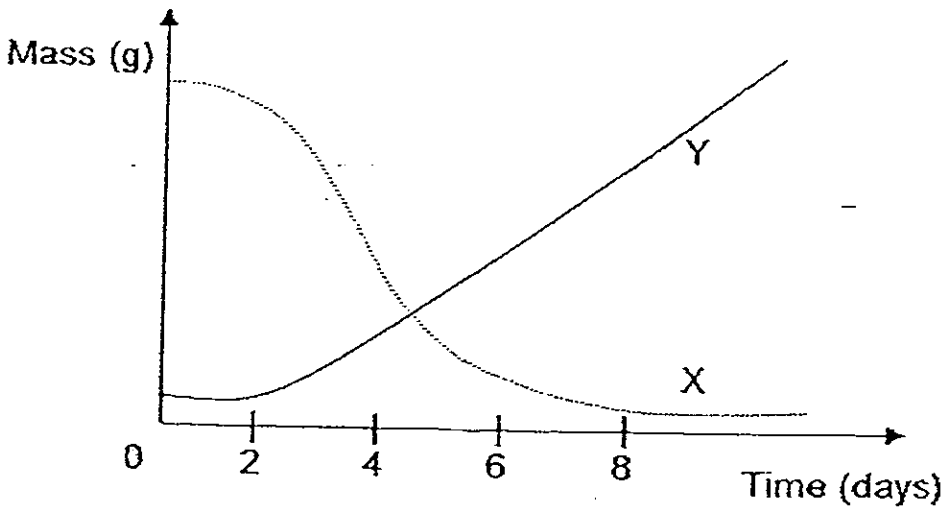
i)

ii)

32. Vishnu carried out an experiment on a seed growing into a seedling as shown below.




In the graph below, the two curves show changes in the mass of the seed leaf and the shoot of the seedling during the experiment.




a) Which curve, X or Y, shows how the mass of the seed leaf changes during the experiment? Give a reason for your answer. [1]

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

33. The diagram shows the life cycle of a cockroach.

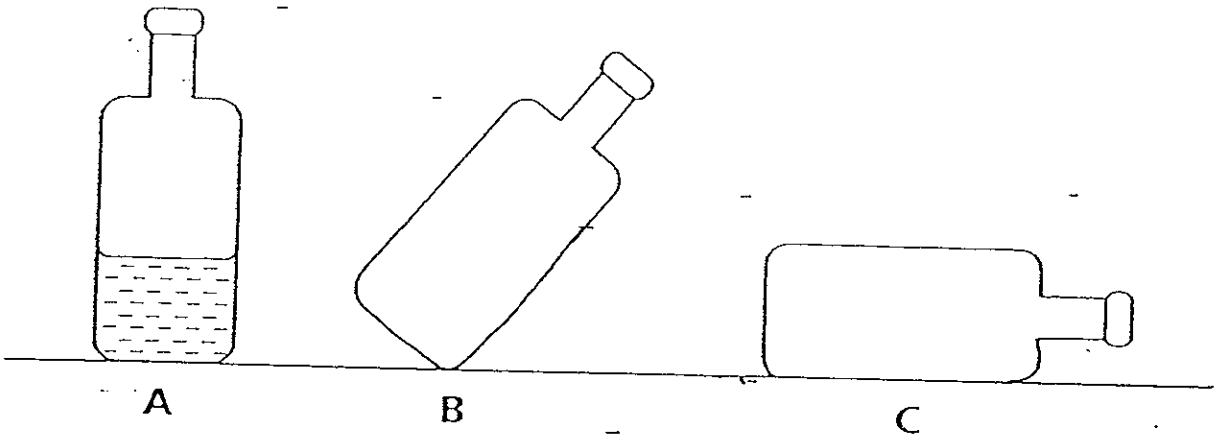

a) Name the young of the cockroach at stage Y. [1]

b) Based on what you have learnt about the life cycle of a cockroach, state 1 difference between the appearances of the cockroach when it is at stage Y and when it is at stage Z. [1]

c) Why does the cockroach lay so many eggs at one time? [1]

34. Samy wanted to find out what will happen to the water inside his bottle when he tilts it. Diagram A shows his water bottle partially filled with water. He then tilts his bottle slightly as shown in diagram B. Then, the bottle is made to lie sideways on the table as shown in diagram C.

a) **Using a ruler and a pencil**, draw the changes in the water level in diagrams B and C. [2]




b) Based on the above experiment, what can you infer about the property of the liquids? [1]

_____

_____

35. Tammy and Felicia investigated different materials to find out whether they are solids, liquids or gases at room temperature.

a) Fill in the missing information in the table. [2]

| Material | Always takes up the same amount of space | Can be cut or shaped | Takes on the shape of its container | State |
|---|---|---|---|---|
| Chocolate | Yes | Yes | | Solid |
| Air | | No | Yes | Gas |
| Juice | Yes | No | Yes | |
| Cooking oil | Yes | | Yes | Liquid |

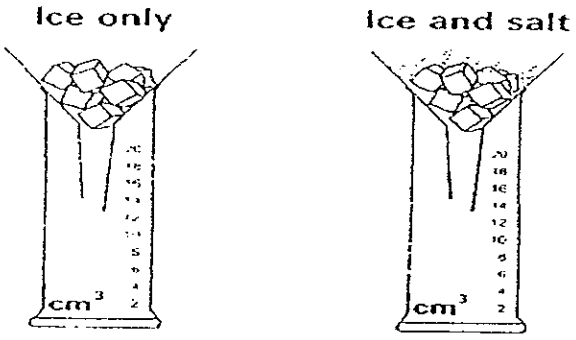
Tammy and Felicia looked at another material. They decided that honey must be a liquid.

b) Find two pieces of evidence from the table that support their conclusions. [1]

i) _____

ii) _____

36. Faizah investigates the effect of salt on melting ice. He puts the same amount of ice in two funnels and adds salt to the ice only in one of the funnel as shown in the diagram below.



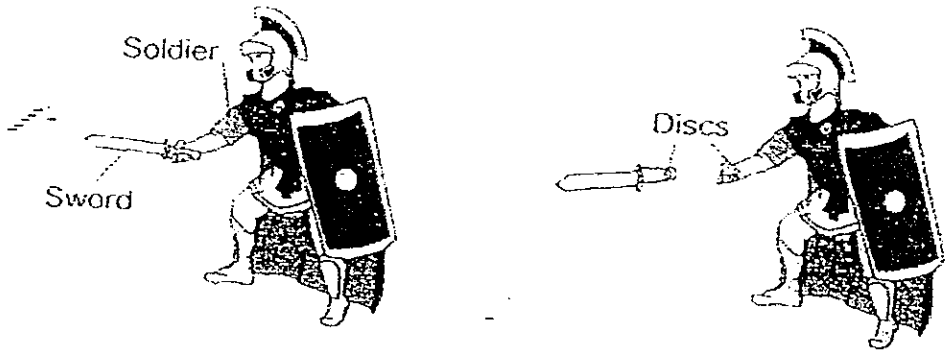

The ice starts to melt. Every two minutes, Faizah measures how much water is in each cylinder. Faizah records his results in the table below.

| Time (minutes) | Volume of water (cm³) | |
|---|---|---|
| | Ice only | Ice and salt |
| 0 (at the start) | 0 | 0 |
| 2 | 1 | 2 |
| 4 | 3 | 5 |
| 6 | 6 | 9 |
| 8 | 10 | 13 |
| 10 | 13 | 13 |
| 12 | 13 | 13 |

a) What has Faizah found out about the effect of salt on melting ice? [1]

b) How long did the ice take to melt completely in the funnel in which salt was added? [1]

37. Wei Ming and Ivan have a toy soldier with a sword that it can hold. There are small discs in the hand of the soldier and in the handle of the sword. When the discs are brought close to each other, they snap together.




Wei Ming thinks that both discs must be magnetic to stick together like this. Ivan thinks only one disc has to be magnetic.

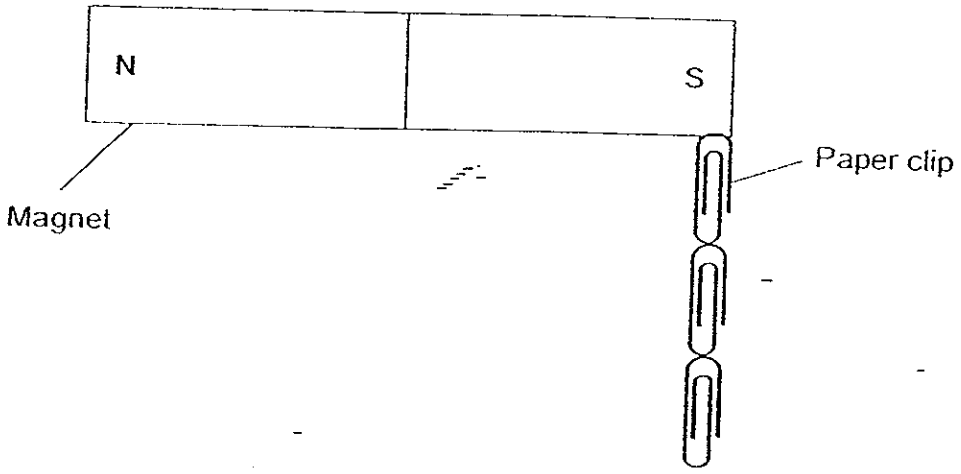
a) Must both the discs be magnetic in order to stick together? Explain your answer.

[1]

b) Name <u>two</u> materials that the discs might be made of.

[1]

38. Clara and Vanessa took a box of paper clips and a strong bar magnet. They suspended chains of paper clips from different parts of the magnet as shown in the diagram below and noted how many paper clips could be suspended from each section.



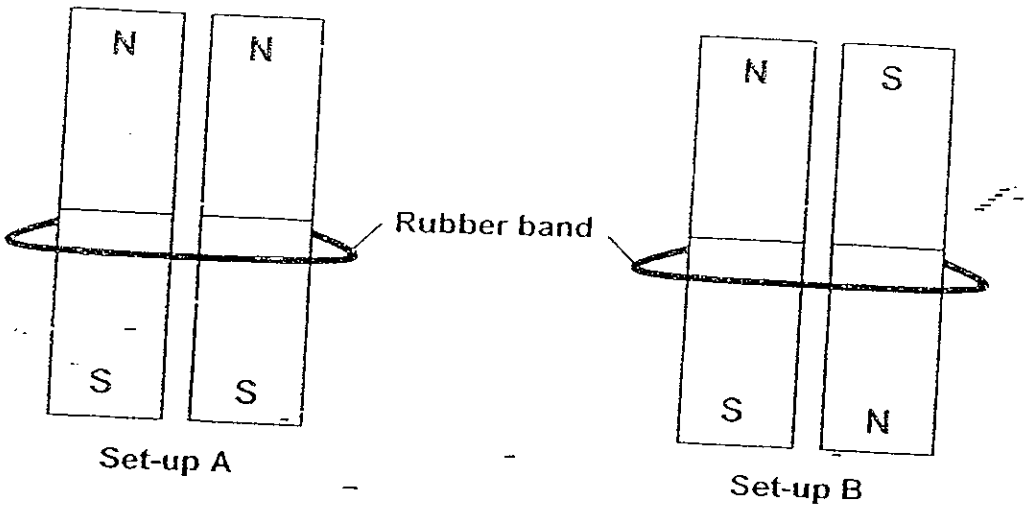

Here are their results.

| Part of the magnet | Number of paper clips able to be suspended |
|---|---|
| S-pole | 19 |
| Middle | 12 |
| N-pole | 21 |

a) What were Clara and Vanessa trying to find out? [1]

b) Write a possible conclusion for their experiment. [1]

39. Two powerful magnets are placed together in two different ways. A rubber band is used to tie them as shown in the diagram below.

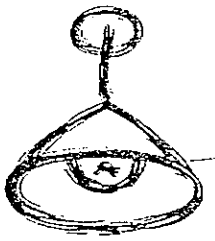



a) In which set-up, A or B, will the rubber band be stretched? [1]

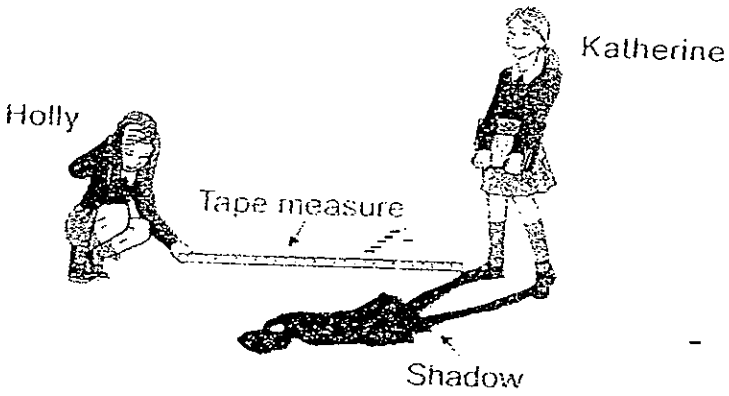
b) Give a reason for your answer in (a). [1]

c) Why is the rubber band in the other set-up not stretched? [1]

40. Using a ruler and pencil, draw arrows on the diagram below to show how light rays travel from the lamp to allow Tommy to see his reflection in the mirror. [2]



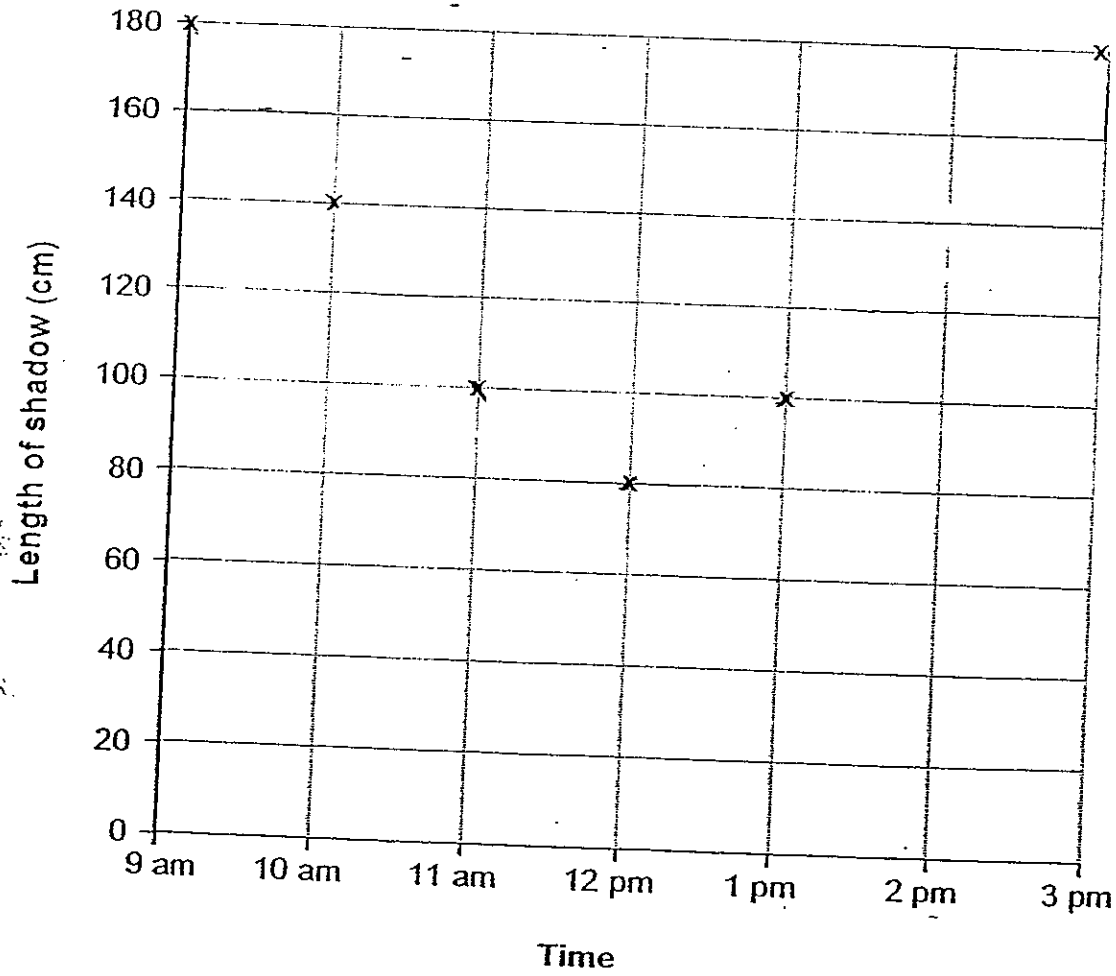

41. On a sunny day, some children investigated their shadows in the playground.



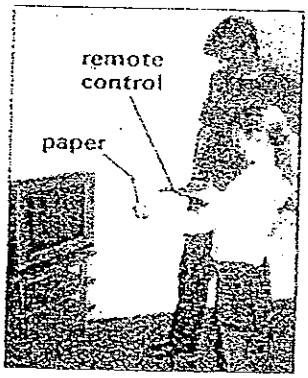

Holly recorded the length of Katherine's shadow every hour and used the measurements to draw a line graph. At 2pm, it was cloudy and the children could not take a measurement.

Estimate where the missing point should be. **Draw** this point in and **link** all the points to make a line graph.

[2]



42. Ruth wants to find out how well the remote control turns on her television when different materials are put in front of it. She holds writing paper in front of the remote control. The television still turns on. Ruth steps back until the remote does not turn the television on.




Ruth repeats the test with different materials. The table below shows her results.

| Material | Distance from television when remote does not work (steps) |
|---|---|
| Writing paper | 5 |
| Clear plastic bag | 25 |
| Tracing paper | 8 |
| Aluminium foil | 0 |
| Book | 0 |

a) Ruth's brother says she should not test the book as it makes her test unfair. Why does the book make her test unfair? [1]

_____

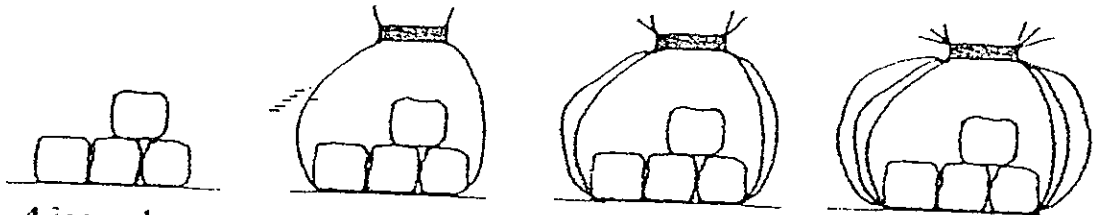
_____

b) Ruth thinks her results suggest that the remote control uses light to turn on the television and classified the materials as follows. Give a suitable heading for each group of materials below. [2]

**Materials**

| (i) | (ii) | Transparent |
|---|---|---|
| Aluminium | Writing paper | Clear plastic bag |
| Book | Tracing paper | |

43. Samy is thinking about how to keep ice cubes from changing into water on a hot day. He puts four ice cubes in different numbers of plastic bags as shown in the diagrams below.



4 ice cubes with no bag | 4 ice cubes in 1 bag | 4 ice cubes in 2 bags | 4 ice cubes in 3 bags

He records the time it takes for the ice cubes to change to water in the table below.

| Number of plastic bags | Time for ice to change to water (minutes) |
|---|---|
| 0 | 18 |
| 1 | 20 |
| 2 | 24 |
| 3 | 26 |

a) Name the process that describes the change from ice to water. [½]

_____

b) What is the temperature at which ice changes to water? [½]

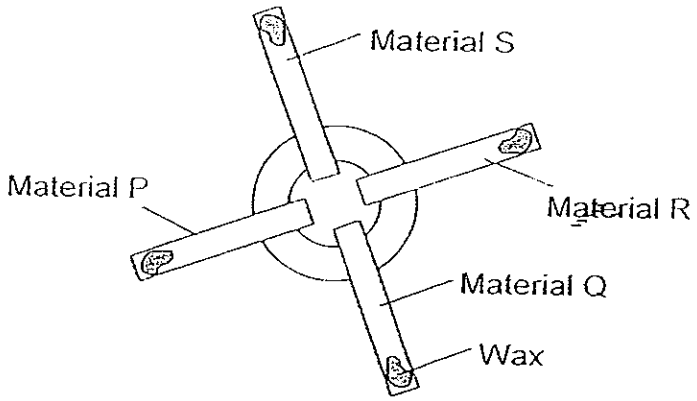
_____

c) What can Samy conclude from the results? [1]

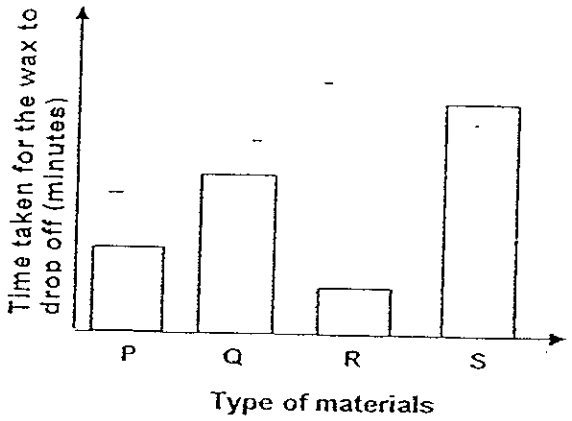
_____

_____

44. Jasmine coated the ends of 4 rods made of different materials, P, Q, R and S with some wax as shown below.

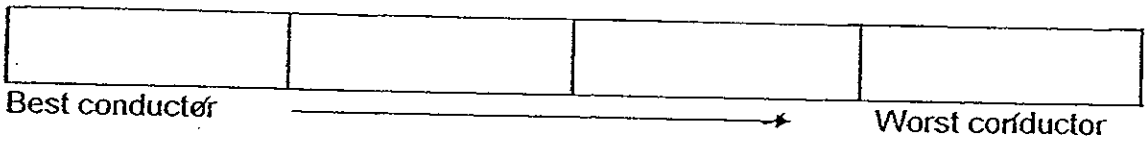



She heated the other ends of each rod by placing a candle in the middle of the ring. She measured the time taken for the wax to drop off the rods. Her results are shown in the bar graph below.




Arrange the materials according to how well they conduct heat in the spaces below.

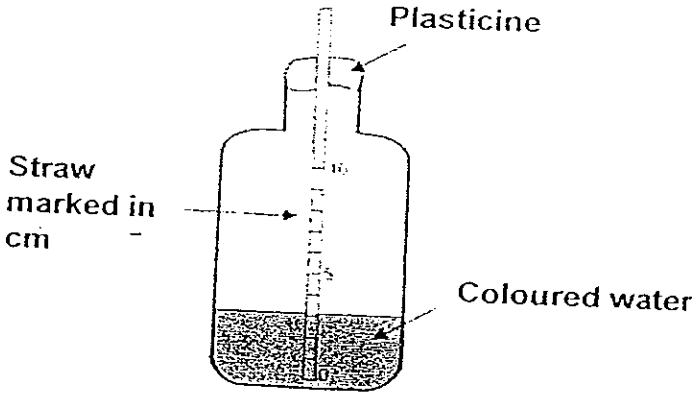
[2]



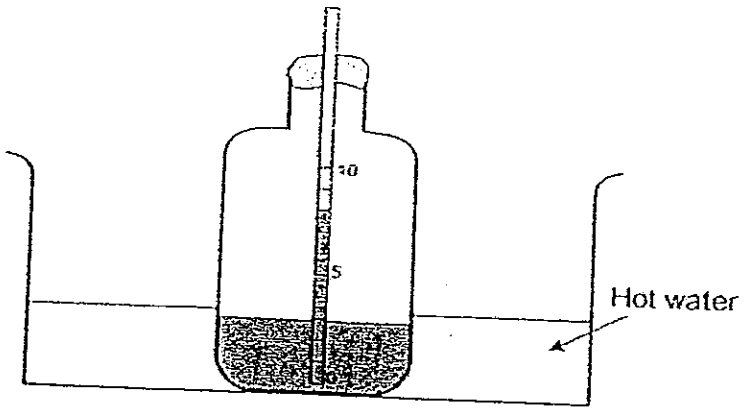

Based on the above graph, which one of the materials, P, Q, R or S, is the most suitable for making the handle of a cooking pot?

[1]

45. Jasvinder and Naomi decided to make their own temperature measurer. They marked off 1cm intervals on a straw and put it in a bottle containing some coloured water. They wrapped plasticine around the straw. The diagram below shows their measurer.



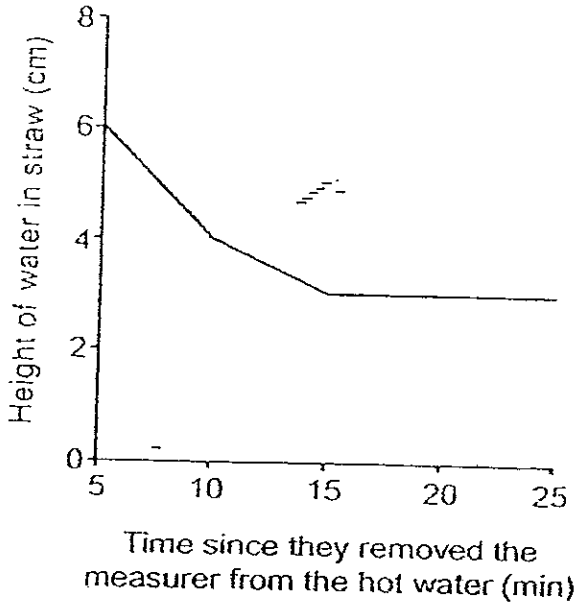

They placed their temperature measurer in a bowl of hot water. This diagram shows their apparatus after three minutes in the hot water.




a) How many centimetres did the coloured water move up the straw in the three minutes?

[1]

Jasvinder and Naomi took the measurer out of the hot water and recorded what happened as it cooled down. They recorded their results in a line graph.

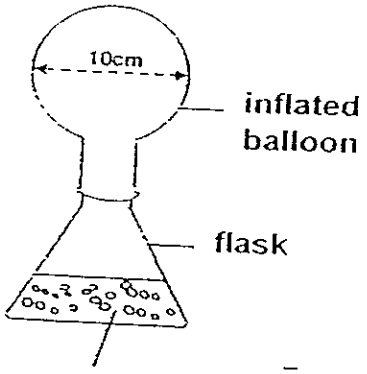



b) Why did the water level in the straw stop going down after 15 minutes? [1]

c) If they wanted to make the water level in the straw to go down further, what can they do to the temperature measurer? [1]

46. Mary knew that vinegar when mixed with baking soda produces a gas. He wanted to investigate whether changing the temperature of vinegar would affect the rate at which the gas was produced.

The gas produced would inflate the balloon to 10cm as shown in the diagram below. He recorded the results in the table as shown.




| Flask | Temperature of vinegar (°C) | Time taken (s) | Diameter of inflated balloon (cm) |
|---|---|---|---|
| A | 20 | 10 | 10 |
| B | 60 | 5 | 10 |
| C | 5 | 20 | 10 |

a) Mary used 2g of baking soda and **10ml** of vinegar in flask A. How much of baking soda and vinegar should she use in flask C? [1]

_____

b) What conclusion can be made about the temperature of vinegar and the time taken to inflate the balloon? [1]

_____

_____

## ~~ End of Paper ~~

# ANSWER SHEET

EXAM PAPER 2008

SCHOOL : CHIJ PRIMARY SCHOOL
SUBJECT : PRIMARY 4 SCIENCE

TERM : SA 2

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

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

31)a)Yes. Because if she use different soil the bean may grow faster.

b)i)The place that she put for the bean.

ii)The amount of water for each bean.

32)a)X. Seed leaf provides food for the shoot so as the shoot grows.

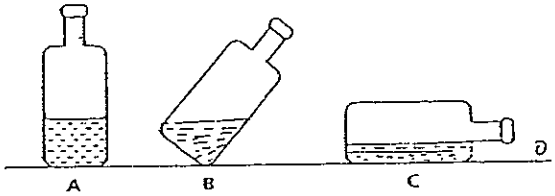
b)from day 8 onwards, the first leaves would have appeared and the shoot will be able to make its own food.

33)a)It is called a nymph.

b)All stage Y, the cockroach does not have wings but at stage Z, the cockroach has wings.

c)To ensure that at least some of the eggs at one time is to let the life cycle of it own kind continue in case some dies.

34)a)




b)I can infer that liquids follows the shape of the containers.

35)a)No
No
Liquid
No
b)i)It always takes up the space of the container.
ii)Honey cannot be cutted.

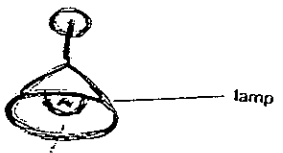
36)a)Salt helps the ice melt faster.
b)It took 8 minute.

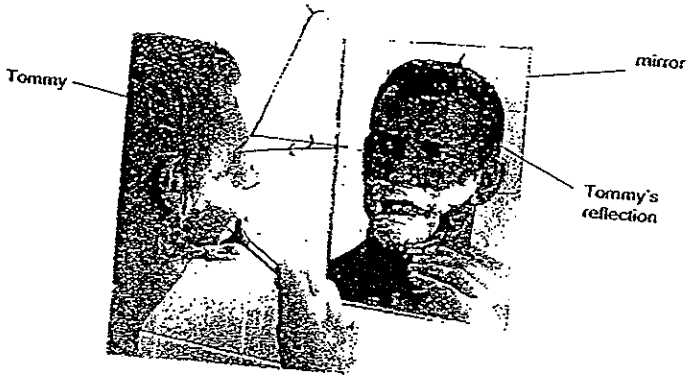
37)a)Yes, It has to attract each other so they need to be magnetic.
b)iron or steel.

38)a)They are trying to find out which part of the magnet is the strongest.
b)The conclusion is the south and the north pole are the strongest part of the magnet.

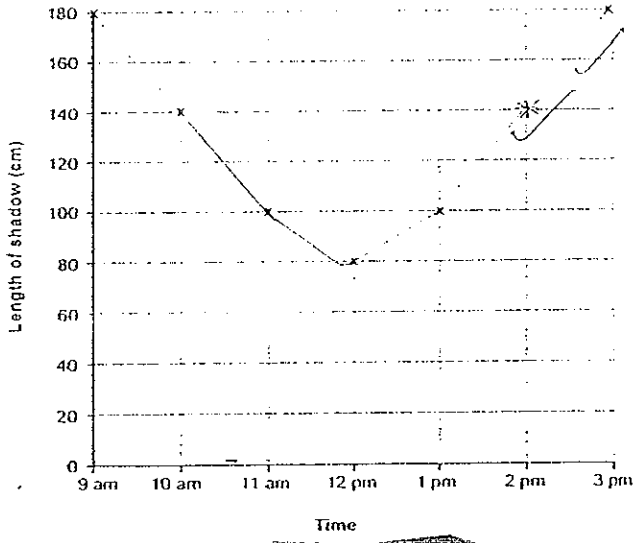
39)a)Set-up A will stretched.
b)In set-up A, the like poles of the two magnet are place next to each other.
c)In set up B, unlike poles of the two magnet are placed together and as unlike poles attract, the attractive force holds the two magnets together.

40)



41)




42)a)Because the book is much thicker then the other material.
b)i)opaque ii)translucent

43)a)The process is called melting.
b)The temperature is 0℃.
c)The more the number of plastic bags used, the longer it take for the ice cubes to melt.

44)R, P, Q, S
Material S.

45)a)5 centimetres.
b)The measurer had reached room temperature.
c)Put in the fridge.

46)a)2g of baking soda and 10ml of vinegar.
b)The higher the temperature of vinegar the shorter it takes to inflate the balloon.