PRIMARY 4 MID-YEAR EXAMINATION 2013

Name : _____ ( ) Date: 20 MAY 2013

Class : Primary 4 ( ) Time: 8.00 a.m. – 9.30 a.m.

Duration: 1 hour 30 minutes

Parent's Signature : _____ Marks: _____ / 60

SCIENCE

BOOKLET A

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

Do not turn over this page until you are told to do so.

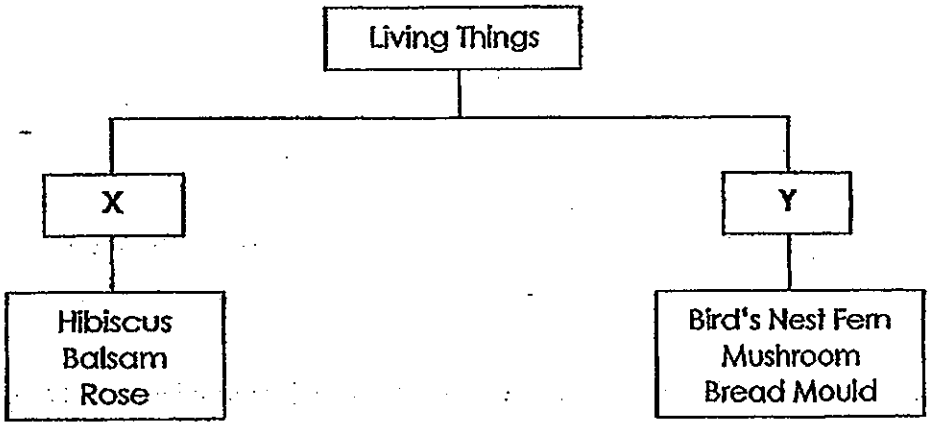
Follow all instructions carefully.

Answer all questions.

Section A (30 x 2 marks)

For each question, choose the most suitable answer and shade its corresponding oval (1,2,3 or 4) in he optical answer sheet.

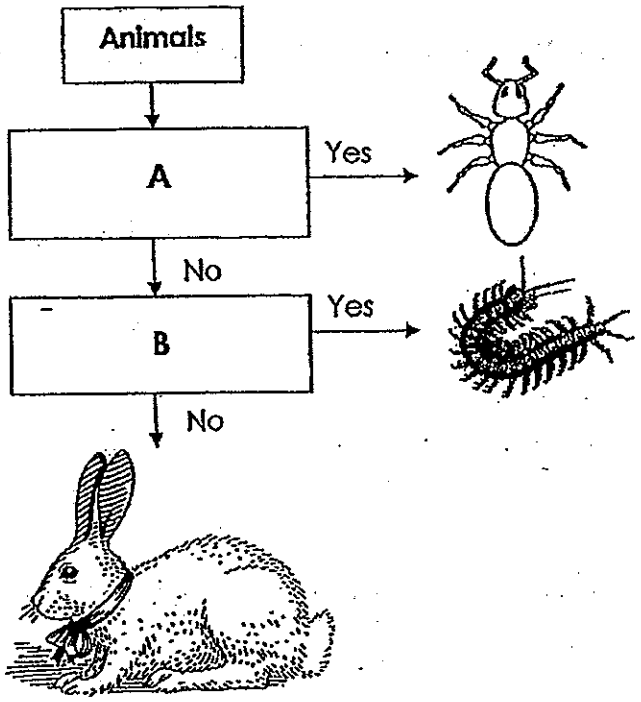
1. Study the classification chart below. Two characteristics, X and Y, are used to classify the living things.



Based on the classification chart above, what are the two characteristics, X and Y?

	X	Y
(1)	Has stems	Does not have stems
(2)	Has chlorophyll	Does not have chlorophyll
(3)	Grow on Land	Grow in water
(4)	Reproduce by seeds	Reproduce by spores

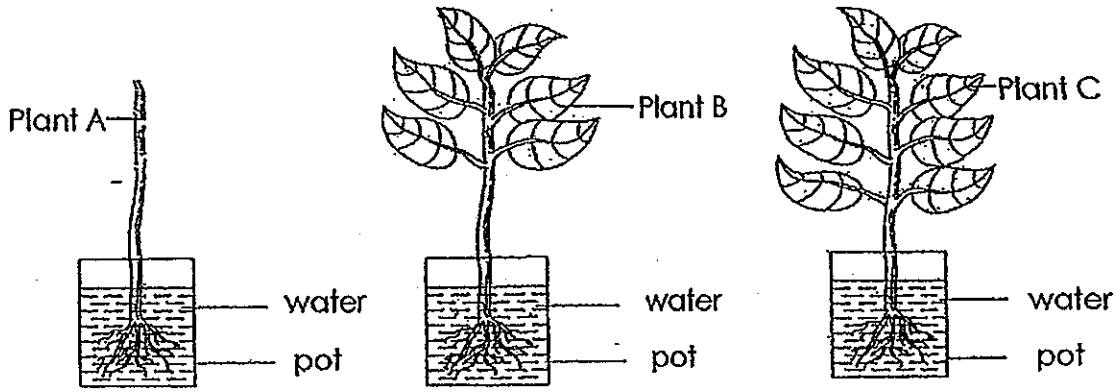
2. Study the flow chart below.



Based on the flow chart, what can A and B represent?

	A	B
(1)	Does it have two body parts?	Does it have legs?
(2)	Does it have feelers?	Does it have two body parts?
(3)	Does it have three body parts?	Does it have feelers?
(4)	Does it have six legs?	Does it have fur?

3. Isaac selected three similar looking plants, Plant A, Plant B and Plant C, for his experiment. He trimmed off all the leaves from plant A, and some leaves from plant B. No leaves were trimmed from plant C. Then he placed each plant in a pot with equal volumes of water.



After ten hours, he recorded the volume of water in each pot of water.

	Volume of water in the pot (ml)
Plant A	500
Plant B	300
Plant C	200

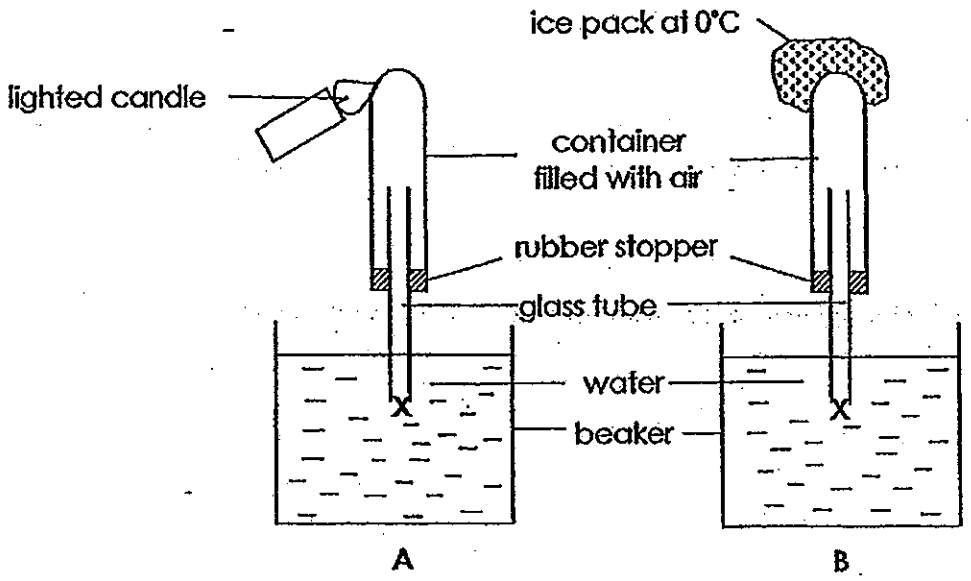
What is the aim of the experiment?

(1) To investigate if the roots of a plant absorb water.
(2) To investigate if the stem of a plant transports water.
(3) To investigate if the leaves of a plant need water to make food.
(4) To investigate if the number of leaves affect the volume of water taken in.

4. Which of the following substances are absorbed into the bloodstream after digestion?

(1) Water and digested food only
(2) Carbon dioxide and water only
(3) Water and undigested food only
(4) Oxygen and carbon dioxide only

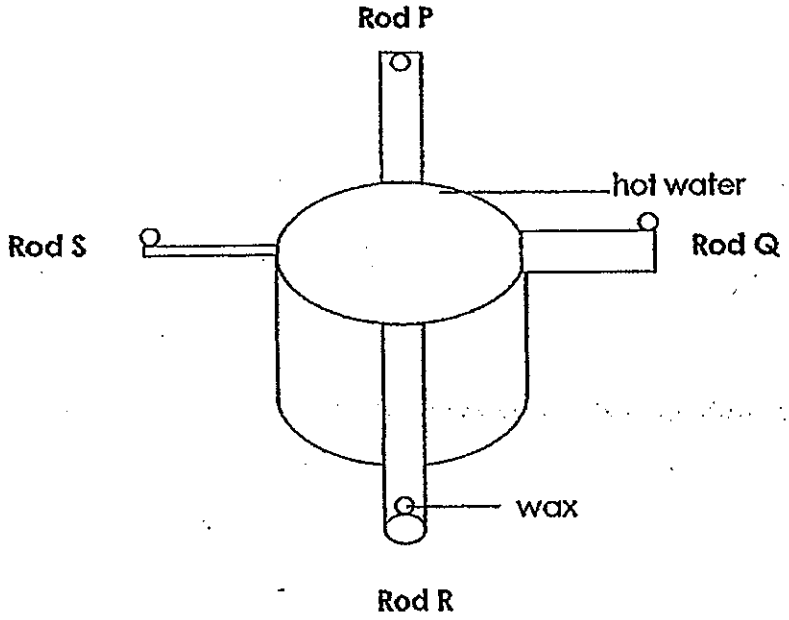
5. Study the set-ups, A and B, below.



Which of the following could be observed after two minutes in the set-ups, A and B, as shown above?

	Observation for A	Observation for B
(1)	Water rising up the glass tube.	Water rising up the glass tube.
(2)	Water rising up the glass tube.	Bubbles escaping from the glass tube at X.
(3)	Bubbles escaping from the glass tube at X.	Water rising up the glass tube.
(4)	Bubbles escaping from the glass tube at X.	Bubbles escaping from the glass tube at X.

6. Aileen wanted to investigate f the material of a rod affects the rate heat is conducted through it. She had a container of water with different rods, Rod P, Rod Q, Rod R and Rod S attached to it. Each rod had a piece of wax placed at its end furhest from the water as shown in the diagram below. The water was heated continuously till all the pieces of wax had melted completely.



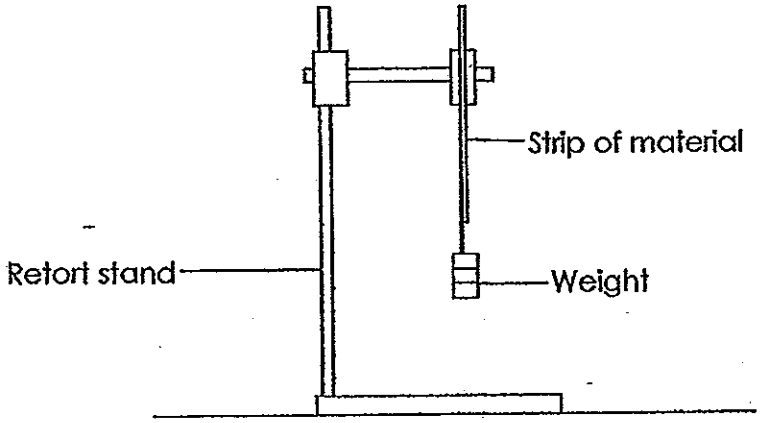
The table below shows some information about the rods.

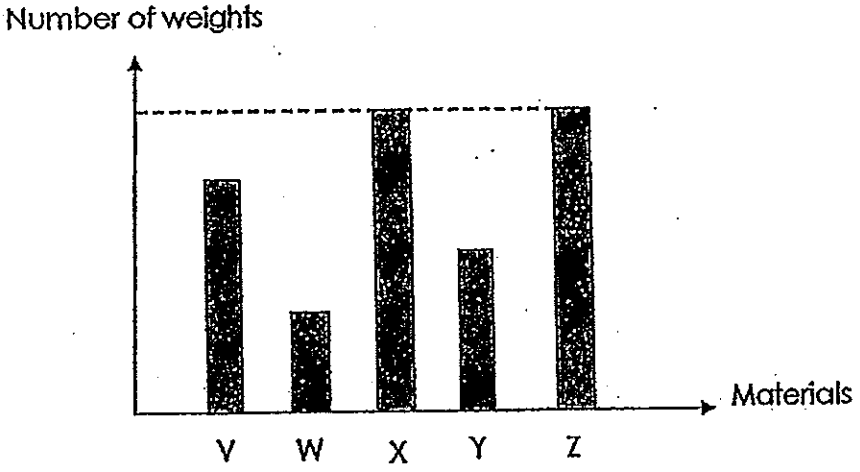
	Material	Length (cm)	Thickness (cm)
Rod P	Copper	5	0.7
Rod Q	Iron	5	0.7
Rod R	Glass	7	0.7
Rod S	Copper	5	0.2

Which of the following rods should be used to ensure a fair test?

(1) Rod P and Rod Q
(2) Rod P and Rod S
(3) Rod Q and Rod R
(4) Rod R and Rod S

7. Five strips of different materials of similar sizes were tied to a retort stand one at a time as shown in the diagram below. Weights were hung on them until they broke. The number of weights that was needed to break each strip was recorded and represented in the graph below.

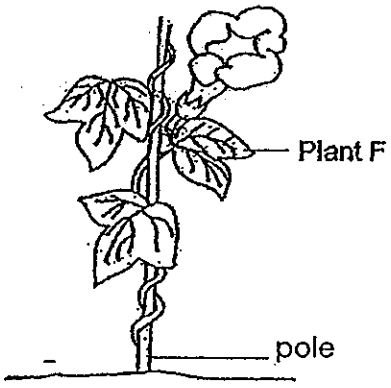


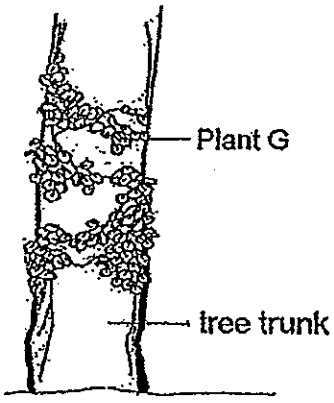


Based on the graph above, which of the following conclusions is correct?

(1) Y is stronger than Z.
(2) V is stronger than W.
(3) W is the softest material.
(4) X and Z are the hardest materials.

8. Two plants, Plant F and Plant G, grown in a garden are shown below.

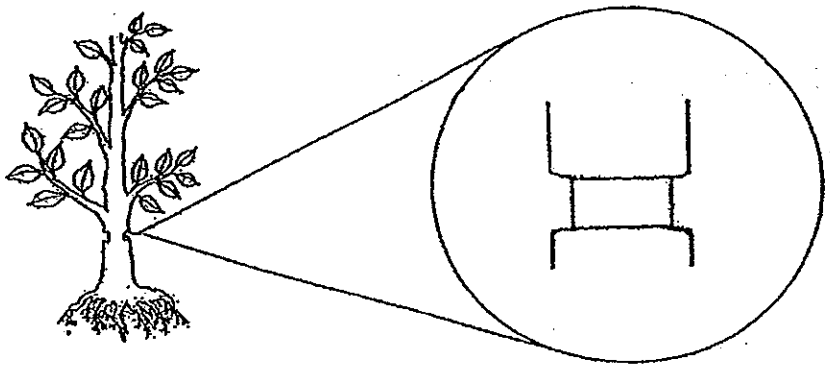




Based on the above, which of the following is true?

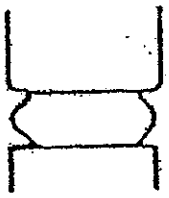
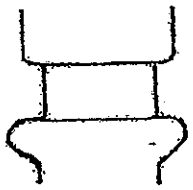
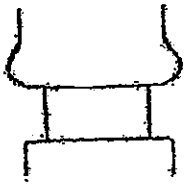
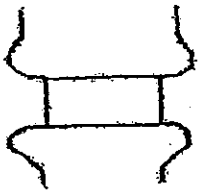
(1) They have roots.
(2) They reproduce by spores.
(3) They need sunlight to grow.
(4) They climb up a support to stay upright.

9. The picture shows a plant with a small ring-like layer with food-carrying tubes carefully removed from the outer part of the stem at part P, leaving the water-carrying tubes behind.

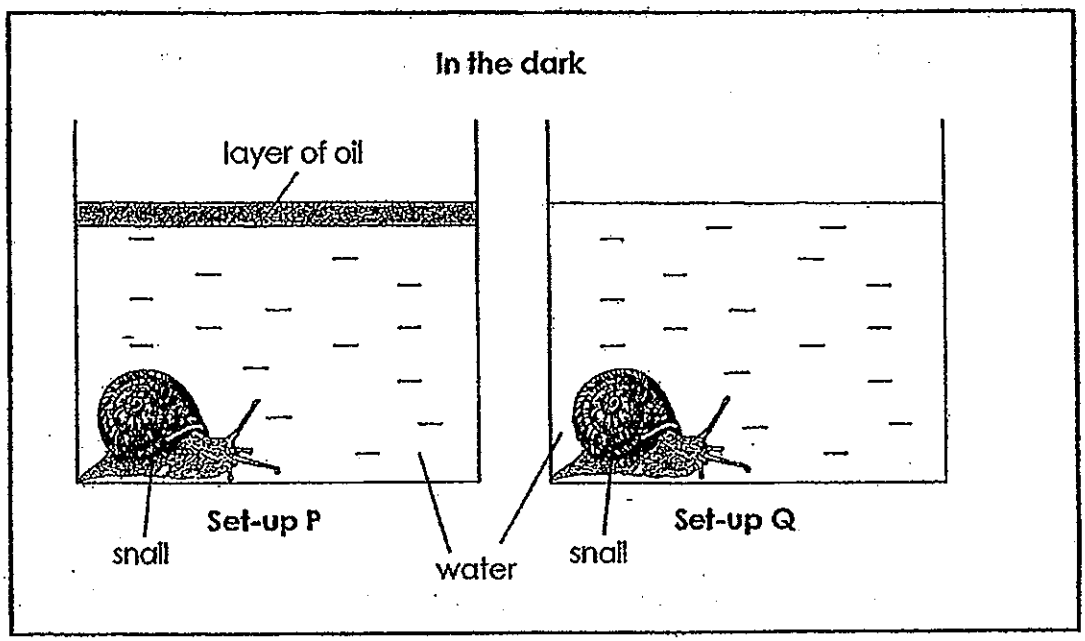


enlarged view of part P

Which diagram shows the likely change of the stem at part P after a period of time?

(1)		(2)	
(3)		(4)	

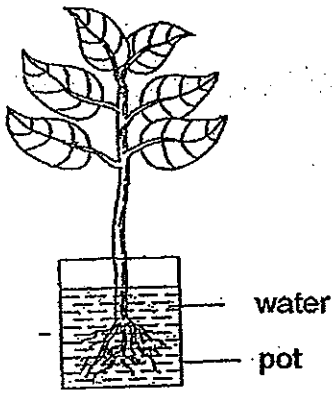
10. Sifi carried out an experiment as shown below.



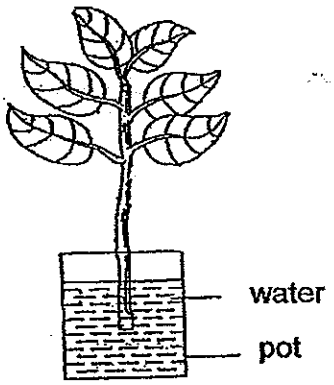
At the end of three hours, only the snail in Set-up Q was alive. What does the result of this experiment show?

(1) Living things need light to survive.
(2) Living things need food to survive.
(3) Living things need water to survive.
(4) Living things need oxygen to survive.

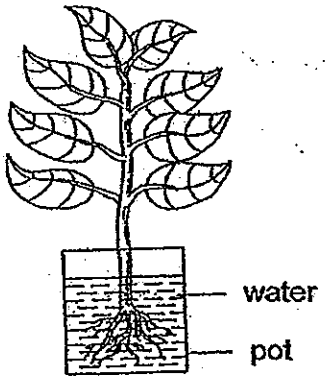
11. Ali was given four set-ups as shown below. His teacher asked him to conduct an experiment to show that the roots of a plant take in water.



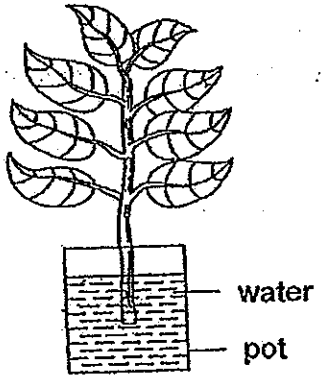
Set-up A



Set-up C



Set-up B

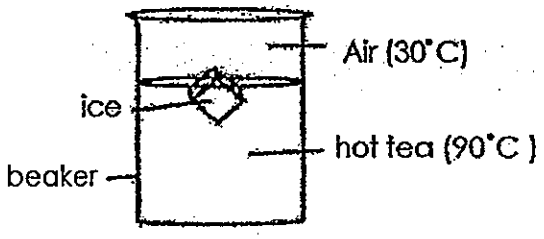


Set-up D

Which two of the four set-ups, Set-up A, Set-up B, Set-up C and Set-up D, should he use in his experiment to ensure a fair test?

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

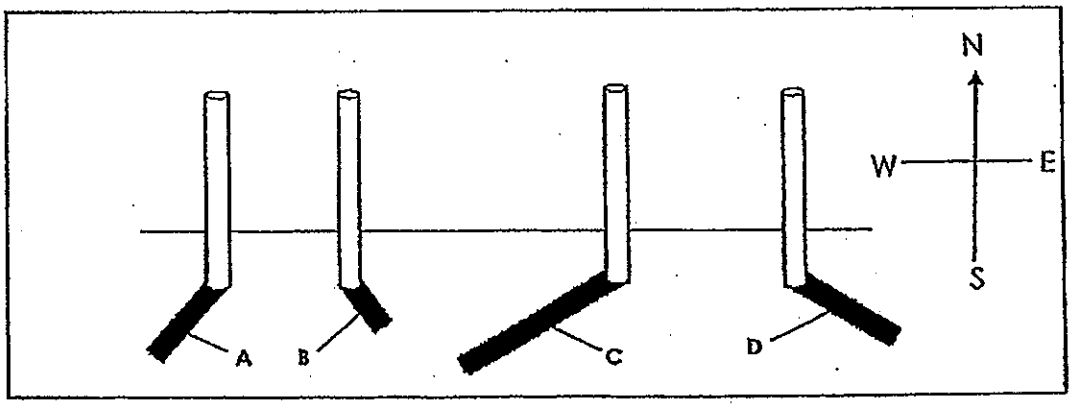
12. Study the diagram below.



Which of the following explains why the ice melted completely after some time?

(1) The hot tea loses heat to the air.
(2) The air gains heat from the hot tea.
(3) The ice loses coldness to the hot tea and the air
(4) The ice gains heat from the hot tea and the air.

13. The diagram below shows the shadows of a pole at different times of the day.



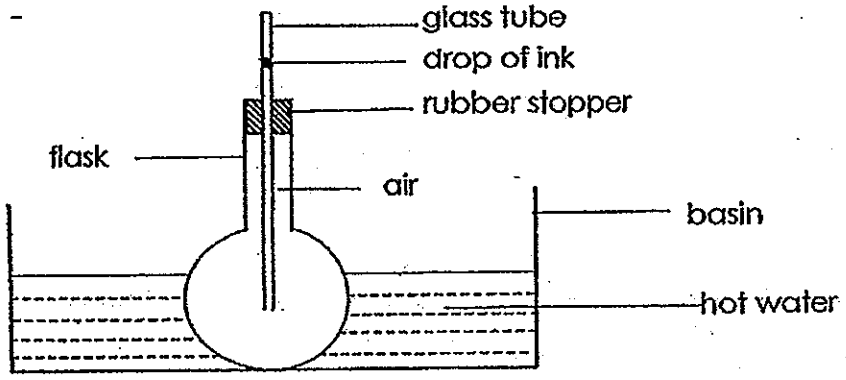
Match the shadows with the different times of the day.

	8 a.m.	10 a.m.	2 p.m.	4 p.m.
(1)	A	C	D	B
(2)	B	D	C	A
(3)	C	A	B	D
(4)	D	B	A	C

14. Which of the following is correct?

(1) All sources of heat are also sources of light.
(2) The Sun is our only source of heat and light.
(3) Heat is a measurement of hotness of an object.
(4) Heat always flows from a hotter place to a colder place.

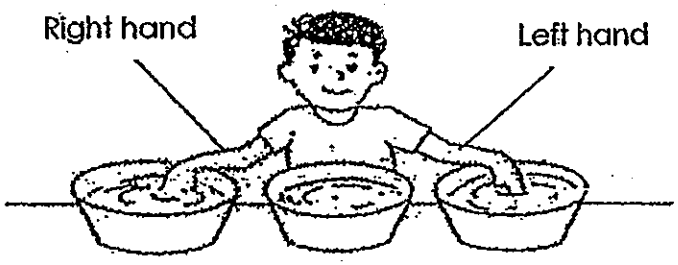
15. In the experimental set-up below, when the flask was immersed in the basin of hot water, the drop of ink dropped slightly first before it rose.



What could have caused the drop of ink to drop first before rising again?

(1) The flask expanded first followed by the air in the flask.
(2) The air in the flask expanded first followed by the flask.
(3) The glass tube expanded first followed by the air in the flask.
(4) The air in the flask expanded first followed by the glass tube.

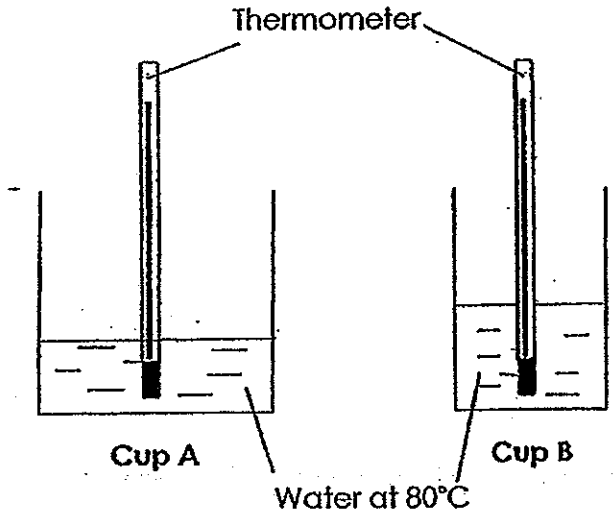
16. Max put his left hand in Basin Y and right hand in Basin W. Then he put both his hands in Basin X. His right hand feels warm while his left hand feels cold in Basin X.



Which one of the following are the likely temperatures of water in Basin W, Basin X and Basin Y?

	Basin W	Basin X	Basin Y
(1)	10°C	30°C	50°C
(2)	30°C	10°C	10°C
(3)	50°C	30°C	10°C
(4)	50°C	50°C	30°C

17. Paul wanted to find out which cup made of different materials is a better conductor of heat. He poured the same volume of water at 80°C into the cups, Cup A and Cup B, and measured the temperature of the water in the cups every minute.

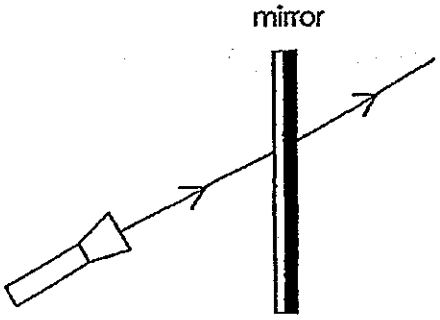


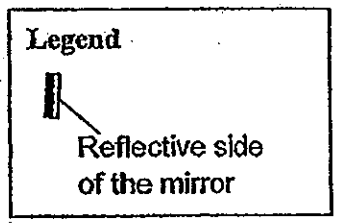
Paul's teacher said that his experiment was not a fair one. Explain why.

(1) Cup A was bigger than Cup B.
(2) The volume of water is the same.
(3) The temperature of the water is the same.
(4) Cup A was a better conductor of heat than Cup B.

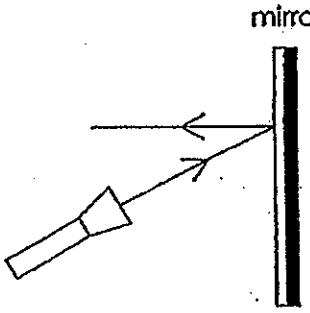
18. Which of the following shows the path of light when a torch is shone on a mirror?

(1)

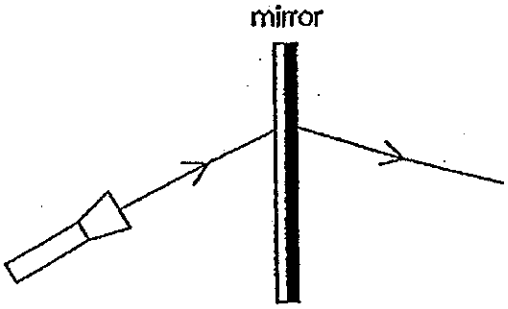




(2)



(3)



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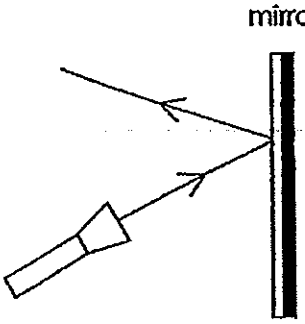
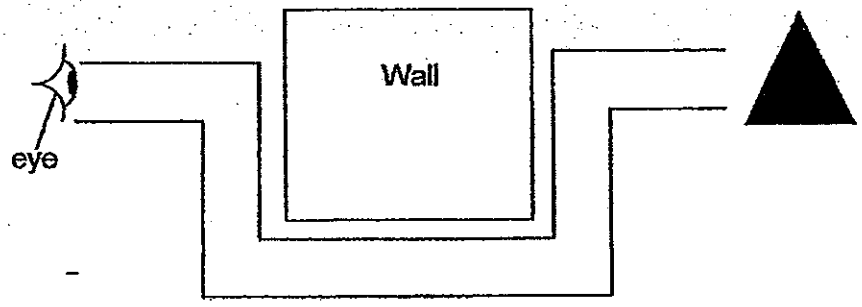
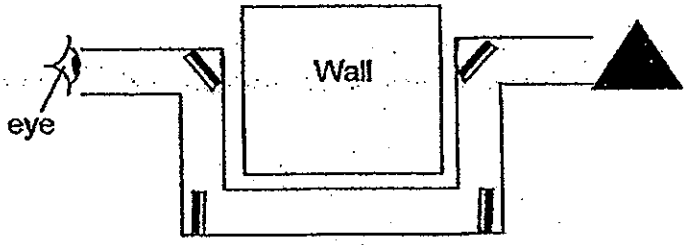


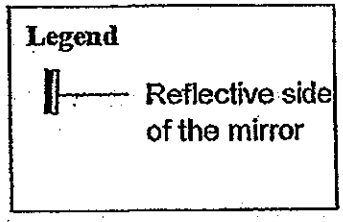
19. When Tommy looked through a tube, he could not see the triangular-shaped card which was on the other side of the tube as shown below.



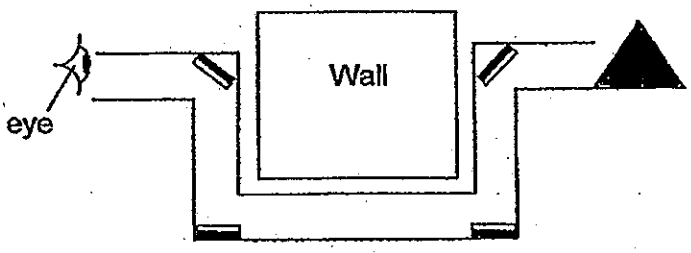
To see the triangular-shaped card, Tommy was asked to place four mirrors in the tube. Which of the following shows the correct positions of the mirrors?

(1)

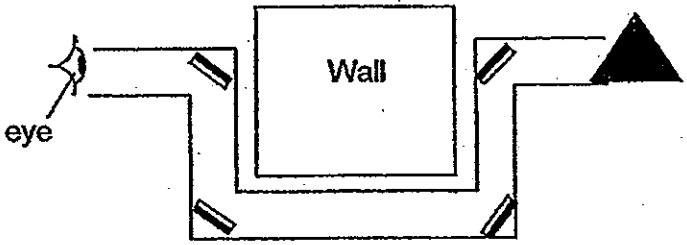




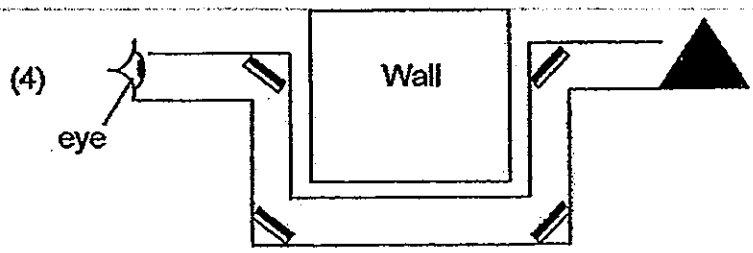
(2)



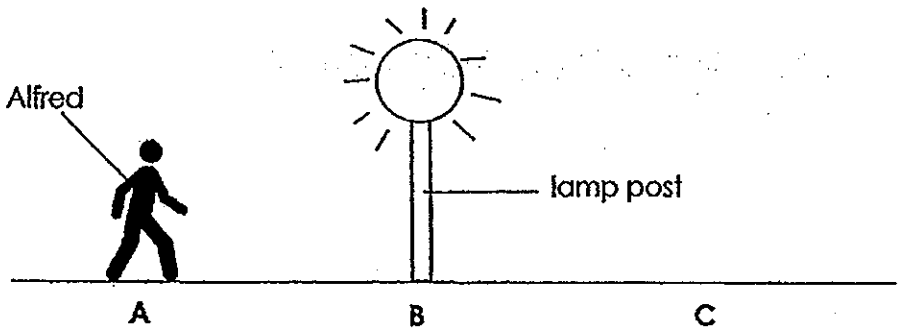
(3)



(4)

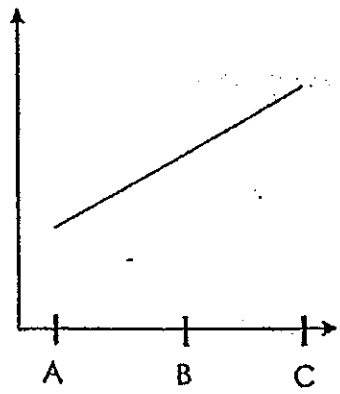


20. One dark night, Alfred walked from point A to point C, passing a lamp post at point B as shown in the diagram below.

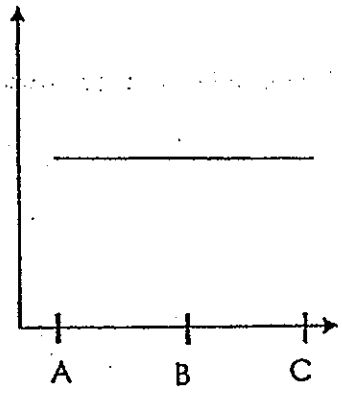


Which of the following graphs below represents the length of Alfred's shadow from point A to point C?

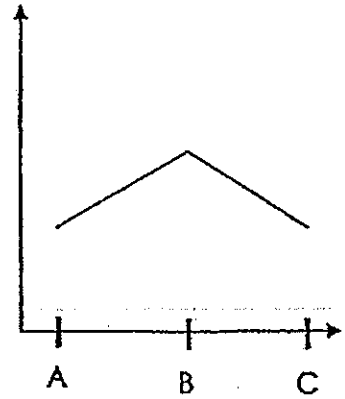
(1)



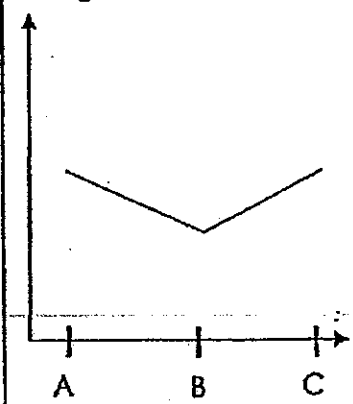
(2)



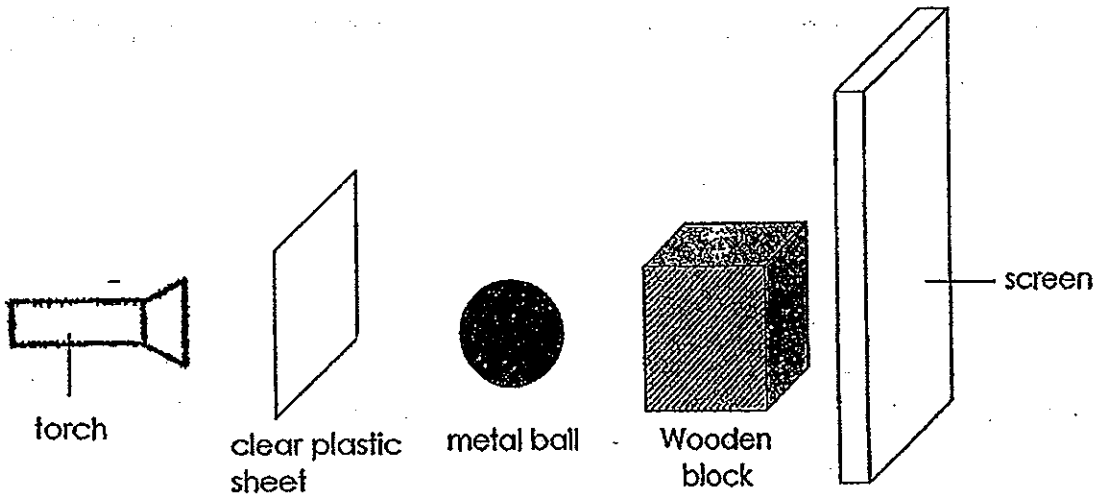
(3)



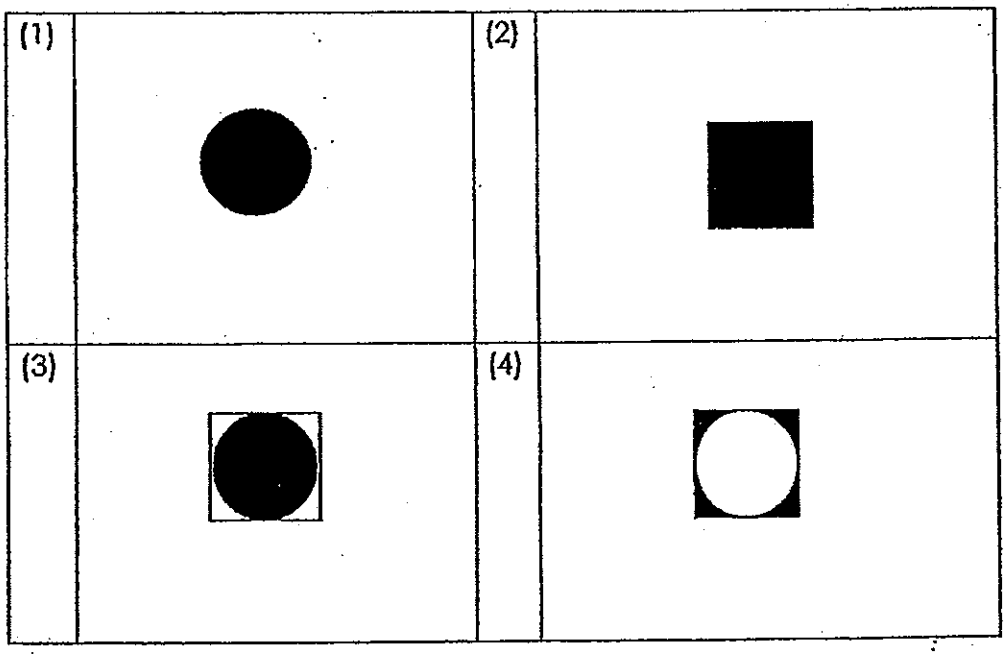
(4)



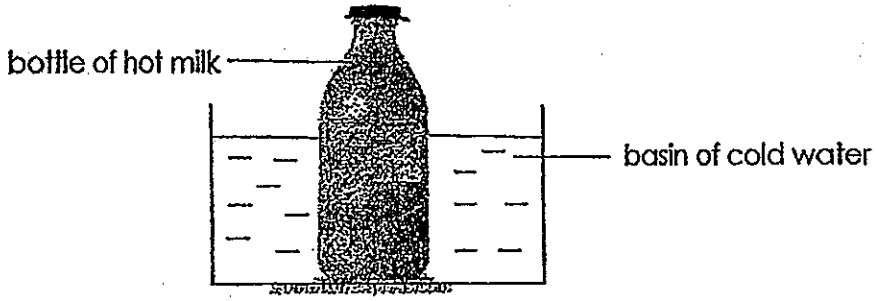
21. Sharifah set up an experiment as shown below. She observed the shadow formed on the screen when the torch was shone on the clear plastic sheet, metal ball and wooden block.



Which of the following best represents the shadow cast on the screen?

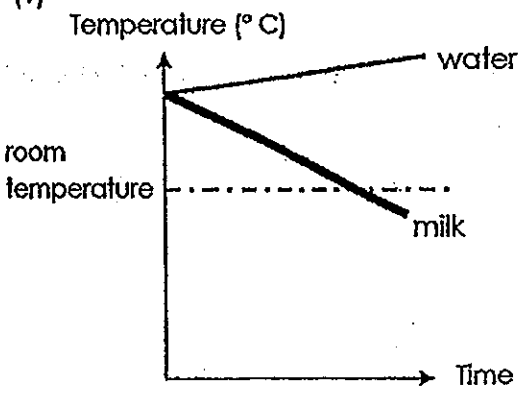


22. A bottle of hot milk is placed in a basin of cold water.

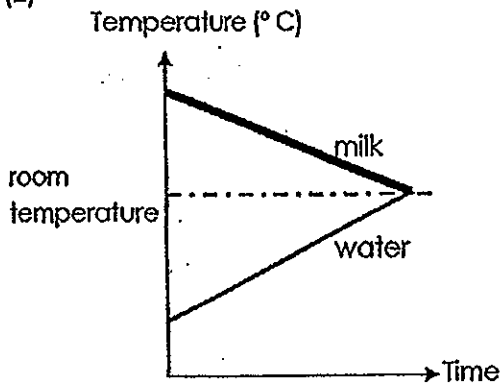


Which of the following graphs shows the temperature of the milk and the temperature of the water after some time?

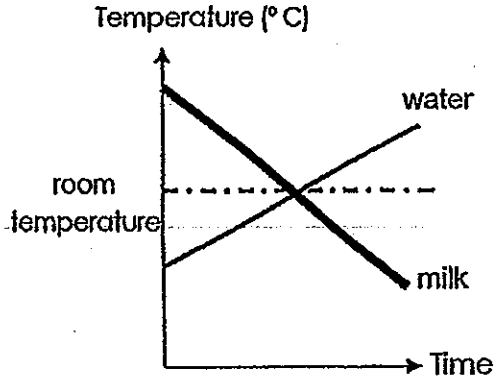
(1)



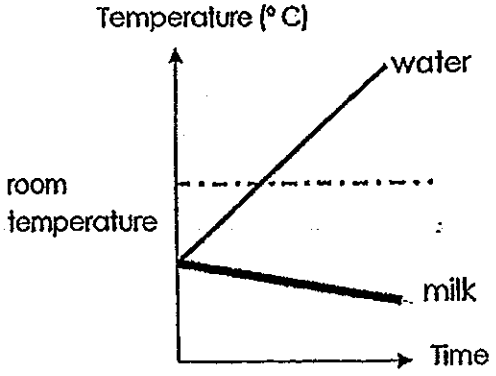
(2)



(3)



(4)



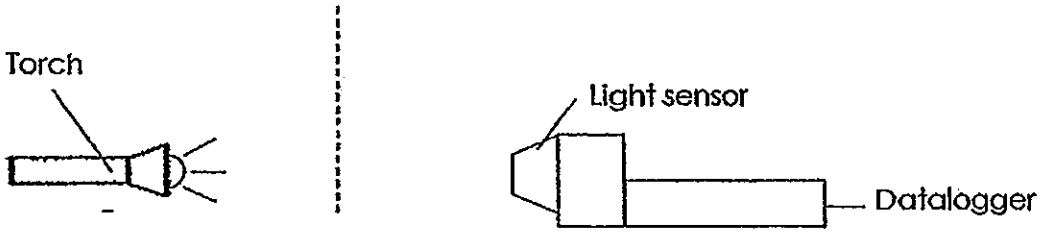
23. The table below shows the volume and temperature of water in 4 cups, Cup A, Cup B, Cup C and Cup D.

	Volume of water	Temperature of water
Cup A	100 ml	40°C
Cup B	100 ml	60°C
Cup C	800 ml	40°C
Cup D	800 ml	60°C

Which cup has the greatest amount of heat?

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

24. Ryan set up an experiment to investigate if the number of sheets of paper between a torch and a light sensor affects the amount of light that can pass through. The papers are placed at Position X.



Position X

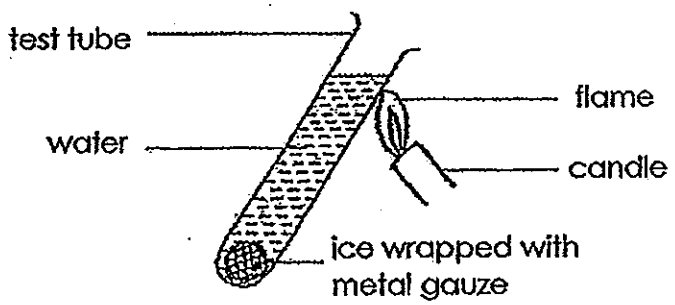
He increased the number of sheets of paper of the same type and recorded his readings in the table below.

Readings on the datalogger for the different number of sheets of paper	
Number of sheets of paper	**Amount of light (lux)**
0	80
1	40
2	20
3	10
4	0
5	0

What changes should Ryan make to the experiment if he wants light to pass through four sheets of the same type of paper?

(1) Move the torch nearer to the papers.
(2) Move the torch further from the papers.
(3) Move the papers nearer to the light sensor and datalogger.
(4) Move the light sensor and datalogger further from the papers.

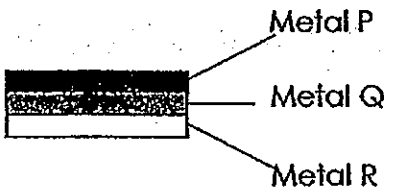
25. An experiment was set up as shown below. After a few minutes, the water at the top of the test tube became warm while the ice at the bottom of the test tube did not melt.



What can you conclude from this experiment?

(1) Ice is a good conductor of heat.
(2) Metal is a poor conductor of heat.
(3) Glass is a good conductor of heat.
(4) Water is a poor conductor of heat.

26. The metal strip below is made up of three metals.



When the metal strip is heated, it curved as shown below.

Which of the following is true?

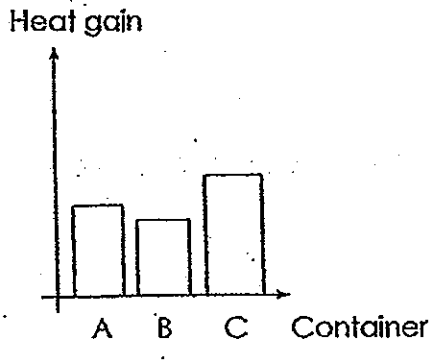
(1) Metal P expands the most.
(2) Metal R contracts the most.
(3) Metal Q expands more than Metal P.
(4) Metal Q contracts more than Metal R.

27. Jessica heated three containers of water together for five minutes. She recorded the volume of water and the temperature of the water before and after it was heated.

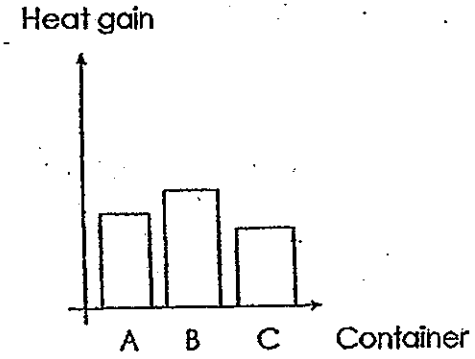
Container	Volume of water (ml)	Temperature of water at the start (°C)	Temperature of water after 5 minutes (°C)
A	300	30	60
B	200	30	60
C	400	30	60

Which of the following shows the heat gain after five minutes?

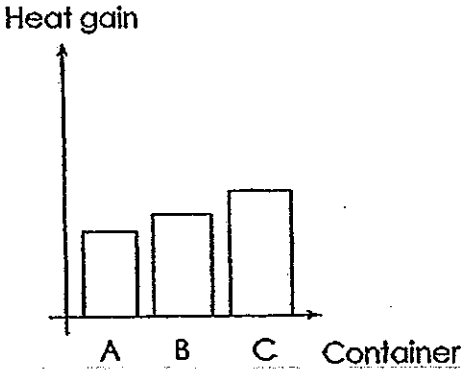
(1)



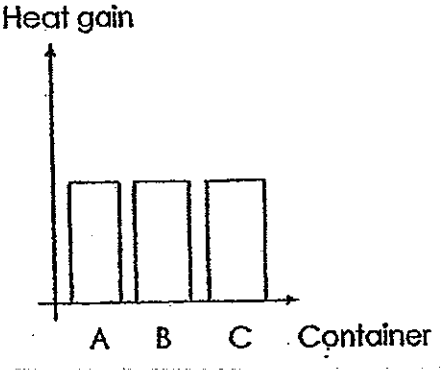
(2)



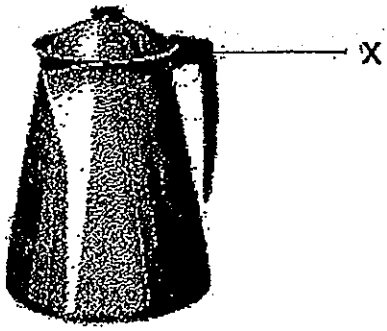
(3)



(4)



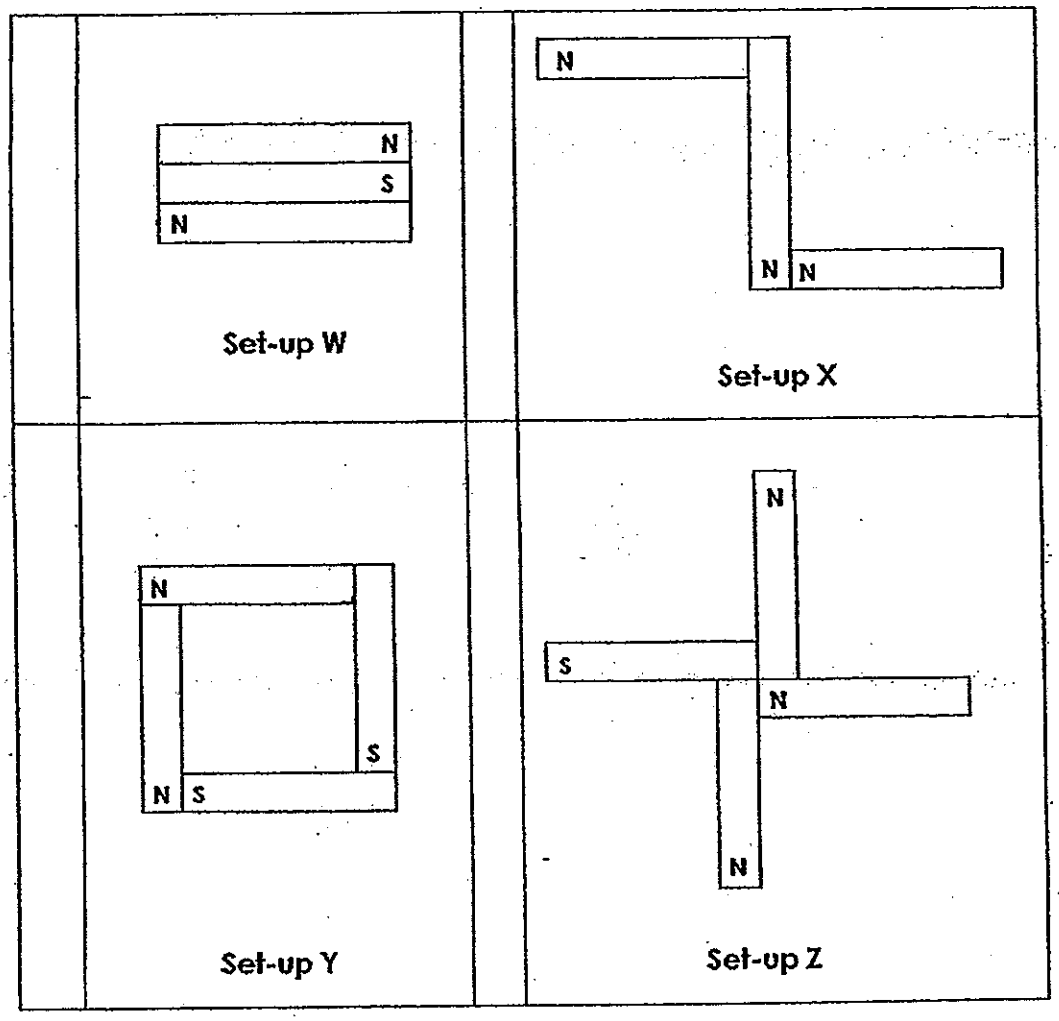
28. Look at the kettle below.



Which of the following explains whether metal or plastic is better for making the part labelled X?

(1) Metal is better because it is a poorer conductor of heat.
(2) Plastic is better because it is a poorer conductor of heat.
(3) Metal is better because it is a better conductor of heat.
(4) Plastic is better because it is a better conductor of heat.

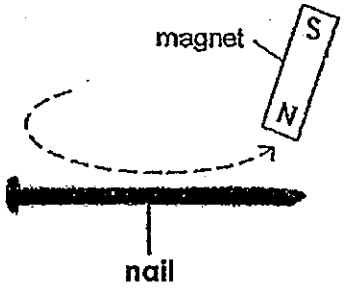
29. The diagrams below show the arrangement of some magnets.



Which 2 of the arrangements are possible?

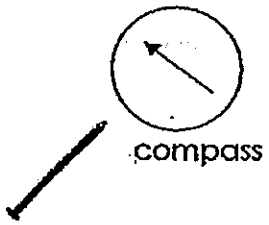
(1) Set-up W and Set-up X
(2) Set-up W and Set-up Z
(3) Set-up X and Set-up Y
(4) Set-up Y and Set-up Z

30. A nail is made into a temporary magnet by the stroking method as shown below.

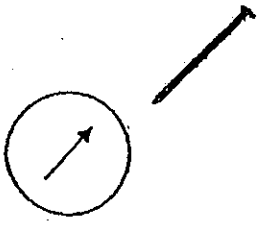


The nail is then placed near a compass. Which of the following correctly shows the direction the compass needle will point to?

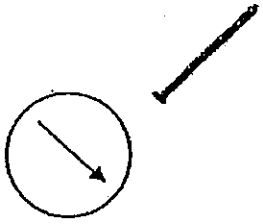
(1)



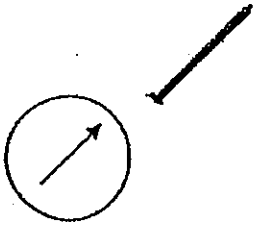
(2)



(3)



(4)



End of Booklet A

PRIMARY 4 MID-YEAR EXAMINATION 2013

Name : _____( ) Date: 20 MAY 2013

Class : Primary 4 ( ) Time :8.00 a.m. – 9.30 a.m.

Duration: 1 hour 30 minutes

Parent's Signature : _____ Marks:_____ / 40

SCIENCE

BOOKLET B

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

Do not turn over this page until you are told to do so.

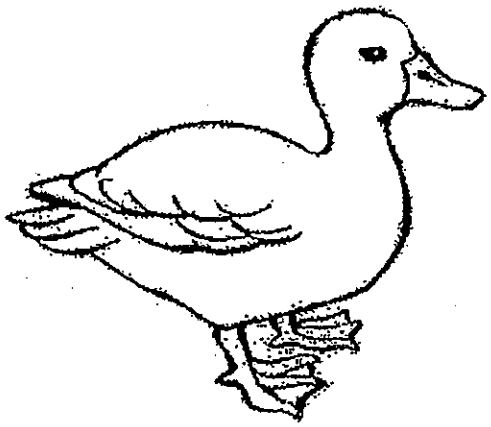
Follow all instructions carefully.

Answer all questions.

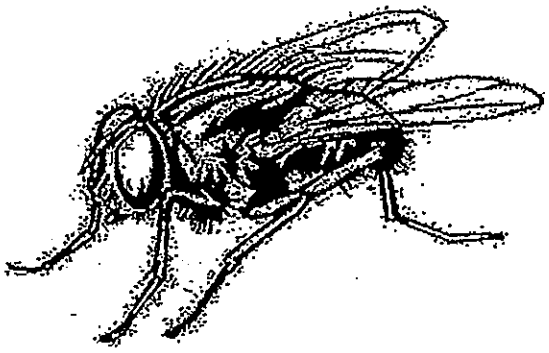
Section B (40 marks)

Write your answers in the spaces provided.

31. Study the pictures below.



Duck



Housefly

(a) Based on the pictures above, state a similarity between the duck and the housefly. (Do not mention their colour and size.) (1m)

_____

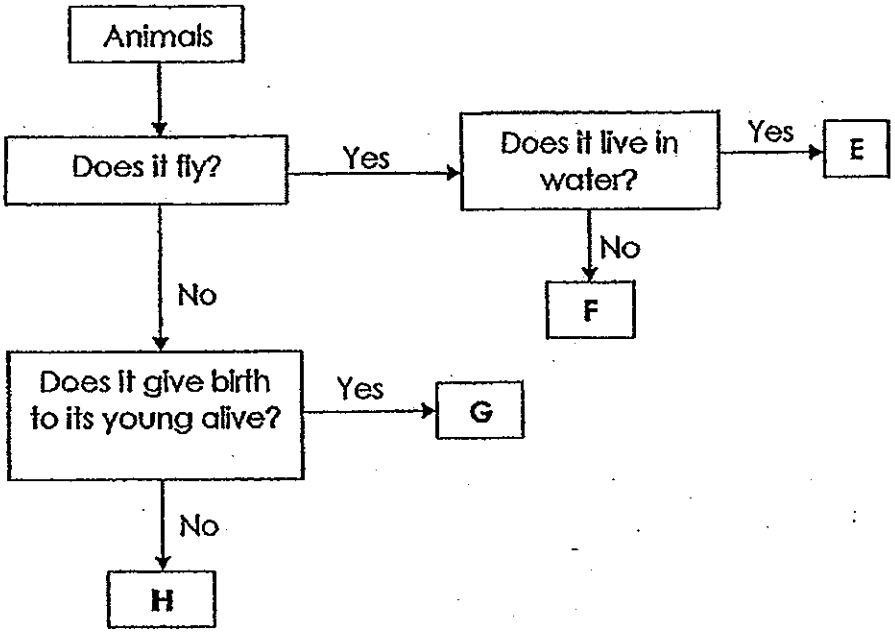
_____

(b) Based on the pictures above, state a difference between the duck and the housefly. (Do not mention their colour and size.) (1m)

_____

_____

32. Study the flow chart below.



(a) State the difference between **E** and **F**. (1m)

_____

_____

(b) State the similarity between **G** and **H**. (1m)

_____

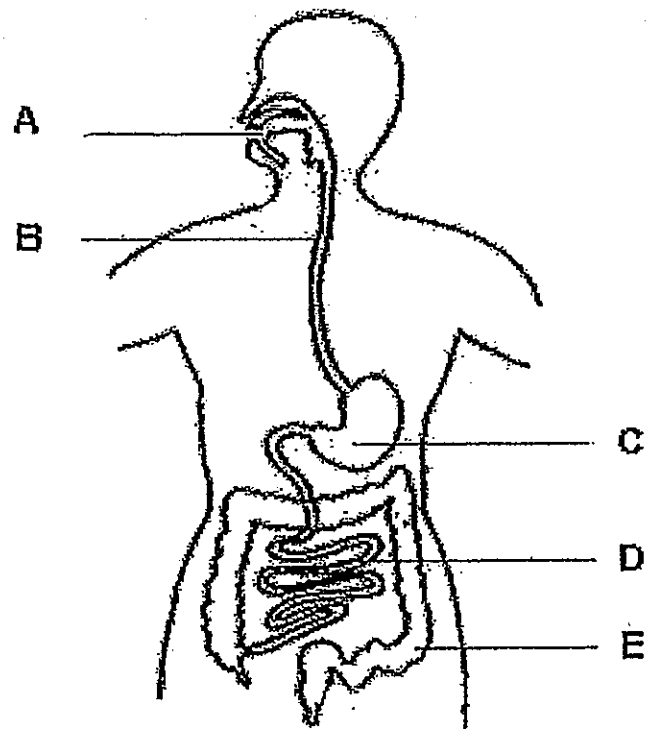
_____

(c) Describe **E**. (2m)

_____

_____

33. Study the diagram below.



(a) State the part (A, B, C, D or E) where digestion begins. (1m)

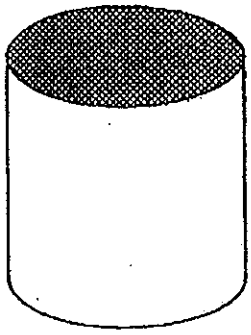
_____

(b) Identify C and D. (2m)

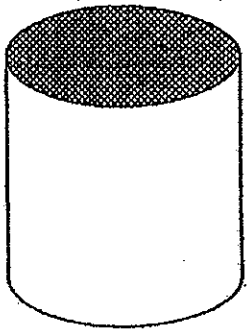
C: _____

D: _____

34. An equal volume of boiling water was poured into two containers, Container P and Container Q, of similar shape, size and colour as shown below. The containers were then tightly sealed and left in an empty room for an hour.



Container P



Container Q

The table below shows the time the water in each container took to cool to room temperature.

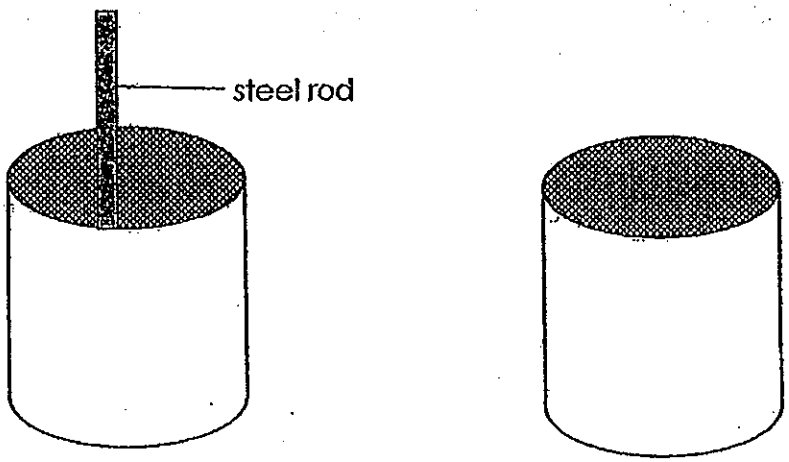
	Time the water took to cool to room temperature (minutes)
Container P	36
Container Q	24

(a) Explain why the water in Container P took a longer time to cool to room temperature. (1m)

_____

_____

The experiment was repeated with a steel rod placed in Container P as shown below.



The table below shows the time the water in each container took to cool to room temperature.

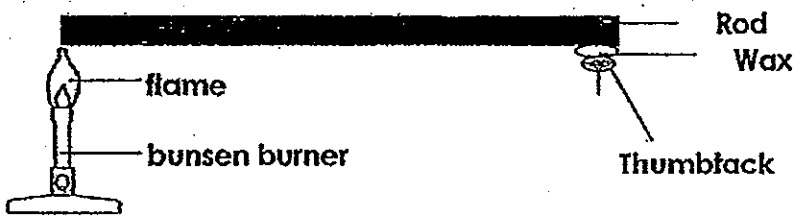
	Time the water took to cool to room temperature (minutes)
Container P	18
Container Q	24

(b) Explain why the water in Container P took a shorter time to cool to room temperature than before. (1m)

_____

_____

35. John set up an experiment to find out how fast heat travelled through different materials. He used 3 rods of the same thickness and length but made of different materials.



The results of his experiment are in the table shown below.

Rod	Time taken for thumbtack to drop (seconds)
A	25
B	360
C	40

(a) Explain why the wax melted and the thumbtacks dropped. (1m)

_____

_____

(b) Explain why the thumbtack attached to Rod C took a longer time to drop as compared to the thumbtack attached to Rod A. (1m)

_____

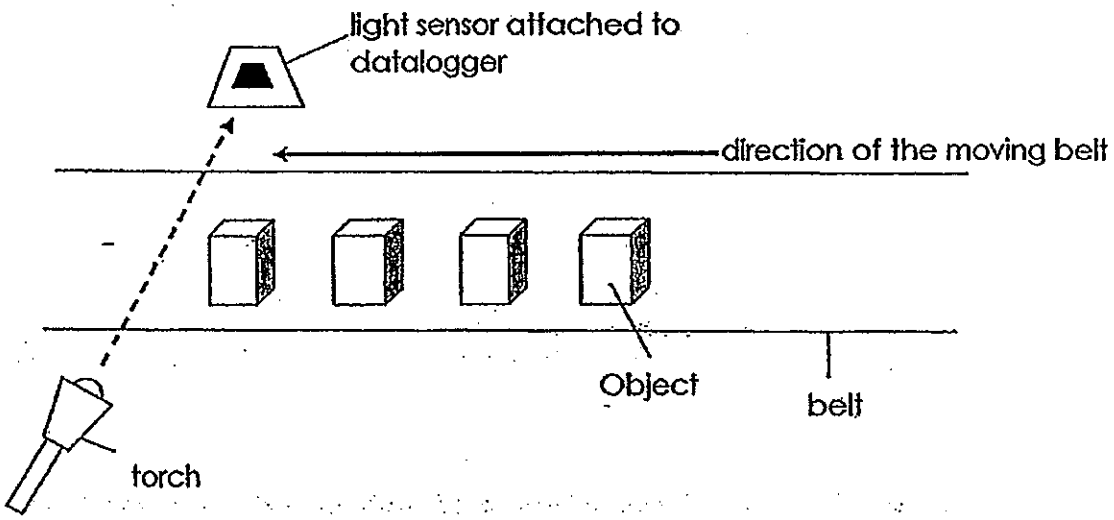
_____

(C) State a change to the set-up so that the thumbtack attached to Rod B takes a shorter time to drop. (Do not change the rod or the position of its wax and thumbtack.) (1m)

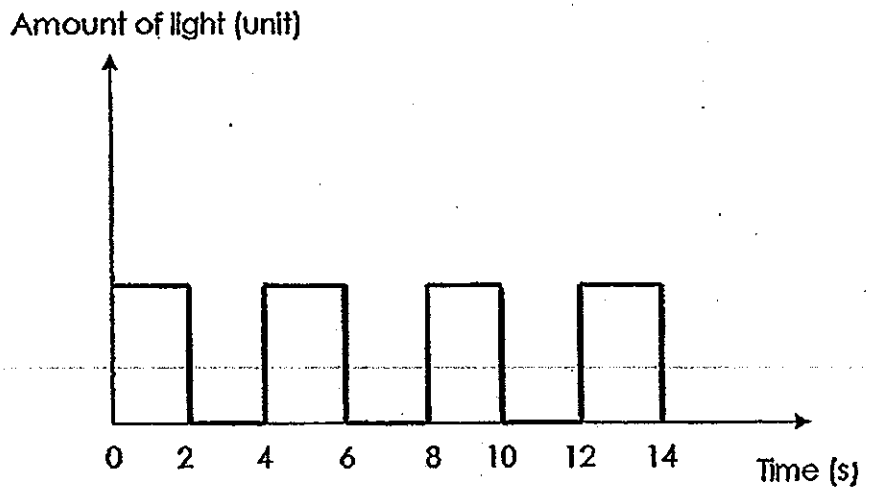
_____

_____

36. The set-up below uses a light sensor to count the number of identical objects on a moving belt.



The belt moves at a constant speed. When the object of 1 cm is between the torch and the light sensor, it blocks the light from reaching the light sensor. The data recorded is shown in the graph below.



(a) Based on the graph, how many objects passed the light sensor in 14 seconds? (1m)

_____

(b) The set-up can count 20 objects in a minute when the belt is moving at its maximum speed. Describe one way to count more than 20 objects in a minute without changing the speed of the belt. (1m)

_____

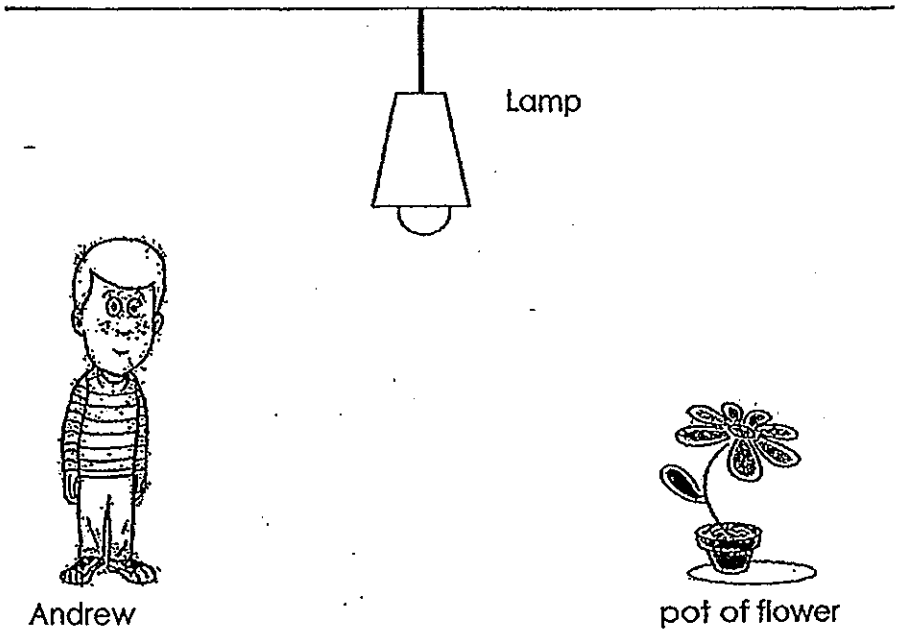
_____

(c) Object made of glass cannot be detected by the set-up. Explain why. (1m)

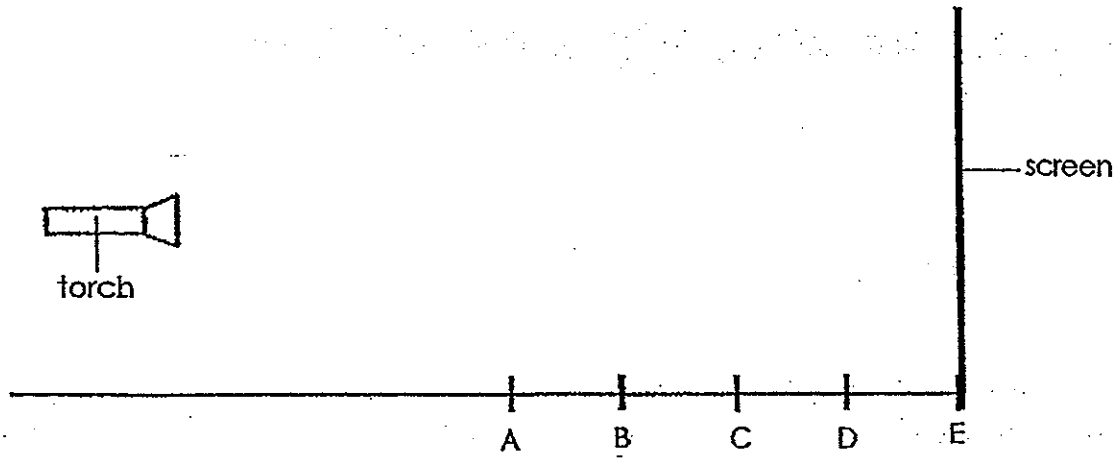
_____

_____

37. Andrew could see the pot of flower as shown below. Draw light rays to show how the lamp acted as a source of light that allowed him to see the pot of flower. (2m)



38. Mrs Lee switched on a torch and shone it on a white screen.



(a) At which positions, A, B, C, D or E should the object be placed at so that the shadow cast on the screen will be the same size as the object? (1m)

(b) Mrs Lee wants to increase the size of the shadow formed on the screen by the object. Without changing the object, state two ways she can increase the size of its shadow. (2m)

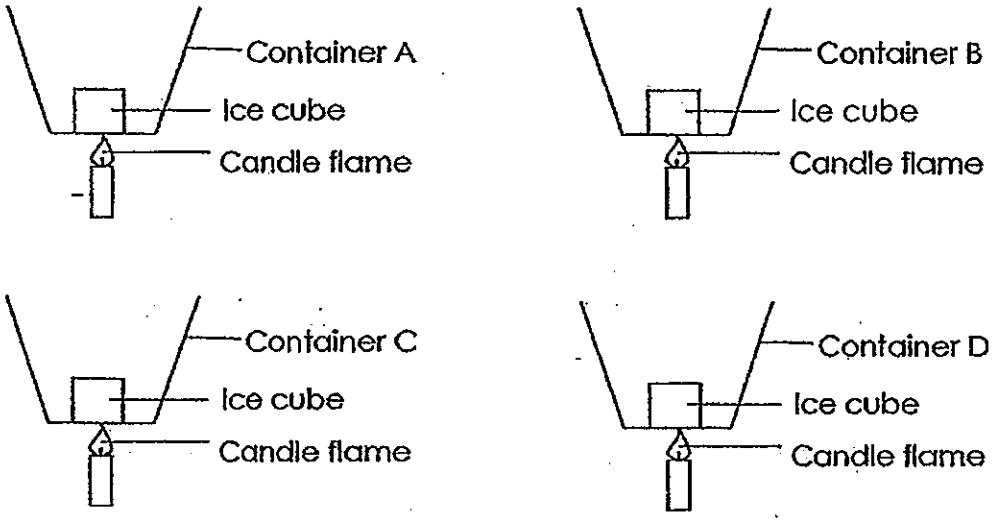
(1) _____

_____

(2) _____

_____

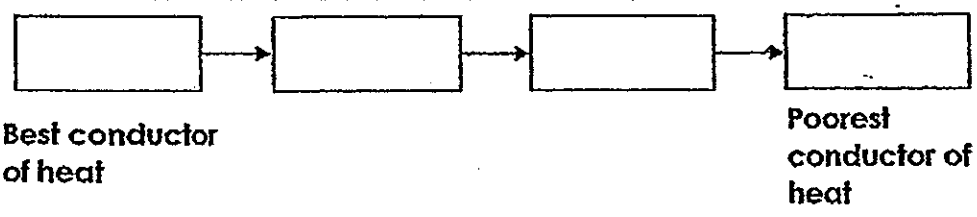
39. Matthew placed a 50-gram ice cube in each of the four containers made of different materials. He heated the containers over a flame for one minute, as shown below.



The water from the melted ice cube was poured away and the remaining ice cube was removed and weighed. The weight of the ice cube in each container was then recorded in the table below.

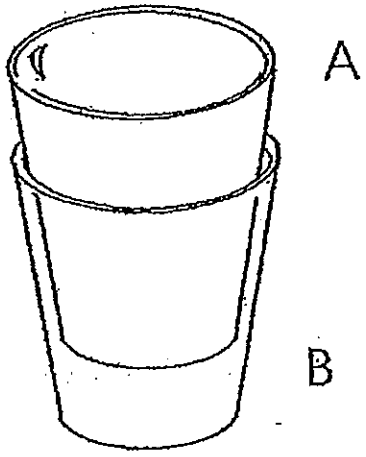
	Weight of remaining ice cube (g)
Container A	12
Container B	7
Container C	21
Container D	18

(a) Arrange the four containers from the best conductor of heat to the poorest conductor of heat. (2m)



(b) Which container is most suitable to be used for keeping his drink hot for the longest time? Explain why. (2m)

40. James had two cups, A and B, stacked together which cannot be separated.



(a) His mother gave him a jug of ice water and told him that the cups can be separated using that. Describe how James can use the ice water to separate the 2 cups without breaking them. (1m)

_____

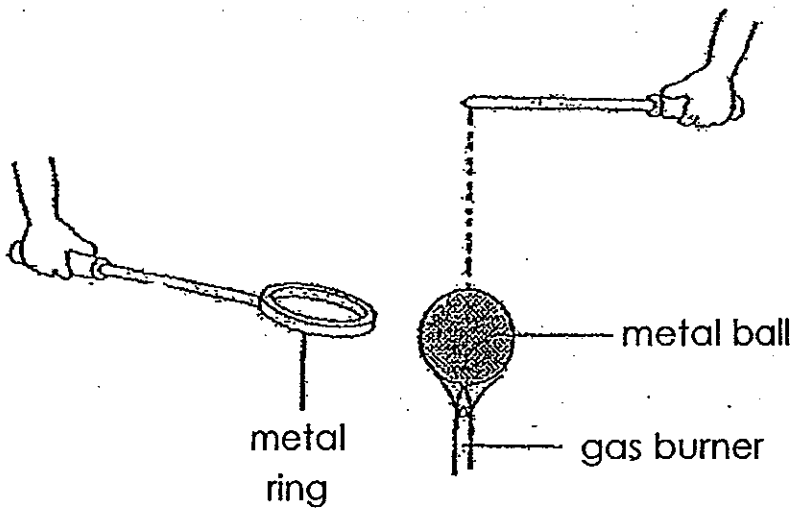
_____

(b) Explain James' action in (a). (1m)

_____

_____

(c) In an experiment, a metal ball was able to pass through a metal ring. The metal ball was then heated as shown in the diagram below.

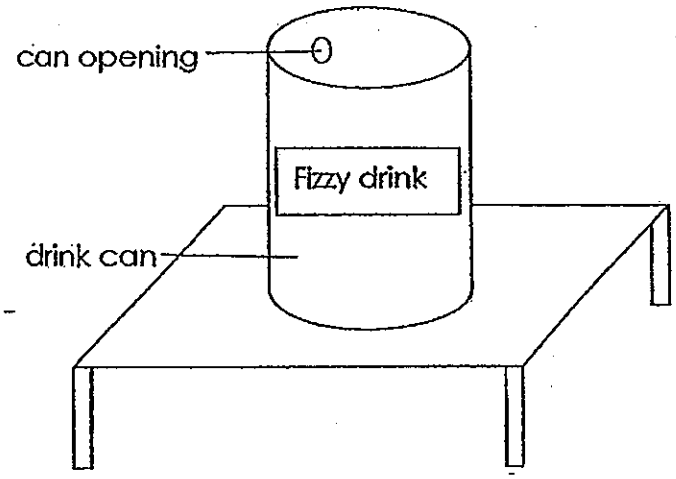


Explain why the metal ball was unable to pass through the metal ring after it was heated? (1m)

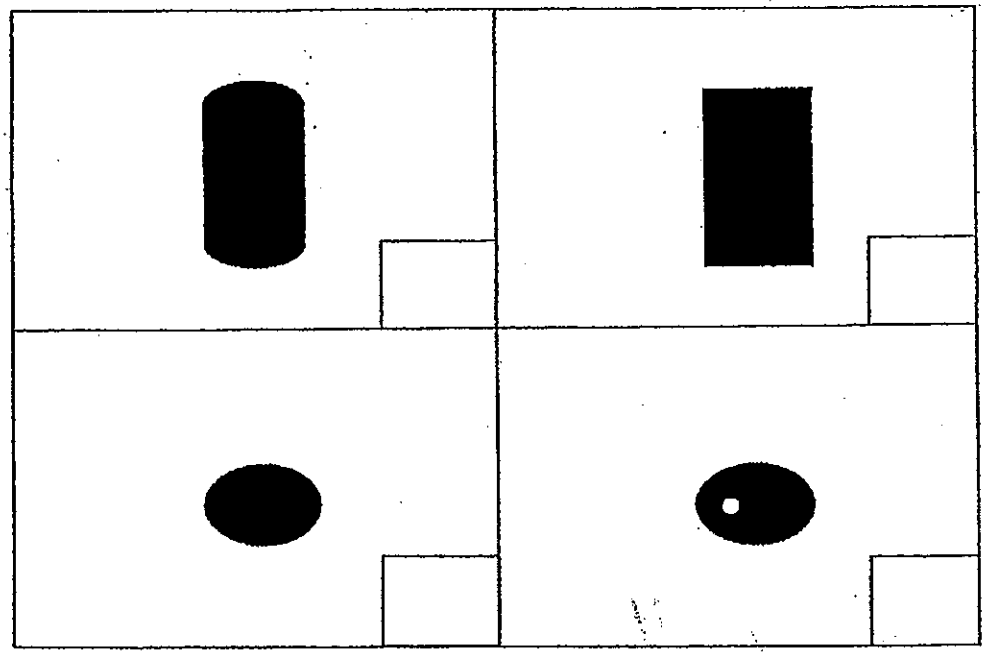
_____

_____

41. James left a drink can on a table and shone a torch on the drink can from different positions, forming different shadows.



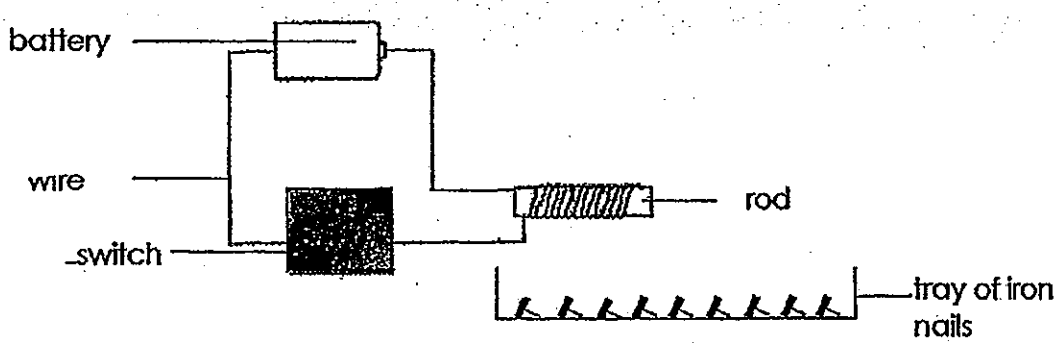
(a) What are the possible shadows could the drink can cast? Put a tick (√) in the boxes provided. (1m)



(b) State a property of light that causes shadows to be formed. (1m)

_____

42. Mark had four rods, P, Q, R and S, made of different materials. He wanted to investigate the magnetic strength of each rod using the following set-up.



When the switch was turned on, the rod attracted some of the iron nails in a tray. The number of nails attracted from the tray was recorded in the table below.

Rod	Number of iron nails attracted from the tray
P	36
Q	29
R	32
S	25

(a) Based on the table above, which rod was the weakest electromagnet when the switch is turned on? Explain your answer.

_____

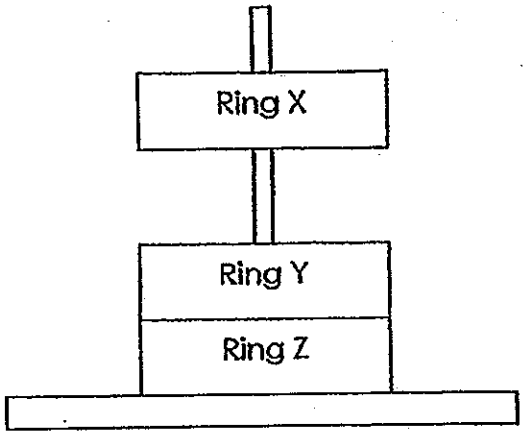
_____

_____

(b) Which variable(s) should be kept constant in the experiment? Put a tick (√) in the boxes provided. (2m)

Variables	Put a tick (√)
Type of rod	
Number of coils around the rod	
Number of batteries	
Type of batteries	

43. Below are two ring magnets and a plastic ring.



Based on the information in the table below, put a tick (√) in the correct boxes. (2m)

		True	False	Not Possible to Tell
(i)	Both X and Y are magnets.			
(ii)	Z is the plastic ring.			
(iii)	X is made of iron.			
(iv)	Y and Z attract each other.			

44. Diagram 1 shows two empty flasks, A and B, connected by a glass tube. There is a drop of ink in the tube as shown. In Diagram 2, when flask A was put into a beaker of hot water, the drop of ink moves.

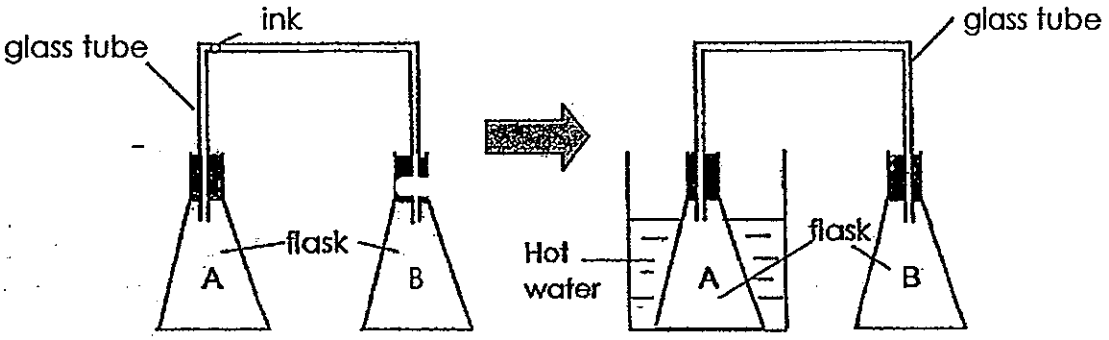


Diagram 1 **Diagram 2**

(a) Indicate with a "X" on the glass tube where the drop of ink will be after flask A is placed in the beaker of hot water in Diagram 2. (1m)

(b) Explain your answer in (a) (2m)

_____

_____

End of paper

ANSWER SHEET

EXAM PAPER 2013
SCHOOL : TAO NAN
SUBJECT : PRIMARY 4 SCIENCE

TERM : SA1

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

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

31)a)Both of them have at least one eye.
b)The duck has a beak while the housefly does not.

32)a)E live in water while F does not.
b)Both of them do not fly.
c)E is an animal that flies and live in water.

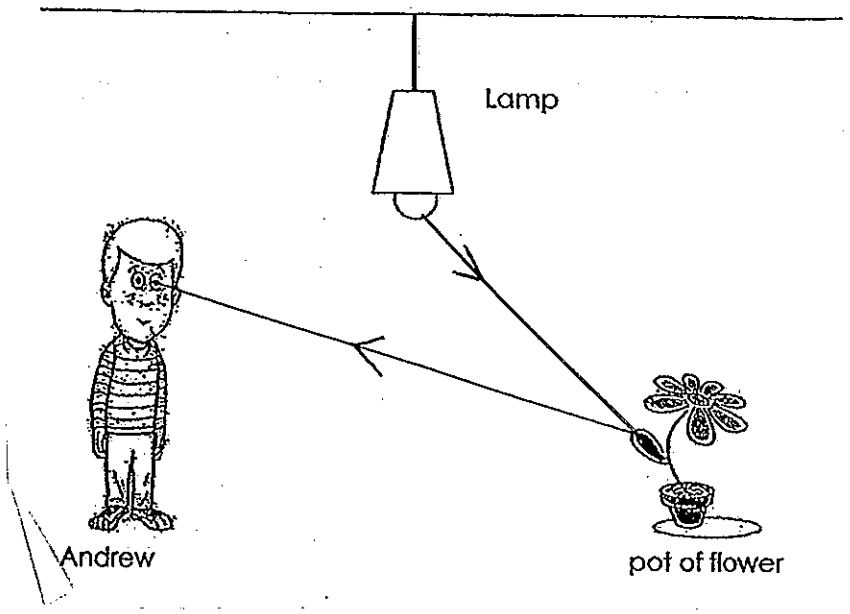
33)a)A.
b)C: Stomach D: Small intestine.

34)a)Container P is a poorer conductor of heat than Container Q.
b)Steel is a good conductor of heat. The steel rod transferred the heat from the surrounding air into the water in Container P faster than before.

35)a)The rods conducted the heat from the flame to the wax, making the thumbtacks drop.
b)Rod C is a poorer heat conductor than Rod A. Heat flowed through Rod C slower than Rod A.
c)Move the Bunsen burner closer to the thumbtack.

36)a)Three objects.
b)Place the objects closer together.
c)Glass is transparent.

37)

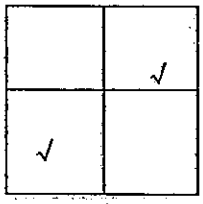


38)a)E.
b)1)She can move the torch further from the screen.
2)She can move the object closer to the torch.

39)a)B→A→D→C
b)Container C. C is the poorest conductor of heat as compared to the rest and so heat is lost the slowest from the drink to the surrounding.

40)a)He could pour the ice water in cup A.
b)The cup would lose heat to the ice water and contract so James could pull it out.
c)The metal ball gained heat and expanded.

41)a)



b)Light travels in straight lines.

42)a)Rod S. It attracted the least number of iron nails
b)Number of coils around the rod
Number of batteries
Type of batteries

43)i)Not
ii)Not
iii)Not
iv)F

44)a)

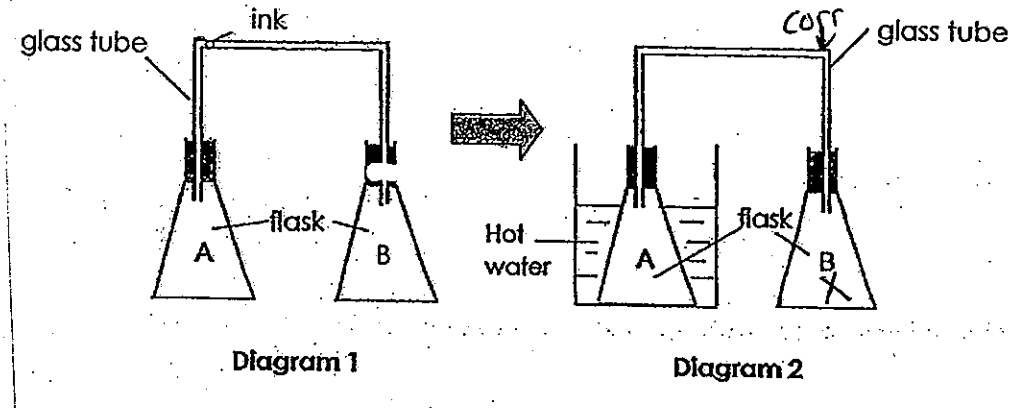


Diagram 1 Diagram 2

b)The air in flask A would gain heat from the hot water and expand causing the ink to be pushed by the air to the right side of the glass tube and into flask B.