HENRY PARK PRIMARY SCHOOL
2011 SEMESTRAL EXAMINATION 2
SCIENCE
PRIMARY 4

Duration of Paper: 1 h 45 min

100

Name:_____( )

Parent's Signature

Class: Pr 4_____

_____

Booklet A (60 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.

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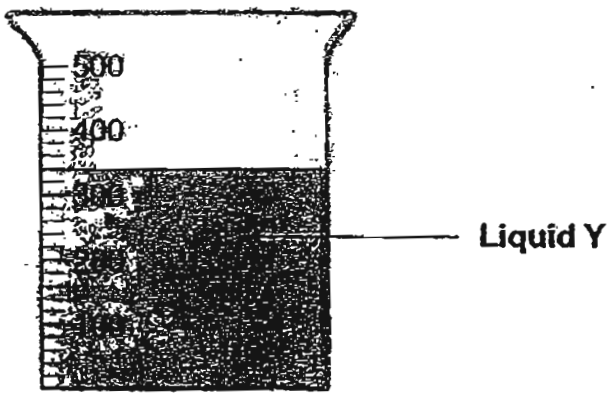
1. Matter is anything that has mass and occupies space.
Which of the following is **not** matter?

(1) Ice
(2) Leaf
(3) Light
(4) Oxygen ( )

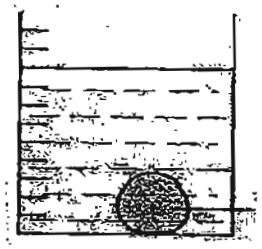
2. The diagram below shows Liquid Y in a measuring beaker.



What is the volume of Liquid Y above?

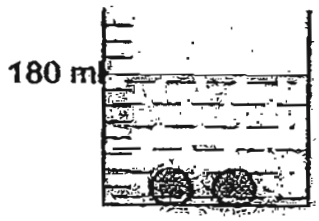
(1) 300 ml
(2) 320ml
(3) 340 ml
(4) 460 ml ( )

3. Sarah put a ball of plasticine into a container of water. She noticed that the water level rose to 200 ml mark.

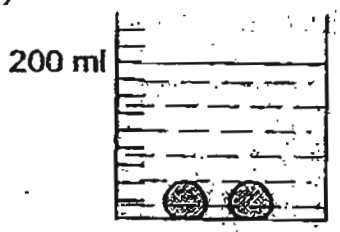


She then took the ball of plasticine out of the water, cut it into 2 pieces and lowered them into the water without splashing any water out of the container.
Which of the following diagrams shows the correct water level in the container?

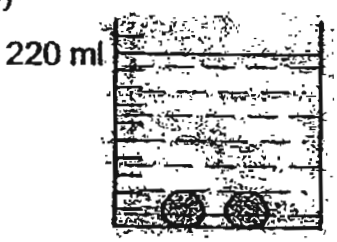
(1)



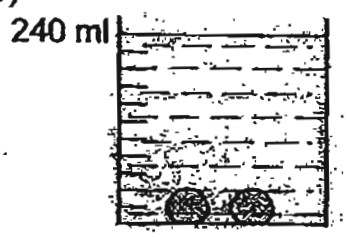
(2)



(3)



(4)



( )

4. Which of the following statements about heat are **correct**?

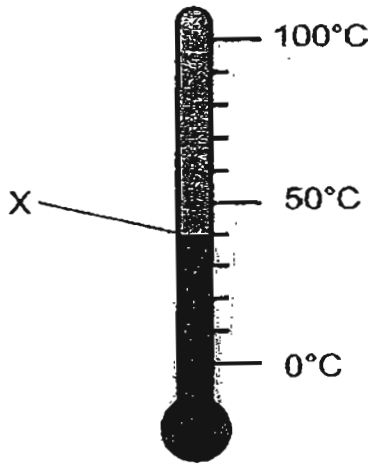
A: Heat causes ice to melt.
B: Heat is a type of matter.
C: Heat is a form of energy.
D: Heat occupies space.

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

5. Which one of the following is **not** a source of heat?

(1) The Sun
(2) A lighted torch
(3) A yellow t-shirt
(4) The flame of a burning matchstick ( )

6. The diagram below shows a thermometer.



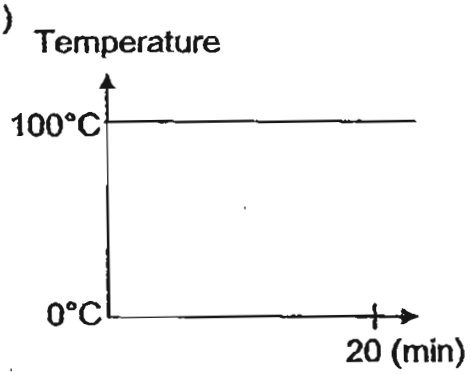
The reading marked 'X' is likely to be _____.

(1) 5°C
(2) 10°C
(3) 39°C
(4) 89°C

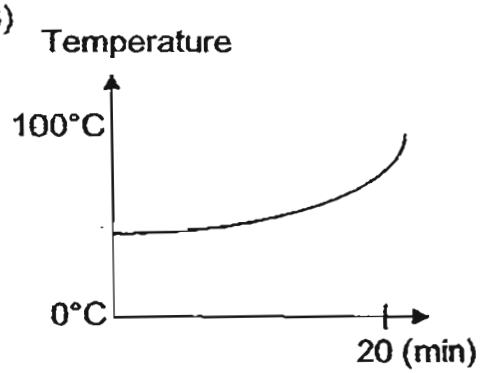
( )

7. A glass of water which had just been boiled was left on the table to cool down.
Which one of the following graphs correctly shows the correct temperature of the water over a period of 20 minutes?

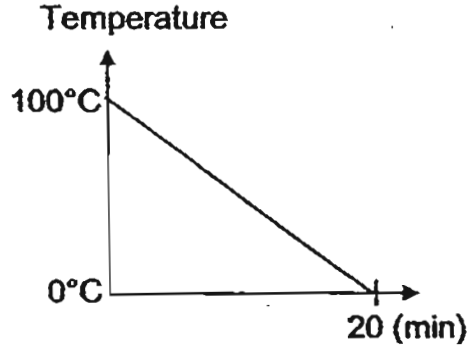
(1)



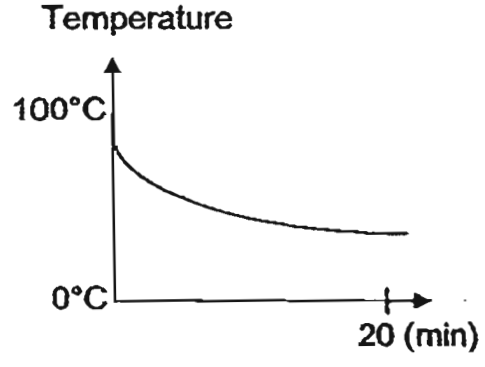
(3)



(2)



(4)



( )

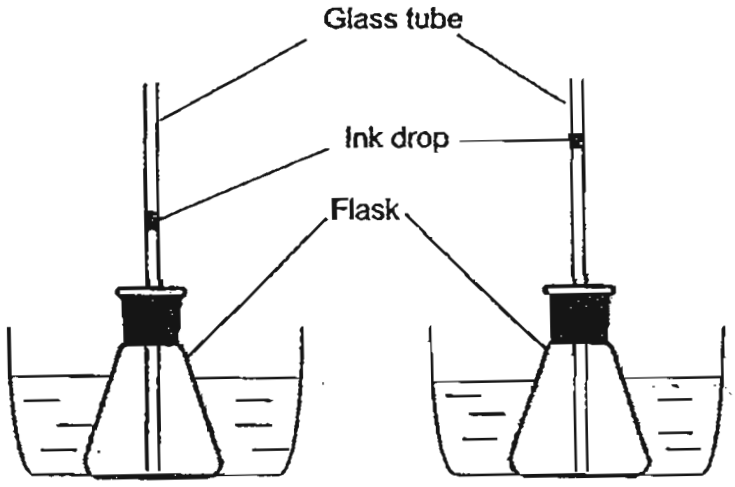
8. Aruna placed cup Y in the freezer for 2 hours. Then she took it out and poured some water (at 29°C) into cup Y. She measured the temperature of the water after 5 minutes and found that its temperature had dropped to 20°C.

Which of the following correctly explains the drop in the temperature of water in cup Y?

A: The cup had gained heat from the water.
B: The water had gained heat from the cup.
C: The water had lost heat to the surrounding air.

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

9. 2 similar flasks filled with a stopper and a narrow glass tube each were placed inside a basin of water of **different** temperatures. There was a drop of ink inside each glass tube. The height of the ink drops was the same.
The picture below shows the height of the ink drops **after** they were placed in Basin X and Basin Y.

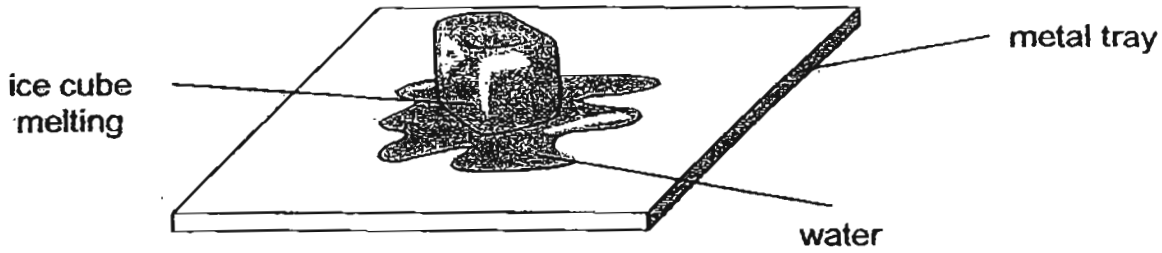


Basin X **Basin Y**

Which of the following is mostly likely to be the cause of the difference in the height of the ink drops in the 2 flasks?

(1) Basin X expanded more than Basin Y.
(2) The ink drop in Basin Y expanded more than Basin X.
(3) The air in the flask in Basin X expanded more than the air in the flask in Basin Y.
(4) The air in the flask in Basin Y expanded more than the air in the flask in Basin X. ( )

10. An ice cube is left to melt on a metal tray as shown in the diagram below.



Which of the following statement(s) is/are correct when the ice cube is melting into water?

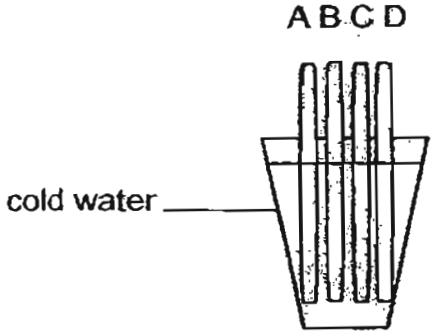
A: The temperature of the metal tray decreases.
B: The ice cube is losing heat to the surrounding air.
C: The volume of the water increases.

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

11. Which one of the following is the **poorest conductor** of heat?

(1) A metal cup
(2) A glass cup
(3) A paper cup
(4) A styrofoam cup ( )

12. Humaira wanted to find out which material, A, B, C or D, is the best conductor of heat. She obtained 4 rods, each made of different material (A, B, C and D). She then placed the rods into a glass of cold water as shown below.

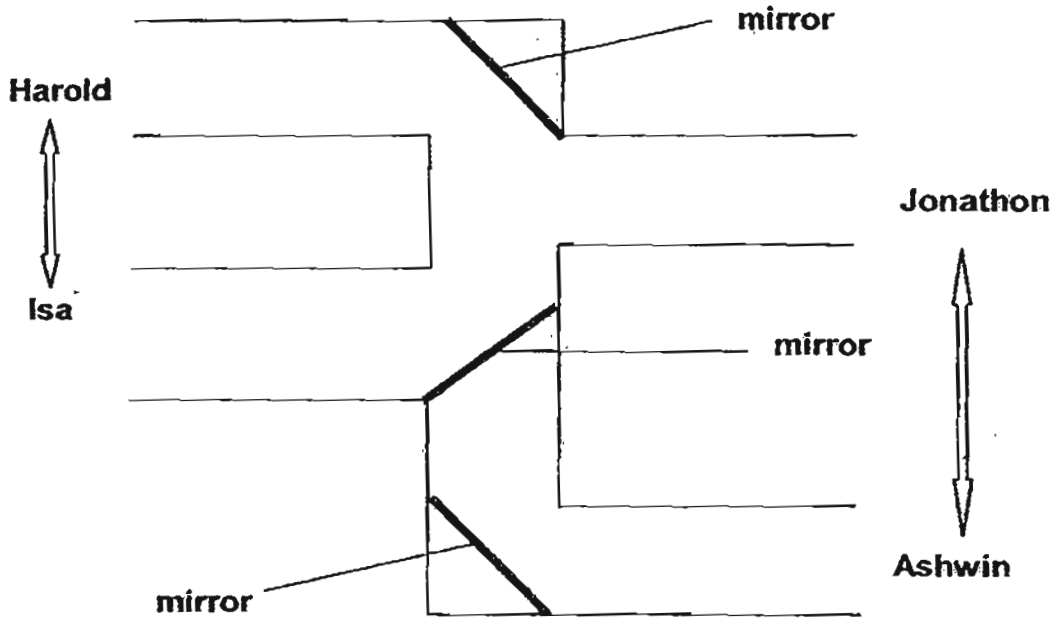


After 3 minutes, she measured the temperature of each rod without removing them from the cold water.
Which of the following variables does she need to **keep the same** to ensure the experiment is fair?

(A) thickness of the rods
(B) material of the rods
(C) temperature of rods at the start of experiment

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

13. The diagram below shows the top view of a part of a maze. 3 mirrors were placed at the positions shown with 4 pupils each standing at different positions.



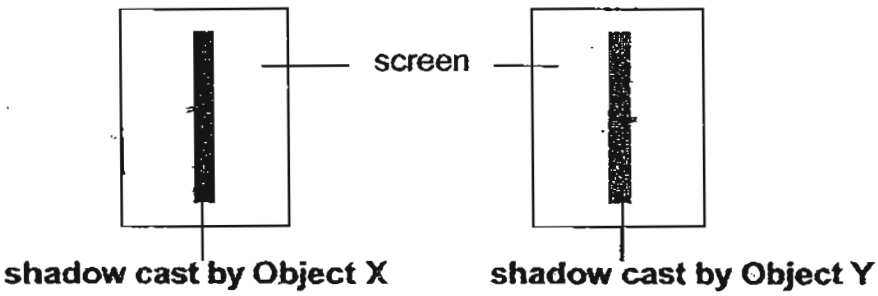
Which of the following pairs will be able to see the reflection of each other?

(1) Isa and Harold
(2) Isa and Jonathon
(3) Harold and Ashwin
(4) Harold and Jonathon ( )

14. Ravi placed Object X between a torchlight and a screen.

When he shone a torchlight onto Object X, a shadow was cast on the screen. He removed Object X and replaced it with Object Y before carrying out the same steps.

The diagrams below show the shadows cast by both objects.

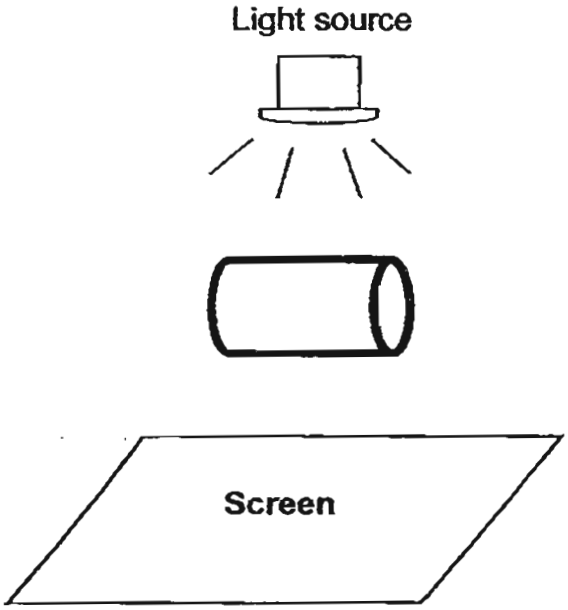


What were Objects X and Y likely to be?

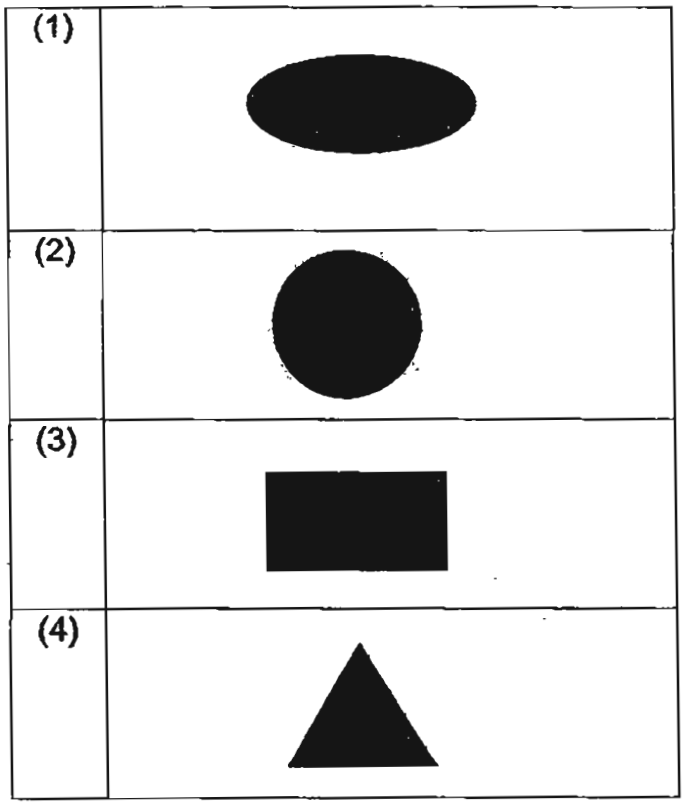
	Object X	Object Y
(1)	A piece of tracing paper	A wooden plank
(2)	A piece of cardboard	A piece of clear thin glass
(3)	A clear window pane	A piece of tracing paper
(4)	A wooden plank	A piece of frosted glass

( )

15. A metal container was placed under a light source as shown below.

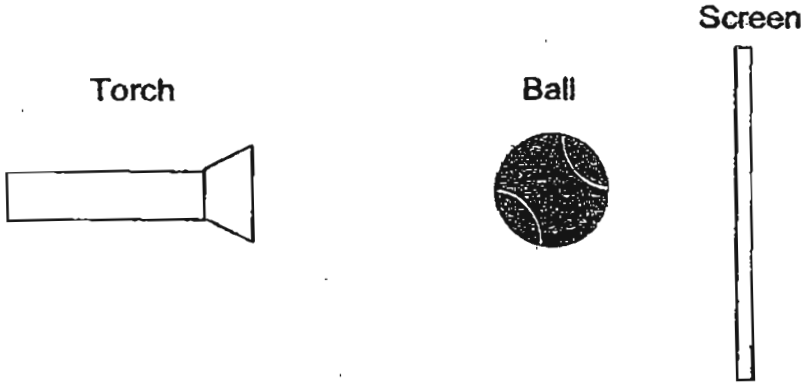


Which one of the following shows the shadow of the metal container on the screen?



( )

16. Choon Lan positioned a tennis ball between a screen and a torch as shown below.



He wrote down the steps he did on his experiment.

Step 1: Switch on the torch
Step 2: Measure the height of the shadow of the tennis ball formed on the screen.
Step 3: Move the tennis ball 5 cm closer to the torch.
Step 4: Measure the height of the shadow again.
Step 5: Repeat steps 3 and 4 twice, moving the tennis ball 5 cm closer to the torch each time.

Which of the following will be the correct hypothesis for the above experiment?

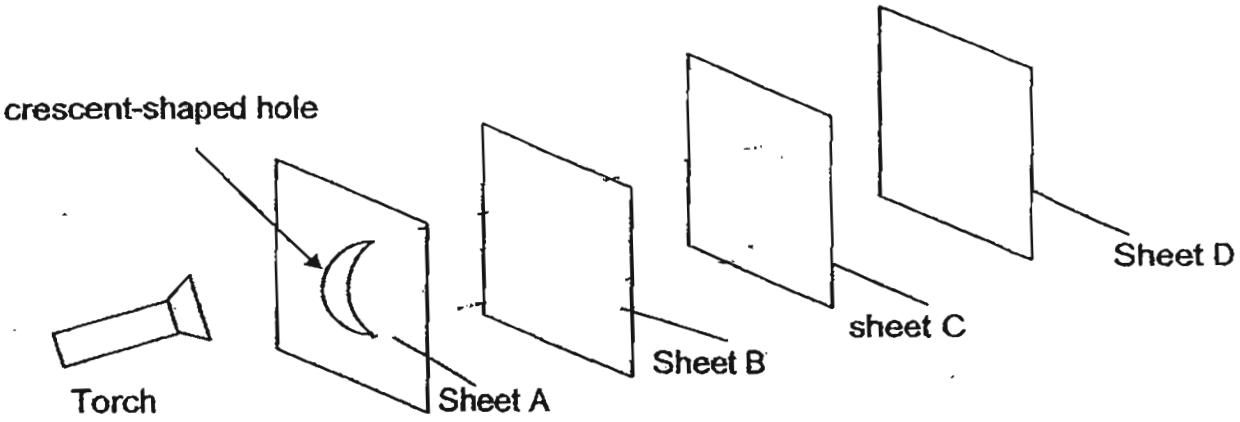
(1) The brightness of the torch will affect the size of the shadow.

(2) The strength of the battery will affect the darkness of the shadow.

(3) The distance between the torch and the tennis ball will affect the height of the shadow.

(4) The distance between the tennis ball and the screen will affect the shape of the shadow. ( )

17. Martin carried out an experiment in a dark room with the set-up as shown below. He arranged 4 sheets made of different materials A, B, C and D in a straight line. When the torch was switched on, he observed that a **bright patch of light in the shape of a crescent** was seen on sheet C only.



Which of the following conclusion(s) is/are true about the sheets used above?

A: Sheet A is opaque.
B: Sheet B is transparent.
C: Sheet C is transparent.
D: Sheet D is translucent.

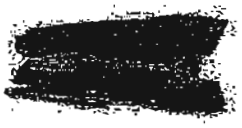
(1) A only
(2) A and B only
(3) B and D only
(4) C and D only ( )

18. Which of the following is **not** a system?

(1) A marble

(3) A model car

(2) A stapler



(4) A plant

( )

19. The class teacher asked the class what is the **main** function of the digestive system. Four pupils gave their answers as follow.

Jaylynn: It is to help the blood move through the body.

Curtis: It is to help the body obtain oxygen.

Dougles: It is to help the body make food.

Barbara: It is to help the body break down food.

Which one of the following pupils is correct?

(1) Curtis

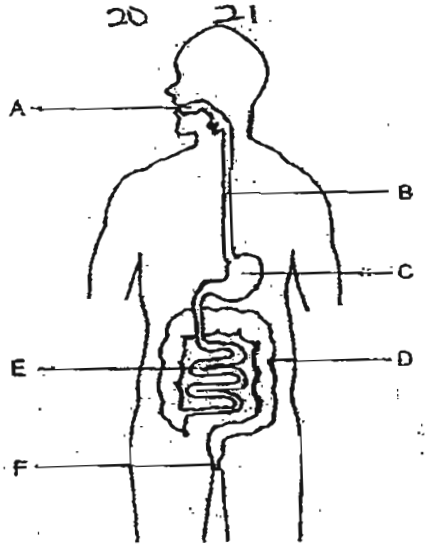
(2) Barbara

(3) Dougles

(4) Jaylynn

( )

20. The diagram below shows the digestive system of a human body. Use the diagram to answer **questions 21 and 22**.



Which of the following parts of the digestive system breaks down food into simple substances?

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

( )

21. In which one of the following organs is water removed from the digested food?

(1) B
(2) D
(3) E
(4) F

( )

22. What is the **main** function of the small intestine?

(1) It breaks food into smaller pieces.

(2) It allows movement of food to the stomach.

(3) It removes undigested food from the body.

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

( )

23. The following list shows the functions of different parts of a plant.

A: makes food

B: absorbs water and mineral salts

C: protects the seeds

D: supports the branches and the leaves

E: transports food and water to other plant parts

Which one of the following correctly matches the plants parts to their function?

	Part of a plant	Functions
(1)	leaf	A and C
(2)	stem	D and E
(3)	roots	B and E
(4)	fruits	C and D

( )

24. The diagram below shows Plants A and B.

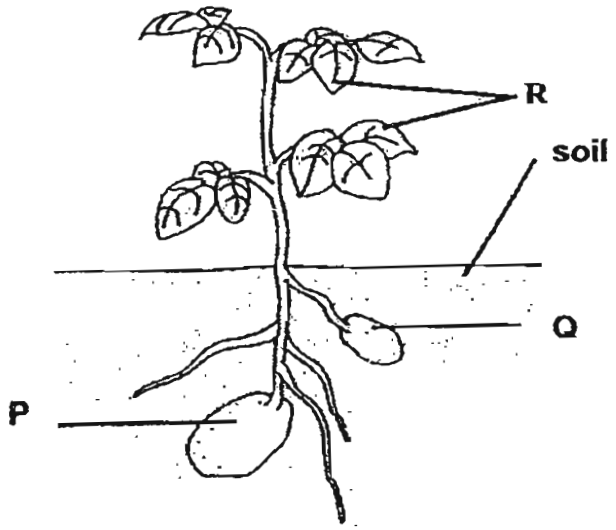
Plant A

Plant B

Based on the diagram, which of the following statements about plants A and B is true?

(1) Both do not bear fruits.
(2) Both have weak roots.
(3) Both are flowering plants.
(4) Both need to cling onto supports to reach out for food. ( )

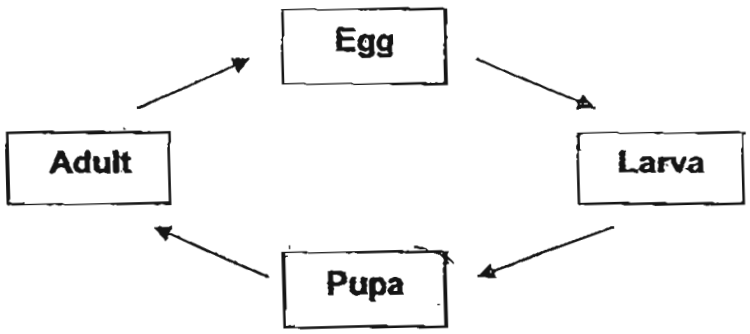
25. The diagram below shows a plant.



Parts P and Q store food for the plant. How does part Q obtain the food?

(1) The food is made by Q.
(2) The food is transported from P.
(3) The food is absorbed from the soil.
(4) The food is transported from Part R. ( )

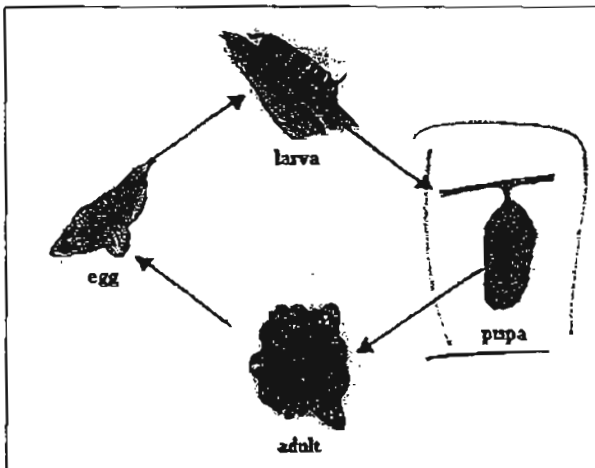
26. The diagram below shows the life cycle of an animal.



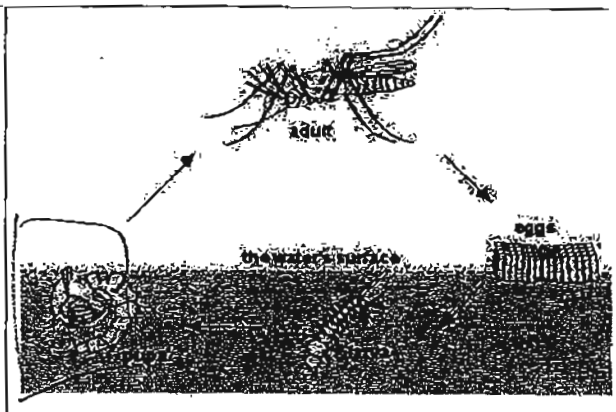
Which of the following animals is likely to have the life cycle as shown above?

(1) cockroach
(2) beetle
(3) chicken
(4) grasshopper ( )

27. The diagram below shows the life cycle of a butterfly and a mosquito.



Life cycle of a butterfly



Life cycle of a mosquito

Which of the following statements about their life cycles are most likely correct?

A: The mosquito spends part of its life in the water but the butterfly does not.

B: There are four stages in the life ~~cylee~~ cycle of the butterfly while the mosquito has three stages in its life cycle.

C: Both the larva of the butterfly and the mosquito go through the process of moulting.

D: During the life cycle of each animal, only the mosquito stops feeding during one stage.

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

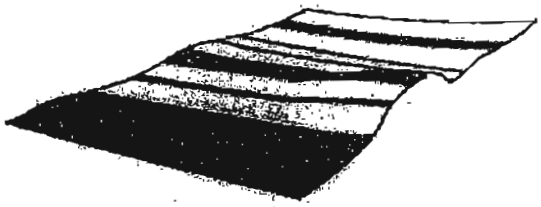
( )

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

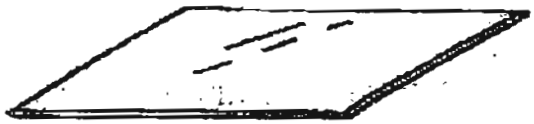
(1) A plastic fork

(2) A wooden stick

(3) A hand towel



(4) A sheet of glass



( )

29. Glass is used to make spectacles because glass is _____.

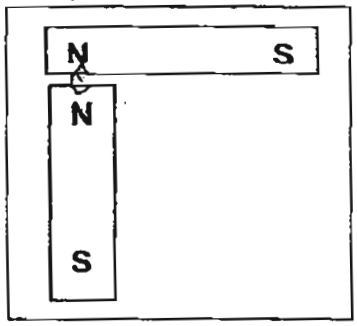
(1) strong
(2) absorbs water
(3) transparent
(4) flexible

( )

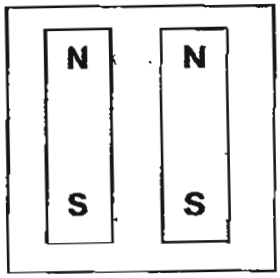
30. In which of the following set ups, A, B, C or D, will the two magnets pull towards each other?

Set up **A**

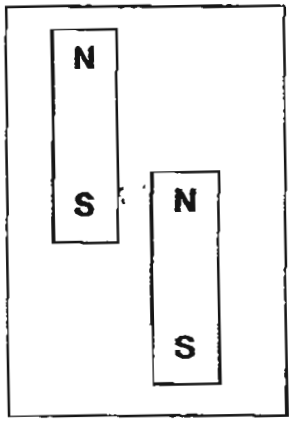
Set up **B**



Set up **C**



Set up **D**



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

( )

End of Booklet A

HENRY PARK PRIMARY SCHOOL
2011 SEMESTRAL EXAMINATION 2
SCIENCE
PRIMARY 4

40

Name:_____( )

Class: Pr 4_____

Booklet B (40 marks)

Write your answers to questions 31 to 44 in the spaces given.

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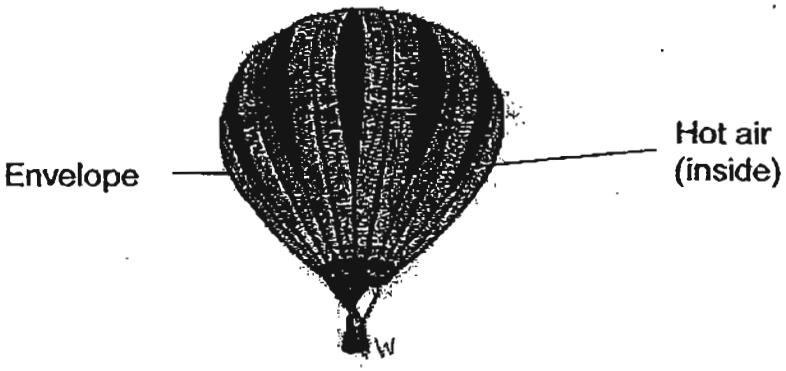
31. The diagram below shows a hot air balloon.

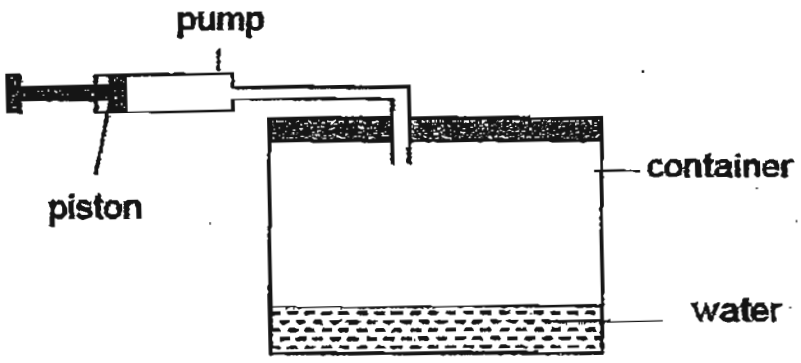


Complete the sentence to state if the parts are **solid**, **liquid** or **gas**.

a) Hot air inside the balloon is a _____. *(1m)*

b) The envelope is a _____. *(1m)*

32. The diagram below shows a pump connected to a container that has a capacity of 300 cm^3. The container has 60 cm^3 of water.



When the piston is pushed completely in, 40 cm^3 of air is forced into the container.

a) What is the volume of air in the container now? *(1m)*

_____

b) Explain your answer in part (a). *(1m)*

_____

_____

33. Sugar dissolves in water. More sugar can be dissolved in water if the temperature of the water increases.

Paul set up an experiment to see how much sugar could be dissolved in water. He used 4 containers A, B, C and D.

The containers are all filled with water and the water in each container was heated for different period of time.

Paul then added sugar to each container, one spoonful at a time until no more sugar would dissolve.

Container	A	B	C	D
Amount of water in each container	800 ml	800 ml	800 ml	800 ml
Number of minutes water in each container was heated	5	9	14	20

(a) Based on the table above, state in which container, A, B, C or D, will the amount of dissolved sugar be the greatest. Give a reason for your answer. *(2m)*

_____

_____

_____

(b) Paul used containers that were made of the same material for the experiment. Explain why it is important to use containers made of the same material. *(2m)*

_____

_____

34. Tian Rong wanted to find out how the size of ice cubes affects the temperature of water. He placed a large ice cube in one beaker and a small ice cube in another beaker.

In each beaker there was 200 ml of water at room temperature of 29°C.

He recorded the time for the temperature of water in each beaker to reach 20°C, 15°C and 10°C in the table below.

Temperature of water (°C)	Time to reach temperature (seconds)	
	Experimental Set-up X	Experimental Set-up Y
20	90	40
15	140	70
10	180	110

(a) Based on the table above, state which experimental set up, X or Y, contained the large ice cube? Give a reason for your answer. *(2m)*

_____

_____

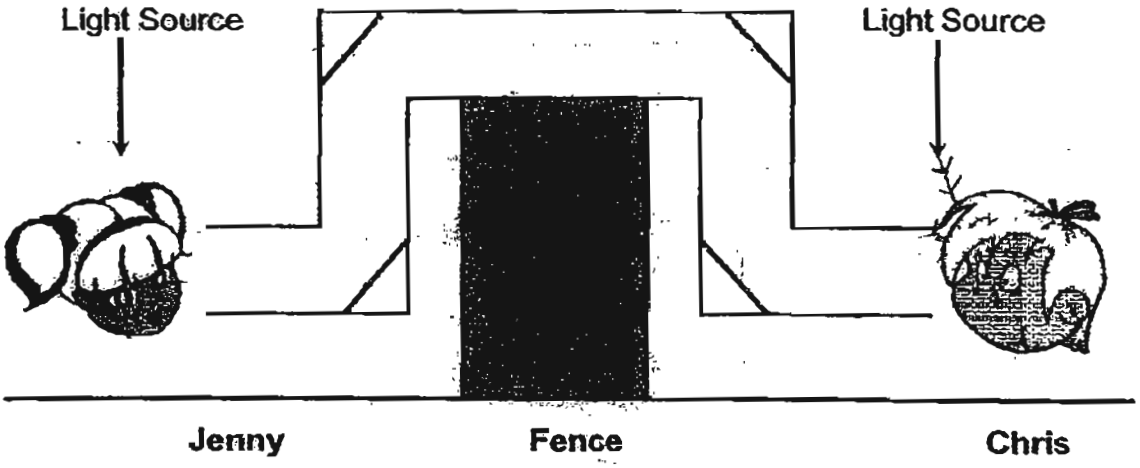
_____

(b) What is the relationship between the size of ice cube placed in the beaker and the amount of heat lost by the water in the beaker? *(1m)*

_____

_____

35. Jenny constructed a device using wood and mirrors so that she could see her best friend, Chris, who stays on the other side of her fence.



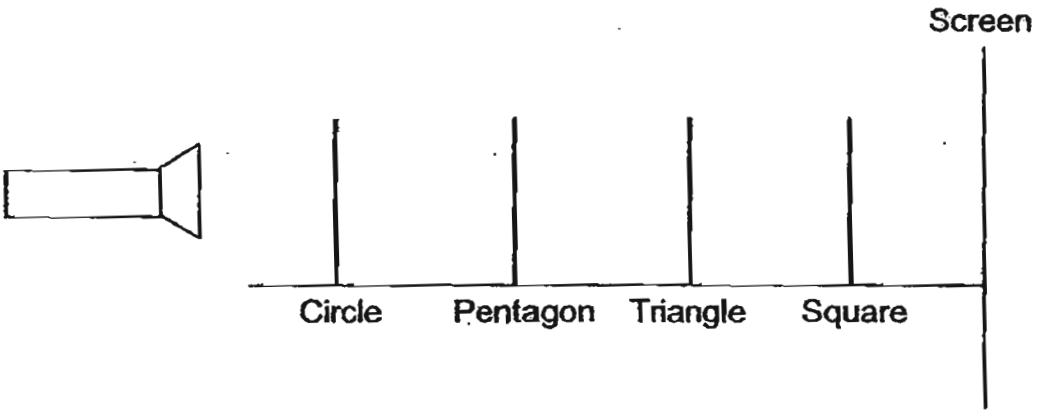
(a) In the diagram above, draw the **path and direction** of the light ray that enables **Jenny to see Chris**. *(2m)*

(b) State one property of light which is demonstrated in this device. *(1m)*

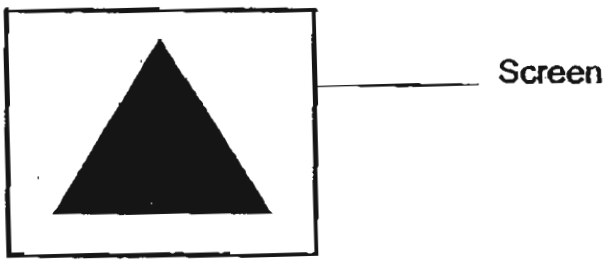
36. The diagram below shows 4 different shapes cut from sheets made of different materials.

circle pentagon triangle square

The shapes were then arranged in a straight line as shown in the diagram below. A very bright light source was used to shine on the shapes.



A shadow as shown below was seen on the screen as the light source was shone.



a) Based on the shadow formed, complete the following table by ticking the correct box for each shape to show if it is opaque, transparent or not possible to tell ~~to tell~~ its property. *(2m)*

Shape	Opaque	Transparent	Not possible to tell
Circle			
~~Pentagon~~ ~~Hexagon~~			
Triangle			
Square			

b) If the position of the square and the triangle were swapped, would you still be able to get the shadow of a triangle? Explain your answer. *(1m)*

_____

_____

c) If the position of the circle and the triangle were swapped, describe the change in the shadow of the triangular piece that will be observed on the screen. *(1m)*

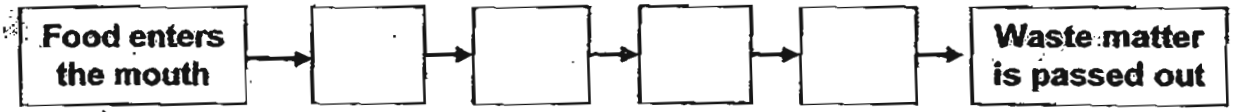
_____

_____

37. The following processes A, B, C and D, take place in various parts of the digestive system during the digestion process.

A: Saliva is produced to break down food.
B: Undigested food is stored here to be passed out.
C: Partially digested food is pushed down the muscular tube.
D: Food is digested and absorbed into the blood stream.

a) Write the letters **A, B, C and D** in the correct boxes below according to the order that each process takes place during digestion. *(2m)*

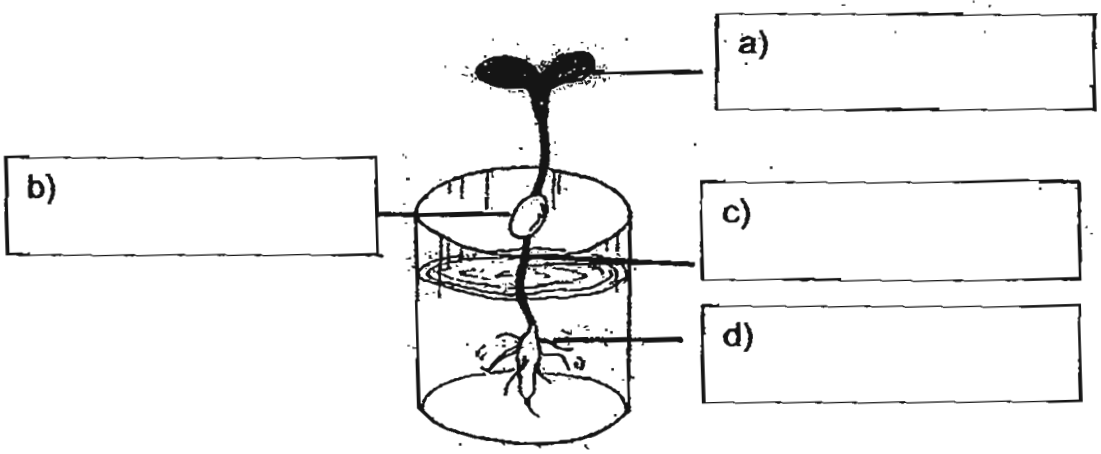


b) Name the organ where process C takes place. *(1m)*

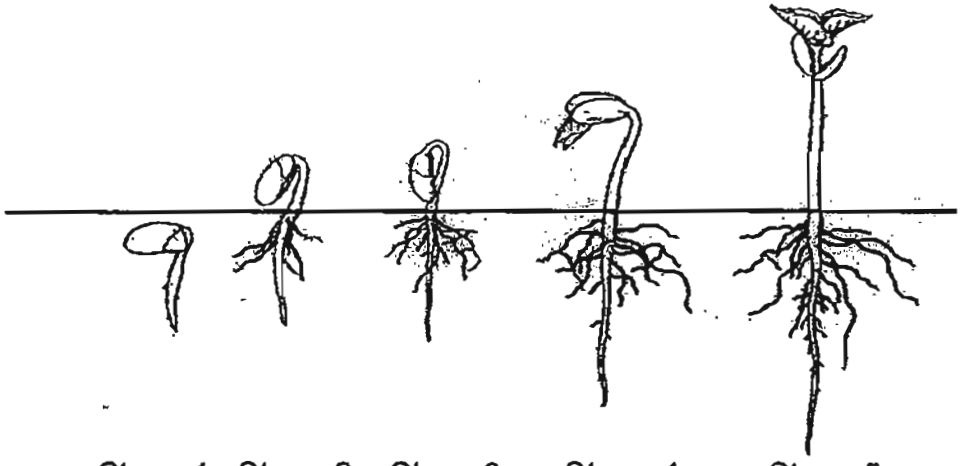
_____

38. Label the parts of the seedling shown below with the following helping words. *(4m)*

~~Leaf~~	~~Root~~	~~Flower~~ ~~Stem~~
Fruit	~~Seed leaf~~	Seed



39. The diagram below shows the stages of growth of a young plant and its roots.



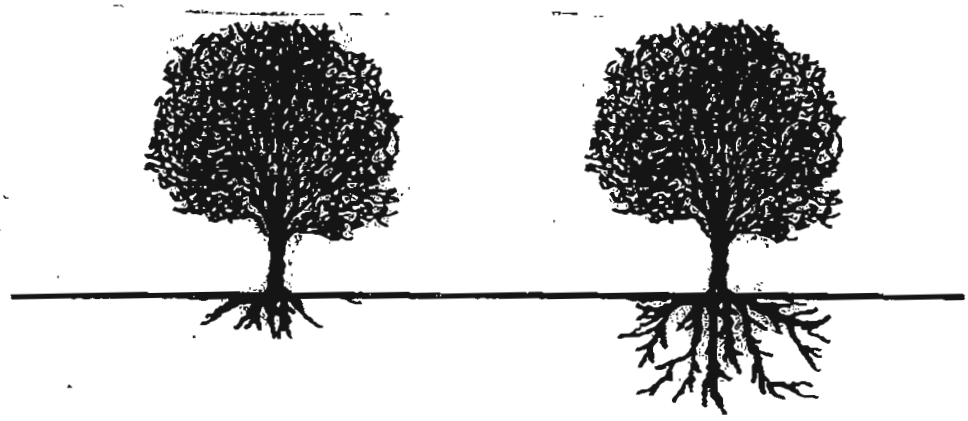
Stage 1 Stage 2 Stage 3 Stage 4 Stage 5

The table below shows the ~~measure~~ measurement of the plant and the roots in the different stages.

1	0	5
2	3	8
3	7	13
4	10	17
5	15	25

(a) What is the relationship between the height of the plant and the length of the roots? *(1m)*

The diagram below shows two trees, A and B. During a storm, Tree A was uprooted while Tree B still stood strong.



Tree A Tree B

(b) Based on your answer in (a), what could be the possible reason Tree B was still standing strong after the storm? *(1m)*

_____

_____

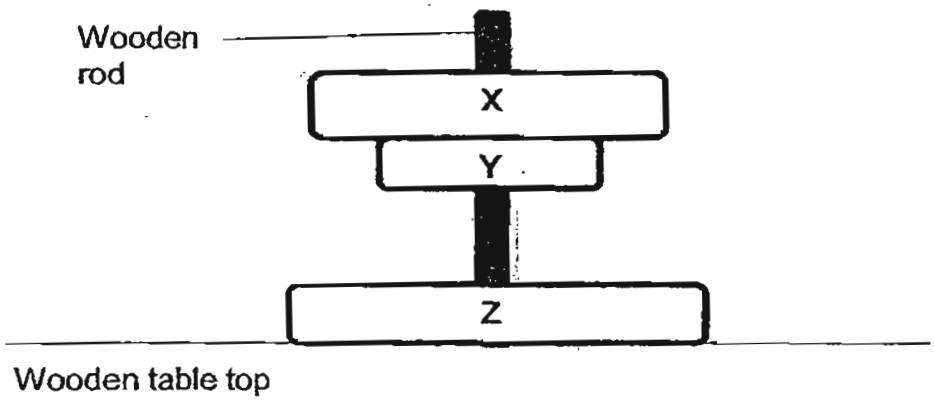
(c) Besides the reason mentioned in (b), suggest another reason why it is important for plants to have longer, deeper roots. *(1m)*

_____

_____

40. Khadijah slotted three rings, X, Y and Z, made of different materials through a wooden rod.

The diagram below shows what Khadijah observed after slotting the rings.

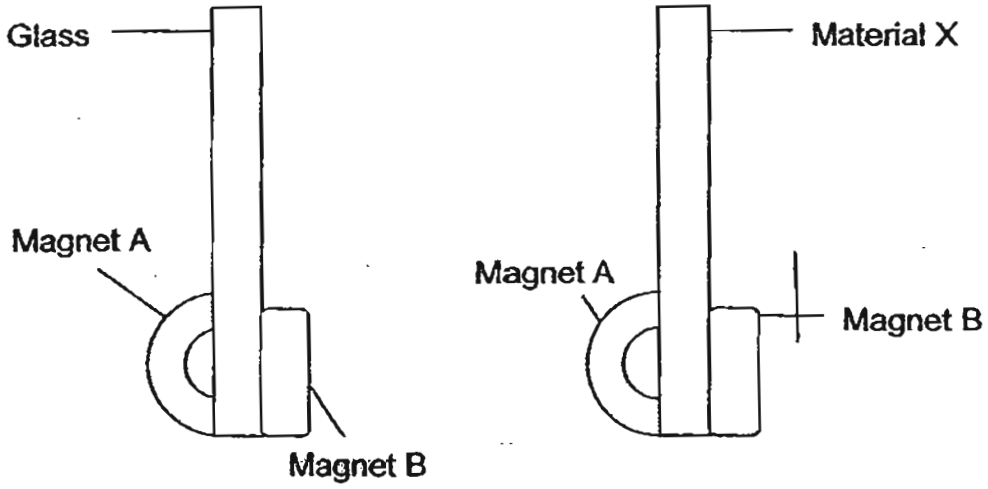


Based on the above diagram, complete the table below by putting a tick '✓' in the correct boxes.

(2m)

	Statements	True	False	Not possible to tell
1	Ring Y is made of copper.			
2	Ring Y is a magnet.			
3	Ring Z is a magnet.			
4	Ring X is made of a magnetic material.			

41. Study the two set ups below.



Set up 1 **Set up 2**

In Set up 1, magnet A is moved upwards along the glass and the distance moved by the two magnets are measured using a ruler. The same is done for Set up 2. The result is recorded in the table below.

Set up 1

Distance moved by A (cm)	Distance moved by B (cm)
2	2
6	6
8	8

Set up 2

Distance moved by A (cm)	Distance moved by B (cm)
2	0
6	0
8	0

a) What could Material X likely be made of? *(1m)*

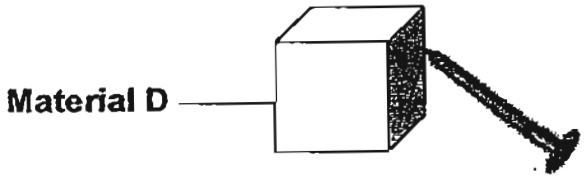
_____

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

_____

_____

42. Peter can easily scratch Material D with an iron nail.



a) This shows that the iron nail is _____ than Material D. *(1m)*

b) What could Material D likely be made of? _____. *(1m)*

Peter also had four rods made of different materials. He wanted to find out which material was the hardest. Each time, he used one rod to scratch another.

He recorded his results in a table as shown below.

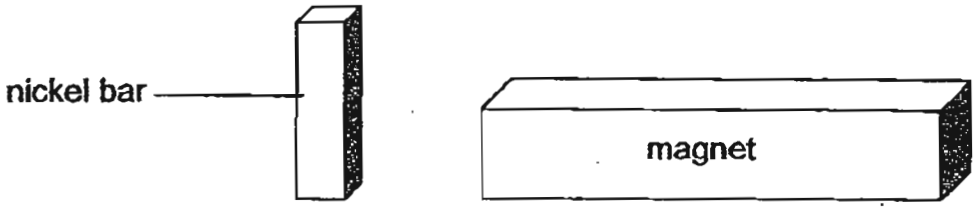
	Rod P	**Rod Q**	**Rod R**	**Rod S**
Rod P		No scratches on Q	No scratches on R	No scratches on S
Rod Q	Deeper scratches on P		Fine scratches on R	Deep scratches on S
Rod R	Deep scratches on P	No scratches on Q		Fine scratches on S
Rod S	Fine scratches on P	No scratches on Q	No scratches on R	

c) Based on the results above, arrange Rods P, Q, R and S in order of hardness of the material, beginning with the **hardest**.

(1m)

_____

43. Eileen places a magnet near a nickel bar. The nickel bar moves towards the magnet.



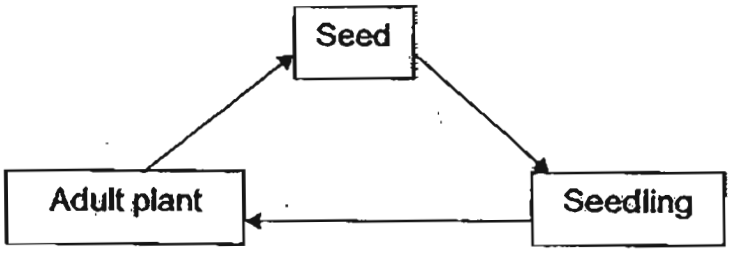
a) Magnet exerts a _____ on the nickel bar. *(1m)*

b) Choose the correct word from the box to answer the question below. *(1m)*

hard	~~magnetic~~	strong

Eileen's observation shows that nickel is a _____ material.

44. Mrs Tan shows the class the life cycle of a plant.



When Mrs Tan asked her class to give an example of plant that has a similar life cycle, three pupils, Benjamin, Derek and Cheryl gave their answers.

Benjamin: It is tomato.
Derek: It is bird's nest fern.
Cheryl: It is mushroom.

a) Which child/~~children~~ gave the correct answer? *(1m)*

_____

b) Explain your answer in (a) *(1m)*

_____

_____

End of Booklet B

Setters: Madam Doris Heng and Ms Wong Kui Fong

Answer Ke

EXAM PAPER 2011

SCHOOL : HENRY PARK
SUBJECT : PRIMARY 4 SCIENCE

TERM : SA2

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

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

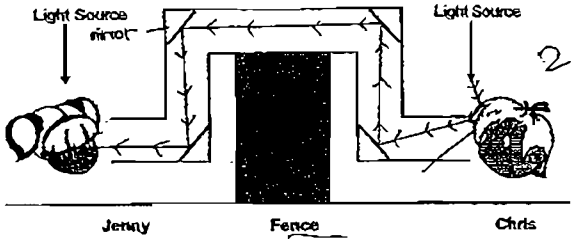
31)a)gas b)solid

32)a)240cm3
b)Air can be compressed to take up less space.

33)a)Container D. Container D has been heated up for the longest time so its temperature is the highest. More can be dissolved in water if the temperature of the water increases.
b)Different material conduct heat at different rates. If Paul uses metal, a good conductor of heat to heat the water up for 5 minutes but use Styrofoam, a poor conductor of heat to heat up the water for 20 minutes, the water in Container A might be hotter than the water in Container D. This is not fair and Paul needs to ensure a fair test.

34)a)Experimental set-up Y contained the larger ice cube. It is bigger and contains less heat than the smaller ice cube. Experimental set-up Y took a faster time than experimental set-up X to reach 10℃.
b)The larger the ice cube, the greater the amount of heat loss to the water.

35)a)



b)Light travels in a straight line.

36)a)

Shape	Opaque	Transparent	Not possible to tell
Circle		√	
Pentagon		√	
Triangle	√		
Square		√	

b)yes, I would. The circle, pentagon and square are all transparent and allows most of the light to pass through. A shadow cannot be cast on them. Only the triangle is opaque and does not allow light to pass through so there will be a shadow on the screen.

c)The shadow of the triangle piece will be bigger.

37)a)A→C→D→B

b)Gullet.

38)a)Leaf b)Seed leaf c)Stem d)Root

39)a)The taller the plant the longer roots are.

b)Tree B's roots were long and were gripped tightly to the ground during the storm while Trees A's roots were short and could not hold on to the ground tightly.

c)During a dry spell, the upper part of the ground would start to dry up while the lower part is harder to. The roots of the plant needs to absorb water to help the plant make food. If the roots are short, they would not be able to absorb any water and the plant would die.

40)1)F 2)T 3)T 4)Not

41)a)Iron.

b)The magnetic material does not allow the magnetic force to pass through so magnet B did not follow magnet A when it moved up and down the glass.

42)a)harder

b)Wood

c)Rod Q, Rod R, Rod S, Rod P

43)a)magnetic force

b)Magnetic

44)a)Benjamin gave the correct answer.

b)The bird's nest fern reproduces by spores so the cycle should not start with a seed and grow into a seedling. A mushroom is not a plant. The tomato however reproduces from seeds and is a plant so Benjamin gave the correct answer.