

**METHODIST GIRLS' SCHOOL**

Founded in 1887

**END-OF-YEAR EXAMINATION 2012  
PRIMARY 4  
SCIENCE****BOOKLET A**

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

**INSTRUCTIONS TO CANDIDATES**

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

Follow all instructions carefully.

Answer all questions.

Shade your answers in the Optical Answer Sheet (OAS) provided.

Name: \_\_\_\_\_ ( )

Class: Primary 4. \_\_\_\_\_

Date: 11 October 2012

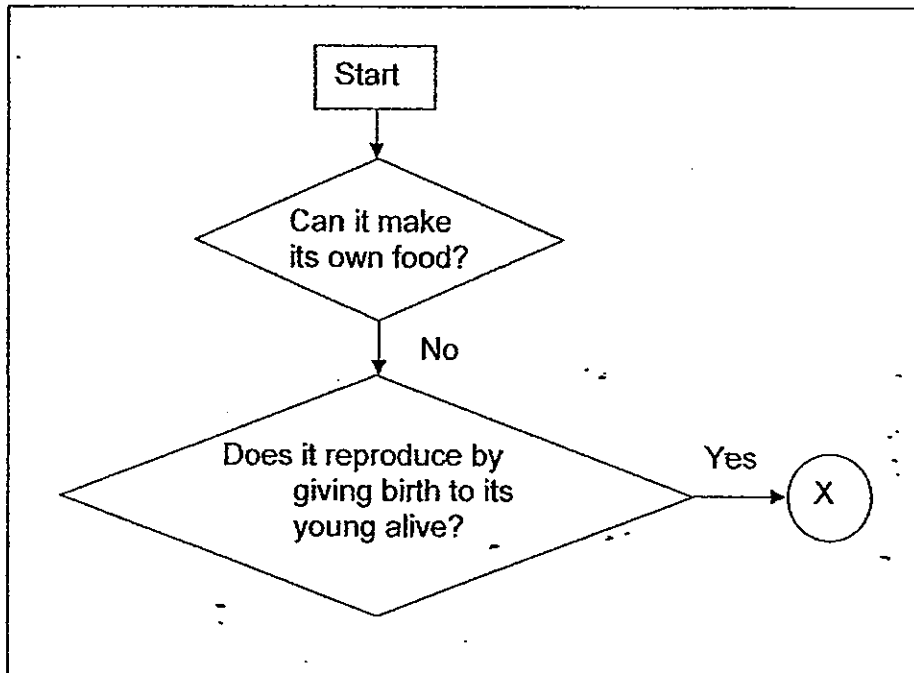
This booklet consists of 15 printed pages including this page.

45  
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For each question from 1 to 25, 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.

[50 marks]

1. Study the chart below.



What could X be?

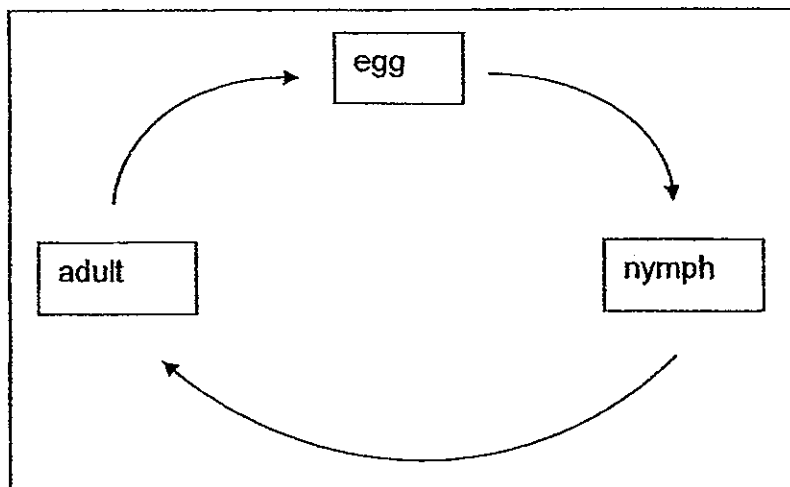
- (1) bird
- (2) plant
- (3) insect
- (4) mammal

2. Which one of the following statements is true for ALL insects?

- (1) They have tails.
- (2) They have wings.
- (3) They live in water.
- (4) They have six legs.

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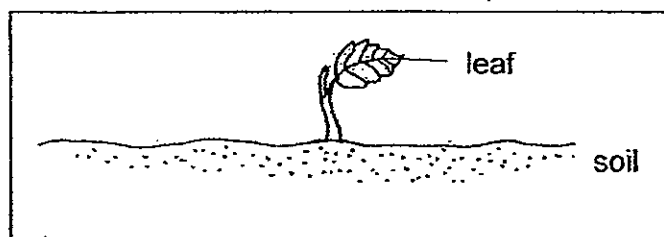
3. The diagram below shows the life cycle of an animal.



Which animal is likely to have the same life cycle as shown above?

- (1) Moth
- (2) Frog
- (3) Mealworm
- (4) Grasshopper

4. The diagram shows a young plant.



The leaf helps the plant to \_\_\_\_\_.

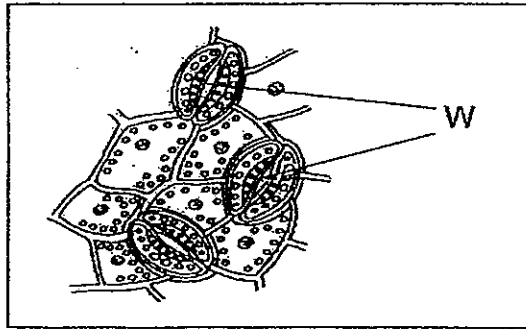
- (1) make food
- (2) absorb water
- (3) hold it upright
- (4) absorb mineral salts

5. The table below shows the characteristics of Animals P and Q.

Characteristics	Animal	
	P	Q
Has a pupa stage	✓	X
Gives birth to young alive	X	X
Has wings in adult stage	✓	✓
Moults several times	✓	X

Based on the table above, which one of the following statements is correct?

- (1) Both can fly when they were young.
  - (2) Animal P is a butterfly and Animal Q is a cockroach.
  - (3) Animal P gives birth to young alive while Animal Q lays eggs.
  - (4) Animal P has 4 stages in its life cycle while Animal Q has 3 stages in its life cycle.
6. The diagram below shows the underside of a leaf as seen under a microscope.



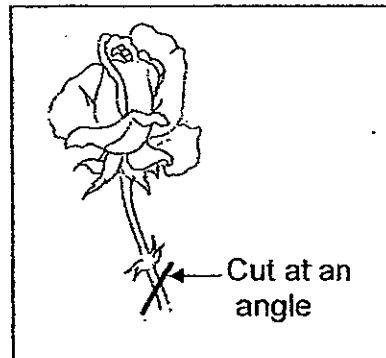
Which of the following are true about the parts labelled W in the diagram?

- A: W take in oxygen.
  - B: W take in dissolved mineral salts.
  - C: W absorbs sunlight for the leaf to make food.
  - D: W allows excess water vapour to escape through them.
- (1) A and C only
  - (2) A and D only
  - (3) A, C and D only
  - (4) All of the above

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7. Sally, Jon, Peter and Cathy noticed that a florist always cuts flower stalks at an angle instead of horizontally.

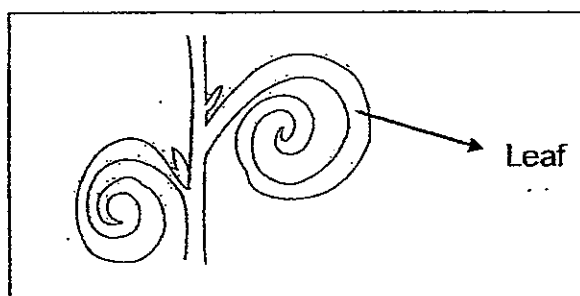
They form their own conclusions based on their observations.



Which one of the following conclusions is most likely to be the reason why the florist always cuts the stalks at an angle?

(1)	Sally	It is easier to place the stalks into the pot of soil.
(2)	Jon	Cutting the flower stalks at an angle increases the plant's uptake of water.
(3)	Peter	The flowers will survive longer as they are more exposed to the air in the surroundings.
(4)	Cathy	The florist is able to determine if the flowers are fresh by looking at the colour of the tubes.

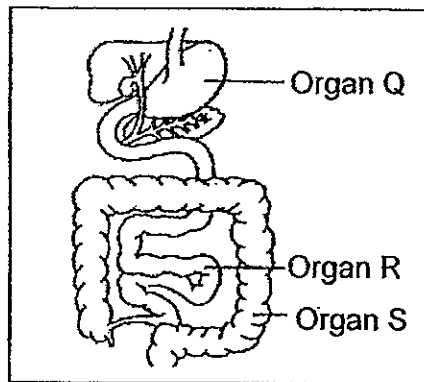
8. The plant shown below has leaves that are curled up.



How do the leaves of the plant help it to survive in a hot environment?

- (1) The leaves store water for the plant.
- (2) The leaves reduce water loss for the plant.
- (3) The leaves protect the plant against animals.
- (4) The leaves help to increase the rate of photosynthesis.

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



Which of the following statements are true of Organ Q?

- A: It is made up of mainly muscles.
- B: The food in organ Q is completely digested.
- C: The food in organ Q is absorbed into the blood.
- D: Food is broken down by digestive juice in organ Q.

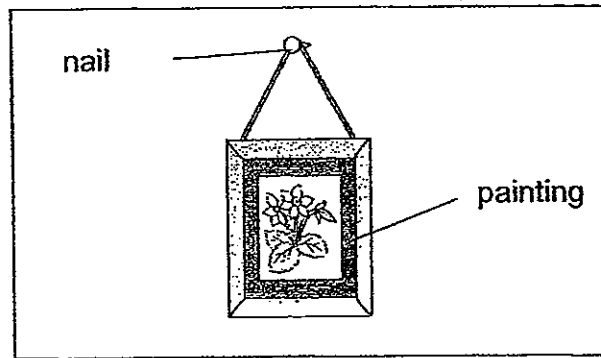
- (1) A and D only
- (2) B and D only
- (3) A, C and D only
- (4) B, C and D only

10. Which of the following is **NOT** a source of heat?

- (1) The sun
- (2) A table lamp
- (3) A candle flame
- (4) A pair of woollen gloves

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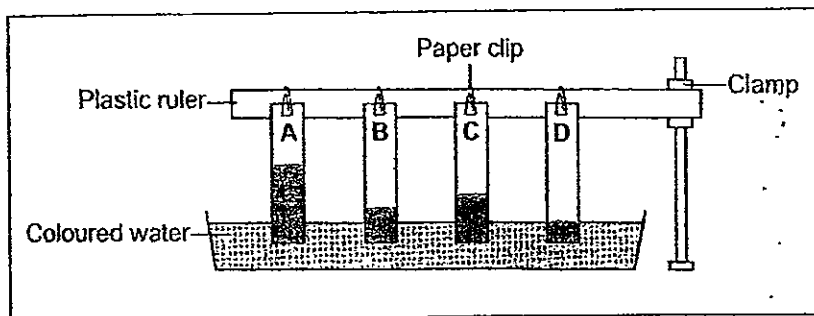
11. The diagram shows a painting hanging on a wall.



Iron is used to make nails because iron \_\_\_\_\_.

- (1) is shiny
- (2) is strong
- (3) is waterproof
- (4) is a magnetic material

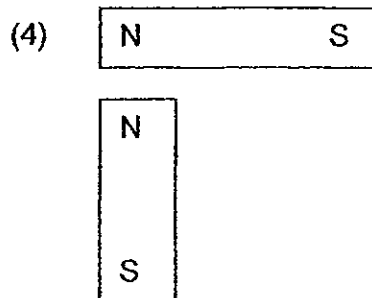
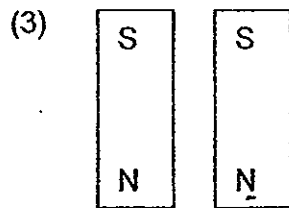
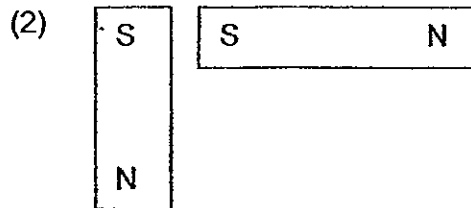
12. Jolie carried out an experiment using four different materials of the same length and same thickness. She placed one end of each material into a basin of coloured water. The diagram below shows what is observed at the end of the experiment.



Which one of the following correctly represents the objects A, B, C and D?

	A	B	C	D
(1)	Cardboard	Cloth	Tissue paper	Aluminium foil
(2)	Tissue paper	Aluminium foil	Cloth	Cardboard
(3)	Aluminium foil	Cloth	Cardboard	Tissue paper
(4)	Tissue paper	Cardboard	Cloth	Aluminium foil

13. In which one of the following positions will the two magnets attract each other?



14. Which one of the following substances has no definite volume?

- (1) Air
- (2) Water
- (3) Stone
- (4) Petroleum

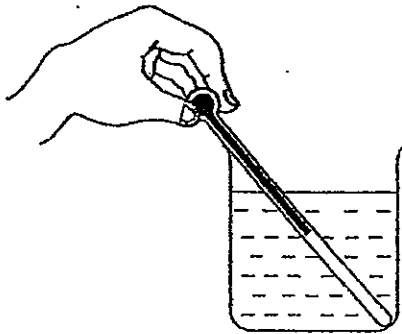
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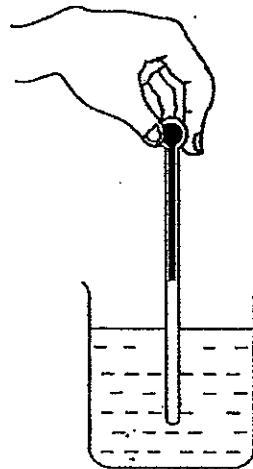
15. Karen wants to measure the temperature of hot water in a beaker at room temperature.

Which one of the following diagrams shows the correct position of the thermometer when taking the temperature reading?

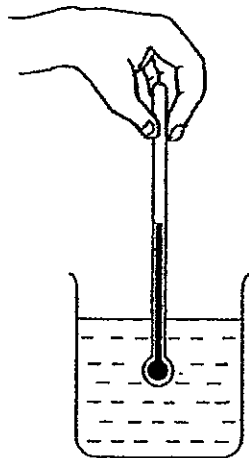
(1)



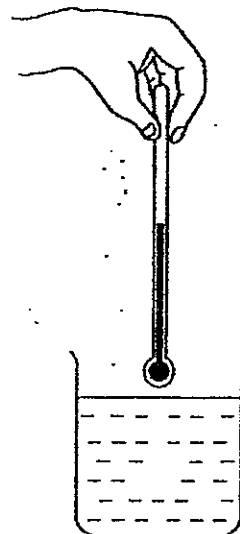
(2)



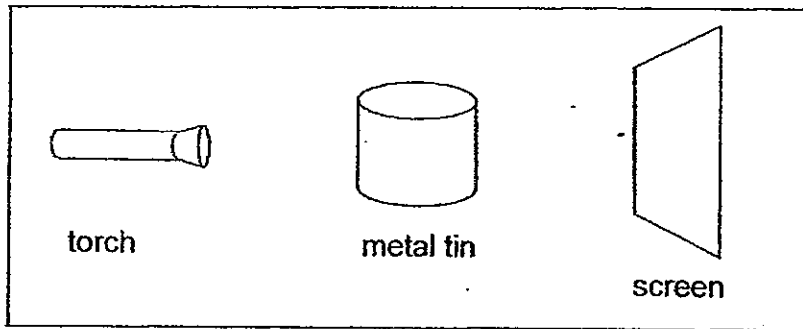
(3)



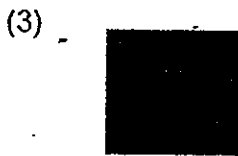
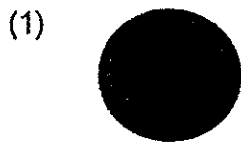
(4)



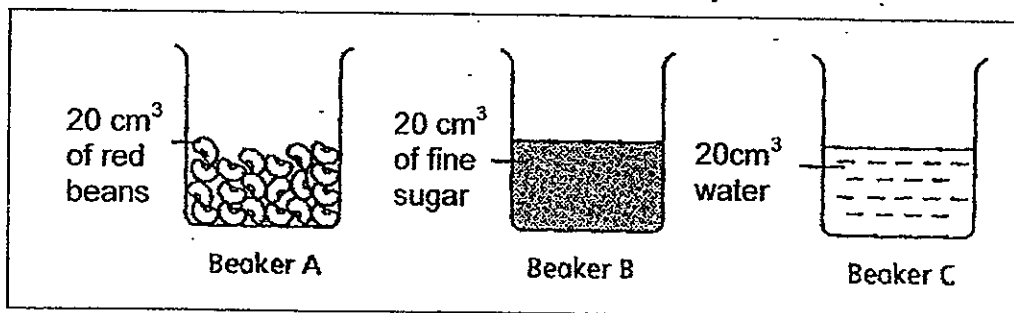
16. The set-up below shows light shining on a metal tin.



Which one of the following would likely be seen on the screen?



17. Beaker A contains  $20 \text{ cm}^3$  of red beans. Beaker B contains  $20 \text{ cm}^3$  of fine sugar. Beaker C contains  $20 \text{ cm}^3$  of water.

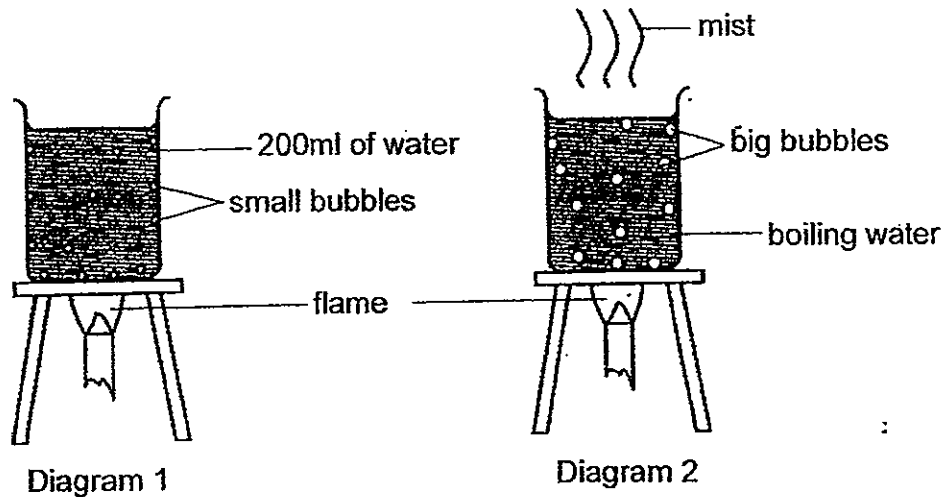


What would the final volume in Beaker B be if everything in Beaker A and C is poured into Beaker B?

- (1) Less than  $40 \text{ cm}^3$   
 (2) About  $50 \text{ cm}^3$   
 (3) Exactly  $60 \text{ cm}^3$   
 (4) More than  $60 \text{ cm}^3$

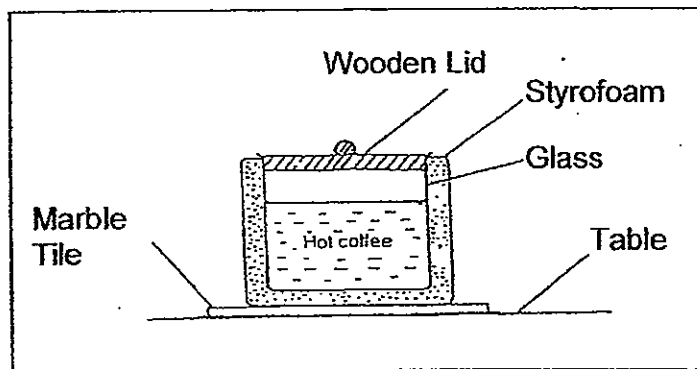
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18. Mel put a beaker containing 200 ml of water over a Bunsen flame as shown in Diagram 1. She heated the water until it started to boil as shown in Diagram 2.



When the water was boiling, Mel noticed some 'mist' above the beaker of boiling water. What is the 'mist' made up of?

- (1) Steam
  - (2) Very hot air
  - (3) Water vapour
  - (4) Tiny water droplets
19. The diagram below shows a container made of glass and encased in styrofoam. There is a wooden lid on it. This container is placed on a marble tile on the table.



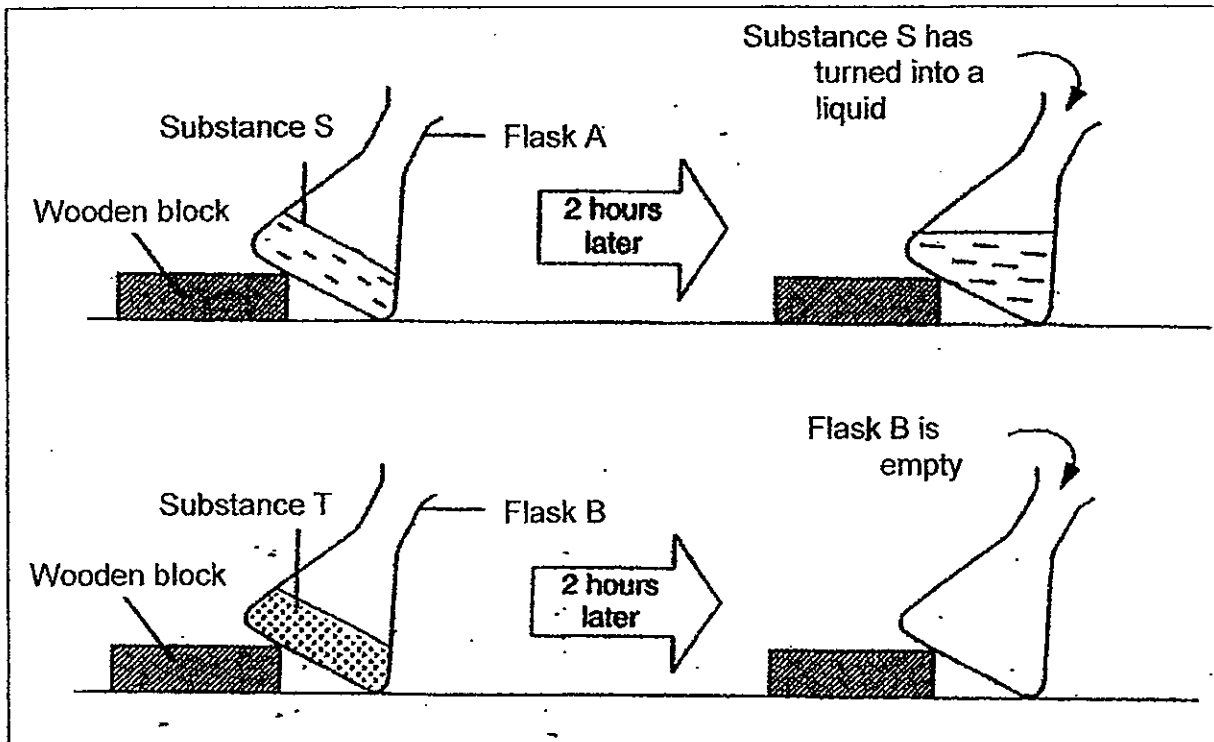
Which one of the following statements explains why the setup is able to keep the coffee warm?

- (1) The lid loses heat to the surroundings quickly
- (2) The glass prevents the coffee from gaining heat.
- (3) The tile slows down heat gain from the surroundings.
- (4) The container does not allow heat to flow through it easily.

55

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20. Susie has 2 conical flasks, A and B, containing substances S and T respectively as shown in the diagram below. She left the flasks on the table at room temperature ( $28^{\circ}\text{C}$ ) for 2 hours.



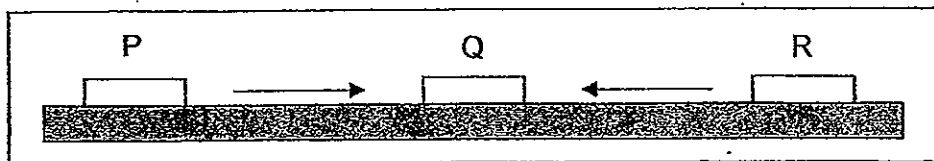
After 2 hours, Susie noticed that substance S has turned into a liquid, while nothing was left of substance T.

Which one of the following correctly represents substance S and T?

	Substance S	Substance T
(1)	Ice	Fog
(2)	Ice cream	Dry ice
(3)	Butter	Alcohol
(4)	Ice	Steam

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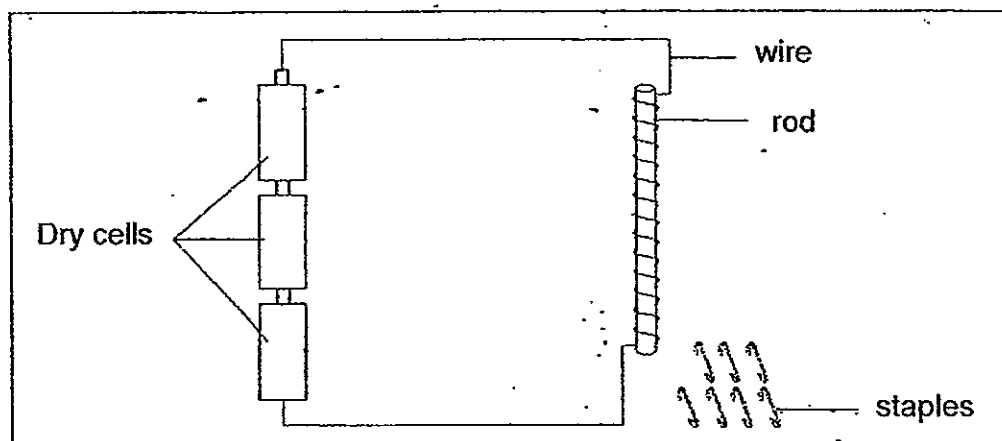
21. Three objects of similar size, P, Q and R, are placed on a wooden table. Object Q is fixed to the wooden table but objects P and R are movable.



Object P and R are pushed towards Q but they do not touch it. It was observed that object R sticks to Q but object P does not. What are Objects P, Q and R most likely to be?

	Object P	Object Q	Object R
(1)	Copper bar	Nickel bar	Bar magnet
(2)	Nickel bar	Bar magnet	Steel bar
(3)	Bar magnet	Iron bar	Aluminum bar
(4)	Silver bar	Copper bar	Bar magnet

22. Mr Lee set up an electromagnet as shown below.

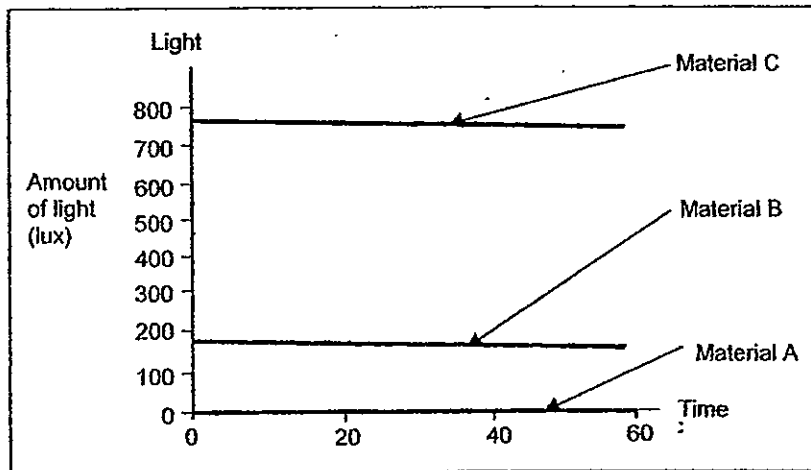


Mr Lee found that the rod **was not** able to attract the staples in the set-up. Based on his set-up above, which of the following could provide the possible reason(s) for his observation?

- A: The staples are rusty.
- B: The rod is made of plastic.
- C: The dry cells are arranged wrongly.
- D: There are too many turns around the rod.

- (1) B only
- (2) A and B only
- (3) B and C only
- (4) All of the above

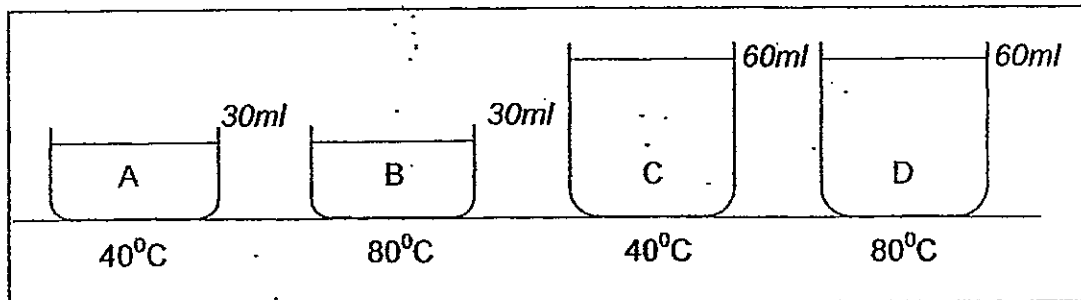
23. The graph below shows the amount of light from the same light source passing through three different materials. The results were obtained using a datalogger with a light sensor.



Which one of the following is most likely to be material A, B and C?

	Material A	Material B	Material C
(1)	Wood	Frosted plastic	Clear glass
(2)	Clear glass	Frosted glass	Porcelain
(3)	Ceramic	Cotton	Metal
(4)	Clear plastic	Cotton	Wood

24. Four containers, A, B, C and D, containing water, were heated to the temperature as shown in the diagram below.



Which of the following statements are true?

- P: The water in container D has the greatest amount of heat.
- Q: The water in containers B and C have the same amount of heat.
- R: The water in containers C and D have the same amount of heat.
- S: The water in container C is warmer than the water in container A

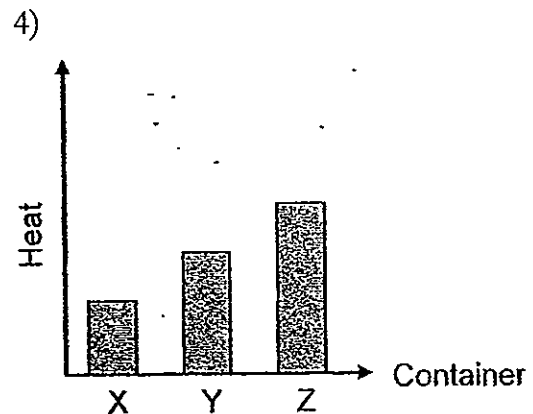
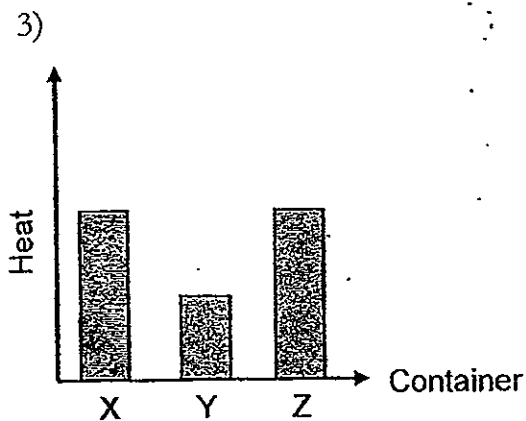
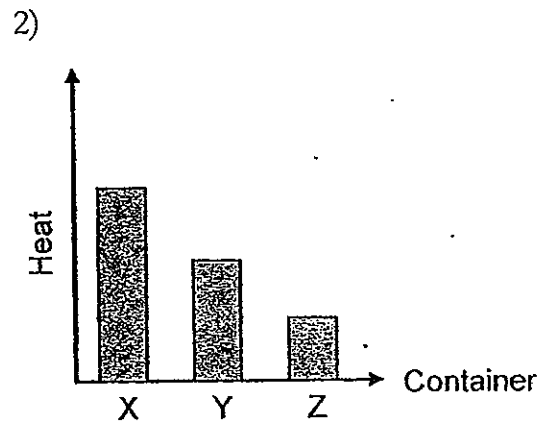
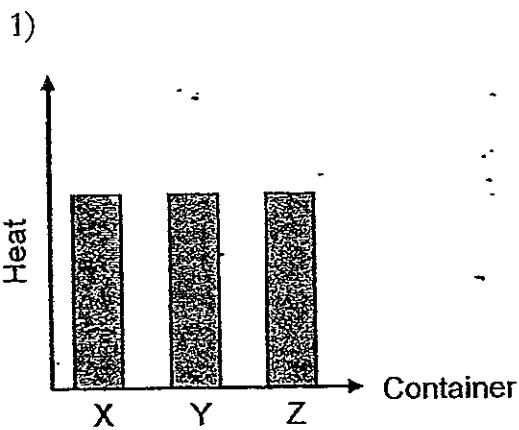
- (1) P and Q only
- (2) P and R only
- (3) P and S only
- (4) P, Q and S only

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25. Three containers of water were heated together inside the same heater until they reached 50°C. The table below shows the amount of water in the three containers and the temperature of the water in each container before and after they were heated.

Container	Amount of water (ml)	Starting Temperature (°C)	Temperature after heating (°C)
X	200	25	50
Y	400	25	50
Z	600	25	50

Which one of the following graphs correctly shows the amount of heat energy in the containers after heating?



# METHODIST GIRLS' SCHOOL

Founded in 1887



## END-OF-YEAR EXAMINATION 2012 PRIMARY 4 SCIENCE

### BOOKLET B

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

### INSTRUCTIONS TO CANDIDATES

Follow all instructions carefully.

Answer all questions.

Write your answers in this booklet.

Name: \_\_\_\_\_ ( )

Class: Primary 4. \_\_\_\_\_

Date: 11 October 2012

<b>Booklet A</b>	<b>/ 50</b>
<b>Booklet B</b>	<b>/ 40</b>
<b>Practical Test</b>	<b>/ 10</b>
<b>TOTAL</b>	<b>/ 100</b>

This booklet consists of 14 printed pages including this page.

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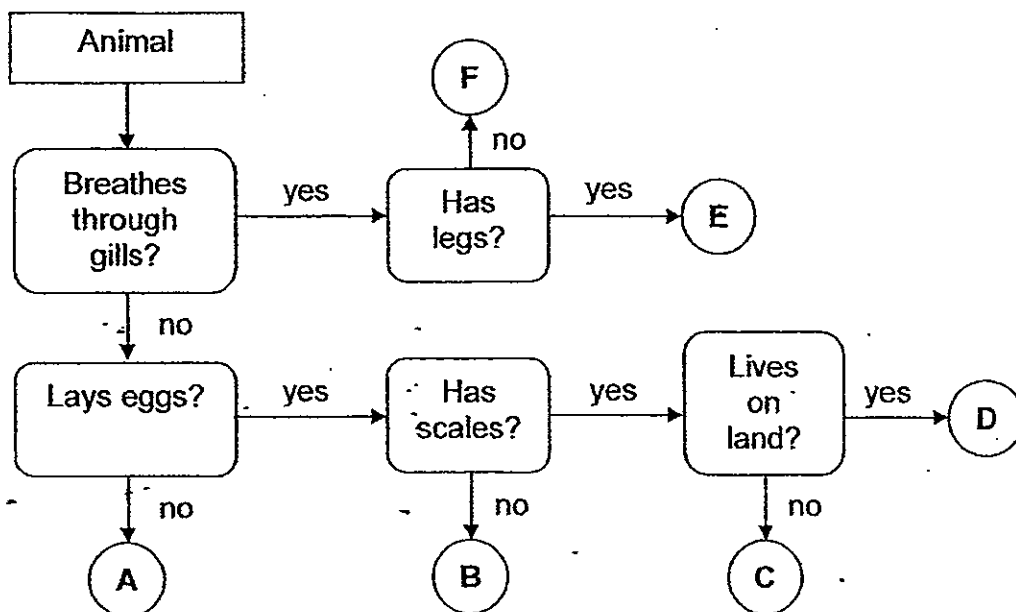


For questions 26 to 40, write your answers in the spaces provided.

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

[40 marks]

26. Study the flow chart below.



(a) Based on the chart above, in what ways are the animals B and C similar? [1]

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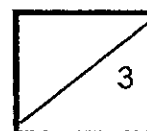
(b) How are animals C and F different? [1]

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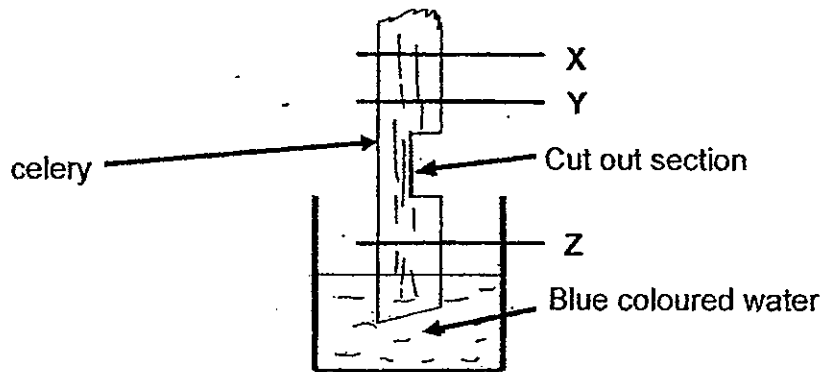
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(c) Which letter is most likely to represent lizard? [1]

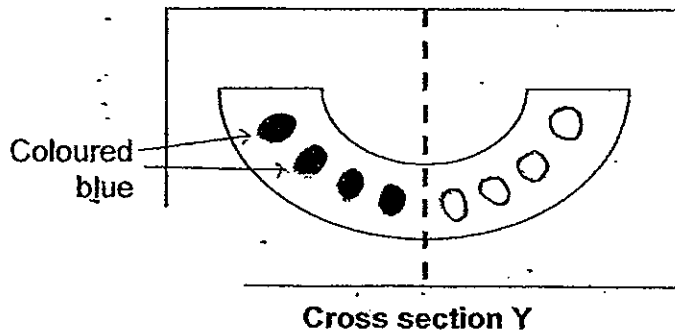
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27. Study the diagram below carefully. A stalk of celery was cut out in the centre and placed into a beaker of blue coloured water for one day. It was then cut at Parts X, Y and Z to get the cross sections of the plant.



The following pattern was observed at cross section Y.



- (a) State your observation. Explain why the above pattern was observed. [2]

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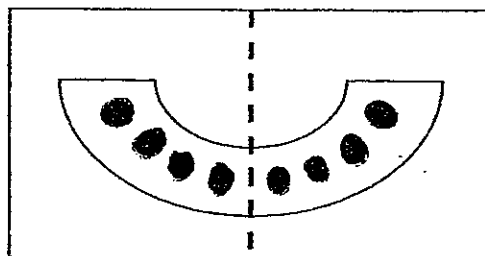


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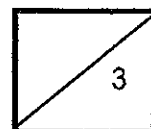


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- (b) Indicate what will be observed at cross section Z by shading the tubes. [1]

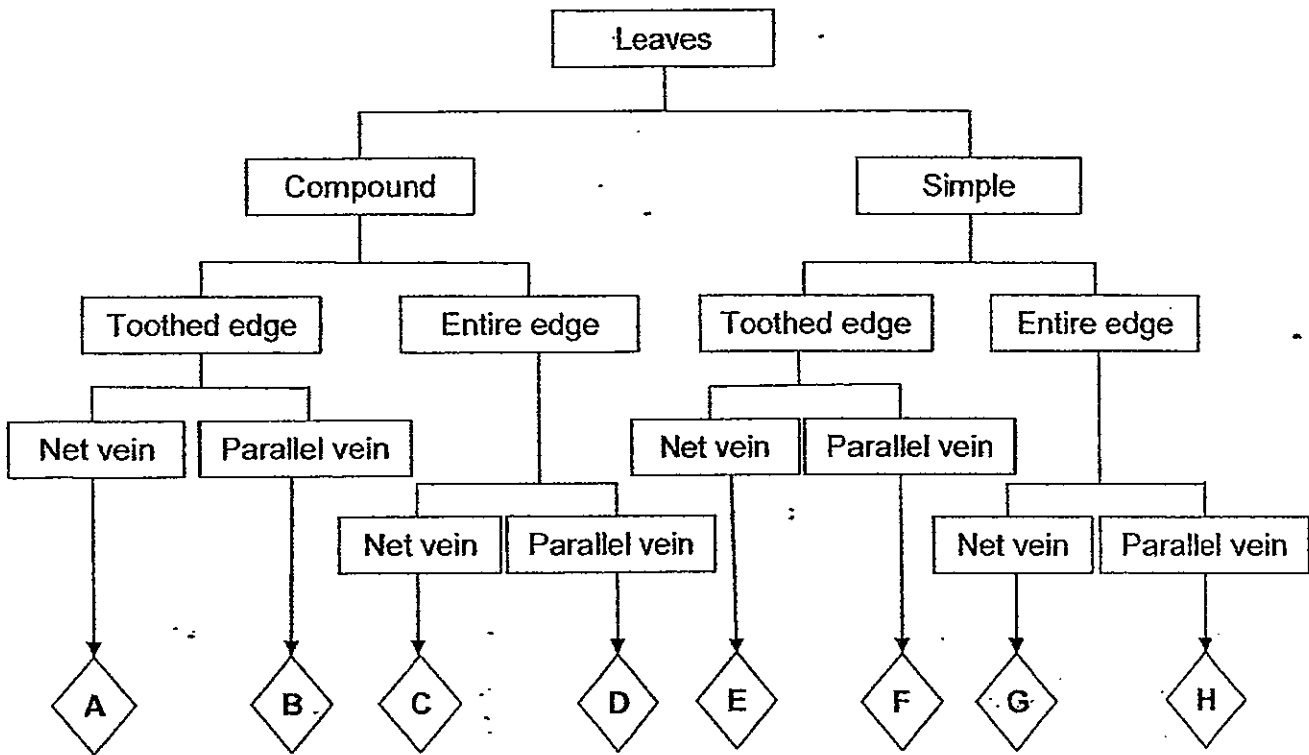


**Cross section Z**



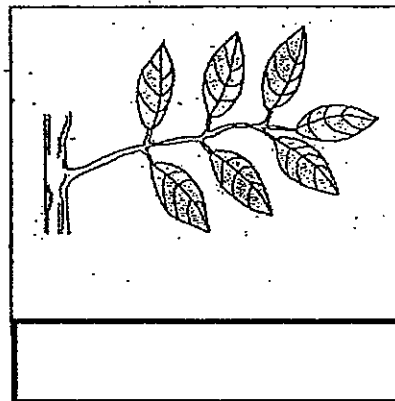
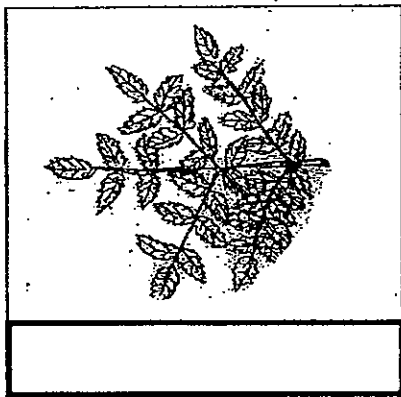
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28. Study the classification chart as shown below.

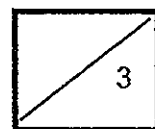
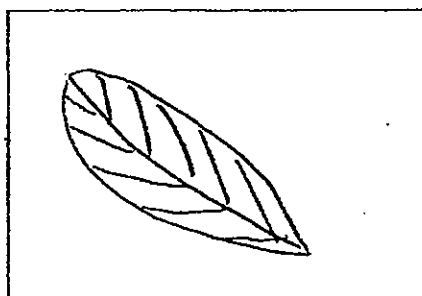


(a) Write down the characteristics of D. [1]

(b) Observe the two leaves carefully and identify them by writing the letters A, B, C, D, E, F, G or H in the boxes below. [1]

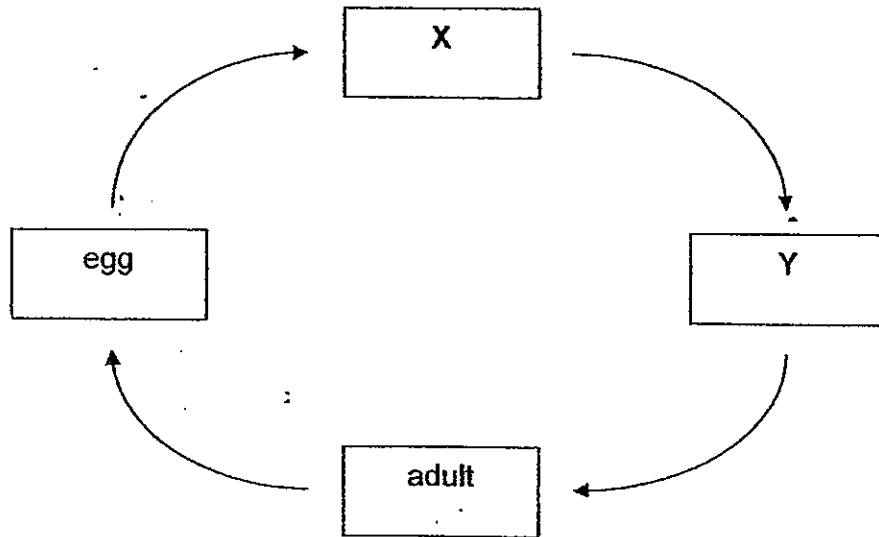


(c) Draw leaf G in the box below. [1]



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29. The diagram below shows the life cycle of a moth.



Choose the correct words from the box to answer the question below.

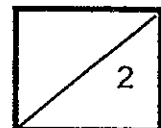
moth      larva      caterpillar      pupa

Name the two stages X and Y.

[2]

X: \_\_\_\_\_

Y: \_\_\_\_\_



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30. The table below shows the remaining amount of three types of undigested food X, Y and Z in decimal after it passes through each part of the human digestive system.

Part of digestive system that undigested food had just passed through	Amount of undigested food remaining (in decimal)		
	Food X	Food Y	Food Z
mouth	0.85	0.70	0.90
gullet	0.85	0.70	0.90
stomach	0.85	0.50	0.60
Small intestine	0.15	0.05	0.10
Large intestine	_____	_____	_____

- (a) Based on the table above, what is the amount of the three types of undigested food that remains in the large intestine? Give your answer in decimal.

Complete the table above by filling in the blanks. [1]

- (b) Explain your answer in (a). [1]

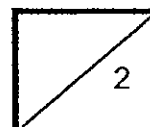
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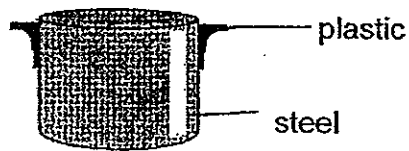
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31. The diagram below shows a pot.



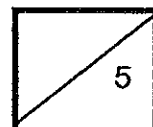
(a) The handle is made of plastic because it is a \_\_\_\_\_ conductor of heat. [1]

(b) The pot is made of steel because it is a \_\_\_\_\_ conductor of heat. [1]

32. Classify the following into matter and non-matter. [3]

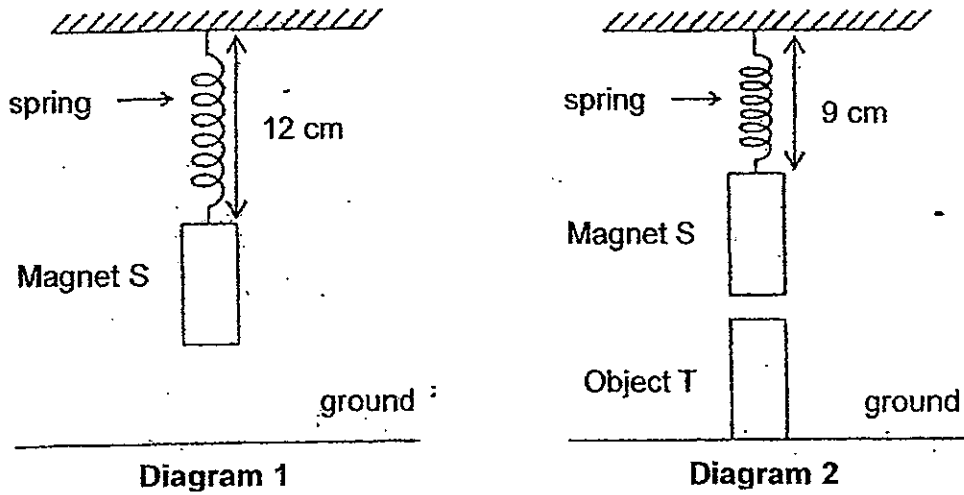
heat	oxygen	clouds
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matter	non-matter



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33. Magnet S was hung from a spring as shown in Diagram 1. An object T was placed on the ground, directly below Magnet S as shown in Diagram 2.



When object T was placed directly below Magnet S, the spring attached to Magnet S extended less than it had in Diagram 1.

- (a) Explain why the spring in Diagram 2 had extended less than that in Diagram 1. [2]

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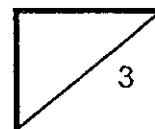
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- (b) State what Object T can be replaced with so that the spring will extend more than it had in Diagram 1. [1]

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34. John conducted several tests on materials P, Q and R and recorded the results in the table below.

	Material P	Material Q	Material R
Is it flexible?	Yes	Yes	No
Is it stretchable?	Yes	No	No
Is it waterproof?	No	Yes	Yes
Is it fragile?	No	No	Yes

- (a) Based on the table above, which one of the materials P, Q or R should John use to make a raincoat? [1]

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- (b) Give two reasons for your answer in (a). [1]

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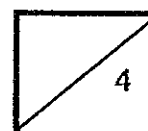
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- (c) John was given a piece of A4-sized printing paper and an iron nail. He carried out the same tests on the printing paper and iron nail as on materials P, Q and R above again. Complete the table below to predict the correct results of the tests.

Write 'Yes' or 'No' in the boxes.

[2]

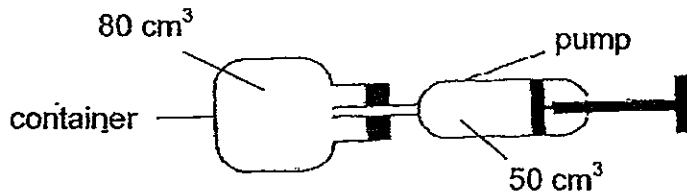
	Printing paper	Iron nail
Is it flexible?		
Is it stretchable?		
Is it waterproof?		
Is it fragile?		



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35. Jolie had a container with a volume of  $80 \text{ cm}^3$ . She fitted a pump on the container. Each time she pressed the pump,  $50 \text{ cm}^3$  of air would enter the container.



- (a) Jolie pushed the pump 2 times. What is the volume of air in the container now? [1]

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- (b) Explain your answer to (a). [1]

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36. The melting point and boiling points of four different substances are shown in the table below.

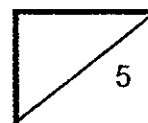
Substances	Temperature at which it melts	Temperature at which it boils
A	$28^{\circ}\text{C}$	$80^{\circ}\text{C}$
B	$32^{\circ}\text{C}$	$120^{\circ}\text{C}$
C	$120^{\circ}\text{C}$	$495^{\circ}\text{C}$
D	$0^{\circ}\text{C}$	$100^{\circ}\text{C}$

- (a) What will the state of each of the substances be at  $110^{\circ}\text{C}$ ? Put a tick ( $\checkmark$ ) in the table below. [2]

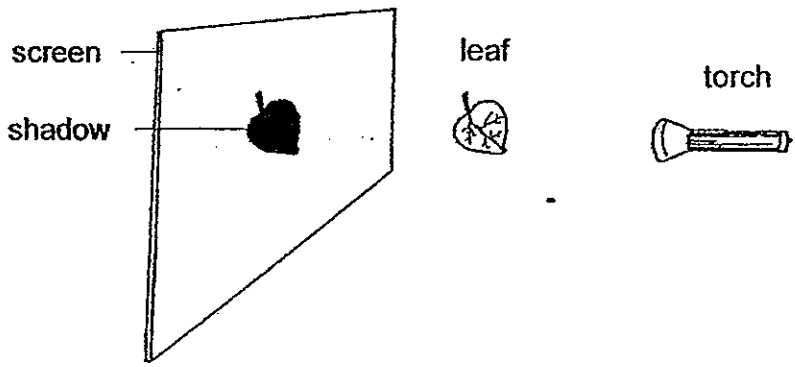
Substances	Solid	Liquid	Gas
A			
B			
C			
D			

- (b) State what substance D could be? [1]

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37. Ethan conducted an experiment in a dark room using a screen, a torch and a green leaf.



The torch and screen were fixed in position. Ethan moved the leaf in between the torch and the screen and recorded his results in the following table.

What took place?	Size of shadow
Leaf was moved closer to torch	bigger
Leaf was moved closer to screen	smaller

(a) Based on the table, what is the relationship of the distance between the leaf and torch and the size of the shadow? [1]

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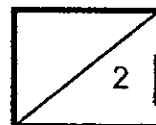
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(b) What do you think the relationship of the distance between the leaf and the torch and the sharpness of the shadow is? [1]

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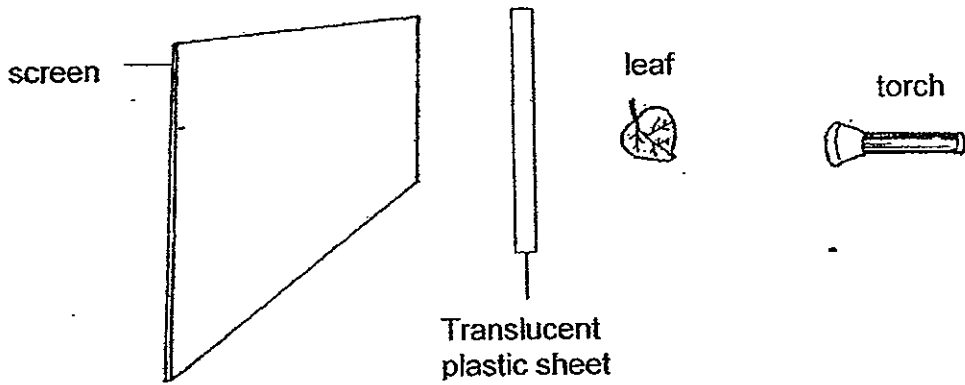
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Ethan then placed a translucent plastic sheet between the leaf and the screen.



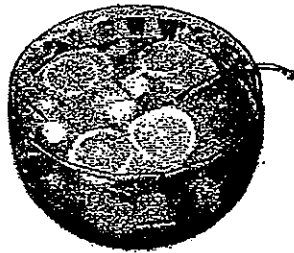
(c) How will the shadow be different from before?

[1]

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38. Mrs Heng prepared ice lemonade for her son's birthday party. She would like the drink to remain chilled with ice for as long as possible.



Which type of ice, blocks or crushed, should she use?  
Explain your answer.

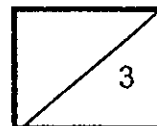
[2]

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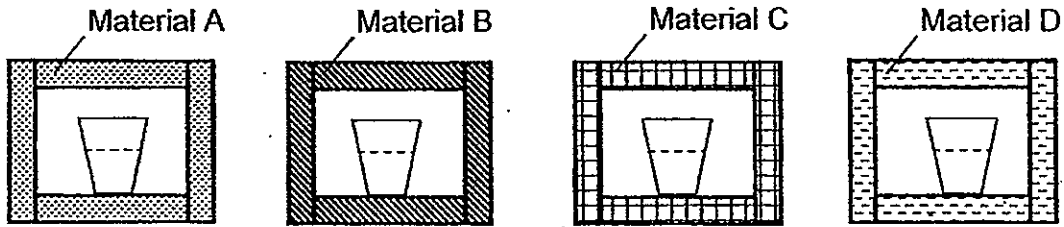
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39. Joey conducted an experiment using four containers made of different materials A, B, C and D as shown below.



She placed four identical cups containing cold water at  $5^{\circ}\text{C}$  in the containers. After 20 minutes, she recorded the temperature of the water in each cup as shown in the table below.

Material	Temperature of water at the end of 20 min ( $^{\circ}\text{C}$ )
A	24
B	17
C	8
D	15

- (a) State **two** important variables that Joey must keep constant in order for the experiment to be a fair one. [1]

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- (b) Which one of the materials A, B, C and D should Joey use for the cup if she wants to keep her hot tea warm for the longest time? Give a reason for your answer. [2]

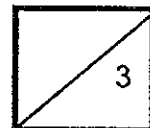
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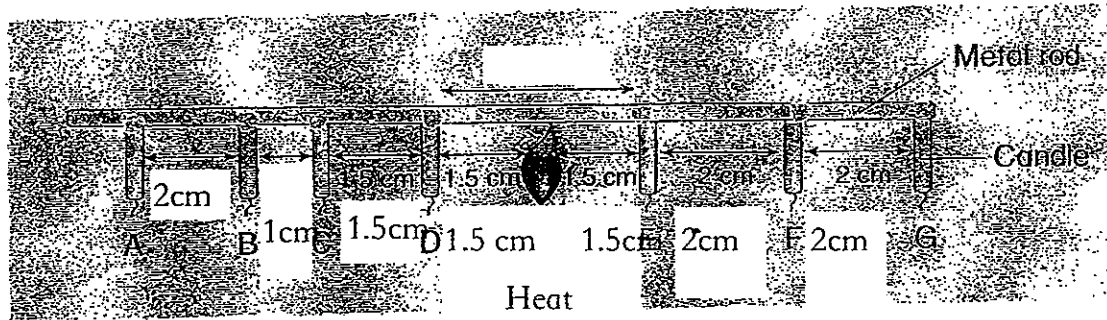


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40. Similar candles are waxed to the metal rod as shown in the diagram below.



(a) When a heat source is placed under the metal rod as shown in the diagram, which candle will take the longest time to drop? [1]

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(b) Based on your answer in (a), how does heat flow? [1]

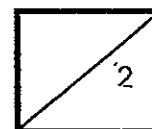
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# ANSWER SHEET

EXAM PAPER 2012

SCHOOL : MGS

SUBJECT : PRIMARY 4 SCIENCE

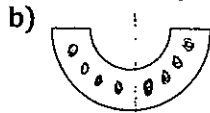
TERM : SA2

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

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25
4	4	2	1	1	1	1	4

- 26)a) They both do not breathe through gills and they both lay eggs.  
b) Animal C does not breathe through gills but animal F breathes through gills.  
c) D.

27)a) Blue coloured water could only pass through half of the celery. Blue coloured water was carried up the plant by the xylem tubes, but when a part of the celery was cut out, the water could not pass through the xylem tubes that were also cut out.



28)a) D is compound leaf that has an entire edge and a parallel vein.

b) A G



29)X : larva  
Y : pupa

30)a)0.15 , 0.05, 0.10

b)The amount undigested food remains the same as digestion is completed in the small intestine as digestion is completed in the small intestine.

31)a)poor

b)good

32)

matter	non-matter
clouds oxygen	heat

33)a)Magnets repel each other when like poles face each other. Object was likely to be a magnet as Magnet S moved upward and stayed there in Diagram 2.

b)Magnetic material.

34)a)Material Q.

b)Material Q is flexible and rain coats need to be flexible to be able to wear them. Material Q is also waterproof to shelter the person wearing it from rain.

c)Yes No  
No No  
No No  
No Yes  
No No

35)a)80cm<sup>3</sup>

b)Air can be compressed to take the space of the container.

36)a)A→Gas

B→Liquid

C→Solid

D→Gas

b)Water.

37)a)As the distance between the leaf and the torch increases the size of the shadow decreases.

b)I think that as the distance between leaf and the torch decreases, the sharpness of the shadow decreases.

c)The shadow will now include a faint shadow and a dark shadow of a leaf unlike before.



38)The crushed ice contains less heat than the blocks of ice as it is smaller in size. Blocks, the exposed surface area of an ice block smaller so the rate of heat gain will be slower and the ice will take longer to melted.

39)a)The type of thermometer used and the size of the containers.

b)Material C. The cup containing cold water in Material C temperature increased the least at end of 20 minutes. This shows that material C can block out more heat from the surroundings to enter,compared to the other three materials.

40)a)Candle A.

b)Heat flows from a hotter region to a colder region.

