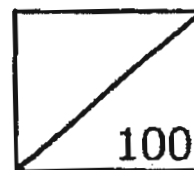




**Rosyth School**  
**Second Semestral Assessment for 2007**  
**SCIENCE**  
**Primary 4**



Total  
Marks:

Name: \_\_\_\_\_

Class: P 4 \_\_\_\_\_ Register No. \_\_\_\_\_ Duration: 1 h 30 min

Date: 1<sup>st</sup> Nov 2007 Parent's Signature: \_\_\_\_\_

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets, Booklet A and Booklet B.
4. For questions 1 to 30 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 31 to 46, give your answers in the spaces given in the Booklet B.

	<b>Maximum</b>	<b>Marks Obtained</b>
<b>Booklet A</b>	<b>60 marks</b>	
<b>Booklet B</b>	<b>40 marks</b>	
<b>Total</b>	<b>100 marks</b>	

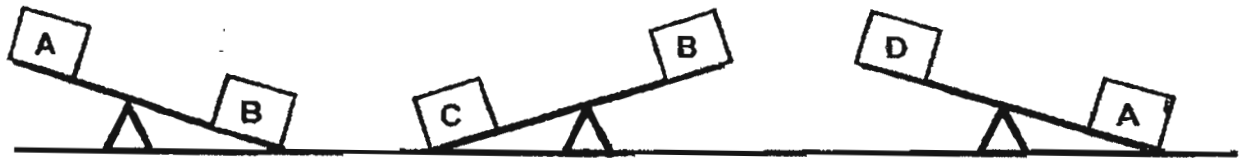
\* This booklet consists of 20 pages . (Pg 1 to 20)

This paper is not to be reproduced in part or whole without the permission of the Principal.

**PART I (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.

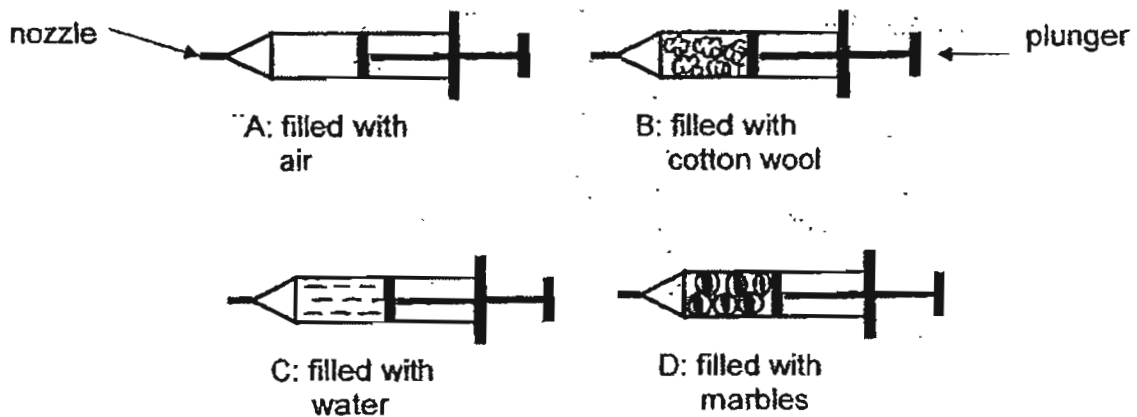
1. Carina used a lever balance to compare the mass of four different blocks A, B, C and D as shown below.



Which block has the greatest mass?

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

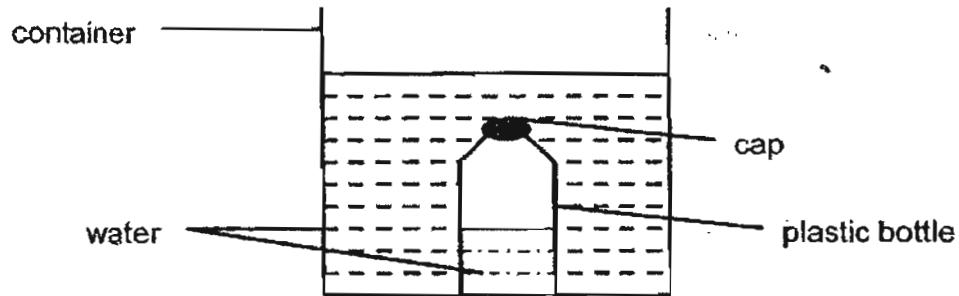
2. Four identical syringes with a similar volume were filled completely with air, cotton wool, water and marbles respectively.



The nozzle of each syringe was completely sealed and the plungers were pushed inwards as far as they could go. Which of the plunger could be pushed in the furthest?

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

3. A transparent plastic bottle was half-filled with water and a cap was screwed on tightly. It was lowered into a container of water as shown below.



The cap was then unscrewed and removed. What happened to the water in the container and in the bottle?

- A: The water level in the container rose.
- B: The water level in the container dropped.
- C: The water level in the plastic bottle rose.
- D: There was no change in the water level in both the plastic bottle and container.

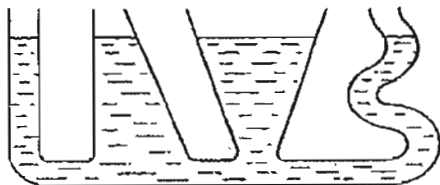
(1) D only

(2) A and B only

(3) B and C only

(4) C and D only

4. Matt poured some water into the container as shown below.



Based on his observations, which of the following statements could he make?

- A: Water has indefinite shape.  
 B: Water has definite volume.  
 C: Water level is always horizontal.

- (1) A only  
 (2) B only  
 (3) A and C only  
 (4) A, B and C
5. The table below shows the melting and boiling points of substances X, Y and Z.

Substances	Melting point ( $^{\circ}\text{C}$ )	Boiling point ( $^{\circ}\text{C}$ )
X	54	90
Y	42	78
Z	28	63

At which one of the following temperatures are the three substances in the same state?

- (1)  $29^{\circ}\text{C}$   
 (2)  $51^{\circ}\text{C}$   
 (3)  $60^{\circ}\text{C}$   
 (4)  $80^{\circ}\text{C}$

6. Marianne was trying to find out whether the thickness of a towel used will affect the time taken for it to dry.

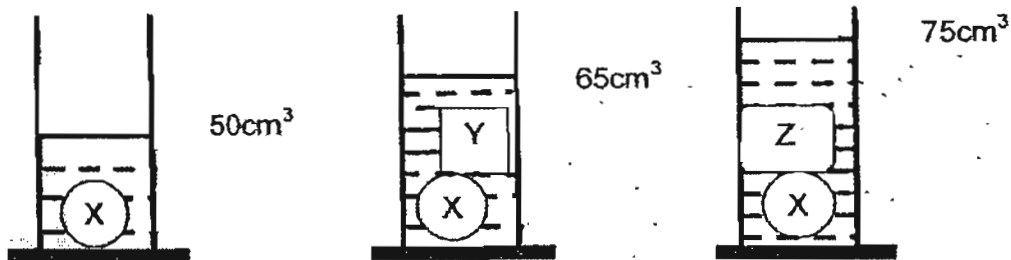
She prepared four different set-ups as shown below.

Set-up	Thickness (cm)	Place of experiment	Size of the towel (cm <sup>2</sup> )	Duration of time it was soaked with water (mins)
P	5	Shady place	50	5
Q	10	Sunny place	50	7
R	10	Shady place	50	5
S	5	Sunny place	50	5

Which two set-ups should she observe for a fair test?

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

7. An equal amount of water was poured into each of the three identical measuring cylinders. Some blocks were placed into the measuring cylinders and the new water levels were indicated below.



Joseph made four deductions based on his observations.

- A: The volume of block Y is 15 cm<sup>3</sup>.  
 B: The volume of water added into each cylinder is 30 cm<sup>3</sup>.  
 C: The volume of block Y is less than the volume of block Z.  
 D: The volume of block X is greater than the volume of block Z.

Which of the deduction(s) he made is/are correct?

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

For Questions 8 and 9, refer to the table below.

Sue poured some water in four identical bowls and placed them in the same place for six hours. The results are recorded in the table below.

Bowl	Amount of water at the beginning (ml)	Amount of water at the end (ml)
S	30	5
T	40	10
U	50	23
V	60	50

8. Which of the following is/are the possible reason/(s) for the different rates of evaporation in the above situation?

A: Presence of wind  
 B: Exposed surface area  
 C: Temperature of the water  
 D: Temperature of the surrounding air

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

9. In which bowl was the rate of evaporation the fastest?

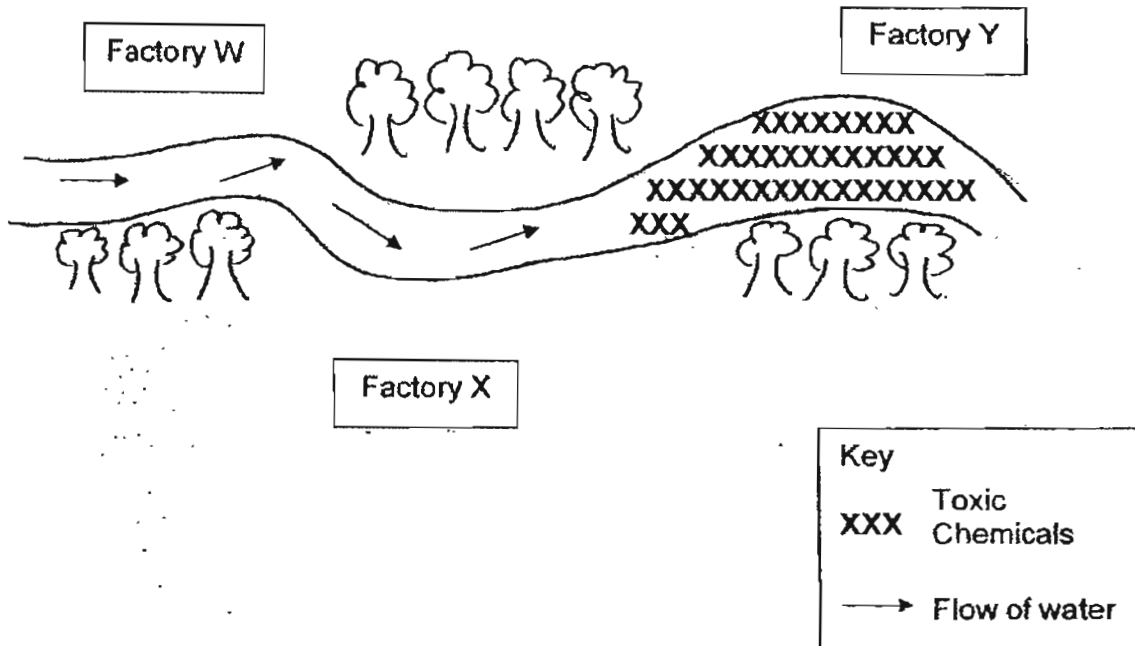
- (1) S  
 (2) T  
 (3) U  
 (4) V

10. Which one of the following would help to conserve water?

A: Take a bath instead of a shower  
 B: Use a pail of water to wash the car instead of a hose  
 C: Use the water from the washing machine to wash the toilet  
 D: Purify water from households so that it can be used more than once

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

11. A certain stretch of a river was found to be polluted with toxic chemicals as shown in the diagram below.



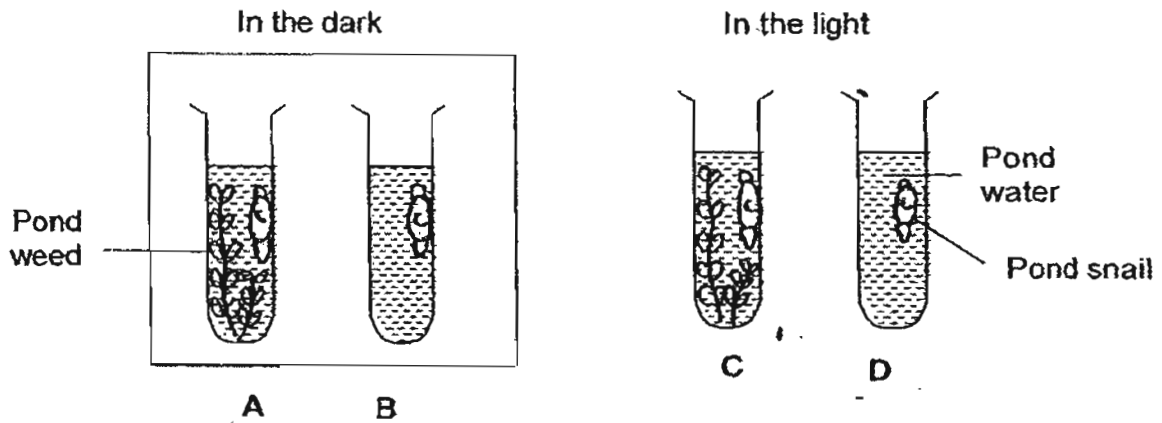
Which of the following statements are definitely true?

- A: Factories X and Y released toxic chemicals into the river.
- B: Factory X released toxic chemicals into the river.
- C: Factory W did not release any toxic chemicals into the ~~factory~~ river.
- D: It is not possible to tell if factory Y had released toxic chemicals into the river.

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

- (2) B and C only
- (4) B, C and D only

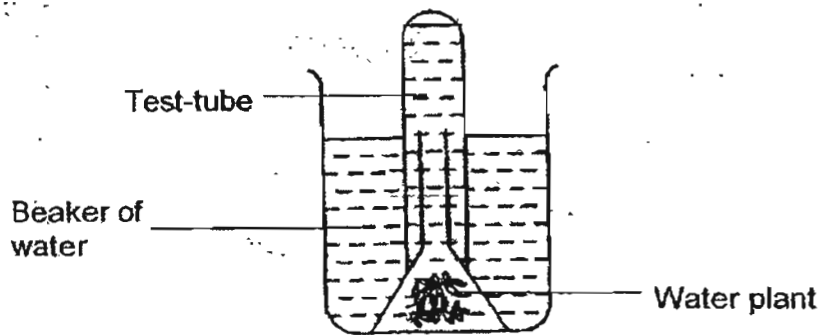
12. Bryan set up four test-tubes (A, B, C, and D) as shown below.



In which test-tube would the amount of oxygen decrease most rapidly?

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

13. An experiment was set up and placed under the sunlight for four hours as shown below.



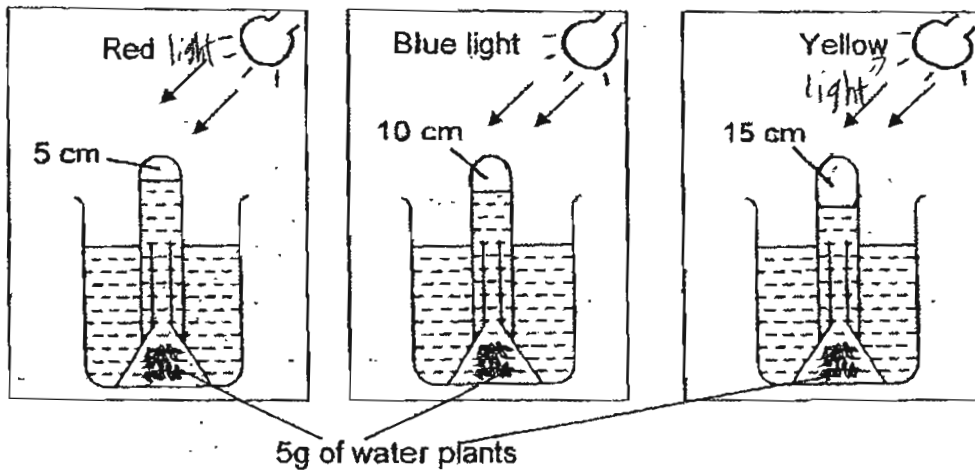
Which of the following results were most likely to be possible?

- A: The water plant would turn brown.
- B: Air bubbles would be seen in the test tube.
- C: All the water in the beaker would be evaporated.
- D: The temperature of the water in the beaker would increase.

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



14. The experiment below was set up to investigate how different lights affect the rate of photosynthesis. The experimental set-ups were left alone for a day and the results of the experiment are as shown in the diagram.



Based on the above results, what conclusion(s) could be drawn from this experiment?

- A: The rate of photosynthesis was faster when the experiment was carried out under red light than under blue light.
- B: The rate of photosynthesis under yellow light was 3 times as fast as under red light.
- C: The rate of photosynthesis was the slowest under yellow light.

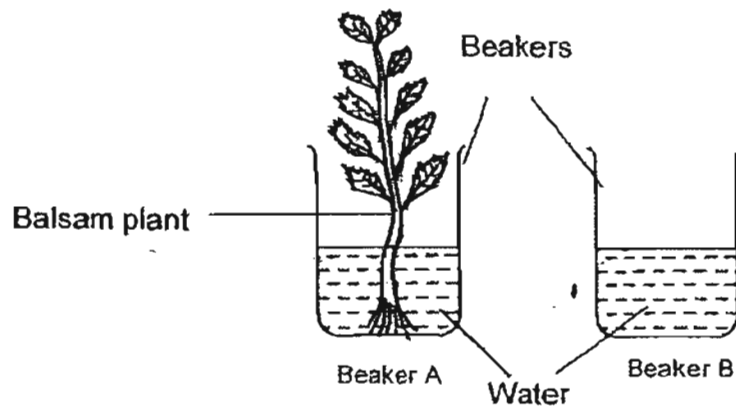
(1) A only

(2) B only

(3) A and B only

(3) A, B and C

15. Audrey set up an experiment as shown below. She left the set-up in the same place from Day 1 to Day 4.



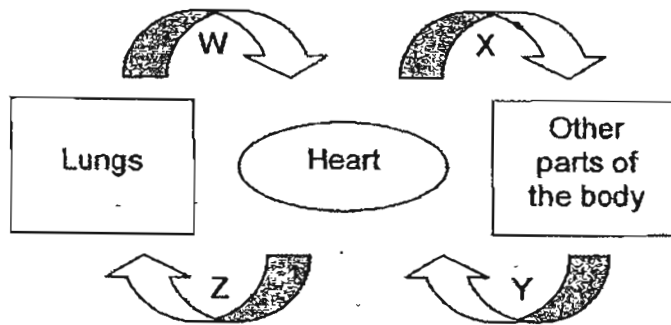
She measured the volume of water in the two beakers on Day 1 and Day 4 and recorded the results in the table as shown below.

Beaker	Volume of water (mℓ)	
	Day 1	Day 4
A	400	250
B	400	350

Using the results above, how much water did the plant take in from Day 1 to Day 4?

- (1) 50 mℓ  
(2) 100 mℓ  
(3) 150 mℓ  
(4) 200 mℓ

16. Study the diagram below. The arrows represent the transport of blood in man.



Which of the following statements are true?

- A: Blood vessels X and Y are rich in carbon dioxide.
- B: Blood vessels Y and Z are rich in carbon dioxide.
- C: Blood vessels W and Y are rich in oxygen.
- D: Blood vessels W and X are rich in oxygen.

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

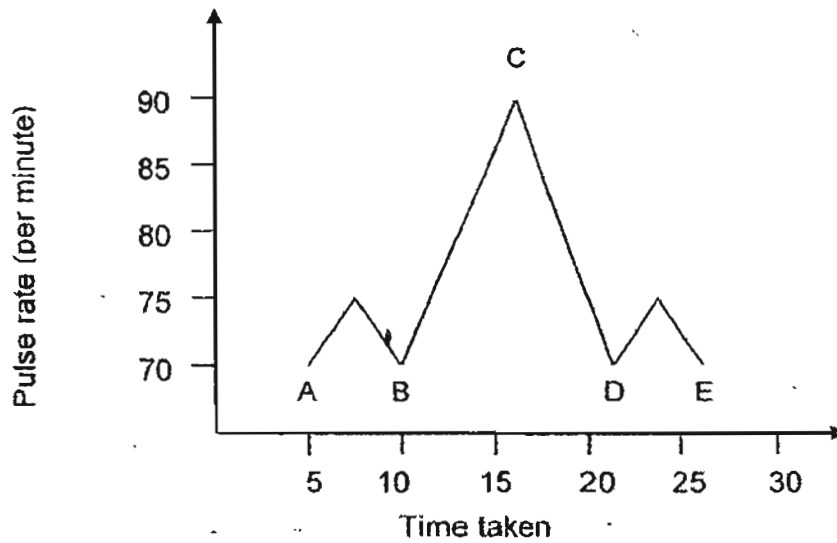
17. The table below shows the average pulse rate of some animals.

Animal	Mass (kg)	Average Pulse Rate (beats per min)
E	60	73
F	35	120
G	24	250
H	1	950

What would be the most likely pulse rate of an animal of 45 kg?

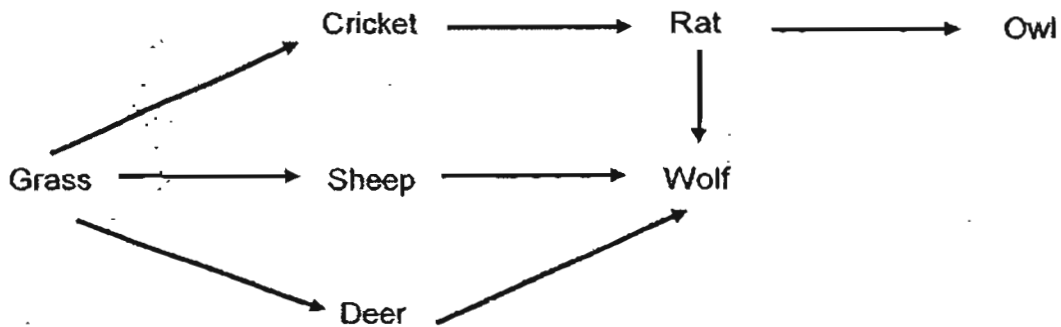
- (1) 70 beats per min
- (2) 100 beats per min
- (3) 150 beats per min
- (4) 260 beats per min

18. The graph below shows the changes in the pulse rate of Rafidah. She started to jog on the spot and stopped for a while.



At which point did she start to jog vigorously on the spot?

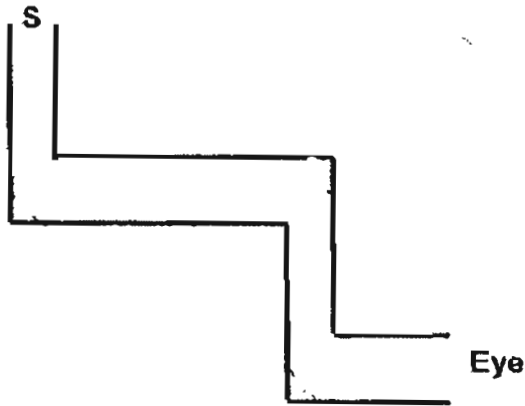
- (1) A  
(2) B  
(3) C  
(4) D
19. The diagram below shows the energy transfer between a group of organisms.



Based on the above energy transfer diagram, which two organisms obtain their energy by eating other animals?

- (1) Cricket and sheep  
(2) Sheep and deer  
(3) Rat and owl  
(4) Deer and wolf

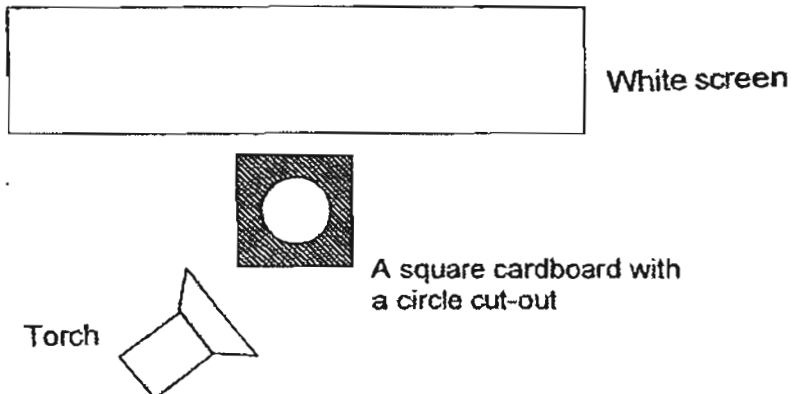
20. Study the diagram below carefully.



To be able to see the object placed at S, what is the least number of mirrors needed to be placed in the tube?

- (1) Three
- (2) Four
- (3) Five
- (4) Six

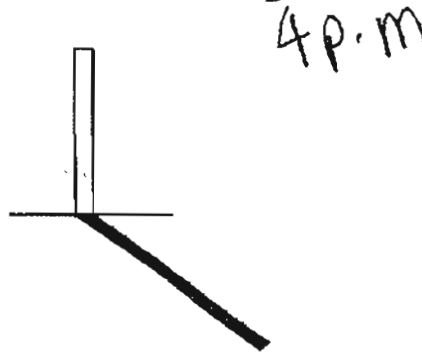
21. Jeremy shone a torch at a square piece of cardboard with a circle cut out in the middle as shown in the diagram below.



Which of the following shows what he would observe on the white screen?

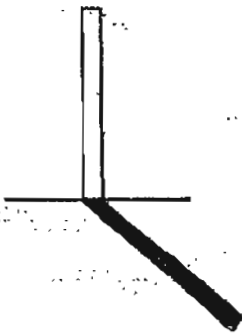
- (1) ~~(2)~~
- (3) ~~(4)~~

22. James placed a pole in the garden and observed the shadow it formed. The shadow in the diagram below was observed at ~~9.00 a.m.~~



Which one of the following could be the most likely shadow to be observed at 4 p.m.?

(1) 9.00 a.m.



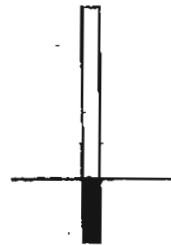
(2)



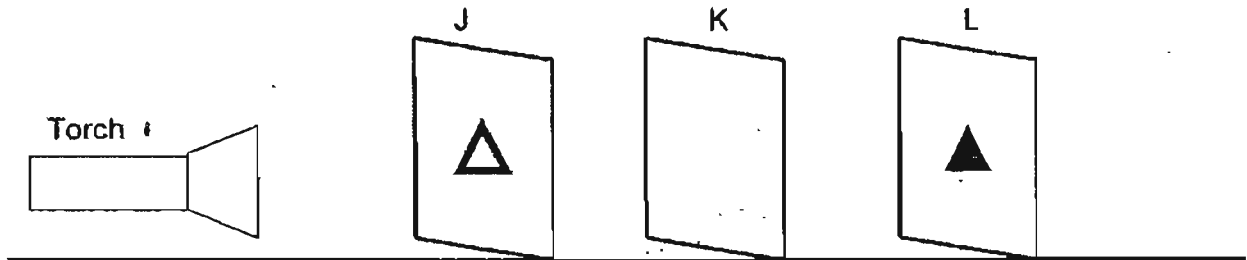
(3)



(4)



23. Ali used three identical sizes of sheets J, K and L. Each sheet was made of a different material and they were arranged in a straight line. There was a triangular-shaped hole in J. When the torch was shone on J, a bright triangular-shaped patch of light appeared on L.



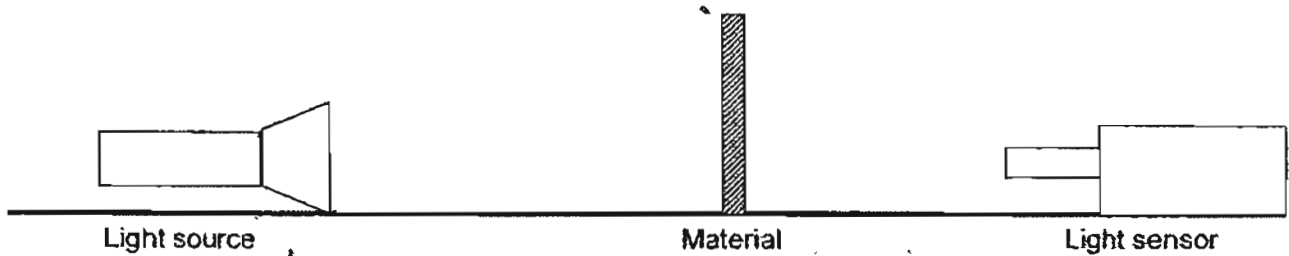
Based on his observations, Ali made the following statements:

- A: Sheet J is made of transparent material.
- B: Sheet K is made of transparent material.
- C: Sheet L is made of opaque material.

Which of the statement(s) he made is/are correct?

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

24. Nurlin wanted to find out which material allows the most light to pass through it. She used a light sensor to measure the intensity of light that can pass through a material as shown below.



Which of the following variables should be kept the same for a fair test?

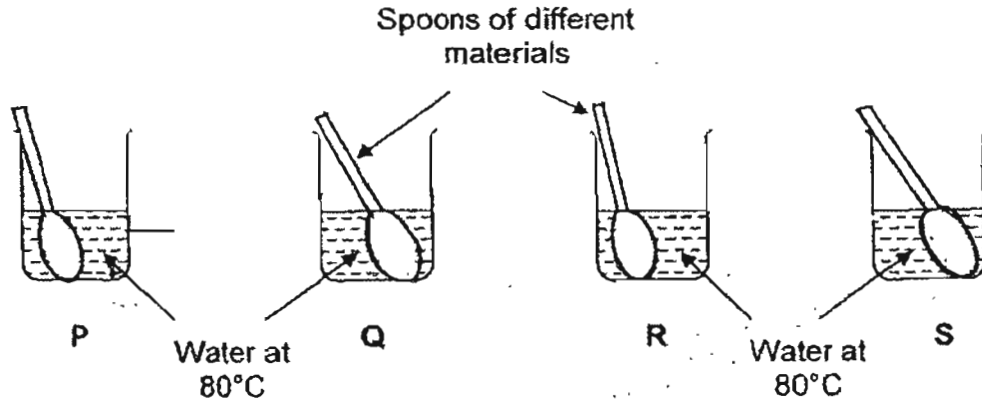
- A: Type of light source
- B: Thickness of the material
- C: Distance between light source and material
- D: Distance between light sensor and material

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

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



25. Paul prepared four beakers (P, Q, R and S) with water at 80°C. Then he placed a spoon in each beaker. The spoons were of different materials. He measured the temperature of the water at four equal intervals over a period of 30 minutes.



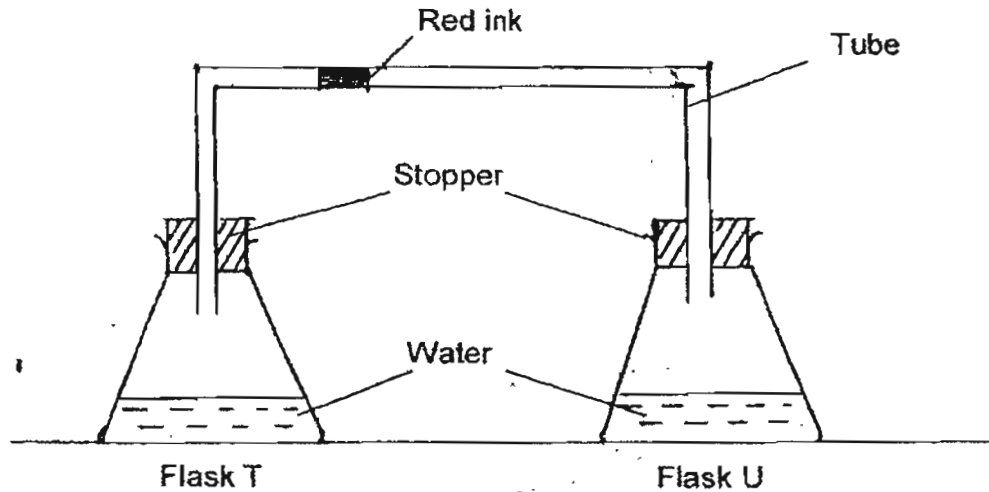
The temperature of the water was recorded in a table as shown below.

Beakers	Temperature (°C)			
P	80	70	60	50
Q	80	60	40	30
R	80	70	55	45
S	80	75	65	55

In which beaker, the spoon is made of a material that is able to conduct heat most easily?

- (1) P
- (2) Q
- (3) R
- (4) S

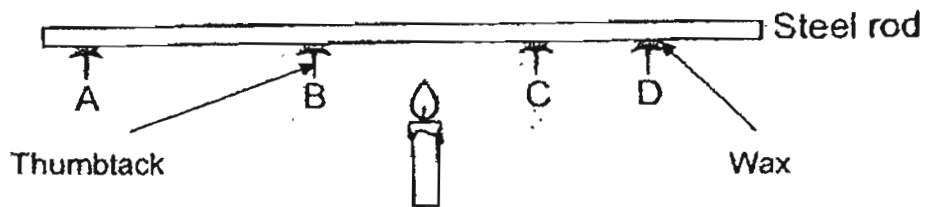
26. Flasks T and U are connected by a tube which contains a drop of red ink.



Which will happen to the drop of red ink when a burner is placed under flask T?

- (1) The drop of red ink will not move at all.
- (2) The drop of red ink will move towards flask U.
- (3) The drop of red ink will move towards flask T.
- (4) The drop of red ink will continuously move forward and backward.

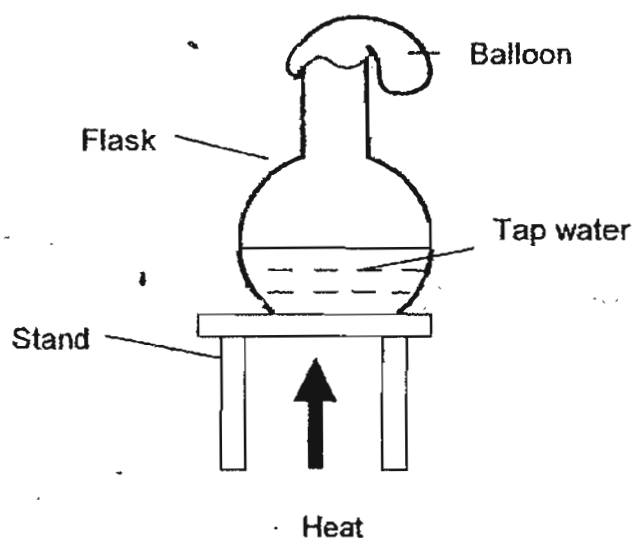
27. In the diagram below, four similar thumbtacks were attached to the steel rod with the same amount of wax.



Which two thumbtacks would most likely to drop off from the rod last?

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

28. Mrs Lee set up an experiment as shown below

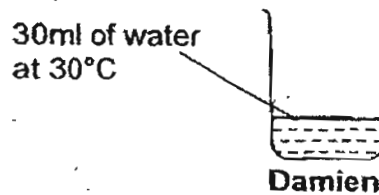
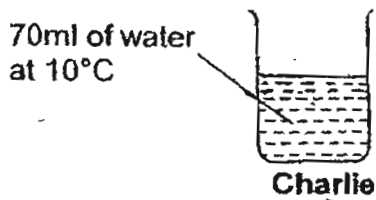
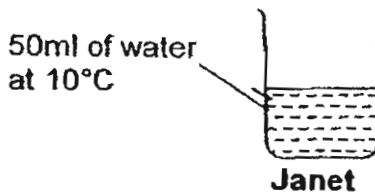
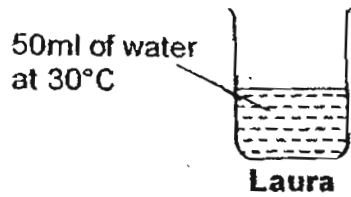


The tap water in the flask was heated over a burner. After some time, she observed that the balloon became inflated. What caused the balloon to inflate?

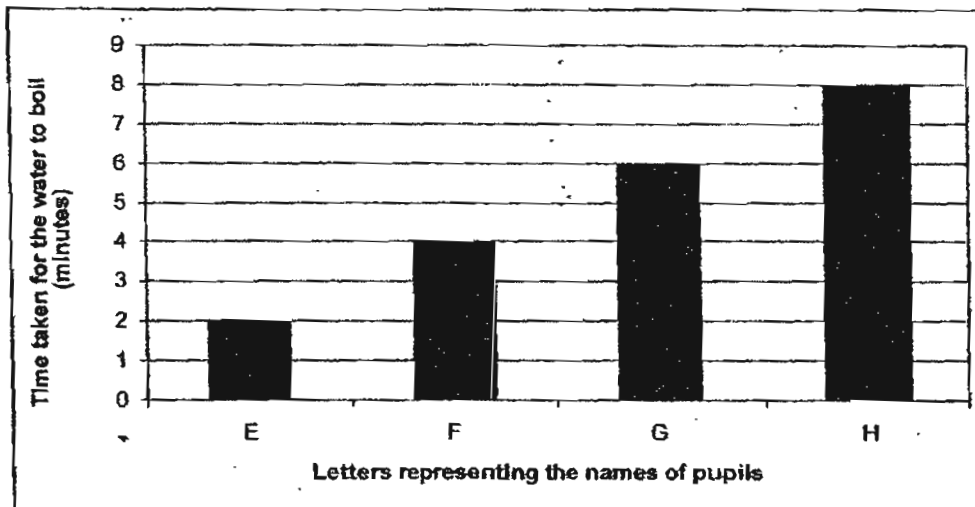
- (1) The air in the flask expanded and entered the balloon.
- (2) The heat from the burner caused the balloon to expand.
- (3) The water level in the flask rose and entered the balloon.
- (4) The flask expanded under the heat of the burner and this caused the balloon to inflate.

Read the following to answer questions 29 and 30.

Laura, Janet, Charlie and Damien wanted to find out whose beaker of water would boil first. The beakers of water they had are shown in the diagrams below.



They represented their results in a bar graph as shown below. The names of the pupils were represented by the letters E, F, G and H.



Questions 29 and 30 continue on pg 20

29. Which of the following represent the letters E, F, G and H correctly?

	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>
(1)	Laura	Janet	Charlie	Damien
(2)	Charlie	Janet	Laura	Damien
(3)	Damien	Laura	Janet	Charlie
(4)	Janet	Laura	Damien	Charlie

30. Which of the following variables should be kept the same for the experiment?

- A: Type of water
- B: Intensity of fire
- C: Material of the beakers

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

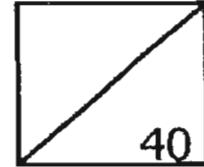
**End of Booklet A**



**Rosyth School**  
**Second Semestral Assessment for 2007**  
**SCIENCE**  
**Primary 4**

Name: \_\_\_\_\_

Total  
Marks:



Class: P 4 \_\_\_\_\_ Register No. \_\_\_\_\_ Duration: 1 h 30 min

Date: 1<sup>st</sup> Nov 2007 Parent's Signature: \_\_\_\_\_

---

## Booklet B

Instructions to Pupils:

1. For questions 31 to 46, give your answers in the spaces given in the Booklet B.

\* This booklet consists of 14 pages . (Pg1 to 14)

This paper is not to be reproduced in part or whole without the permission of the Principal.

**PART II (40 MARKS)**

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

31. Mika placed a ball of plasticine in a measuring cylinder containing some water as shown in diagram A.

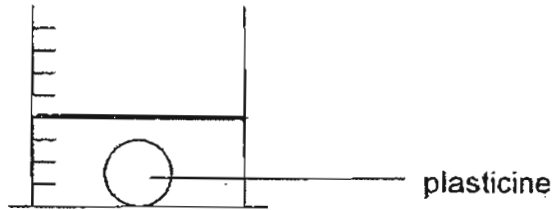


Diagram A

Then he took the ball of plasticine out and cut it into two equal pieces and put it back into the same measuring cylinder as shown in diagram B.

- (a) Draw the water-level in the diagram B. (1m)

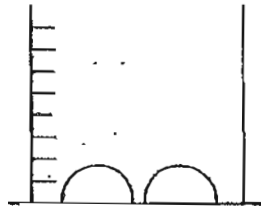


Diagram B

Mika replaced the two pieces of the plasticine with an iron ball of similar size to the ball of plasticine as in diagram A.

- (b) Would the water-level be similar to that in diagram A? Explain why. (1m)

---

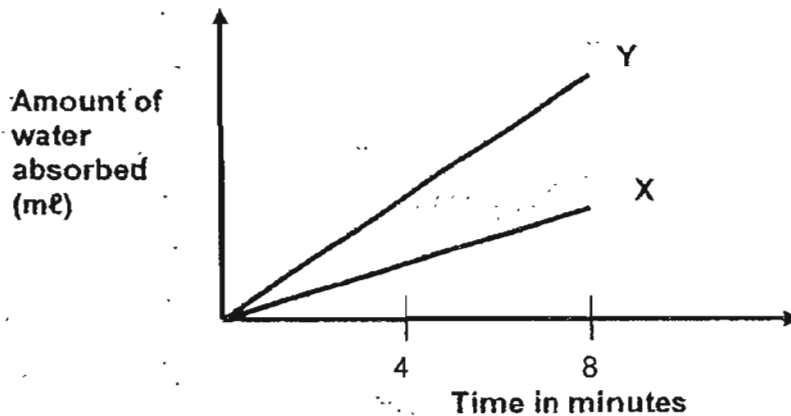
---

---

32. Ernest wanted to find out how the amount of salt affects the time taken for the salt to dissolve in a beaker of water. Put a tick ( ✓ ) for the variable that must be changed and a cross ( x ) for the variable that must be kept the same for a fair experiment. (2m)

	Variables	Tick or Cross
1	Amount of salt	
2	Temperature of water	
3	Rate of stirring	
4	Amount of water	

33. The graph below shows how much water two different materials, X and Y, can absorb in 8 minutes.



- (a) Which material would you use to mop the floor? (1m)

---

- (b) Why did you choose that material? (1m)

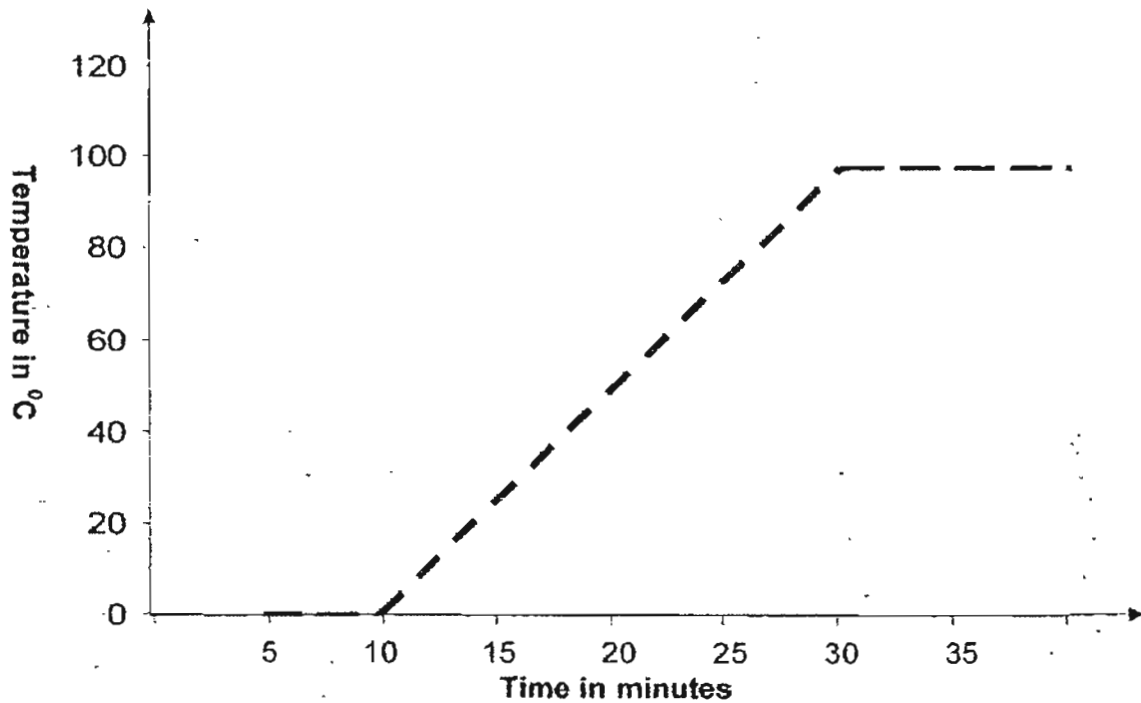
---



---



34. Some ice-cubes were heated in a beaker. The graph below shows how the temperature changes with time.



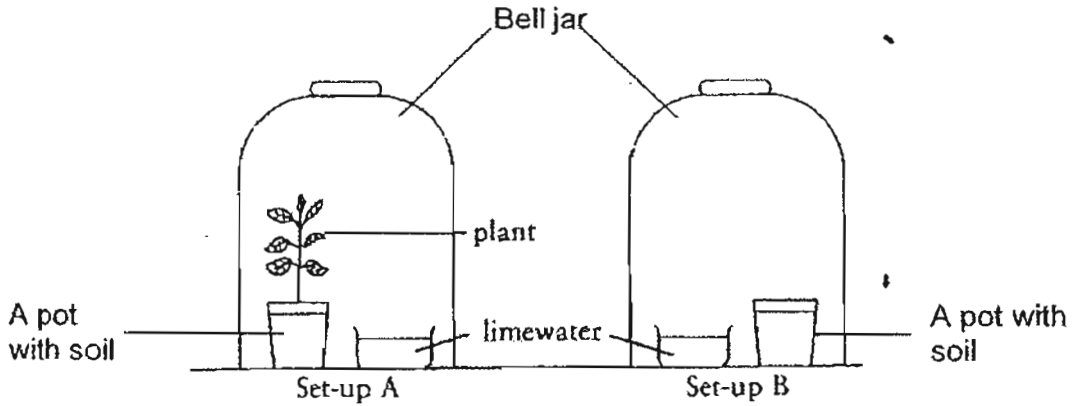
- (a) How long did the ice take to melt completely? (1m)

---

- (b) Explain why there was no increase in temperature for the first 10 minutes although heat was supplied. (1m)

---

35. Alice set up an experiment as shown below. Limewater turns chalky in the presence of carbon dioxide.



She left the two set-ups in a dark room for one day and tabulated the results as shown below.

Set up	Description of limewater	
	At the beginning	After one day
A	Clear	Chalky
B	Clear	Clear

(a) Why did Alice put the set-ups in a dark room? (1m)

---



---

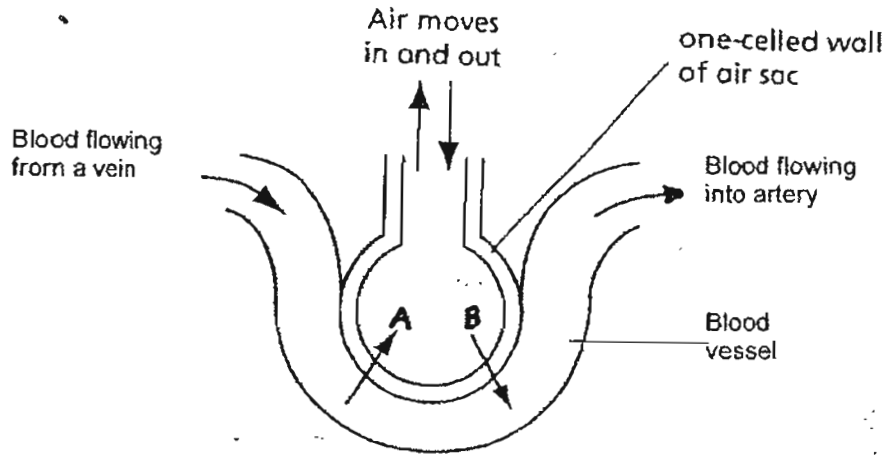
(b) What does the above experiment show? (1m)

---



---

36. There are many air sacs in our lungs. The diagram below shows the exchange of gases in an air sac.



- (a) A and B represent the gases that enter and leave the air sac respectively. Identify gases A and B. (1m)

Gas A: \_\_\_\_\_

Gas B: \_\_\_\_\_

- (b) State the difference between the blood flowing from a vein and the blood flowing into the artery. (1m)

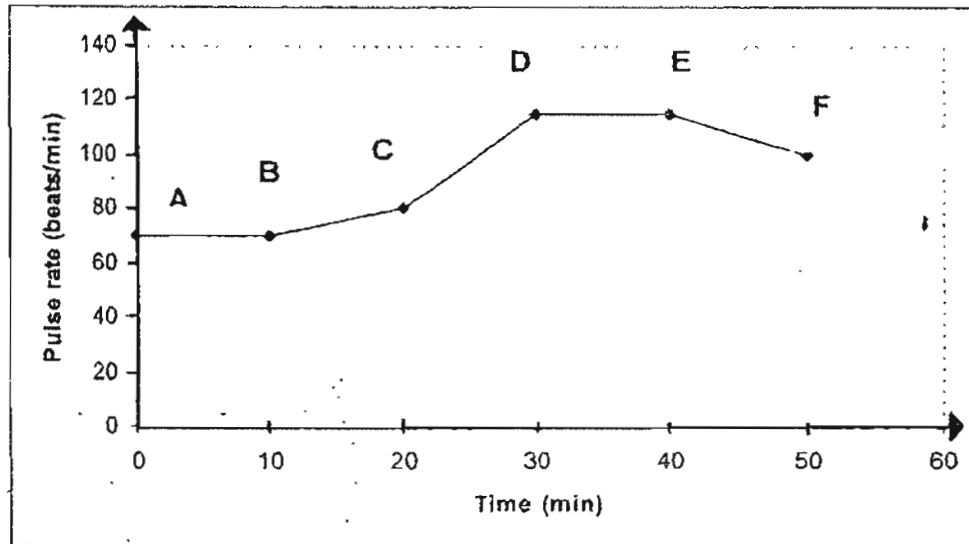
---

---

- (c) Name the two systems that are working together in the above situation. (1m)

---

37. Peter's instructor measured and recorded his pulse rate over a period of 50 minutes as shown in the graph. During this period, he did some warm-up exercises before beginning his run.



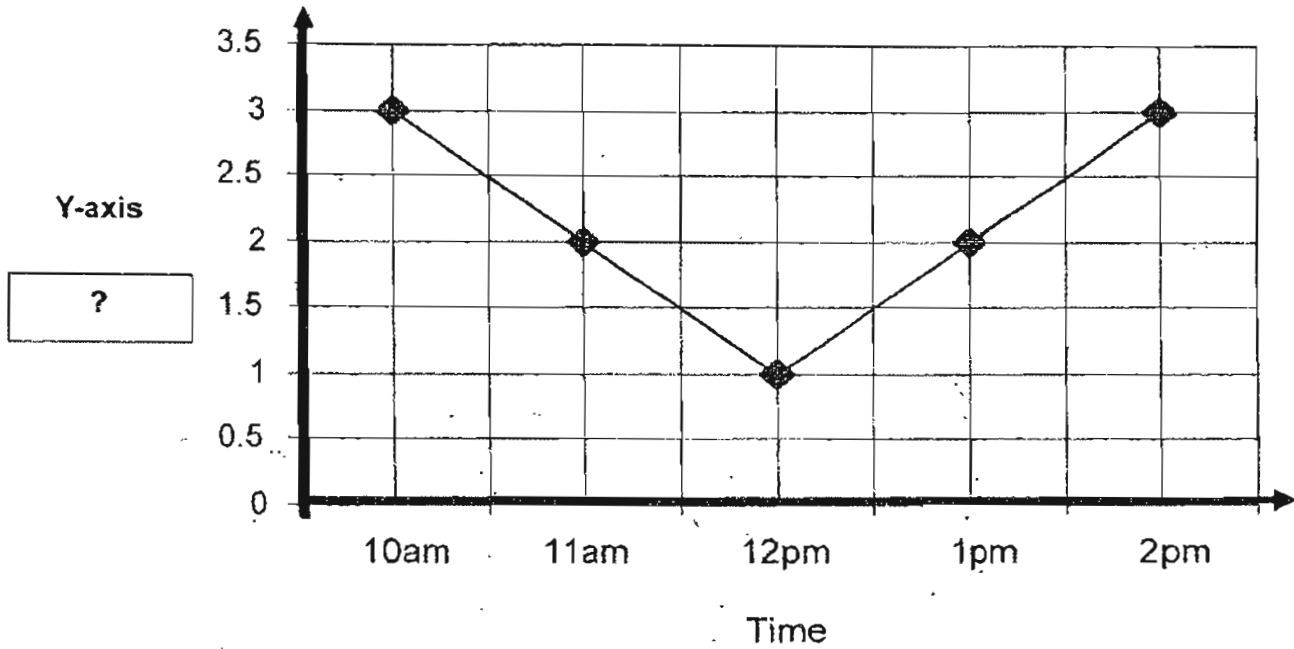
- (a) At which point (A, B, C, D, E or F) did Peter begin his run? (1m)
- 

- (b) What would happen to his breathing rate as his pulse rate increase? (1m)
- 

- (c) At which point did Peter (A, B, C, D, E or F) stop his run? Give a reason to support your answer, (1m)
- 

- (d) From point F, Peter continued to rest completely for another 20 minutes. What should his pulse rate be after 20 minutes? (1m)
-

38. Mary measured the length of the shadow (in metres) of a flagpole at different times of the day. She represented the results in a garden as shown below.



- (a) What is the heading for the Y-axis above? (1m)

---

- (b) Using the graph, what is the size of the shadow cast at 12.30 pm? (1m)

---

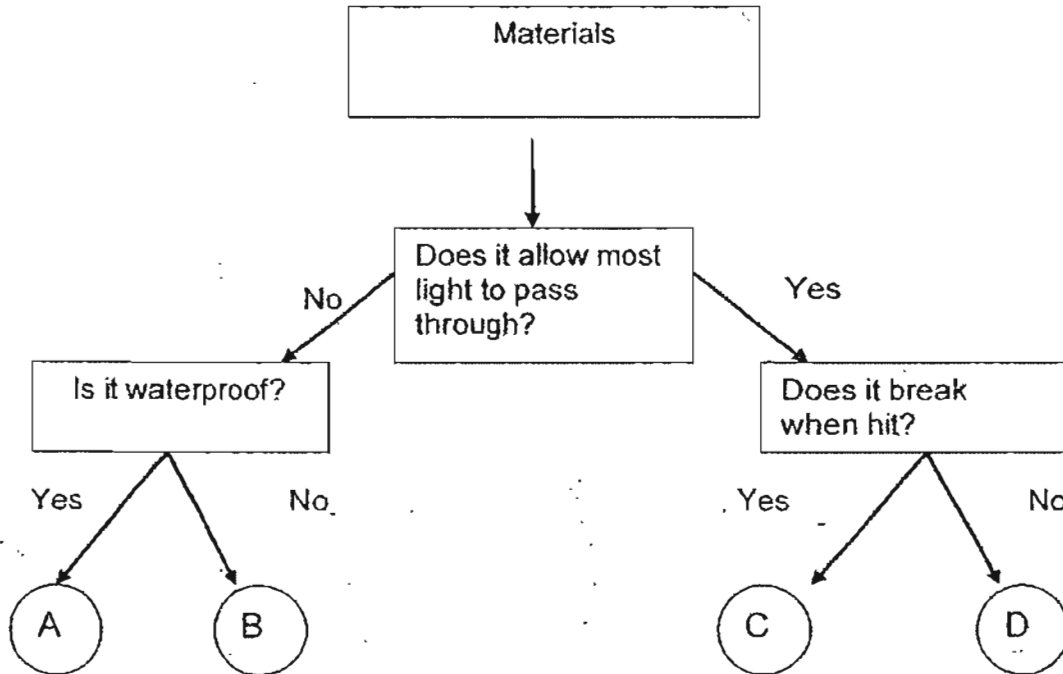
- (c) Explain why the length of the shadow changes at different times. (1m)

---



---

39. Study the flowchart below carefully. It shows the properties of some materials.



(a) State one similarity and one difference between materials C and D. (2m)

Similarity:

---

---

Difference:

---

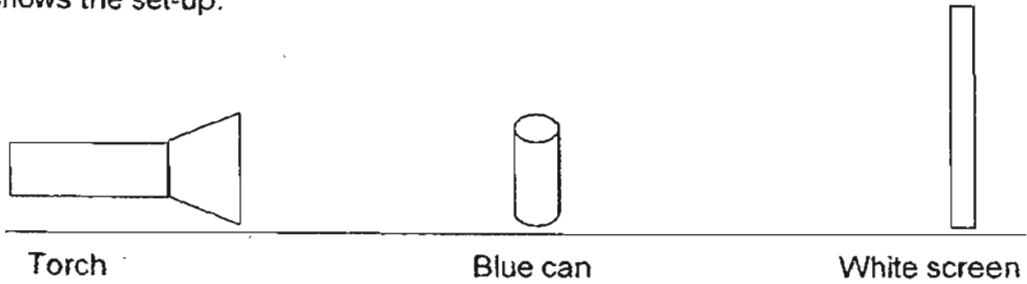
---

(b) Which two properties are the most important for a material that is used to make a glass tank? (1m)

---

---

40. Clemens carried out an investigation to find out how the distance of the torch from the screen affects the size of the shadow. The diagram below shows the set-up.



His results are shown in the table below.

Distance of torch from the screen (cm)	Height of the shadow on the screen (cm)
20	11
25	9
30	7
35	5

- (a) Based on the results, how does the distance of the torch from the screen affect the height of the shadow? (1m)

---



---

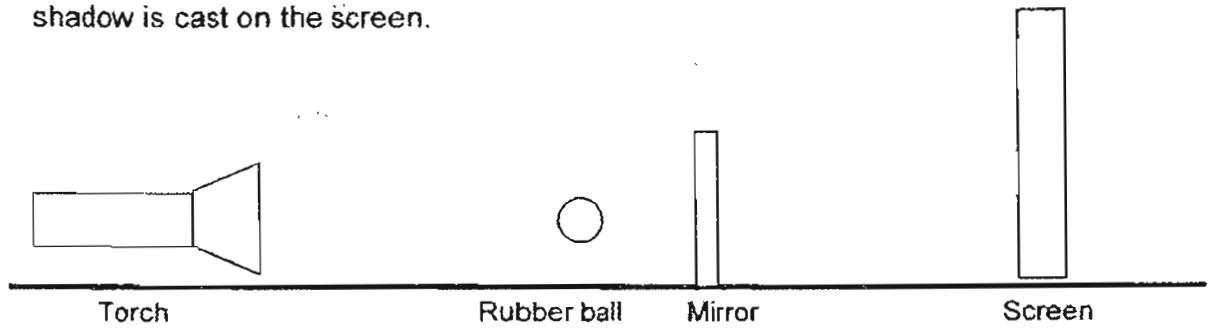
- (b) During the investigation, Clemens observed that the shadow formed on the screen was always black. Why was that so? (1m)

---

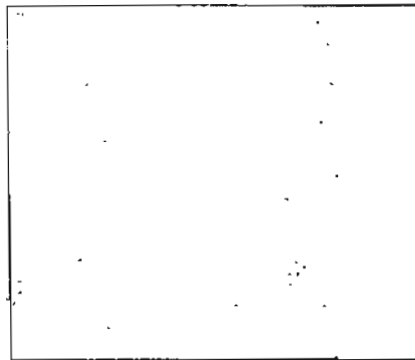


---

41. The diagram below shows a torch shining on a ball and a square mirror. A shadow is cast on the screen.



- (a) Draw the shadow as seen on the screen in the box provided below. (1m)



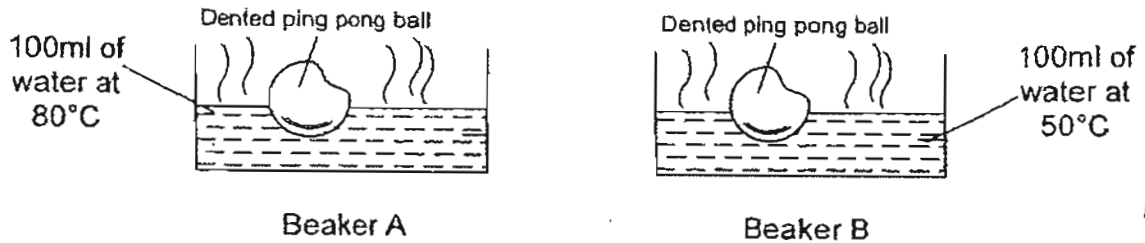
- (b) Suggest one change he should make to the above set-up so that he could see only the shadow of the rubber ball on the screen. (1m)

---

---



42. Xavier had 2 identical ping pong balls which were dented. He placed each ping pong ball in beakers A and B as shown below.



- (a) Compare the amount of heat in beakers A and B.  
What was the difference between the water in beakers A and B with regard to the amount of heat? (1m)

---

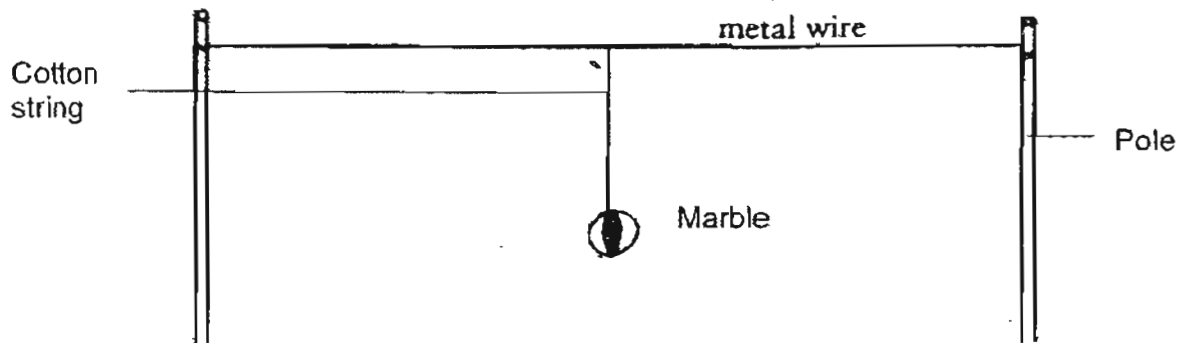
---

- (b) In which beaker would the ping pong ball become round faster?  
Explain why. (1m)

---

---

43. A marble was hung on a metal wire in the garden as shown below.



(a) Using the diagram above, state two changes you would observe on a very hot day. (2m)

---

---

---

---

(b) Would you observe the same changes as mentioned in part (a), if the metal wire was replaced by plastic? Explain why. (1m)

---

---

44. Jenny left a cup of hot chocolate drink in an air-conditioned room. She recorded the temperature of the hot chocolate over a period of time as shown below.

Time/min	Temperature/°C
0	97
5	84
10	66
15	52
20	35
30	24
35	22
40	22
42	22

- (a) What was the temperature of the hot chocolate drink at 10<sup>th</sup> minute?  
(1m)
- 

- (b) Explain what caused the change in the temperature of the hot chocolate drink. (1m)
- 

- (c) Based on the information given, what was the likely temperature of the air-conditioned room? (1m)
- 

- (d) What would happen to the change in temperature of the chocolate drink if the temperature of the air-conditioner was lowered? (1m)
-

45. Azlina wanted to find out which material, X or Y, is a better conductor of heat. She placed the materials in an oven at  $120^{\circ}\text{C}$  for 10 minutes. She recorded the temperature of the two materials in a table as shown below.

Materials	Starting temperature ( $^{\circ}\text{C}$ )	Temperature after placing in the oven ( $^{\circ}\text{C}$ )
X	30	47
Y	30	33

- (a) Using the results, which material is a better conductor of heat? (1m)

---

- (b) Azlina wanted a material to cover ice blocks to prevent them from melting easily. Which material should she choose, X or Y? Support your choice. (1m)

---

---

46. When Jamie exhaled onto a sheet of metal, he noticed tiny drops of water forming on the metal plate. Explain how the water droplets were formed. (2m)

---

---

---

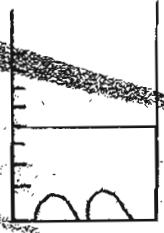
**End of Paper**



# ANSWER SHEET

ROSYTH PRIMARY SCHOOL - PRIMARY 4 SCIENCE 2007  
SEMESTRAL ASSESSMENT (2)

1. 3
2. 1
3. 3
4. 3
5. 3
6. 2
7. 3
8. 2
9. 2
10. 3
11. 1
12. 1
13. 4
14. 2
15. 2
16. 3
17. 2
- 18.
19. 3
20. 4
21. 3
22. 3
23. 4
24. 4
25. 2
26. 2
27. 2
28. 1
29. 3
30. 4



b) Yes, they occupy the same space.

32) 1) ✓ 2) x 3) x 4)

33) a) Y.

b) Material Y can absorb a lot of water.

34) a) 10 min.

b) The ice had not started to melt completely.

35) a) To prevent the plant from making food.

b) Plant give out carbon dioxide when they respire.

36) a) A: carbon dioxide  
B: oxygen

b) The blood flowing in vein is full of carbon dioxide while the blood flowing in the arteries are full of oxygen.

c) Circulatory system and respiratory system.

37) a) C.

b) His breathing rate will also increase.

c) E. His pulse rate had decrease.

d) 70 beats min.

38) a) Length of shadow.

b) 1.5m

c) The earth is moving therefore the light can be stronger or weak.

39) a) Similarity: Both allow most light to pass through.


Difference: Material C easily when hitted

While material D does not break when hitted.

b) It must be waterproof and must allow light to pass through.

40) a) The nearer the torch is, the bigger the shadow is formed.

b) The blue car is an opaque and opaque object does not allow any light to pass through.

41) a) 

b) Remove the mirror.

42) a) The air in the ball gain more heat and expanded faster.

b) Water in A has more heat than B.

43) a) The metal wire will expand.

The marble will be lowered.

b) No, Plastic is a poor conductor of heat.

44) a) 66°C

b) The drink loses heat to the surrounding air.

c) 22°C

d) The temperature will lower to the rooms temperature.

45) a) X.

b) Y, Y is a bad conductor of heat.

46) Water vapour condenses into water when it drop on cold metal plate.