

METHODIST GIRLS' SCHOOL (PRIMARY)

Founded in 1887



MID-YEAR EXAMINATION 2013 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. _____

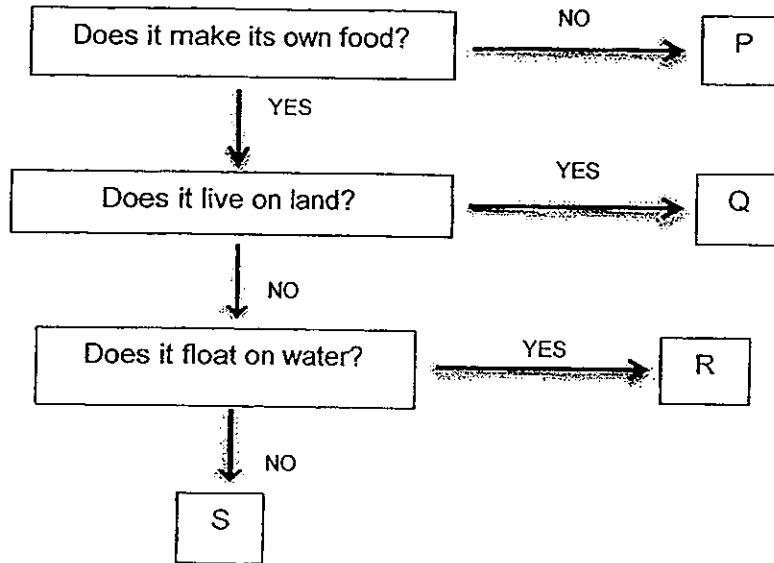
Date: 16 May 2013

This booklet consists of 15 printed pages excluding this page.

For each question 1 – 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 classification table below.



Which of the following correctly shows what P, Q, R and S most likely represent?

	P	Q	R	S
(1)	earthworm	bird nest fern	duckweed	hydrilla
(2)	rabbit	mushroom	hydrilla	duckweed
(3)	toadstool	moss	grass	duckweed
(4)	earthworm	rabbit	duckweed	hydrilla

2 Which of the following sentences best explains the importance of the dead log to mushrooms?

- (1) The log provides mushrooms with food.
- (2) The log helps mushrooms make food.
- (3) Parts of the log are used to grow mushrooms.
- (4) Mushrooms obtain its oxygen from the log.

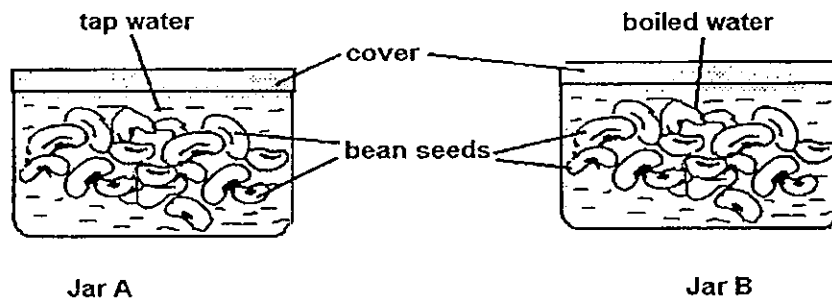
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- 3 The animals below are grouped according to the way they reproduce.

Type of reproduction	
Group A	Group B
sea lion	seagull
rabbit	platypus
whale	goldfish
seal	molly

Which of the animals is wrongly grouped?

- (1) Molly
 - (2) Seagull
 - (3) Sea lion
 - (4) Platypus
- 4 The diagram below shows two jars, Jar A and Jar B, containing some beans and water. They are placed in the classroom.

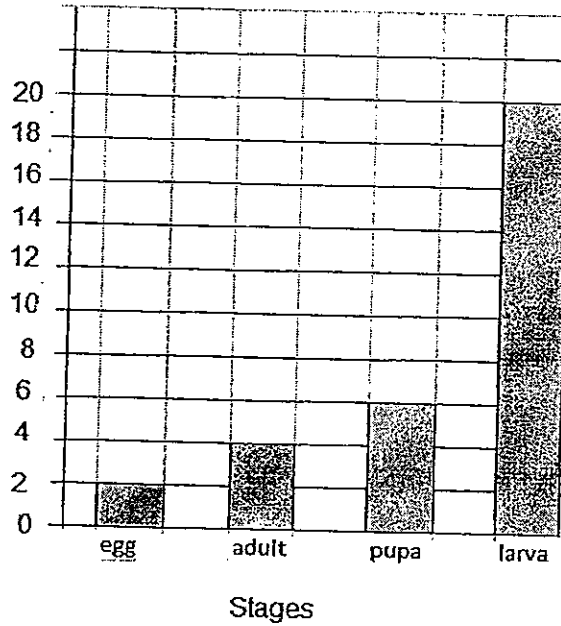


After two days, some green beans in Jar A germinated but none of the beans in Jar B did. What does this experiment show?

- (1) Beans need air to germinate.
- (2) Beans need light to germinate.
- (3) Beans need food to germinate.
- (4) Beans need water to germinate.

- 5 Alice studied the life cycle of an insect X. She recorded the number of days for each stage of its life cycle. Her results are shown in the graph below. However, the stages are not arranged in the correct order.

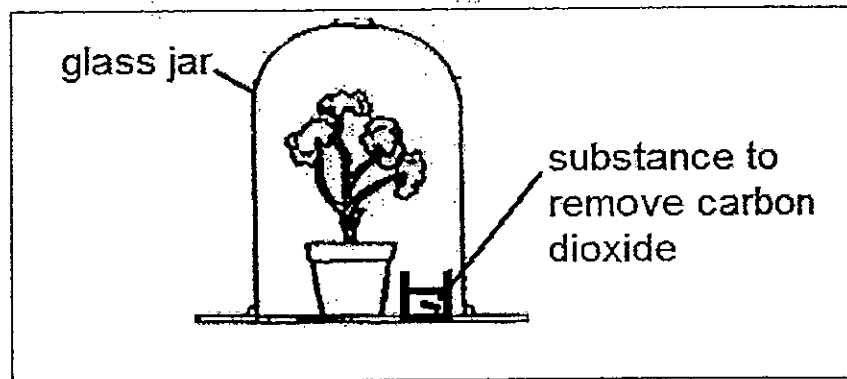
Number of days



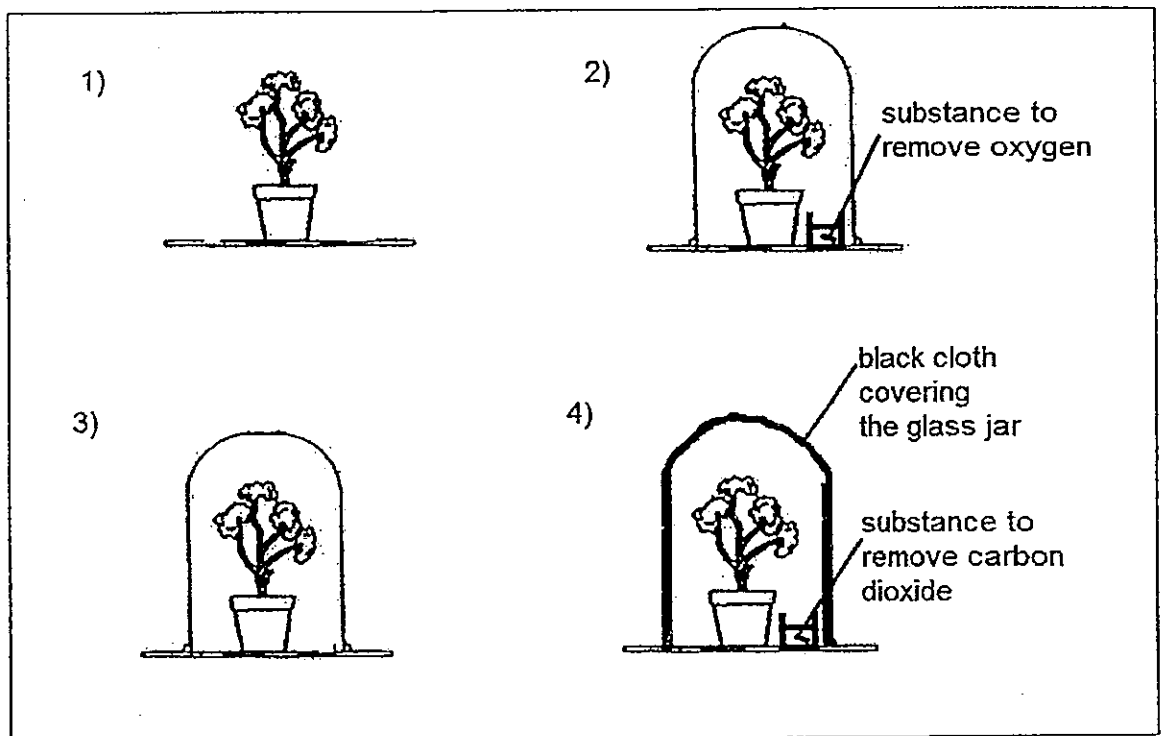
Based on her results, how many days does the insect take to become an adult after the egg has hatched?

- (1) 6 days
- (2) 16 days
- (3) 24 days
- (4) 26 days

- 6 Sam conducted an experiment to find out whether carbon dioxide is needed for photosynthesis. She used the set-up shown below.

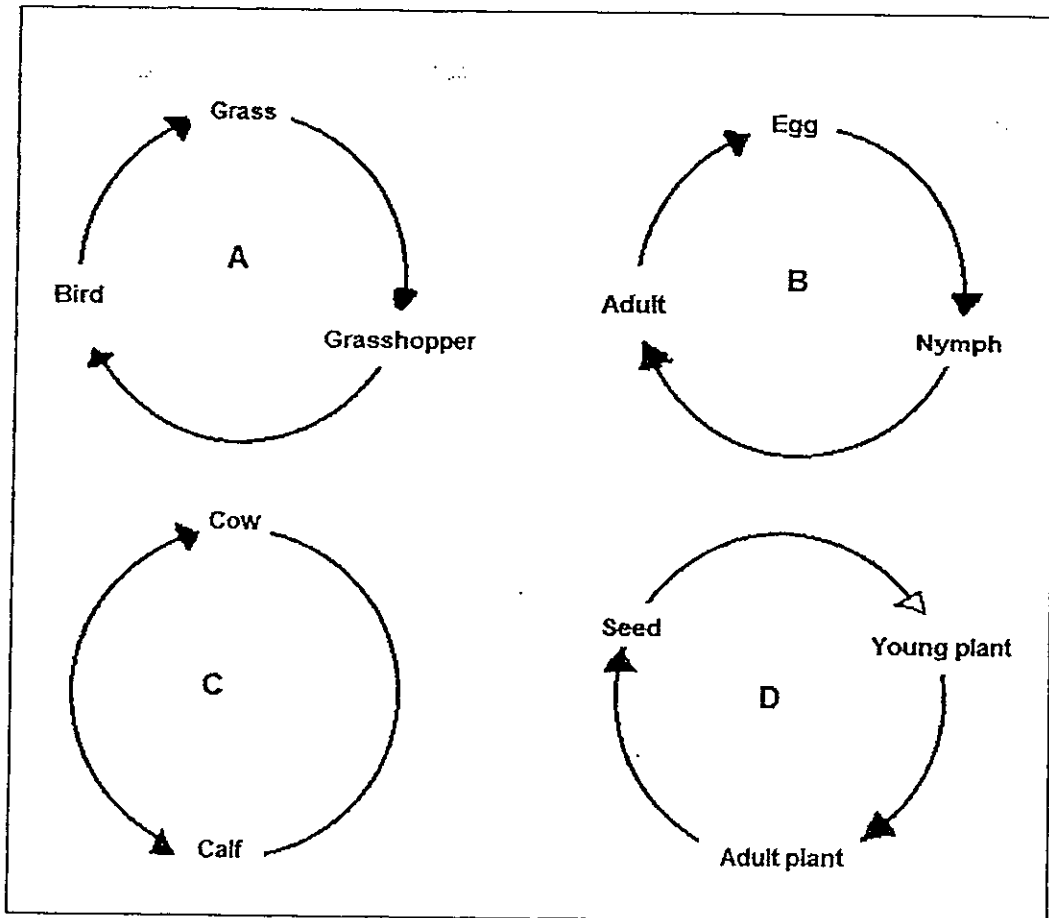


Which one of the following should Sam use as a control for his experiment?



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7 Which of the following is/are not a life cycle?

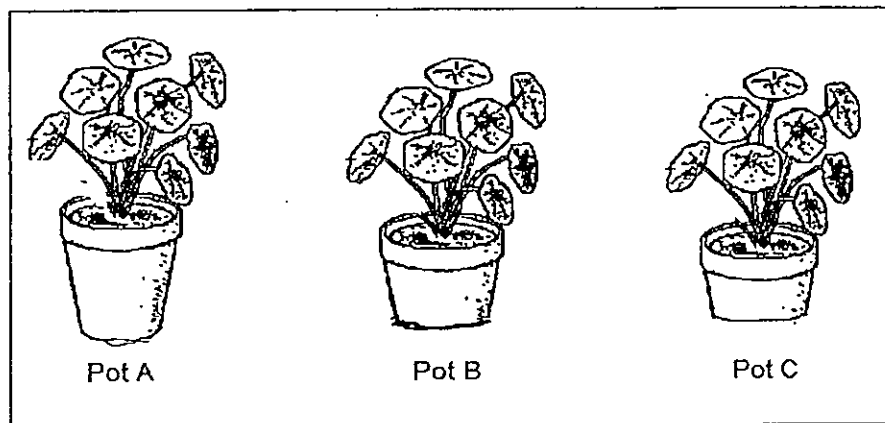


- (1) A only
- (2) A and C only
- (3) A, B and C only
- (4) B, C and D only

- 8 Jenny wanted to find what type of soil was suitable for growing plants. She planted 3 plants of similar size in three pots, A, B and C.

	A	B	C
Material of pot	Porcelain	Porcelain	Porcelain
Type of soil	Garden soil	Sand	Clay
Size of pot	1000cm ³	500cm ³	200 cm ³
Amount of water used every day	200 cm ³	200cm ³	200cm ³

The three plants were placed in the garden.

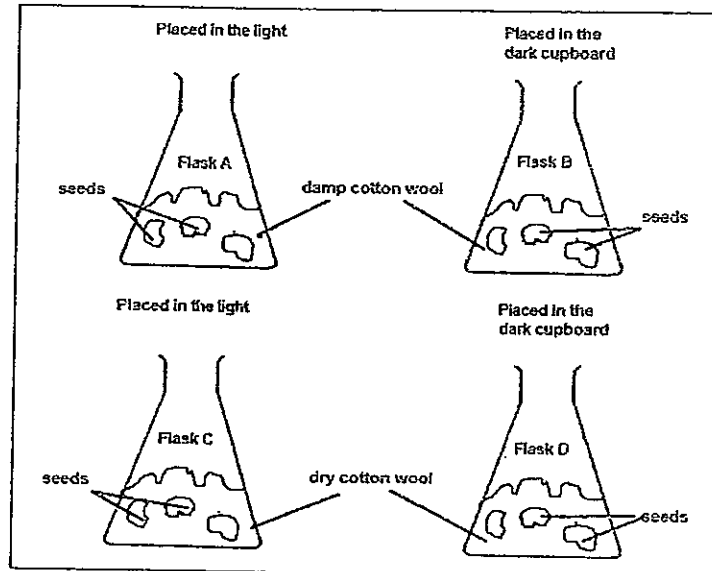


Her teacher told her that her experiment was not a fair test. Why was it not fair?

- (1) The amount of soil in each pot was different.
- (2) The type of soil used in each pot was different.
- (3) The three pots were given the same amount of water.
- (4) The balsam plant in Pot A was placed in the shade in the garden.

- 9 Sally carried out an experiment as shown in the diagram below. At the end of the experiment, she observed that the seeds grew into seedlings in Flasks A and B but not in the other two.

What was Sally trying to find out from her experiment?

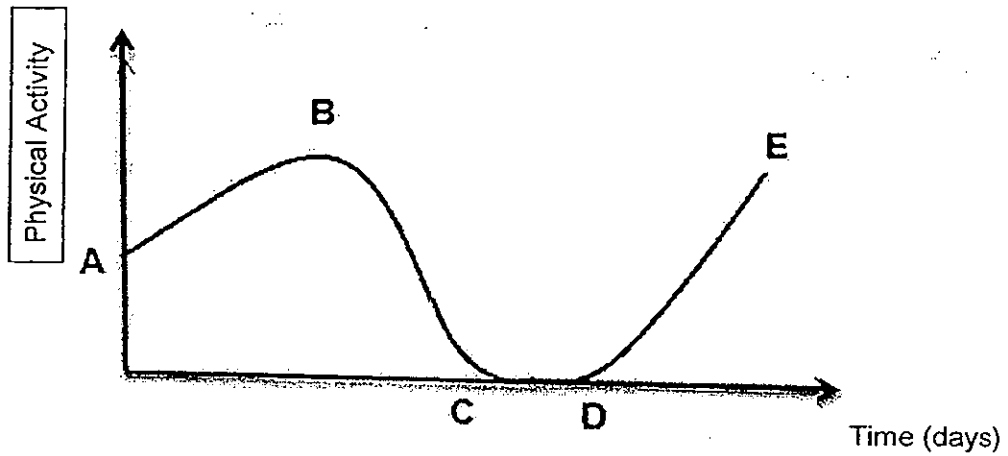


- (1) Seeds need water to germinate.
 - (2) Seedlings need light to photosynthesize.
 - (3) Seeds need water and light to germinate.
 - (4) Seedlings need air, water and light to germinate.
- 10 The picture below shows a seed growing. What is the function of part B?



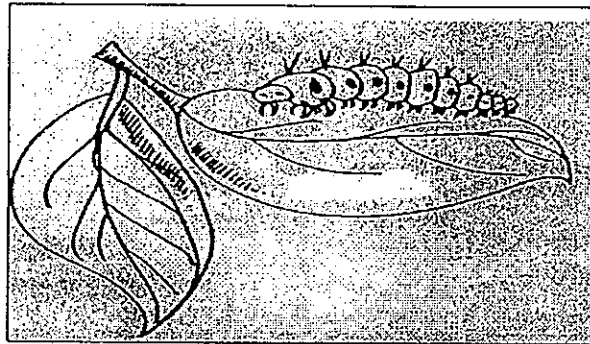
- (1) To protect the seedling.
- (2) To make food for the seedling.
- (3) To store water for the seedling.
- (4) To provide food for the seedling.

- 11 The rate of physical activity of a butterfly over its life cycle is shown in the graph below.



Which one of the following stages is represented by line C to D in the graph?

- (1) Egg
 - (2) Pupa
 - (3) Larva
 - (4) Adult
- 12 The diagram below shows a caterpillar.



Based only on what you can see in the diagram, which of the following statements about the caterpillar is/ are true?

- A : It is green in colour.
- B : It can be found on plants.
- C : It reproduces by laying eggs.
- D : Its body is made up of many segments.

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

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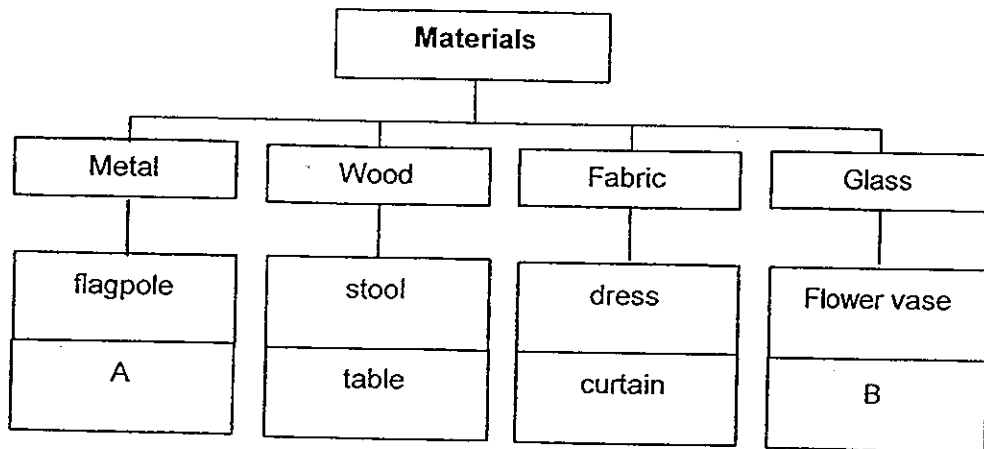
13 The table below shows the characteristics of three objects A, B and C.

Characteristics \ Object	A	B	C
Bends easily	✓	✓	✓
Stretched easily	✓	✓	x

Which one of the following sets of objects best fits the description in the table above?

	A	B	C
(1)	rubber boots	cardboard	rubber band
(2)	paper	sponge	rubber band
(3)	rubber band	swimsuit	paper
(4)	cardboard	rubber band	swimsuit

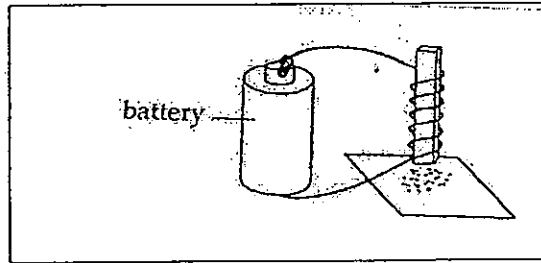
14 Study the classification diagram below. It shows how some objects have been classified according to the material they are made of.



What are objects A and B most likely to be?

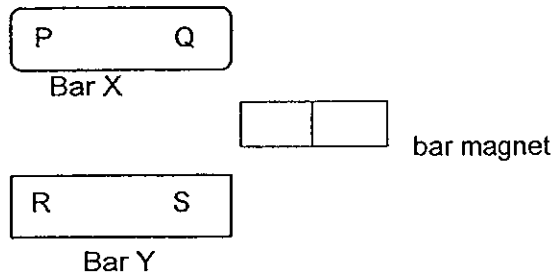
	A	B
(1)	magnet	windowpane
(2)	stapler	drink can
(3)	ring file	mirror
(4)	screw	earrings

- 15 Sandy wants to make an electromagnet. She sets up the experiment as shown below. There is no attraction when she places the metal bar near some iron filings.



What is a possible reason why the iron filings are not attracted to the metal bar?

- (1) The metal bar is made of aluminium.
 - (2) The iron filings have lost their magnetism.
 - (3) The electrical wires should be connected to the electrical mains.
 - (4) The electrical wire must be coiled many times around the metal bar.
- 16 An experiment was carried out using a magnet and two bars, X and Y.



The magnet was brought close to Bar X and observations made were recorded. The same procedure was carried out between the magnet and Bar Y. Observations were also recorded. Which of the following would indicate that Bar X is a magnet and Bar Y is not?

	P	Q	R	S
(1)	repel	attract	repel	attract
(2)	repel	repel	attract	repel
(3)	attract	attract	repel	attract
(4)	attract	repel	attract	attract

- 17 Sally had messed up the cards which showed the steps to find the volume of a pebble.

A. Find the difference between the old and new volumes.

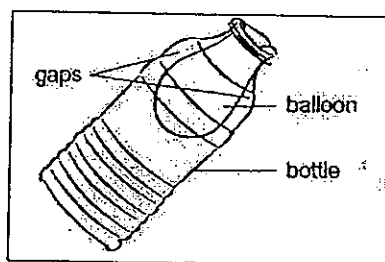
B. Fill the measuring cylinder with 20 ml of water.

C. Take the total volume of the water and the pebble.

D. Place the pebble into the water carefully.

Arrange the cards to show the correct order to finding the volume of the pebble.

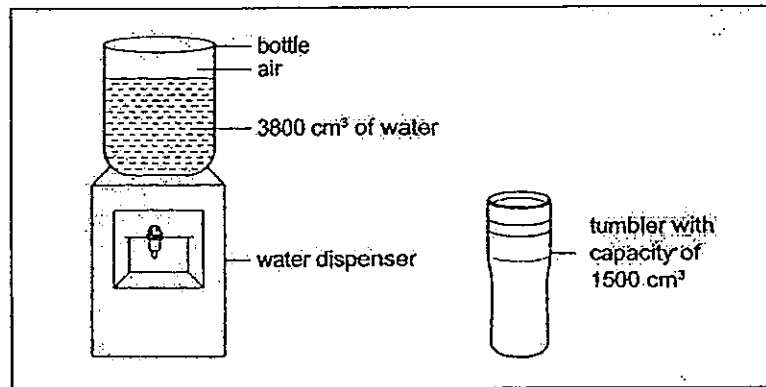
- (1) A,D,C,B
 - (2) B,D,C,A
 - (3) B,D,A,C
 - (4) D,B,C,A
- 18 Tammy secures a deflated balloon over the mouth of a bottle. She then pumps air into the balloon as she wants it to fill up the whole bottle. However, she realizes that it is almost impossible to blow the balloon up.



Why is it not possible for the balloon to inflate inside the bottle?

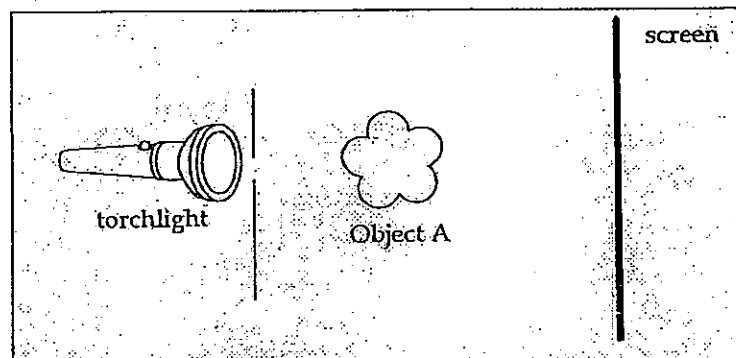
- (1) The container has a fixed shape
- (2) The balloon is not elastic enough.
- (3) The air inside the container occupies space.
- (4) The air in the balloon cannot be compressed.

- 19 The bottle of a water dispenser had a capacity of 5000 cm^3 . John filled his tumbler which had a capacity of 1500 cm^3 with water from the dispenser.



After John had completely filled the tumbler with water from the dispenser, what was the volume of air left in the water dispenser?

- (1) 1200 cm^3
 - (2) 2300 cm^3
 - (3) 2700 cm^3
 - (4) 3800 cm^3
- 20 What should Ali do to make the shadow of Object A larger?

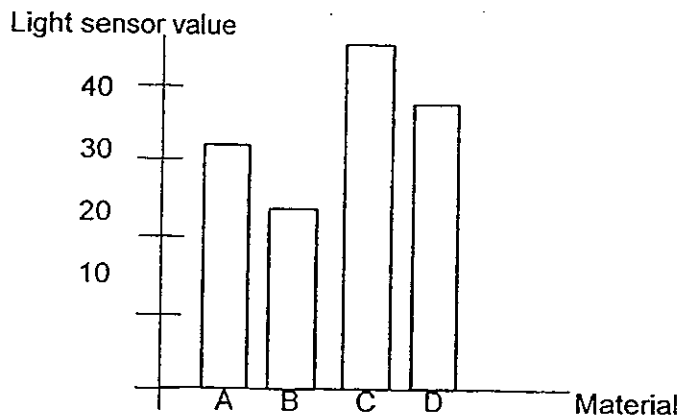


- A. Without changing the position of the torchlight, he should put Object A nearer to the screen.
- B. Without changing the position of the torchlight, he should put Object A further away from the screen.
- C. Without changing the position of the screen, he should put Object A nearer to the light source.
- D. Without changing the position of the screen, he should put Object A further away from the light source.

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

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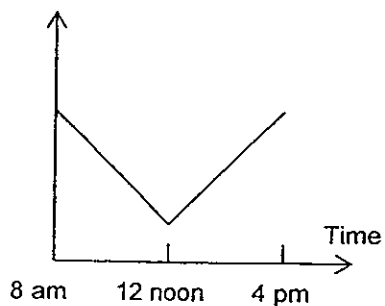
- 21 Benny connected a light sensor to a data logger. With the help of his computer, he tested four different materials to see which would allow the most light to pass through. He plotted the graph of the readings as shown below.



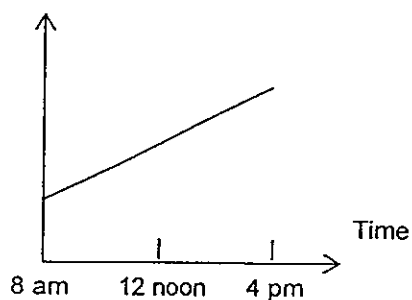
Which of the following is the best choice to make a curtain for the bedroom?

- (1) A
 (2) B
 (3) C
 (4) D
22. Which of the following shows the correct changes in the lengths of the shadow of a tree throughout the day?

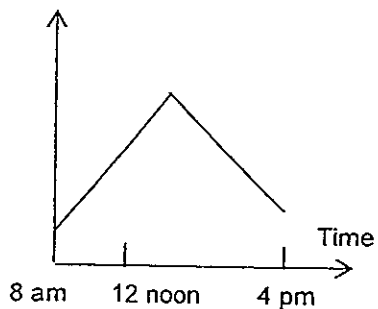
(1) Length of shadow



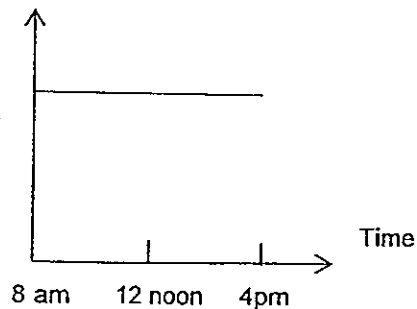
(3) Length of shadow



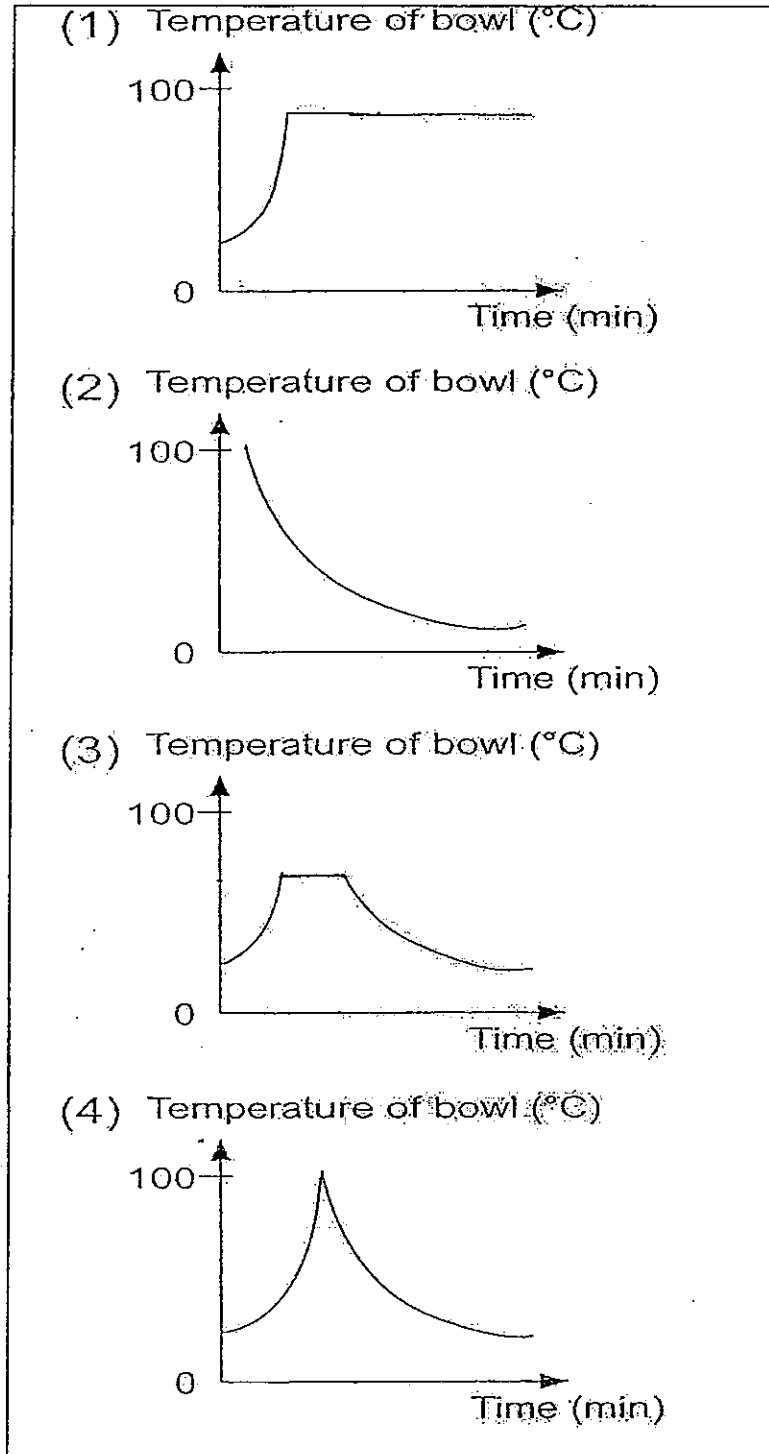
(2) Length of shadow



(4) Length of shadow



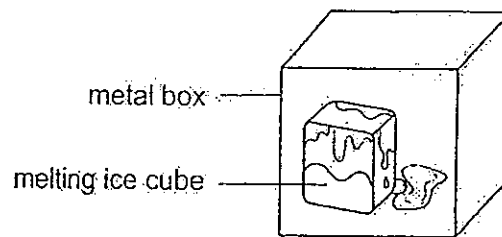
- 23 Annie was preparing to boil some soup for dinner. After the soup had boiled for a few minutes, she poured it out from the pot into a big bowl. Next, she left the big bowl of hot soup on the kitchen table for half an hour. Which graph will best represent the changes in temperature of the bowl?



- 24 Which of the following shows the likely match between a thermometer's temperature range and its use?

	To measure	Range of temperature
(1)	Ice shavings	0°C to 10°C
(2)	man	34°C to 42°C
(3)	states of water	-15°C to 100°C
(4)	an airy room	-20°C to 200°C

- 25 Nathan placed an ice cube into a small metal box as shown below.



Which of the following correctly shows the changes in the temperatures of the ice cube, the metal box and the surrounding air in the metal box during the process of melting?

	Ice cube	Metal box	Surrounding air
(1)	Remains	Increases	Decreases
(2)	Remains	Decreases	Decreases
(3)	Increases	Decreases	Decreases
(4)	Increases	Increases	Remains



METHODIST GIRLS' SCHOOL (PRIMARY)

Founded in 1887



MID-YEAR EXAMINATION 2013 PRIMARY 4 SCIENCE

BOOKLET B

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

INSTRUCTIONS TO CANDIDATES

Answer all questions.

Write your answers in this booklet.

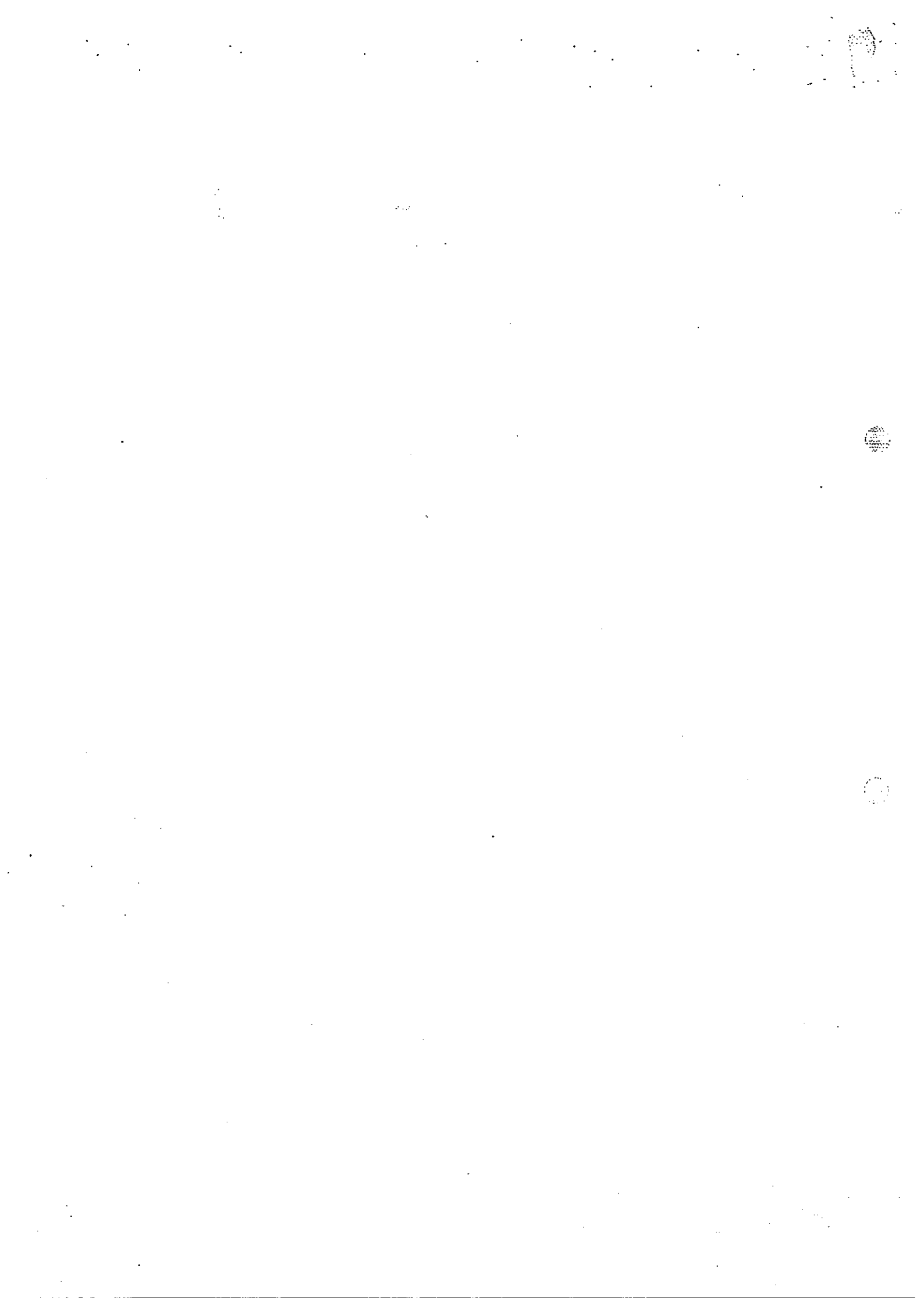
Name: _____ ()

Class: Primary 4. _____

Date: 16 May 2013

Booklet A	/ 50
Booklet B	/ 40
TOTAL	/ 90

This booklet consists of 15 printed pages excluding this page.



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

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

26. The characteristics of four animals are given in the table below.

Animal A	Animal B	Animal C	Animal D
Has two wings	Has two wings	Has two wings	Has no wings
Has two legs	Has two legs	Has two legs	Has four legs
Has feathers	Has hair	Has feathers	Has hair
Can fly	Can fly	Cannot fly	Cannot fly

- (a) Name the two groups of animals that are represented in the table. [1m]

- (b) How is Animal D different from the rest of the other animals in the table? [1m]

27. Match the following characteristics of living things to the observations made in the table. Write A, B, C and D in the correct boxes. [2m]

Characteristics of living things	
A	They grow
B	They reproduce
C	They respond to changes.
D	They move by themselves

	Observations made	Characteristics of living things
i.	A tortoise lays eggs.	
ii.	The birds fly in the sky.	
iii.	The dog chased the thief for 3 km and came back panting.	
iv.	Ramsy is now in Primary 4. He cannot fit into his Primary 1 uniform.	

Go on to the next page.

28. Paul wanted to test how fast fungi grew on different types of bread. He added a few drops of water to each type of bread. After a few days, he observed different coloured patches of fungi on the bread. He recorded his observations in the table below.

Types of bread	A	B	C
Colour of fungal patches	White and yellow	White, black and yellow	White
Amount of fungal patches	++	+++	+

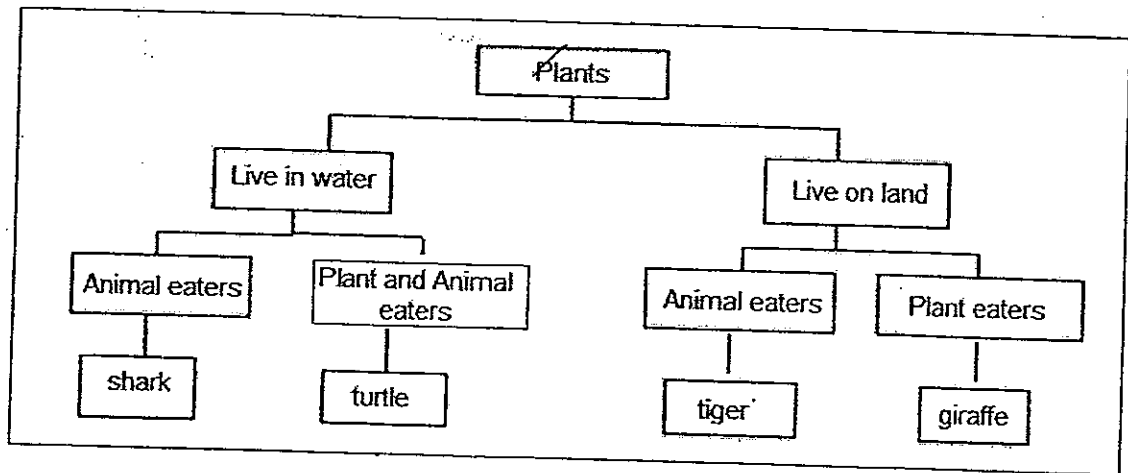
- (a) Which type of bread did the fungi grow the fastest? [½m]

- (b) Where did the fungi come from? [½m]

- (c) What could be the result if no water was added to the bread? [1m]

- (d) What could Paul do to make the result more reliable? [1m]

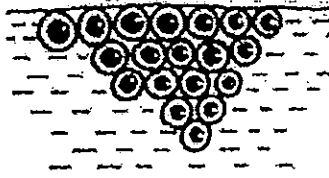
29. A classification chart for animals is shown below.



(a) Based on the chart above, name 2 characteristics of the shark. [1m]

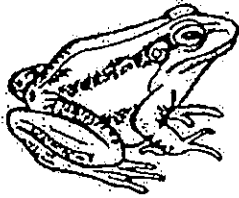
(b) With which organism should the elephant be placed in the chart above? [1m]

30. The diagram below shows the eggs of an animal.



(a) Which animal shown below lays these? Put a tick (✓) in the box.

[½m]





(b) In what way is the egg above different from a chicken's egg below? (Do not compare size, colour and quantity)

[1m]



chicken's egg

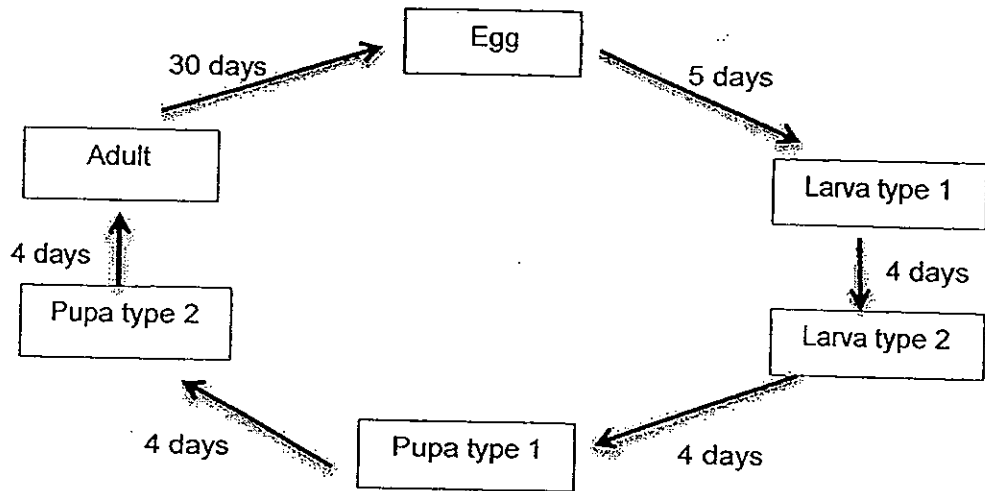
(c) How many stages does the animal in (a) undergo in its life cycle?

[½m]

(d) Name two animals whose life cycle does not have the same number of stages as the above animal.

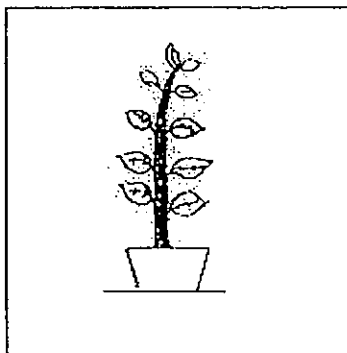
[1m]

31. The diagram below shows the life cycle of an imaginary animal P.



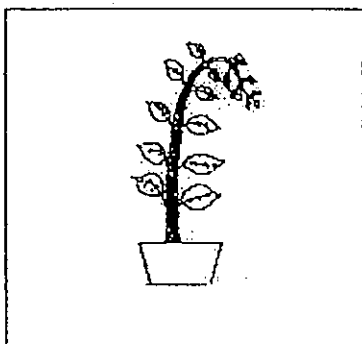
- (a) How many stages are there in the life cycle of Animal P? [1m]
-
- (b) State a similarity between the larval stage and the pupal stages? [1m]
-
- (c) How long does the animal take to become an adult? [1m]
-

32. Terry carried out an experiment to find out how light would affect the growth of a plant. He watered the plant and sealed it up in a cardboard box as shown below.



- (a) Terry pierced a hole in the box and after a few days, he observed that the plant grew towards one side.

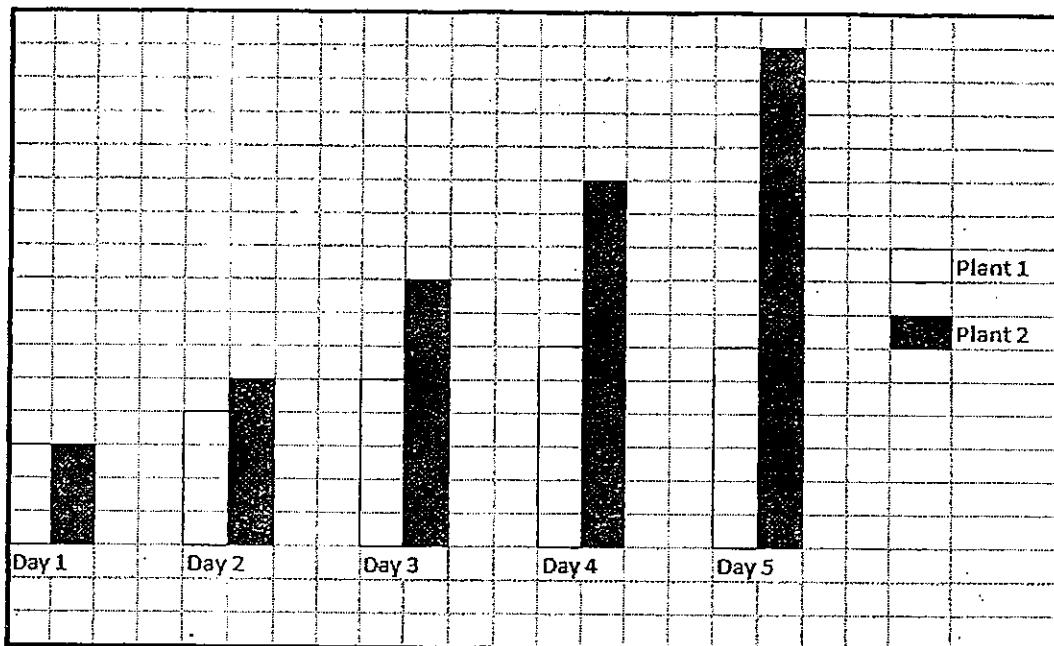
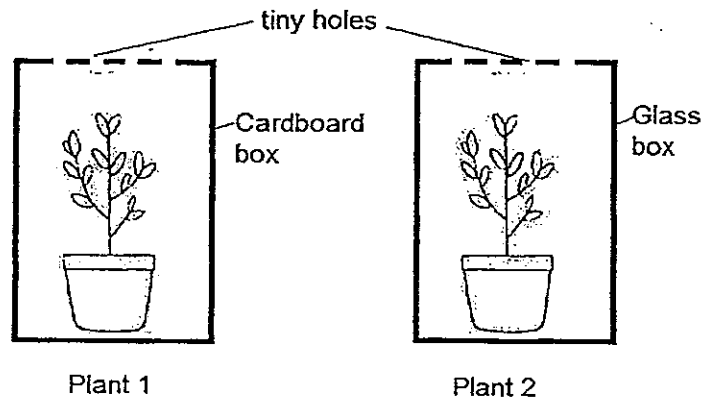
On the diagram below, draw an X to show a possible position of the hole made by Terry. [1m]



- (b) He conducted another experiment using a similar set-up, but this time, he covered the hole with a piece of tracing paper.

Would his observation be the same? Give a reason for your answer. [2m]

33. Billy put two similar plants in two similar pots filled with equal amounts of garden soil. He put them inside two different boxes of the same size with tiny holes at the top. He placed the boxes in the sun and watered them daily. He recorded the result over a week and plotted the graph as shown below.



- (a) From the graph, which plant is the taller one? [1m]

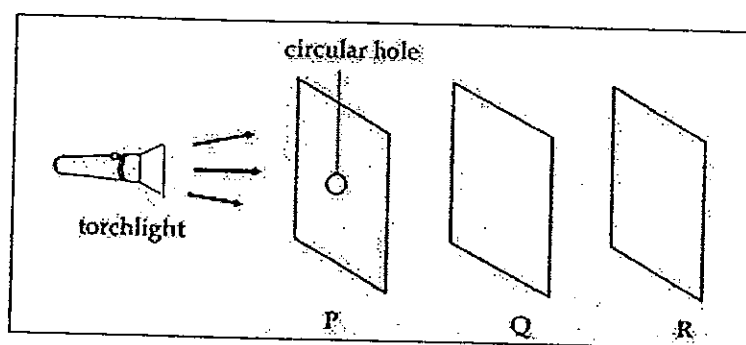
- (b) Give a reason for your answer in (a). [1m]

34 Bernard went trekking in the jungle. He did not bring a compass but had only a magnet, a map and a ball of string in his pocket. He soon realized that he was lost.

(a) He wanted to head towards the North, which according to his map would bring him out of the jungle. Using only the magnet and ball of string, what can he do to find his way out of the jungle? [1m]

(b) Why is the method suggested in (a) able to work? [1m]

- 35 Mary arranged three sheets of materials, P, Q and R, in a row in front of a torchlight as shown below. When she switched on the torchlight, she observed that a bright circular spot appeared only on Material R.



- (a) Based on the experiment done by Mary, state the property of P. [1m]
-

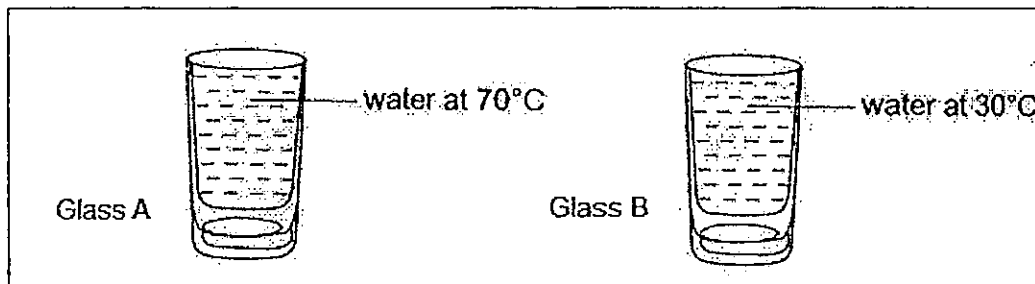
- (b) Give an example of the type of material used in P, Q and R. (No two same materials should be used in your answers.) [2m]

P: _____

Q: _____

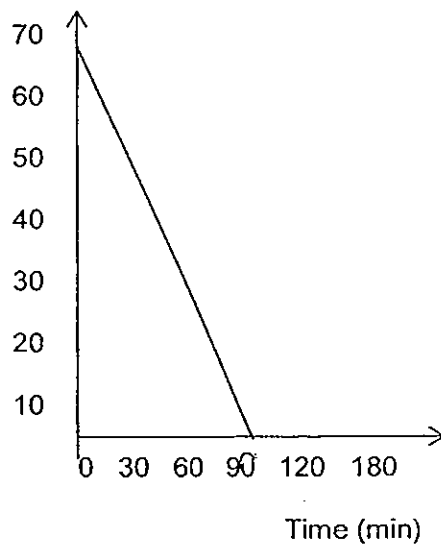
R: _____

- 36 Tommy wanted to try out an experiment that his Science teacher described in class. He filled two glasses with the same amount of water. In glass A, the temperature of the water was 70°C while the temperature of water in glass B was 30°C . He then placed both glasses in the same freezer and measured the time and the temperature of water at regular intervals till the water in both cups reached 0°C .



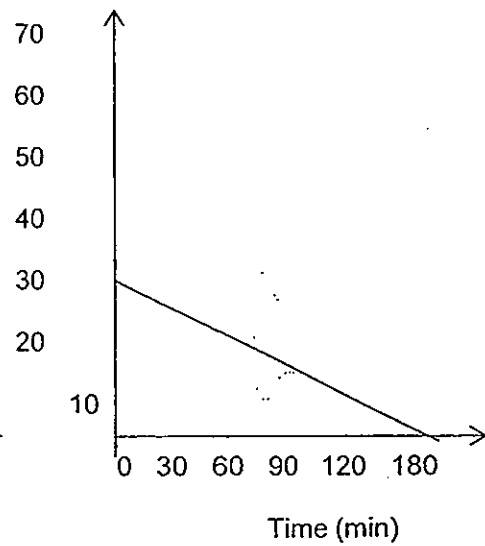
The graph below shows the results of his experiment.

Temperature ($^{\circ}\text{C}$)



Glass A

Temperature ($^{\circ}\text{C}$)



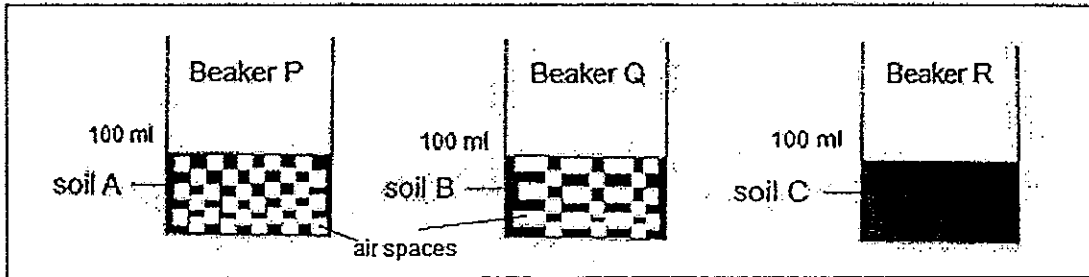
Glass B

- (a) Based on the results of this experiment, in which glass, A or B, did water freeze first? [1m]

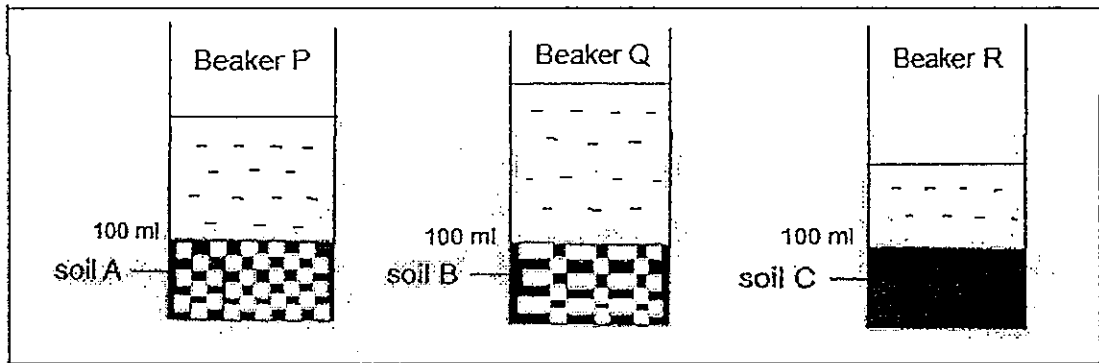
- (b) What is the relationship between the temperature of the water and the time taken for it to freeze? [1m]

- (c) Tommy wanted to make some homemade ice cream using liquid milk and flavourings. Based on your answer in (b), what do you suggest Tommy do to his ice cream mixture so that it freezes in the fastest time? [1m]

37 Suzy conducted an experiment to find out how air occupies space in 3 types of soil. She put each type of soil up to the 100ml mark in each of the 3 beakers, P, Q and R, as shown below.



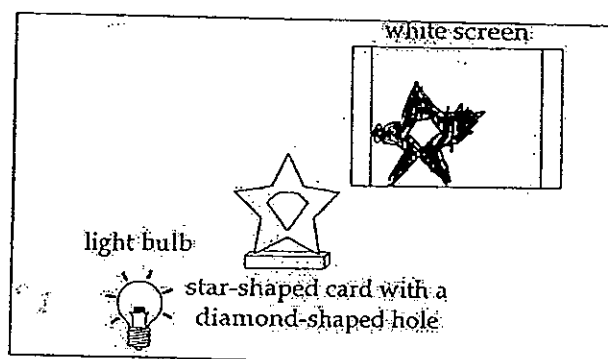
She added 200 ml of water into each container. After 15 minutes, Suzy recorded the results as shown below.



(a) Her teacher noted that she had recorded her observations wrongly. What were wrongly recorded? [1m]

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

- 38 Cindy set up an experiment as shown below.

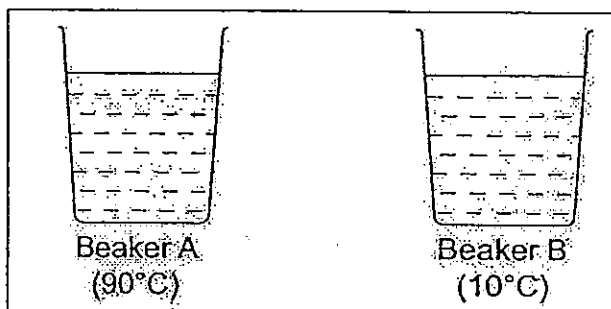


- (a) A shadow was cast on the white screen when the light bulb was turned on. Shade in the diagram below to show how the shadow would look like. [1m]

- (b) Cindy put a piece of tracing paper in front of the star-shaped card. What would happen to the shadow on the screen? [1m]

- (c) Cindy wanted the shadow of the star-shaped card to be sharper than what it was in (b). Without adding or removing any items, what would you suggest that she do? [1m]

- 39 Jimmy conducted an experiment with two beakers of water. He poured some water from one beaker to the other beaker and left it there for one hour. He recorded his readings in a table as shown below.



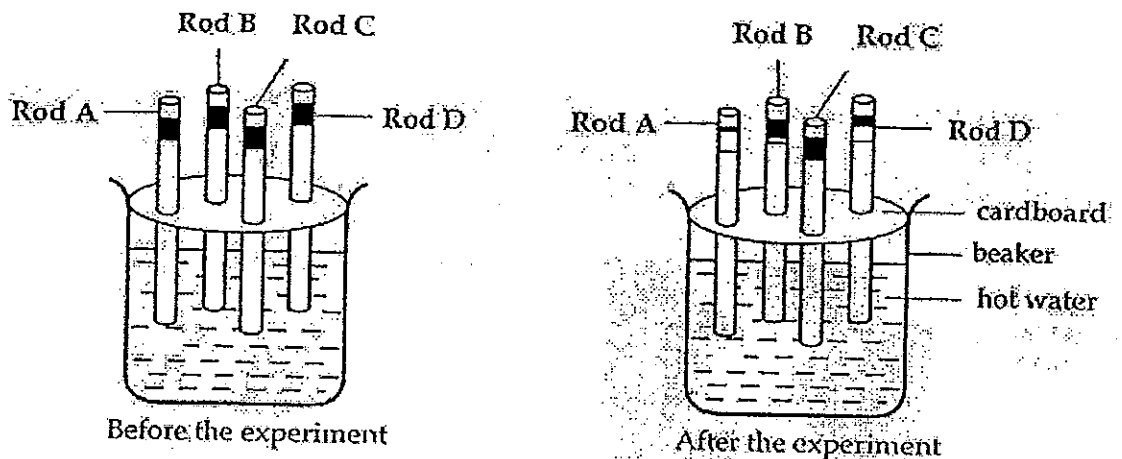
Time (min)	Beaker A	Beaker B
0	90°C	10°C
5	75°C	12°C
10	70°C	14°C
15	66°C	16°C
20	62°C	19°C
25	58°C	21°C
30	54°C	24°C
35	48°C	27°C
90	44°C	27°C

- (a) From which beaker did he pour the water from? [1m]



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

- (c) State 2 variables that were kept constant to ensure that the experiment was a fair test. [2m]

- 40 Steven wanted to test the conductivity of heat of four different rods. At one end of each rod, he added a strip of colour-changing paint which is sensitive to heat. The orange paint would change to white when it was hot. He inserted the four rods through holes of a piece of cardboard. He then placed the cardboard with the rods over a beaker of hot water.



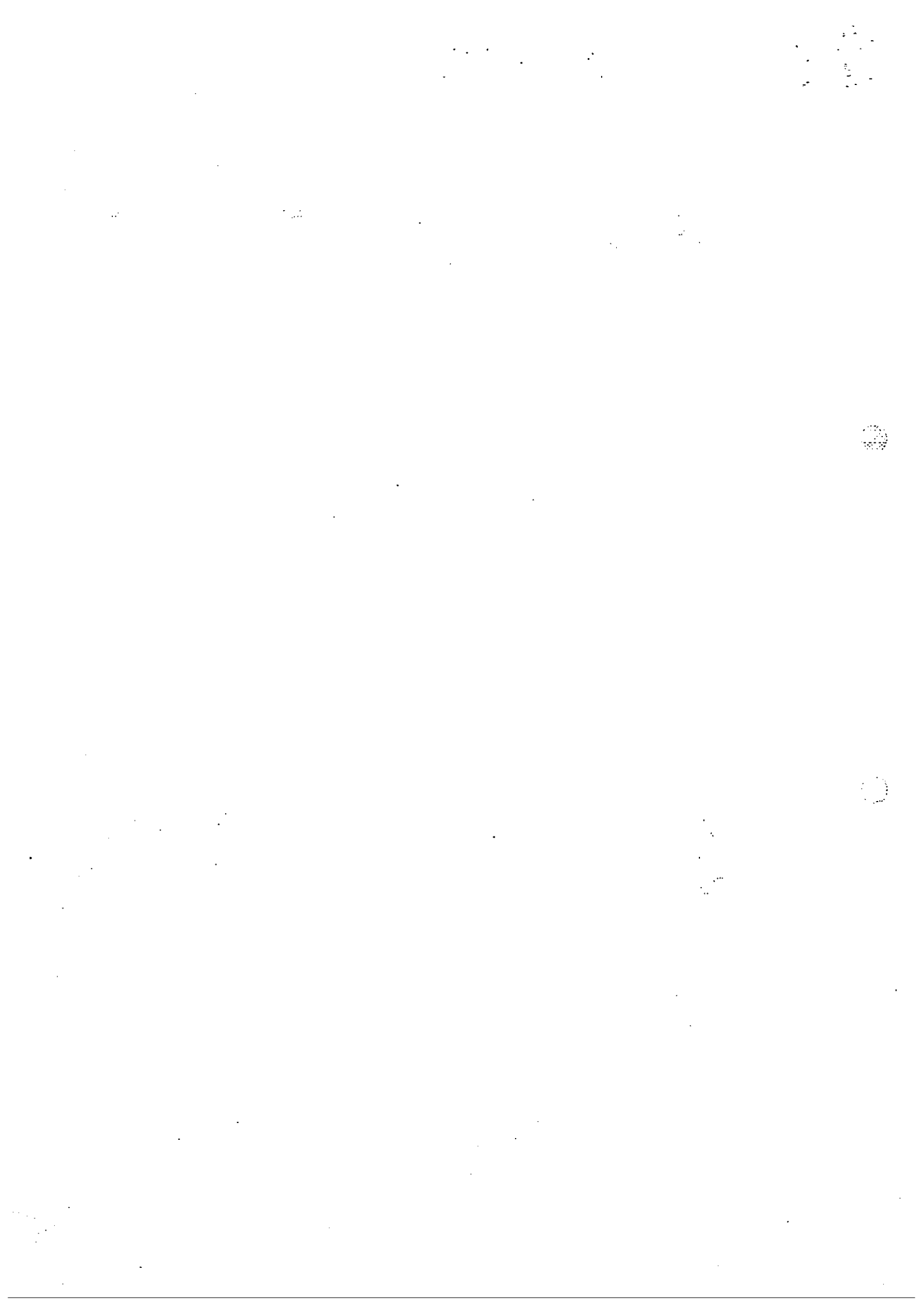
Key:

orange colour		strip of heat-sensitive paint before the experiment
orange colour		strip of heat-sensitive paint after the experiment
white colour		

- (a) (i) Arrange the rods from the best to the poorest conductors of heat. [1m]

- (ii) Explain your answer in (i). [1m]

- (b) In Steven's experiment, why did he insert the four rods through the cardboard piece? [1m]



ANSWER SHEET

EXAM PAPER 2013

SCHOOL : MGS

SUBJECT : PRIMARY 4 SCIENCE

TERM : SA1

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

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25
3	3	3	2	1	3	2	2

26)a) Birds and mammals.

b) Animal D has no wings and four legs but the other animals has two wings and two legs.

27)i)B ii)D iii)C iv)A

28)a) Bread B.

b) The spores came from the air which landed on the bread.

c) The fungi will take a longer time to grow.

d) Paul could repeat the experiment three more times.

29)a) The shark lives in water and eats animals.

b) The giraffe.

30)a)

b) The egg above has a soft shell but the chicken's egg has a hard shell.

c) Three stages.

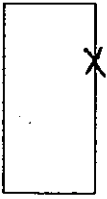
d) The butterfly and housefly.

31)a)4 stages.

b)They both take eight days to go to the next stage.

c)21 days.

32)a)



b)Yes. Tracing paper is translucent so some light can still pass through the tracing paper, the plant will grow towards the hole for sunlight.

33)a)Plant 2.

b)Plant 1 is placed in a cardboard box, cardboard is opaque, so light only can pass through the tiny holes at the top of the box but plant 2 is placed in a glass box and glass is transparent and so sunlight can pass through the glass and the plant can make food.

34)a)Bernard could take the string and tie it on a tree, then take the piece of string to tie on the magnet and wait for it to come to a rest when suspended.

b)The poles of the magnet will always point to the North-South direction.

35)a)P is opaque.

b)P: Steel Q: Clear Glass R: Cardboard

36)a)Glass A.

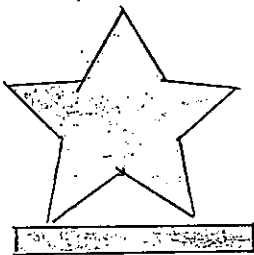
b)The higher the temperature, the faster the time taken for the water to freeze.

c)Heat up his ice cream mixture before putting it in the freezer.

37)a)Water levels in beakers Q and R should interchange.

b)Drew 100ml of water not 200ml soil B has largest air volume, so water can take up the most space the soil in.

38)a)



38)b)The shadow will remain the same.

c)Put the screen nearer to the star-shaped object.

39)a)Beaker B.

b)The decrease in water temperature in Beaker A was much greater than in Beaker B from 0 to 5 minutes. So colder water must be added from Beaker A.

c)The amount of water and the material of the beaker.

40)a)i)Rod A, Rod D, Rod B, Rod C.

ii)The colour-changing paint had turned mostly white in A, followed by D, then B, and no change in C.

b)It provides a support for the rods so that they do not touch each other.

