Name : _____( )

Class : Primary 4 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

SIMPLE IN VIRTUE

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德 纯 义 坚

Primary 4
Semestral Assessment 2 – 2012
SCIENCE

BOOKLET A

24th October 2012

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

30 questions
60 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

This paper consists of 21 printed pages.

4048

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Section A : (30 x 2 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. Mary placed a mealworm in a box at point W (diagram 1) and left the box in a dark room. She noticed that the mealworm did not move after a few minutes. When she shone a torch over the mealworm, she noticed that it started moving to point Y (diagram 2). The experiment was repeated a few times with the same results and Mary concluded that the mealworm responds to light.

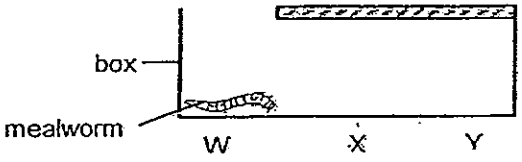


Diagram 1

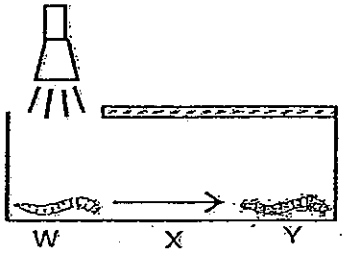
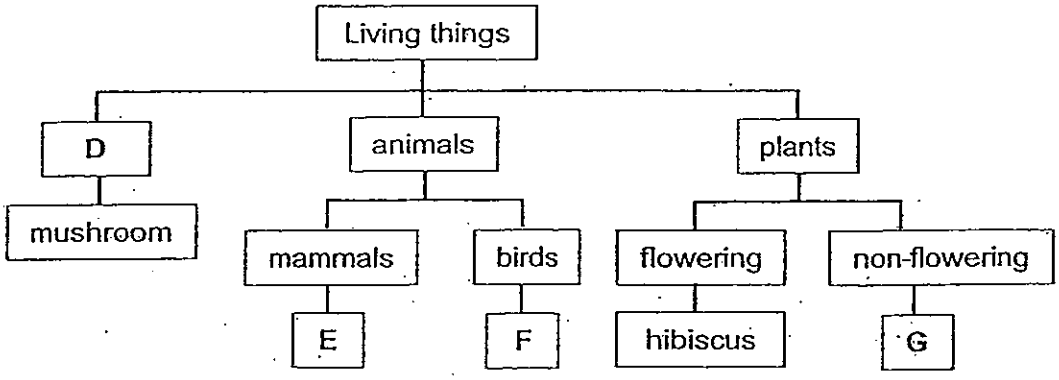


Diagram 2

If the torch were then switched off when the mealworm had moved to position Y, where will the mealworm be found after a few minutes?

(1) W
(2) X
(3) Y
(4) Between W and X

2. Study the classification chart below.



Which one of the following represents D, E, F and G correctly?

	D	E	F	G
(1)	fungi	whale	bat	bird's nest fern
(2)	bacteria	dolphin	chicken	balsam
(3)	fungi	platypus	penguin	staghorn fern
(4)	bacteria	guppy	duck	moss

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3. The diagram below shows two organisms.



mushroom



fern

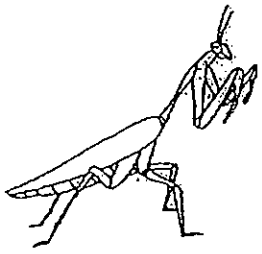
Which of the following statements about the organisms are true?

A Both reproduce by spores.
B Both are need light to grow.
C The fern has leaves but the mushroom does not.
D The fern produces flowers but the mushroom does not.

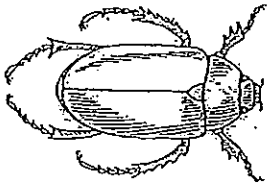
(1) A and C only
(2) A and B only
(3) A, B and C only
(4) B, C and D only

4 Which one of the following animals is <u>not</u> an insect?

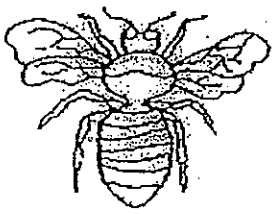
(1)



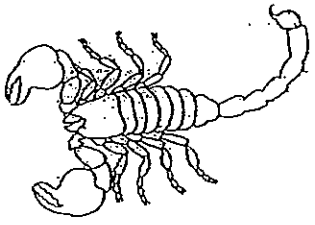
(2)



(3)

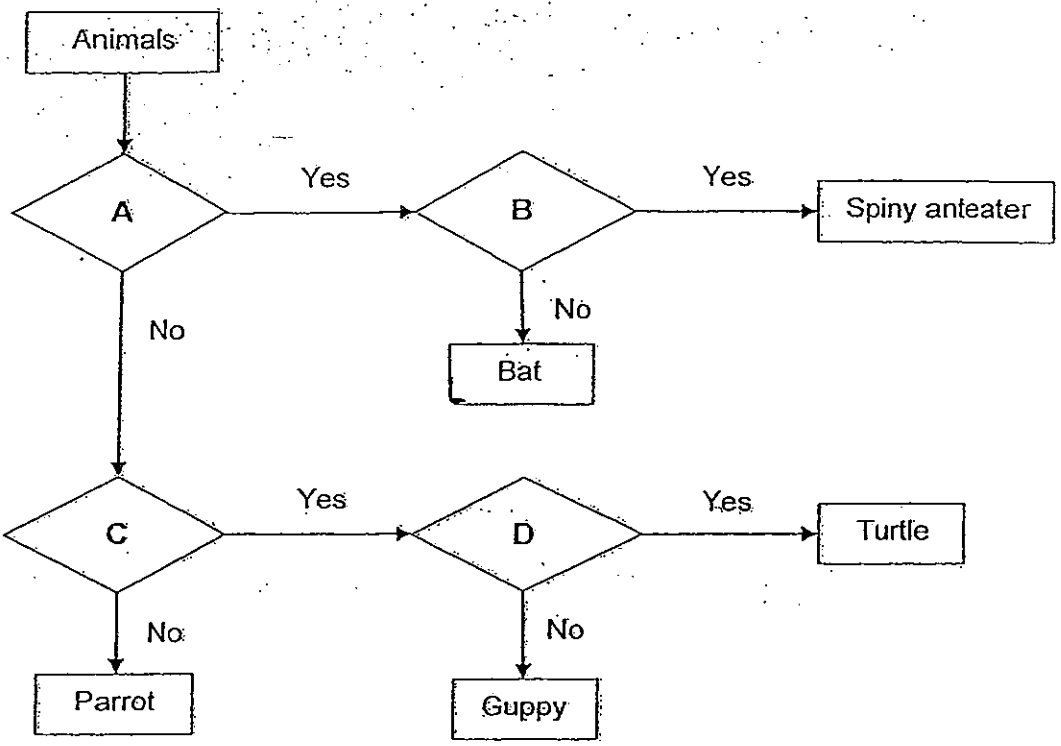


(4)



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5. Study the flowchart below.



With reference to the above flowchart, which one of the following best represents the questions for A, B, C and D?

	A	B	C	D
(1)	Does it give birth to live young?	Does it have a shell?	Does it live in the water?	Does it breathe through gills?
(2)	Does it give birth to live young?	Is it a mammal?	Does it have scales?	Does it live in the water?
(3)	Is it a mammal?	Does it lay eggs?	Does it live in the water?	Does it have a shell?
(4)	Is it a mammal?	Does it have wings?	Does it live in the water?	Does it lay eggs?

3

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6 Which one of the following is not the function of the roots of a plant?

(1) makes food
(2) takes in water
(3) takes in mineral salts
(4) holds plant firmly to the ground

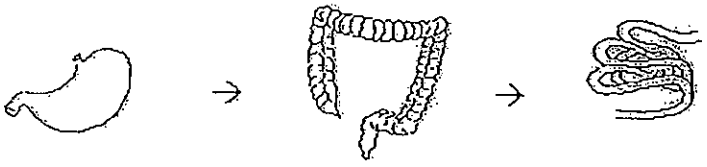
7. Which one of the following shows the correct order when food moves through some parts of the digestive system?

(1)



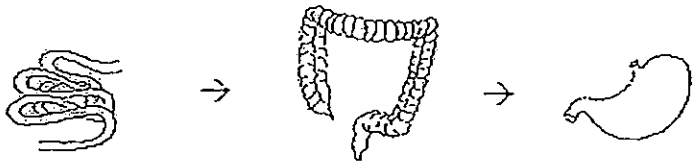
stomach → small intestine → large intestine

(2)



stomach → large intestine → small intestine

(3)



small intestine → large intestine → stomach

(4)

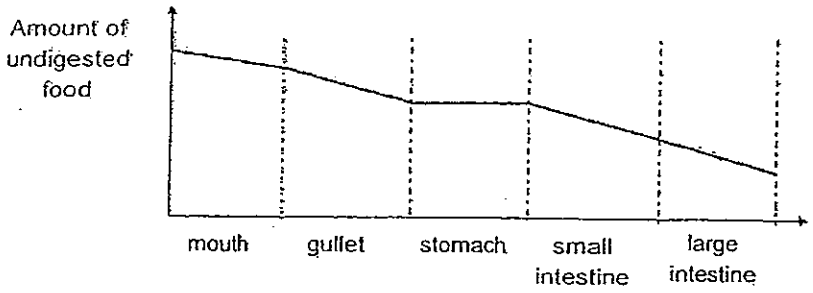


large intestine → stomach → small intestine

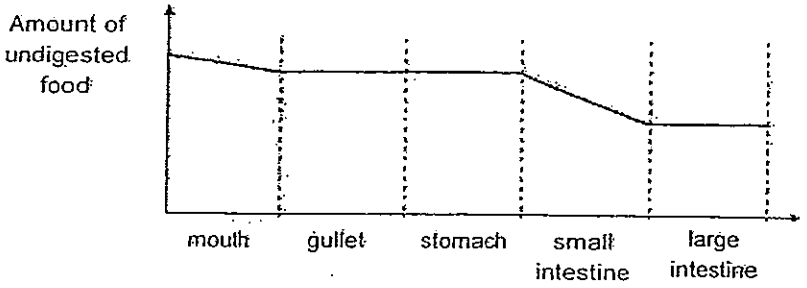
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8. Weiling ate a burger for lunch. Which one of the following graphs best represents the amount of undigested food as it travels through her digestive system?

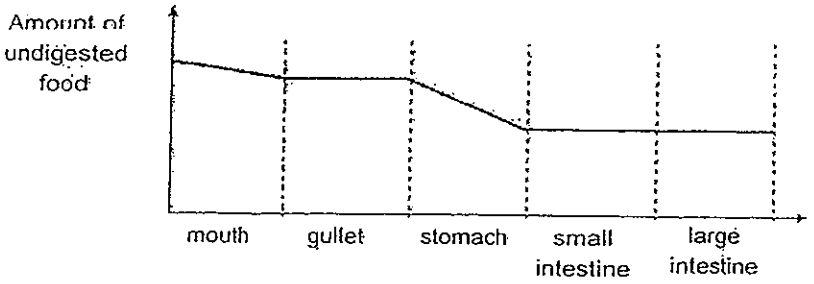
(1)



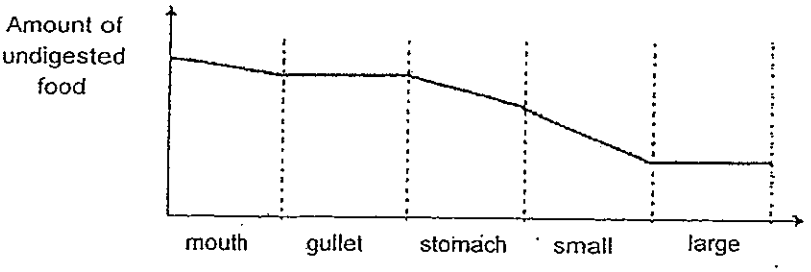
(2)



(3)

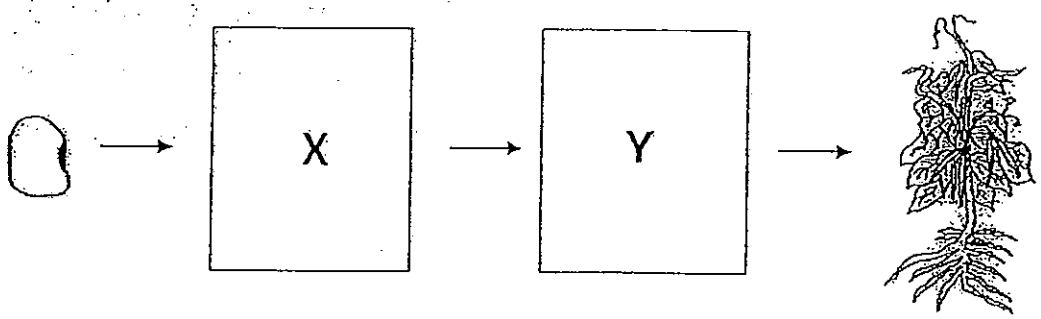


(4)

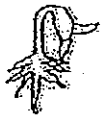


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9 The diagram below shows the growth of a young plant with two missing stages X and Y.

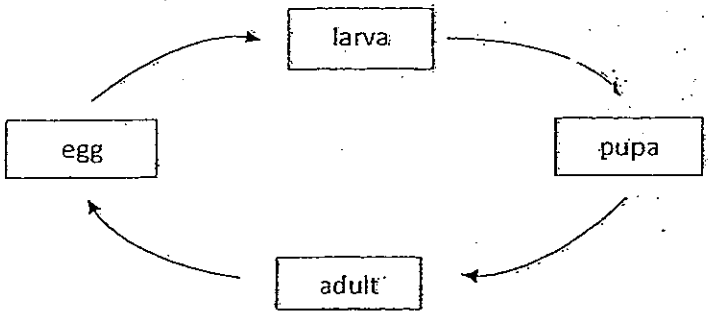


Which one of the following shows the correct stages for X and Y?

	X	Y
(1)		
(2)		
(3)		
(4)		

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

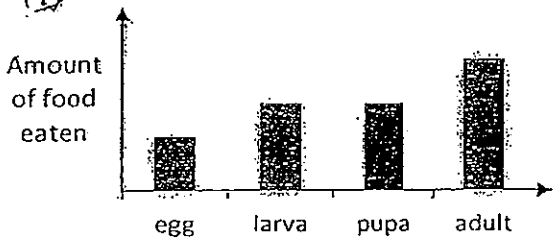


Which animal is likely to have the life cycle as shown above?

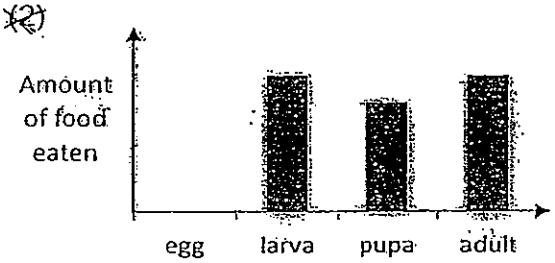
(1) chicken
(2) butterfly
(3) cockroach
(4) grasshopper

11. Which one of the following graphs shows the possible amount of food eaten during the life cycle of a moth?

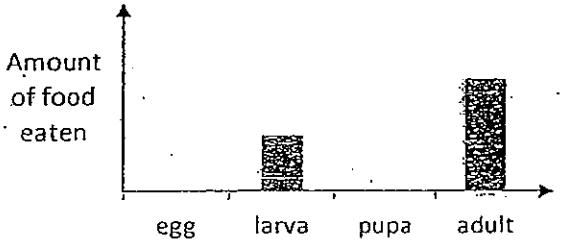
(1)



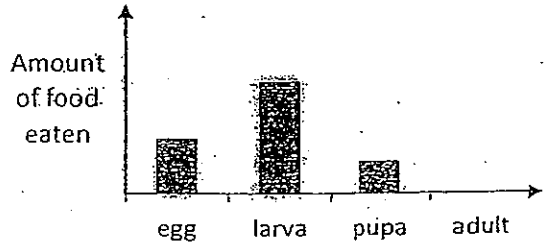
(2)



(3)



(4)



7

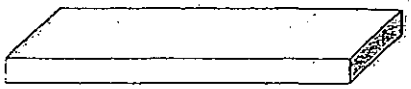
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12. Which one of the following objects can be bent easily without breaking?

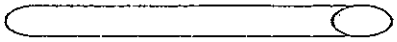
(1) A beach towel



(2) A styrofoam board



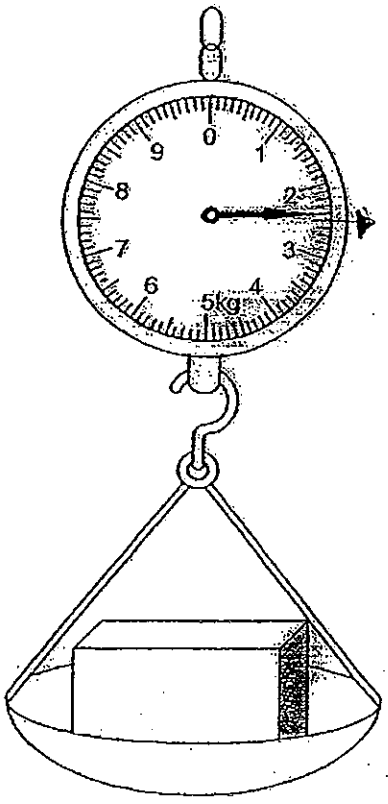
(3) A glass rod



(4) A wooden spoon



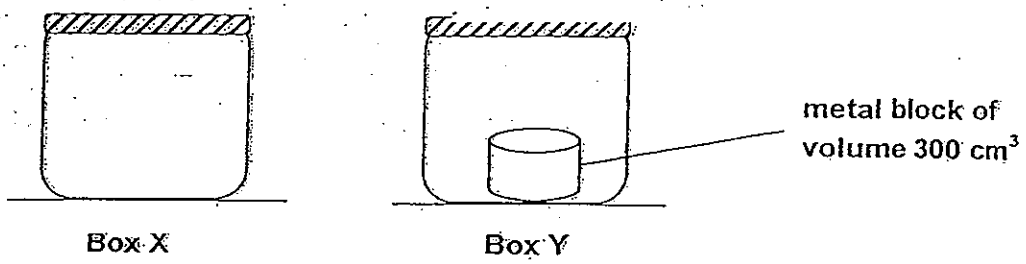
13. The reading on the weighing scale shows that the mass of the wooden box is _____ kg.



(1) 2.4
(2) 2.5
(3) 2.6
(4) 2.8

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14. Two air-tight boxes X and Y, have an equal capacity of 1200 cm^3 each. A metal block of volume 300cm^3 was placed inside Box Y.



Box X Box Y

More air was then pumped into each of the boxes as recorded in the table below.

	Box X	Box Y
Volume of air pumped into each box	800 cm^3	500 cm^3

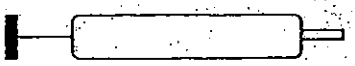
Which one of the following shows the final volume of air in each box?

	Box X	Box Y
(1)	800 cm^3	500 cm^3
(2)	800 cm^3	900 cm^3
(3)	1200 cm^3	500 cm^3
(4)	1200 cm^3	900 cm^3

1

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15. Wei Yang wants to inflate a balloon using a balloon pump.



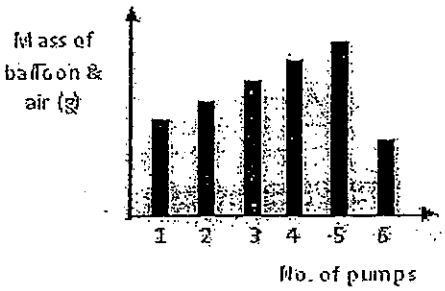
balloon pump

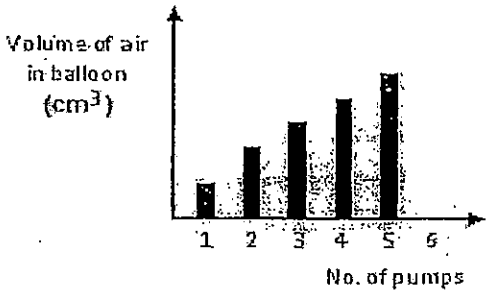


deflated balloon

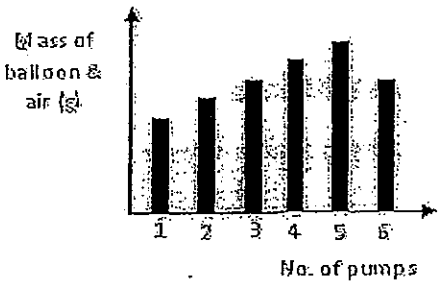
Which set of graphs best represents how the mass and volume of the balloon will change as more air is being pumped into it until the balloon bursts?

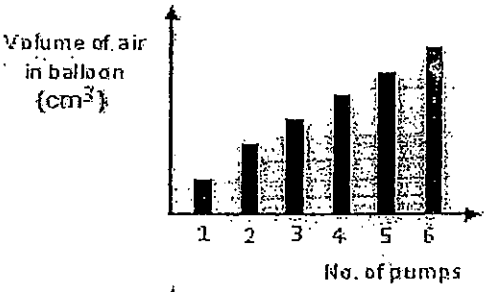
(1)



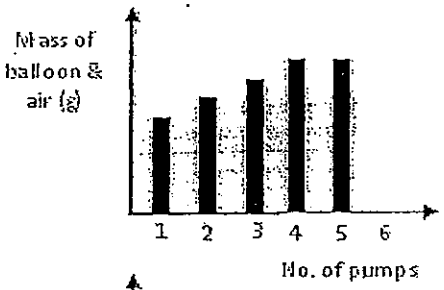


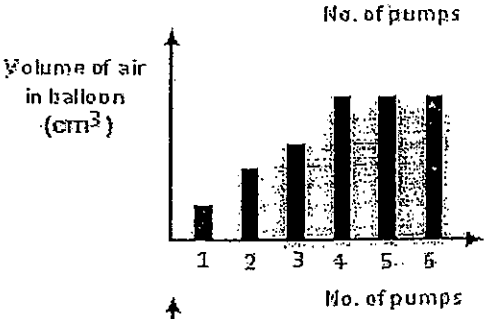
(2)



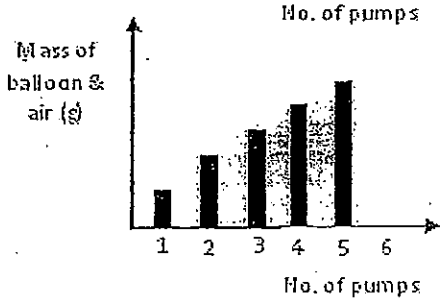


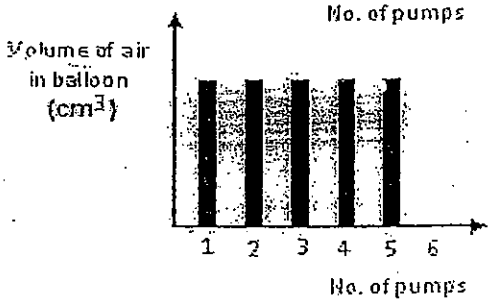
(3)





(4)



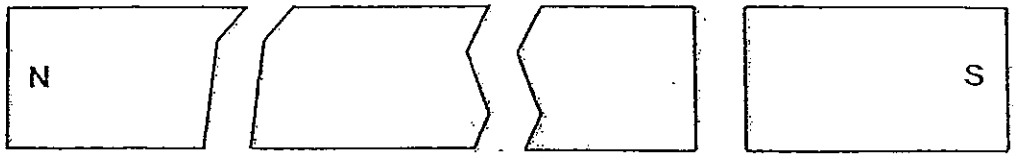


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16. Which one of the following can be attracted by a magnet?

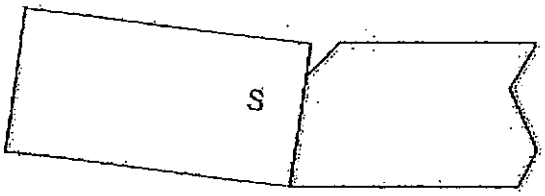
(1) Steel ball
(2) Plastic ball
(3) Rubber ball
(4) Wooden ball

17. Yulin broke a magnet into 4 pieces as shown below.

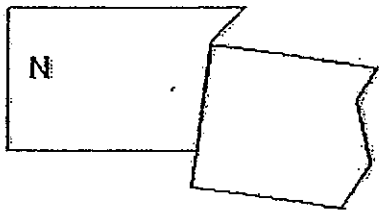


The following diagrams show some of the broken pieces when put together. Which one of the arrangements below is <u>not</u> possible?

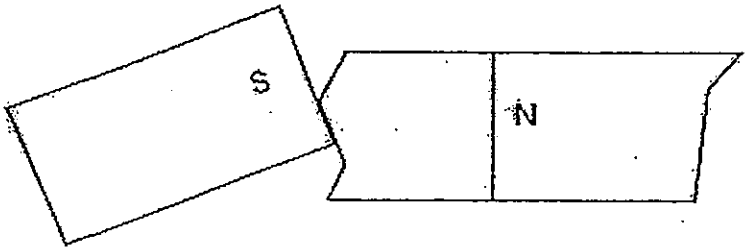
(1)



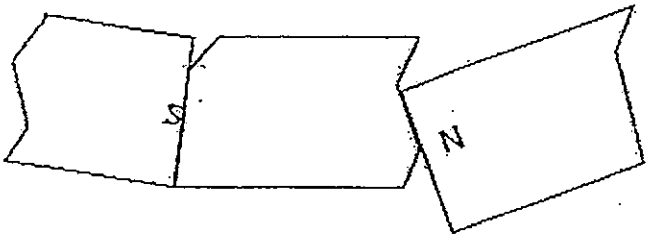
(2)



(3)



(4)



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18. Annie wanted to find out if the number of batteries would affect the strength of an electromagnet made from a rod.

Which one of the following set-ups should she use for her experiment?

(1)

Variable	Kept constant	Changed
Type of batteries	✓	
Number of batteries	✓	
Material of rod		✓
Thickness of rod	✓	

(2)

Variable	Kept constant	Changed
Type of batteries		✓
Number of batteries		✓
Material of rod	✓	
Thickness of rod	✓	

(3)

Variable	Kept constant	Changed
Type of batteries		✓
Number of batteries	✓	
Material of rod		✓
Thickness of rod		✓

(4)

Variable	Kept constant	Changed
Type of batteries	✓	
Number of batteries		✓
Material of rod	✓	
Thickness of rod	✓	

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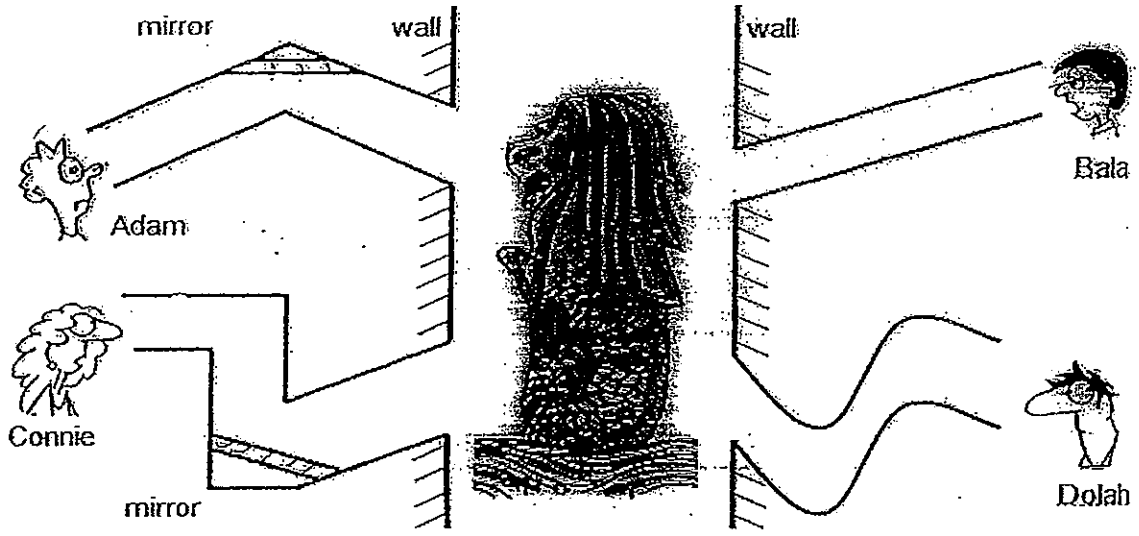
19. Danielle, Muthu, Jiahao and Sari made the following statements about light.

Danielle	:	Light travels in a straight line.
Muthu	:	Sun, moon and stars are sources of light.
Jiahao	:	We can see an object when light is reflected off it.
Sari	:	Having night vision means that the light from our eyes enables us to see in the dark.

Whose statement is correct?

(1) Muthu and Sari
(2) Muthu and Jiahao
(3) Danielle and Jiahao
(4) Danielle, Jiahao and Sari

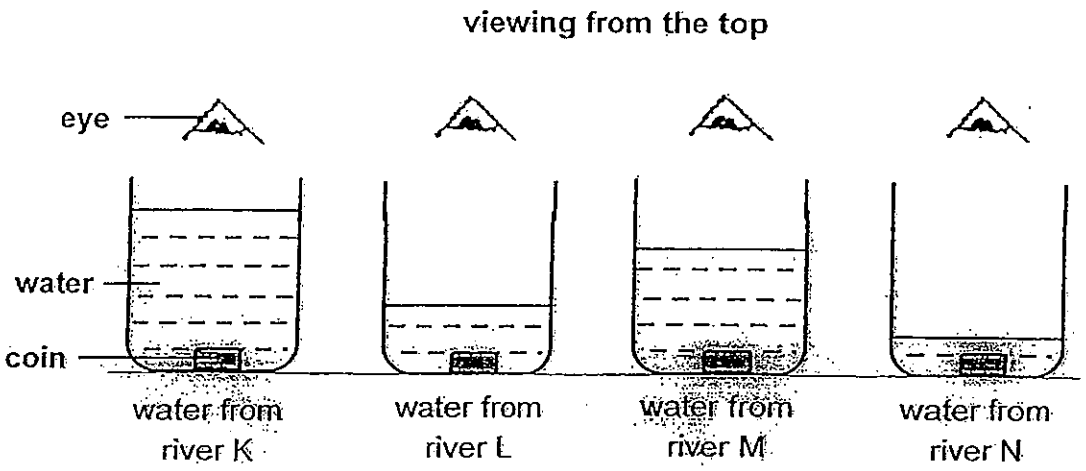
20. Based on the diagram below, who would be able to see the statue of the Merlion?



(1) Adam and Bala only
(2) Bala and Connie only
(3) Connie and Dolah only
(4) Adam, Bala and Connie only

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21. Timothy wanted to find out which river K, L, M or N had the cleanest water. He collected water from the 4 rivers. In his experiment, he used 4 identical containers and placed a coin at the bottom of each of the containers as shown in the diagram below. He then poured water from river K into container K until the coin could no longer be seen from the top. He repeated the experiment using water from the other rivers. The results of his experiment are shown below.

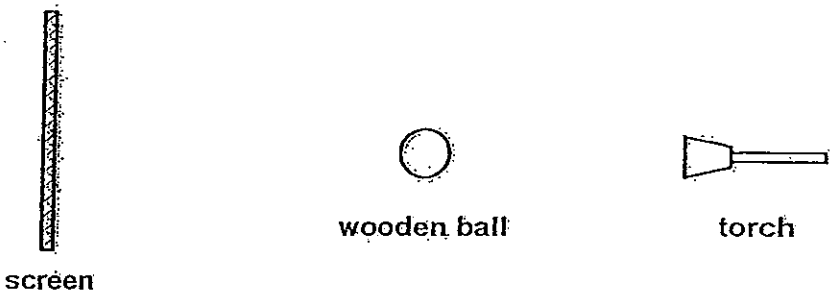


Based on his results above, which river had the cleanest water?

(1) River K
(2) River L
(3) River M
(4) River N

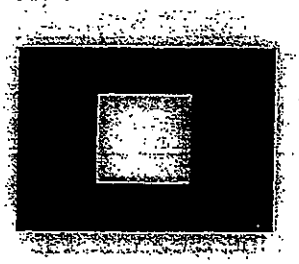
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22. The set-up below shows the positions of a torch, a wooden ball and a screen.

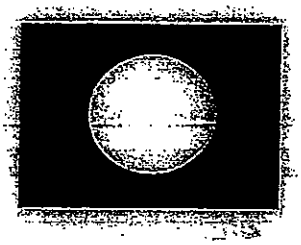


Which one of the following would likely be seen on the screen when the torch is switched on?

(1)



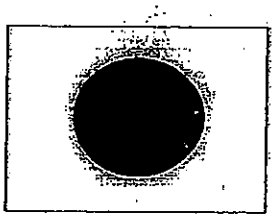
(2)



(3)

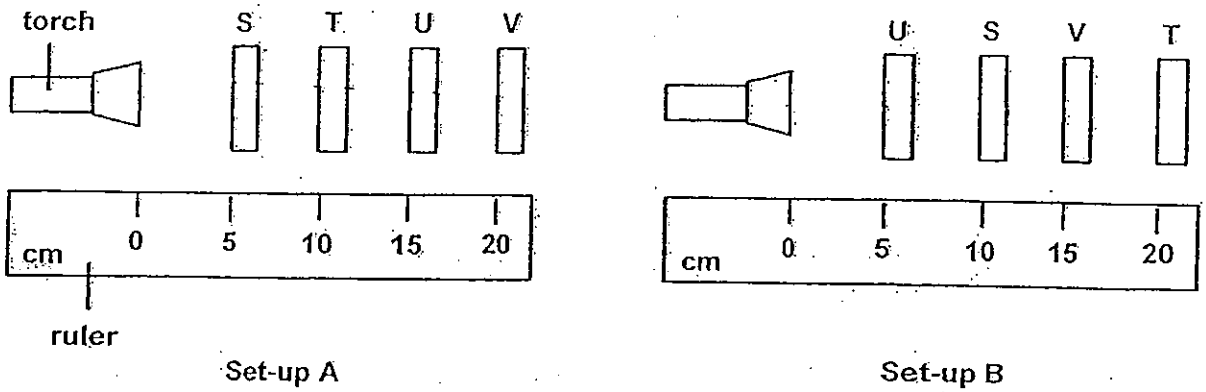


(4)

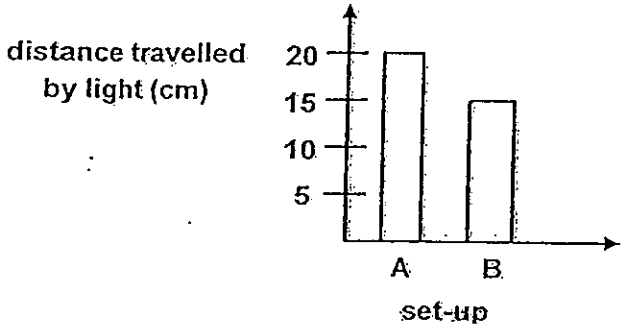


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23. Nurul conducted an experiment to investigate whether light can pass through four different materials, S, T, U and V. The sheets were arranged in two set-ups, A and B, shown below.



She measured the distance travelled by the light for each set-up and plotted a bar graph below.

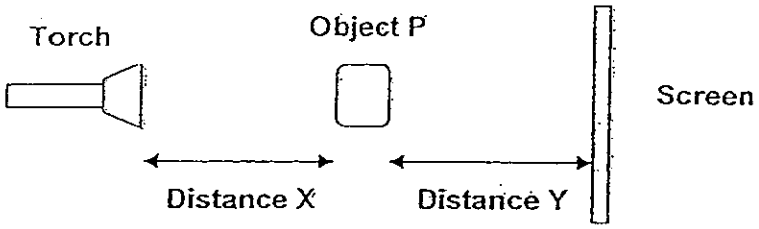


Based on her results, which one of the following correctly describes materials S, T, U and V?

	Does it allow light to pass through?			
	S	T	U	V
(1)	no	no	yes	yes
(2)	yes	yes	yes	no
(3)	not sure	yes	no	no
(4)	yes	yes	yes	not sure

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24. Mei Ling set up the following experiment. The positions of the torch and the screen are fixed.



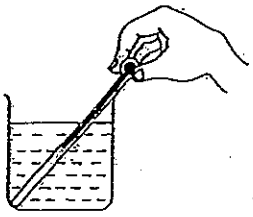
She wanted to find out how the distance between the torch and the object would affect the length of the shadow cast by object P when the torch was switched on. Which of the following variables must be kept constant in order for the test to be a fair one?

A Object P
B The torch
C Distance X
D Distance Y
E The screen

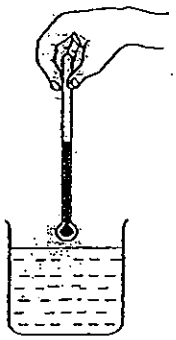
(1) A, B and E only
(2) B, C and D only
(3) A, B, D and E only
(4) B, C, D and E only

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

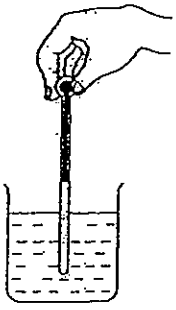
(1)



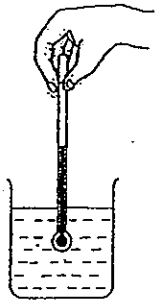
(2)



(3)



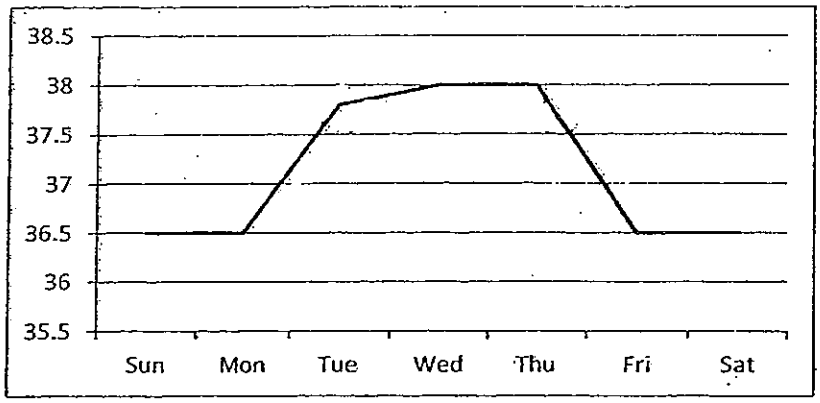
(4)



17

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26. The graph below shows John's temperature reading for one week.



Based on the graph above, on which days did John have a fever?

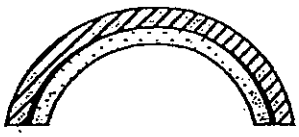
(1) Wednesday and Thursday
(2) Monday, Tuesday and Wednesday
(3) Tuesday, Wednesday and Thursday
(4) Tuesday, Wednesday, Thursday and Friday

27. The diagram below shows a bimetallic strip. A bimetallic strip is made up of two different pieces of metal joined together as shown in the diagram below.



If metal G expands more than metal H when heated, what would be observed when the strip is placed in a basin of ice water?

(1)



(2)



(3)

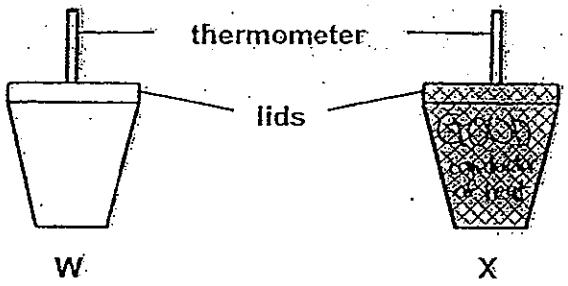


(4)



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28. The diagram below shows 2 similar cups, W and X, made of different materials. Cup W is made of styrofoam while cup X is made of metal.



Xueling poured cold water of 15°C into both cups and placed the cups under the hot sun in her garden. She recorded the temperature of the water in the cups every 3 minutes. The table below shows the change in the temperature of the water in cup W.

Time (min)	0	3	6	9	12	15
Temperature (°C)	15	15	18	19	22	25

Which one of the following tables best represents the change in the temperature of the water in cup X?

(1)

Time (min)	0	3	6	9	12	15
Temperature (°C)	15	15	18	19	22	25

(2)

Time (min)	0	3	6	9	12	15
Temperature (°C)	15	16	17	18	19	20

(3)

Time (min)	0	3	6	9	12	15
Temperature (°C)	15	15	18	18	25	25

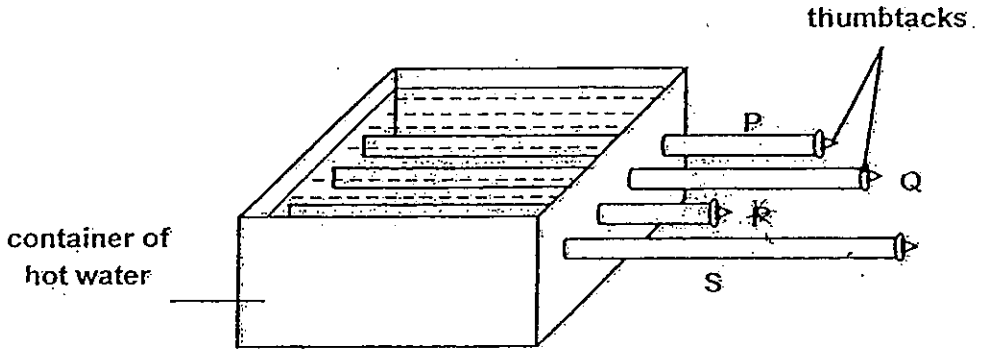
(4)

Time (min)	0	3	6	9	12	15
Temperature (°C)	15	16	19	22	25	29

19

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29. Omar set up an experiment with 4 rods made of materials P, Q, R and S. He wanted to find out which material can conduct heat better. He used some wax to attach a thumbtack to each of the 4 rods and arranged the rods such that equal lengths of the rods are inside the container of hot water.



If Omar observed that all the 4 thumbtacks dropped at the same time, what can he conclude from his experiment?

(1) All are equally good conductors of heat.
(2) Material R is the best conductor of heat.
(3) Material R conducts heat better than material Q.
(4) Material S conducts heat better than material P.

30. Mary took out a piece of meat from the freezer and left it on a plate to defrost.

Which one of the following would take place?

(1) The plate does not gain or lose any heat.
(2) The plate gains heat from the piece of meat.
(3) The piece of meat loses coldness to the plate and the surroundings.
(4) The piece of meat gains heat from the plate and the surroundings.

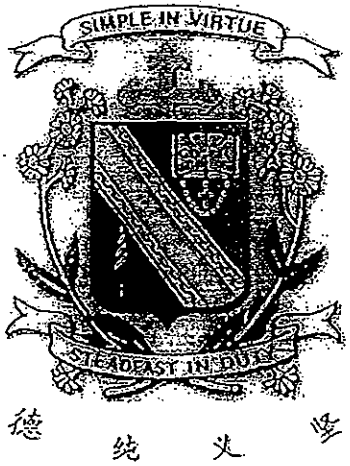
End of Booklet A

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Name : _____ ( )

Class : Primary 4 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL



Primary 4

Semestral Assessment 2 – 2012

SCIENCE

BOOKLET B

24th October 2012

Booklet A	60
Booklet B	40
Total	100

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

14 questions
40 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This paper consists of 12 printed pages.

_____
Parent's Signature/Date

21

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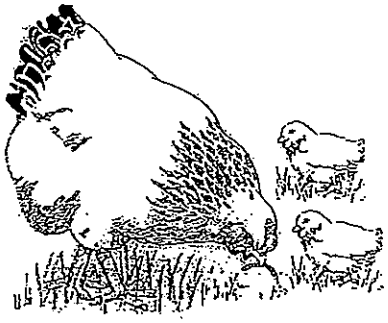
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Section B: 40 marks

For questions 31 to 44, write your answers in this booklet.

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

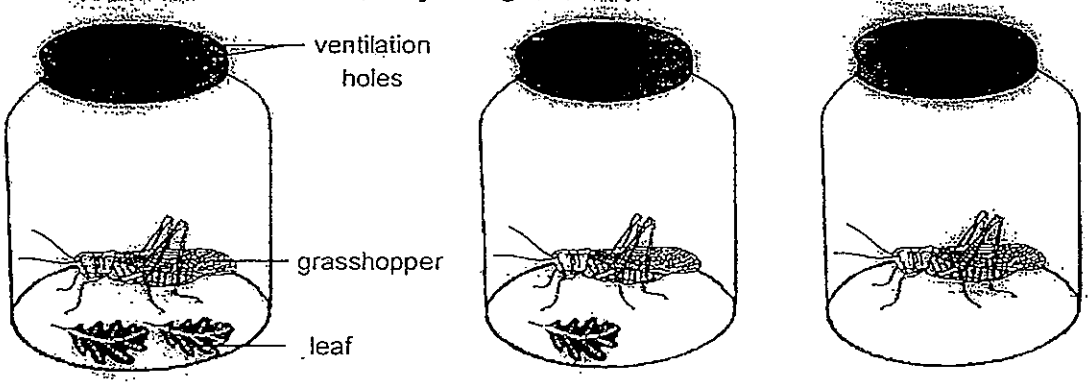
31. (a)



The chicken needs food, air and _____ to stay alive. [1]

(b) The adult chicken lays eggs that hatch into young chicks. This shows that the chicken can _____ [1]

32. Ali caught three grasshoppers and placed them in separate jars, A, B and C, as shown in the diagrams below. Three days later, he noticed that the grasshopper in Jar C died. After one week, only the grasshopper in Jar A survived.



(a) Based on the diagrams above, what variable was changed? (only 1 change) [1]

_____

(b) What was the aim of his experiment? [1]

_____

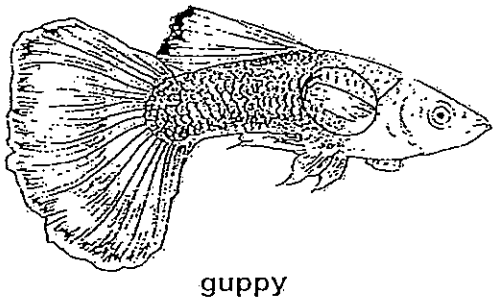
(c) Using only Jars A and B, what changes can Ali make to the set-ups if he wanted to find out whether grasshoppers need air to survive? [1]

_____

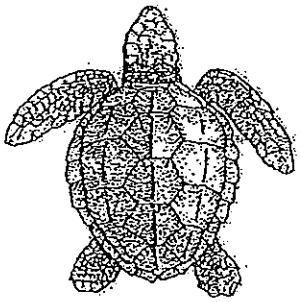
23

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33. The pictures below show a guppy and a turtle.



guppy



turtle

(a) State one similarity between the two organisms based on the way they move. [1]

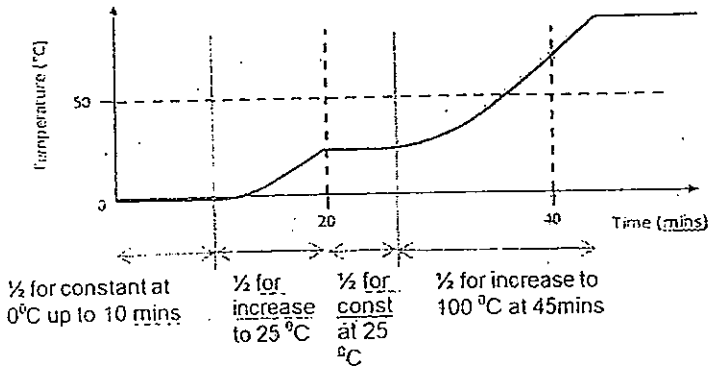
_____

(b) Based on the pictures above, state two differences between the guppy and the turtle. (Do not mention about scales.) [2]

_____

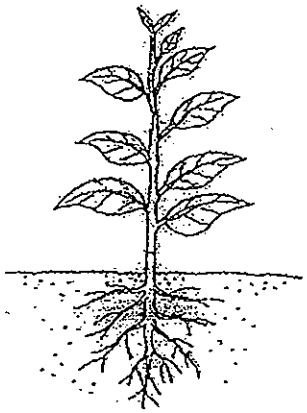
_____

(c) On the picture of the guppy above, identify the part that protects the gills by drawing a circle around it. Label it clearly. [1]

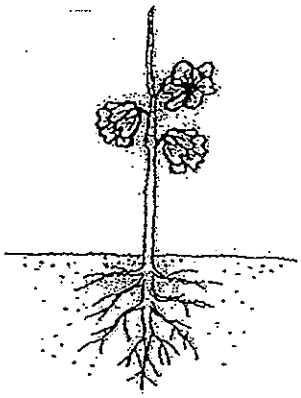


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34. The diagram below shows two plants, A and B, of the same type found in a garden. Both plants were of similar size. In plant A, all the flowers were removed. In plant B, all the leaves were removed. Both plants were watered daily.



Plant A



Plant B

A week later, it was noticed that one of the plants died.

(a) Which of the plants died? [1]

_____

(b) Explain the difference observed. [2]

_____

_____

_____

(c) If the roots of both plants were removed at the start of the experiment, what would be observed after a week? Why? [1]

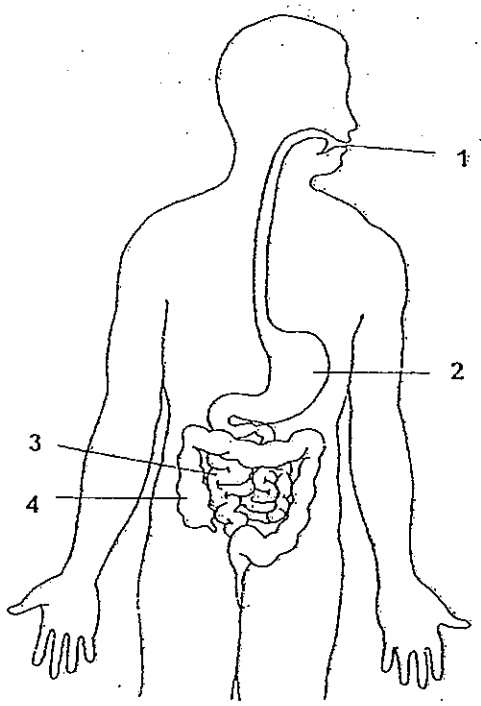
_____

_____

25

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35. The diagram below shows the human digestive system.

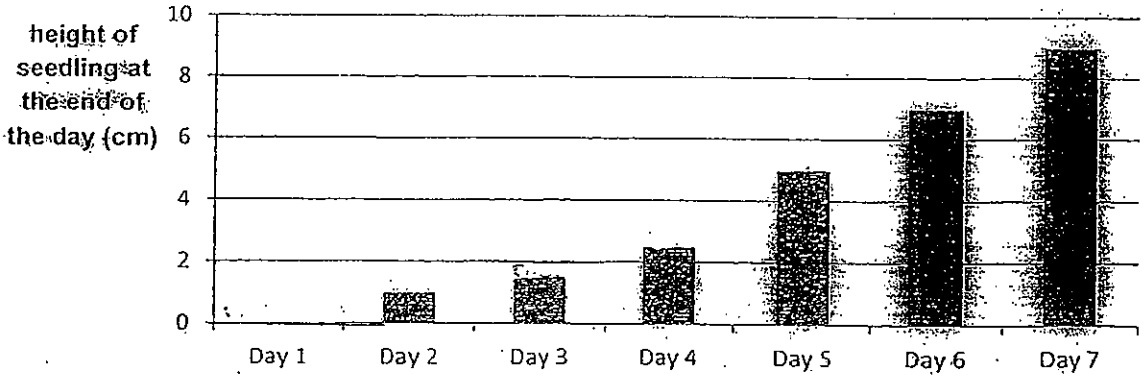


Identify the part (1, 2, 3 or 4) where

(a) digestion first takes place : _____ [1]

(b) there is no digestion : _____ [1]

36. The bar graph below shows the growth of a bean seedling over a span of 7 days.



(a) How many centimetres did the seedling grow from Day 2 to Day 5? [1]

_____

(b) On which day was the fastest growth observed? [1]

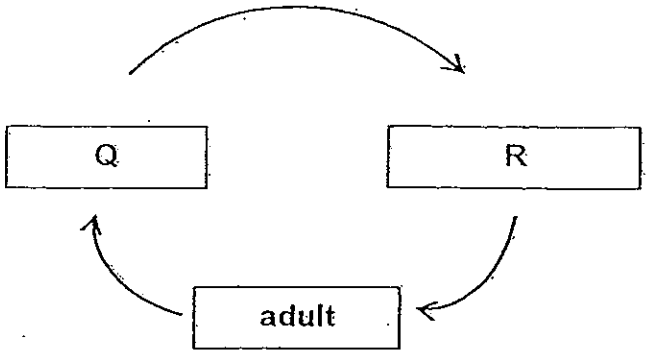
_____

(c) State all the necessary conditions for germination of seeds to occur. [1]

_____

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37. The diagram below shows the stages in the life cycle of a grasshopper.



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

larva	seed	egg	pupa	nymph

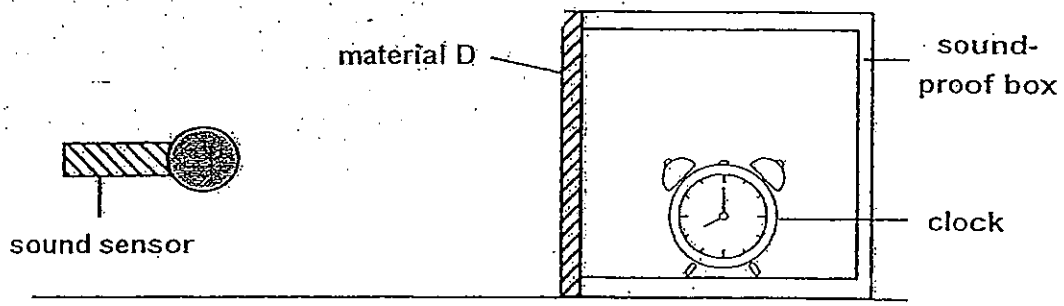
Name the two stages Q and R above. [2]

(a) Q : _____

(b) R : _____

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38. Jia Jun set up the following experiment as shown below. He replaced one side of a sound-proof box with material D.



The clock was set to ring at a fixed level of loudness. He recorded the loudness of the clock with a sound sensor placed at a fixed distance away from the box. He then repeated the same experiment using materials E, F and G, of the same thickness. The results of his experiment were recorded in the table below.

Material	Loudness of sound recorded (unit)
D	45
E	90
F	20
G	50

(a) What was Jia Jun trying to find out from his experiment? [1]

_____

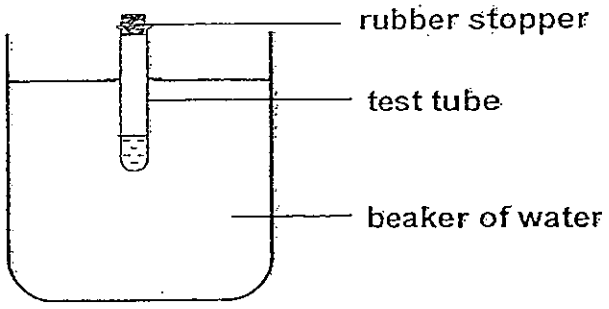
(b) Jia Jun lives next to a noisy road. Based on his results above, which material should he use to make his windows if he wants to make his room quieter? Explain your choice of material. [1]

_____

_____

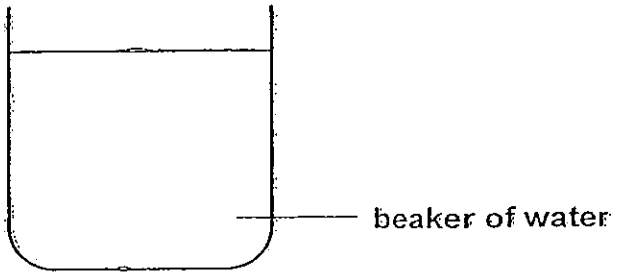
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39. Aimin filled a test-tube with some water and placed it in a beaker of water as shown in the set-up A below. His observation was recorded in the diagram below.



Set-up A

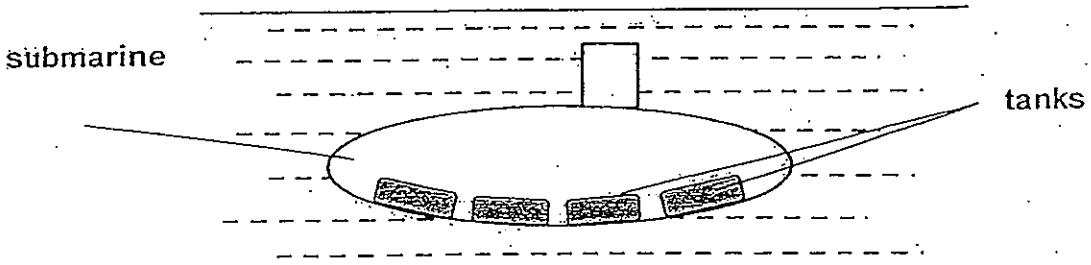
(a) He then filled the test-tube with more water until it was full and placed it in the beaker of water. Draw the test-tube in set-up B below to show the new position of the test-tube. [1]



Set-up B

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

(c) A submarine can travel underwater in the sea. It has fixed tanks inside it that is filled with water.



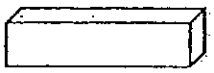
Based on Aimin's experiment, what must be done to enable a submarine to rise from under the sea to the surface of the sea? [1]

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40. Lucy places a magnet near a steel paper clip. The paper clip moves towards the magnet.



steel paper clip



magnet

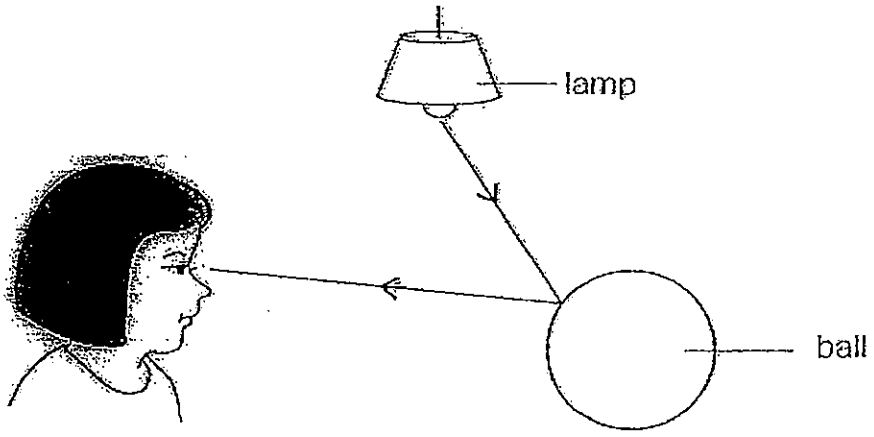
(a) Magnet exerts a _____ on the paper clip. [1]

(b) Choose the correct word from the box to answer the question below. [1]

small	shiny	magnetic

Lucy's observation shows that the paper clip is a _____ object.

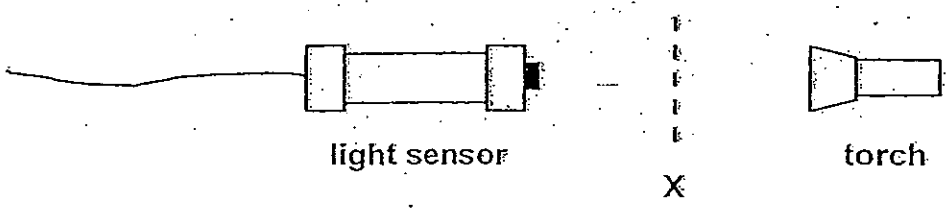
41. The diagram below shows how Mary sees the ball.



The _____ from the lamp is _____ by the ball and enters Mary's eye. [2]

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42. The set-up below can be used to count sheets of paper.



When no paper is placed at position X, the light sensor records a reading of 100 lux. When a sheet of paper is placed at X, the sensor reading becomes 80 lux.

Daniel conducted an experiment using the set-up above, placing an increasing number of sheets of paper at position X. He recorded his results in the table below.

Number of sheets	0	1	2	3	4	5	6	7	8	9	10
Amount of light (lux)	100	80	65	55	30	20	15	5	0	0	0

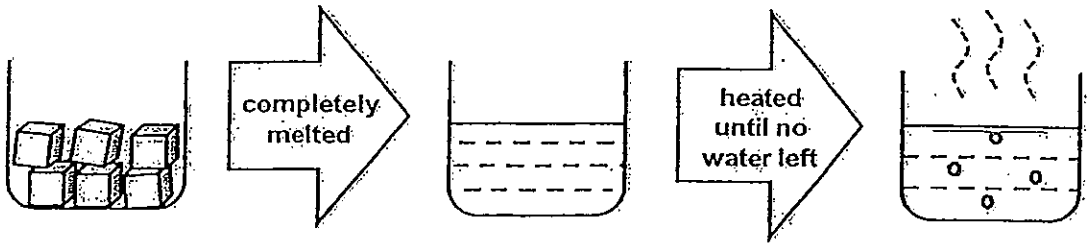
A stack of papers was then put between the sensor and the torch and the reading on the sensor was used to estimate the number of sheets there were in the stack.

(a) Based on the sensor reading in the table, what is the maximum number of sheets of paper that the set-up can accurately count up to? Why? [2]

(b) What can Daniel do to the set-up to enable it to count up to 10 sheets of paper? [1]

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43. Corrina wanted to investigate how changes in temperature would affect the state of a substance. She placed some ice into a beaker and left the beaker on a table to melt and warm up to room temperature. She then heated the same beaker of water until it boils.



The table below shows the temperature reading of the content of the beaker. The temperatures were taken at regular intervals from the start to the end of the experiment.

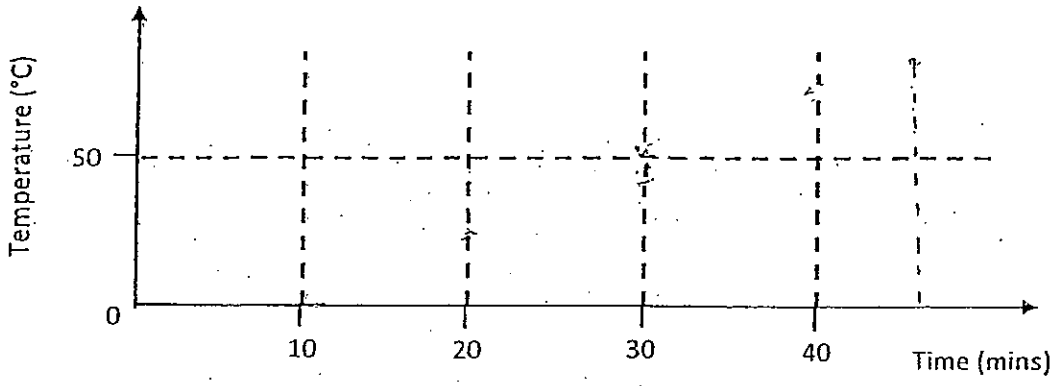
Time (mins)	0	5	10	15	20	25	30	35	40	45	50
Temperature (°C)	0	0	0	10	25	25	50	70	90	100	100

(a) Based on the information above, what was the room temperature? Give a reason for your answer. [2]

_____

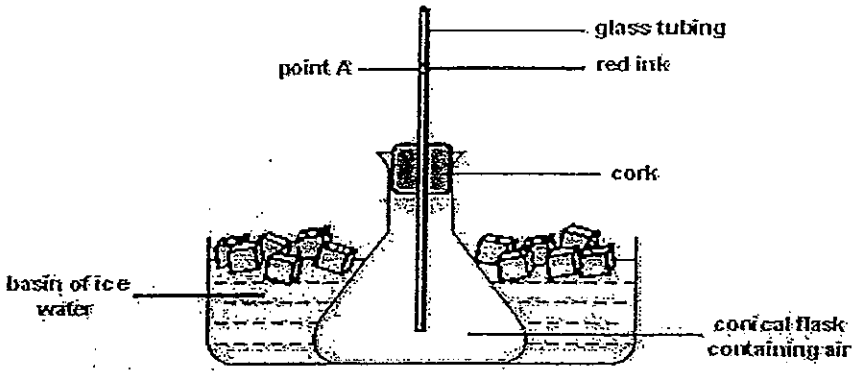
_____

(b) On the graph below, **sketch** a line graph to represent Corrina's results. [2]



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44. Surya wanted to find out how the volume of air is affected when it is cooled. She inserted a glass tubing into a conical flask and sealed it with a cork. She then dripped a drop of red ink in the glass tubing and allowed it to come to rest before marking its position at point A. The flask was placed in a basin of cold water as shown below. She then recorded the distance travelled by the red ink for one minute.



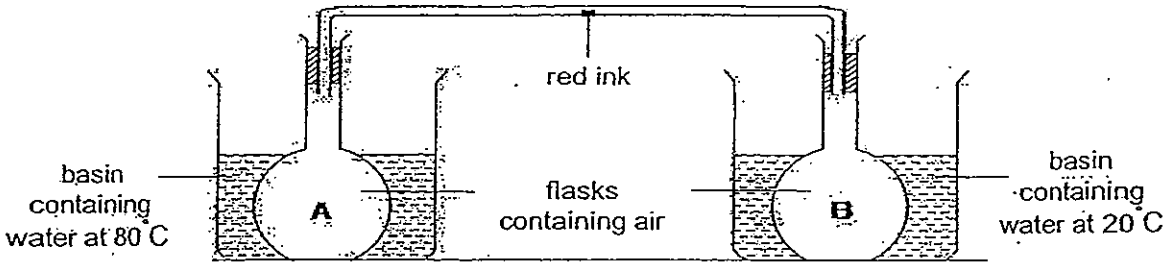
Her results are as shown in the table below.

Time (secs)	10	20	30	40	50	60
Distance travelled by the red ink from point A (cm)	0.7	1.4	2.1	2.8	3.5	4.2

(a) In which direction would the red ink move? Explain your answer. [2]

(b) What can she conclude from her experiment? [1]

(c) Surya decided to investigate further by setting up a similar experiment. This time she connected two flasks in the arrangement shown below.



Indicate with an 'X' in the diagram above where the red ink would be after 1 minute. [1]

END OF PAPER

33

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Answer Ke

EXAM PAPER 2012

SCHOOL : CHIJ
SUBJECT : PRIMARY 4 SCIENCE

TERM : SA2

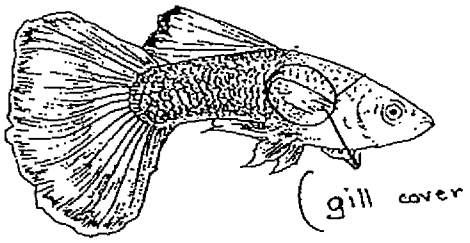
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3	3	1	4	3	1	1	4	2	2	3	1	1	4	1	1	2

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

31)a)water
b)reproduce

32)a)The number of leaves in a jar.
b)He wanted to find out how the amount of food provided would affect the survival of the grasshopper in the jar.
c)Ali can add one more leaf to Jar B and cover the ventilation holes from earlier jar A or B.

33)a)The two organisms swim in water.
b)The guppy does not have a shell but the turtle has a shell. The guppy has a tail but the turtle does not have a tail. The turtle has four flipper but the guppy does not.
c)



guppy

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34)a)Plant B.
b)Plant B had no leaves and could not make its own food.
c)Both would have died as they could not act/absorb water.

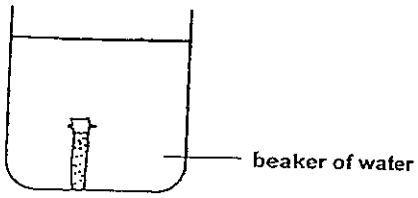
35)a)1
b)4

36)a)5cm.
b)Day 5.
C)Warmth, water and air.

37)a)egg
b)nympy

38)a)Jia Jun was trying to find out which material can allow the least noise to pass through.
b)Material E. The material has the least sound recorded so it is suitable to make his room quieter.

39)a)



Set-up B

b)When the test-tube is filled with water, it will become heavier and will sink to the bottom of the beaker.
c)Remove the water from all the tanks of the submarine.

40)a)force/pull/magnetic force
b)magnetic

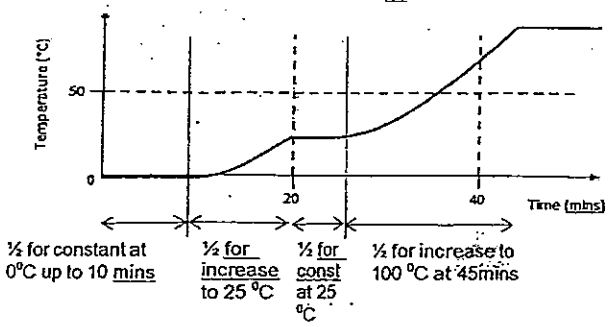
41)light / reflected

42)a)After 7 sheets of paper, the amount of light recorded was 0 lux which means there can be 8 or more sheets, it cannot tell how many sheets there are.
b)Use a brighter light source/use a more powerful torch/more the sensor closer to the sheets of paper/move torch closer to sheets of paper.

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43)a)25℃. The beaker of ice was left to melt on its own in the kitchen. Hence would gain heat from the surroundings and its temperature would increase until it reaches the temperature of the air in the kitchen.

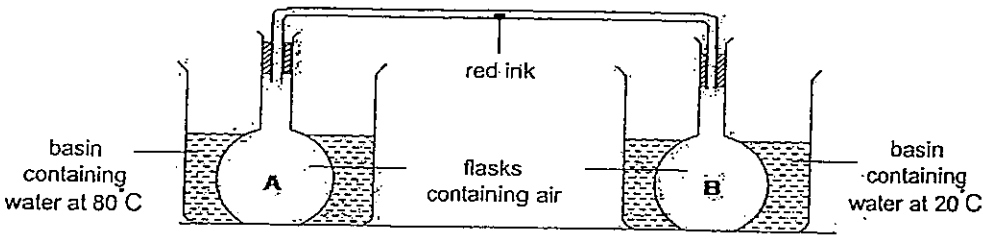
b)



44)a)Air in the flask lose heat and contracts.

b)The volume of the air decreases when cooled.

c)



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