

METHODIST GIRLS' SCHOOL

PRIMARY 6

PRELIMINARY EXAMINATION

2006

SCIENCE

BOOKLET A 1

NAME : _____ ()

CLASS : Pr 6 . _____

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.
ANSWER ALL QUESTIONS.

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.

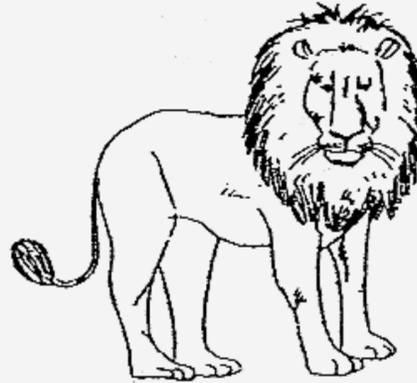
1. The diagram below shows a bat.



Which of the following animals reproduce in the same way as the bat?



owl



lion



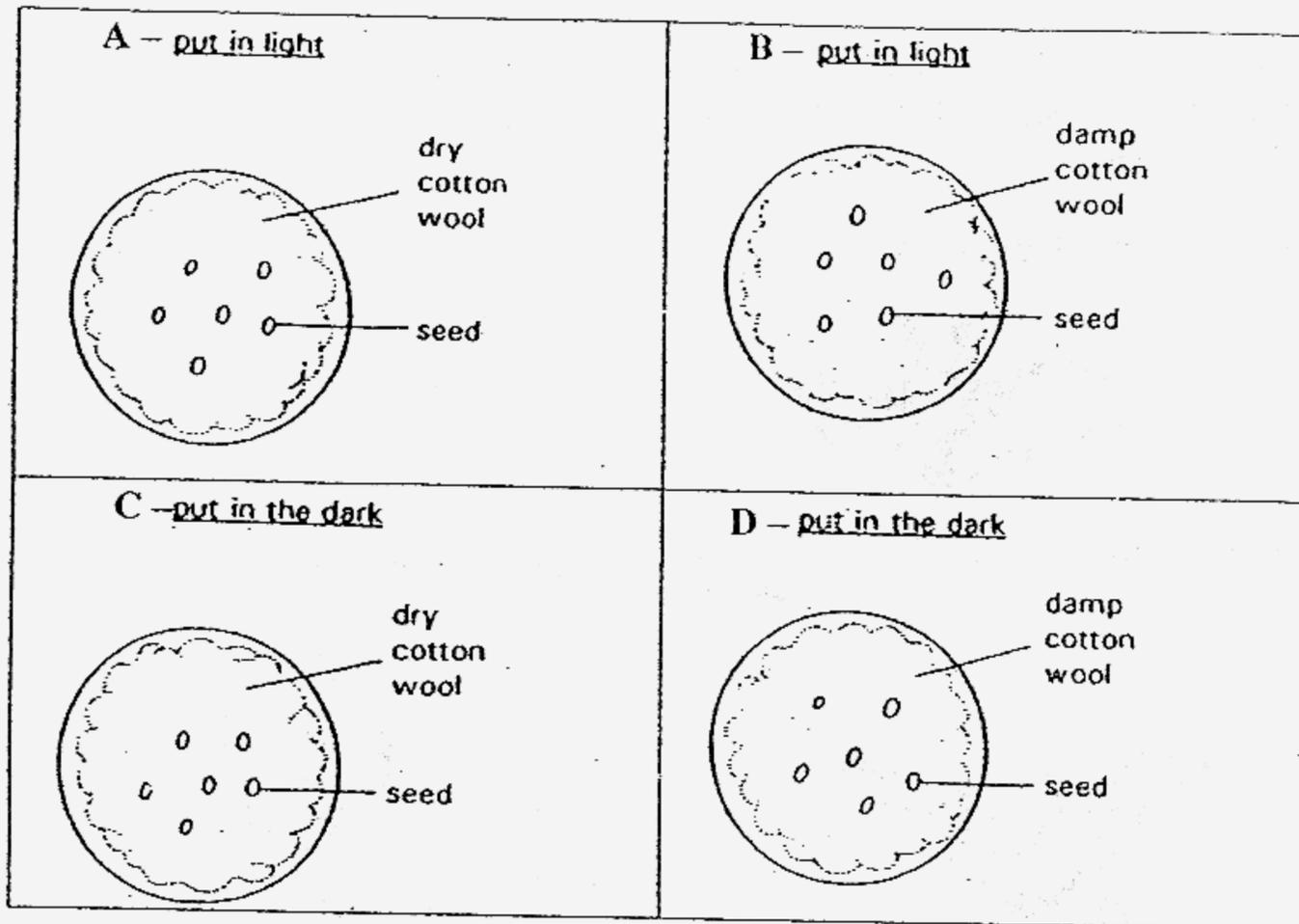
whale



butterfly

- (1) owl and butterfly only
- (2) lion and whale only
- (3) owl, lion and butterfly only
- (4) owl, whale and butterfly only

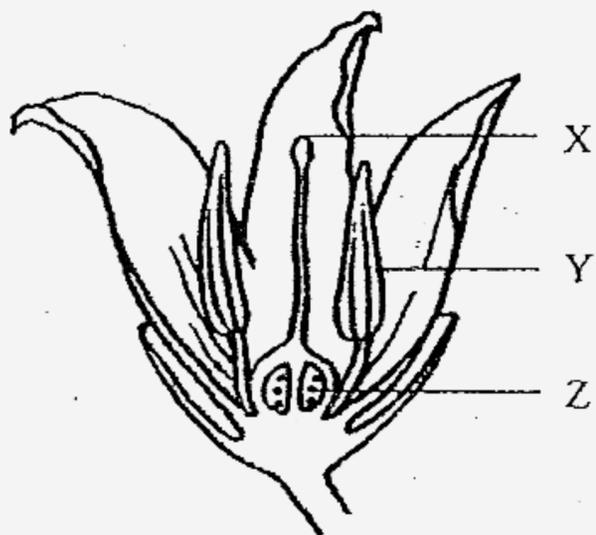
2. Xiao Hui carried out an experiment using four different set-ups, A, B, C and D.



At the end of the experiment, Xiao Hui observed that only the seeds in set-ups B and D grew into seedlings. Based on this observation only, which condition is necessary for seeds to grow into seedlings and which condition is not necessary?

	Condition that is necessary	Condition that is not necessary
(1)	water	warmth
(2)	air	warmth
(3)	air	light
(4)	water	light

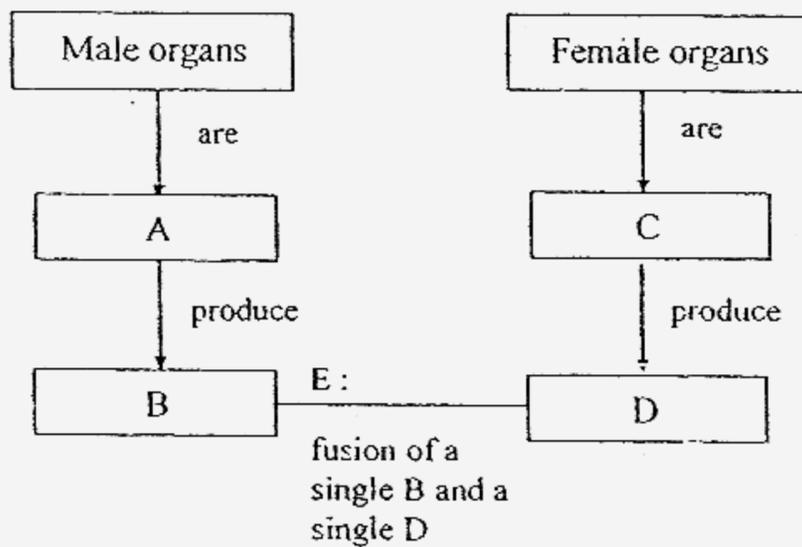
3. The picture below shows a flower.



Where do pollination and fertilization take place?

	Pollination	Fertilization
(1)	X	Z
(2)	X	Y
(3)	Y	X
(4)	Z	Y

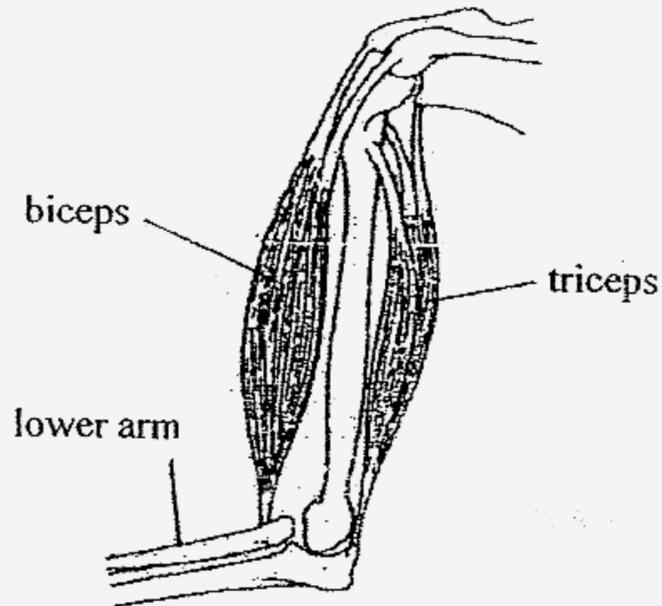
4. Study the chart below.



What do A, B, C, D and E represent?

	A	B	C	D	E
(1)	testes	sperms	ovaries	eggs	Fertilization
(2)	ovaries	sperms	testes	eggs	Reproduction
(3)	sperms	testes	eggs	ovaries	Fertilization
(4)	testes	sperms	ovaries	eggs	Reproduction

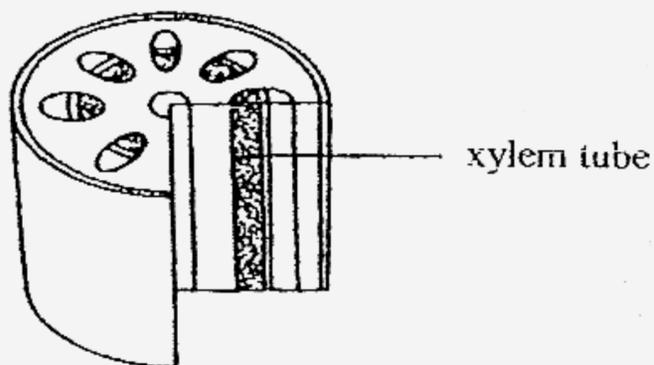
5. The diagram below shows the biceps and triceps of the upper arm.



When the lower arm is raised, what happens to the biceps and triceps?

- (1) Both the biceps and triceps contract.
- (2) Both the biceps and triceps relax.
- (3) The biceps contract while the triceps relax.
- (4) The biceps relax while the triceps contract.

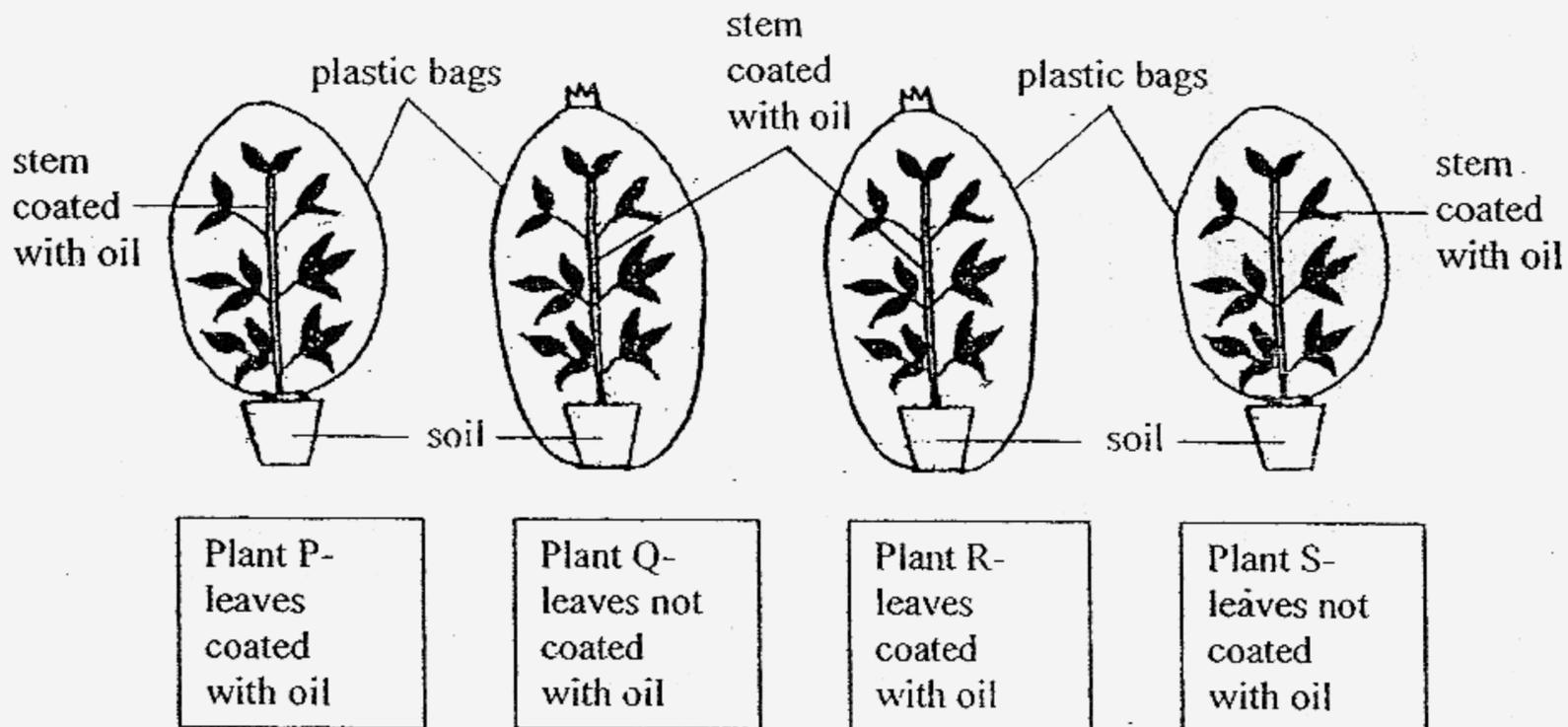
6. The diagram below shows a section through a stem.



What is the main transport function of the xylem tube?

- (1) It transports water from the leaves to the roots.
- (2) It transports water from the roots to the leaves.
- (3) It transports sugar from the leaves to the roots.
- (4) It transports sugar from the roots to the leaves.

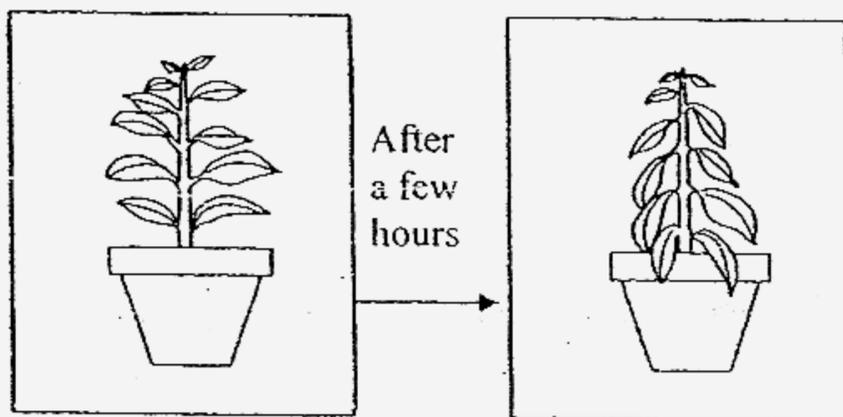
7. Amy wants to carry out an experiment to find out whether water is lost through the leaves of plants.



Which two of the above set-ups should she use?

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

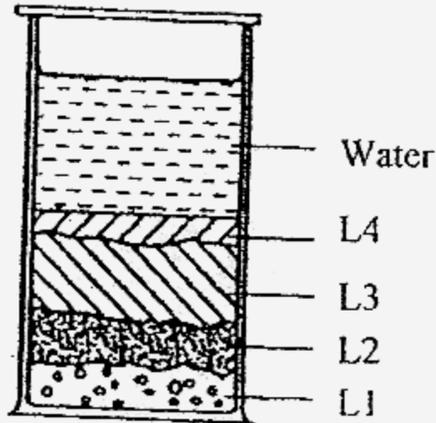
8. A potted plant was placed in the garden. The diagram below shows the change in appearance of the potted plant after a few hours.



Which one of the following shows the most likely conditions of the garden?

	Temperature	Intensity of light	Humidity
(1)	low	high	high
(2)	low	low	low
(3)	high	high	low
(4)	high	low	high

9. A sample of soil has been shaken with water and allowed to stand overnight as shown.

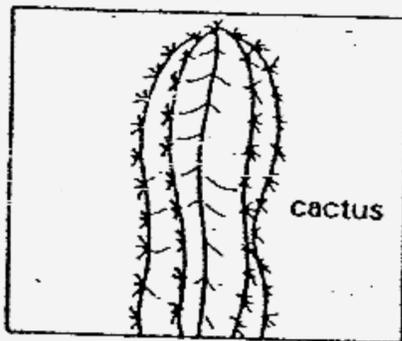


clay	silt	fine sand	coarse sand	gravel
0.002	0.02	0.2	2.0	
Diameter of soil particle / mm				

Using the information given above, what are the layers, L1, L2, L3 and L4 likely to be?

	L1	L2	L3	L4
(1)	clay	silt	sand	gravel
(2)	clay	gravel	silt	sand
(3)	gravel	silt	clay	sand
(4)	gravel	sand	silt	clay

10.



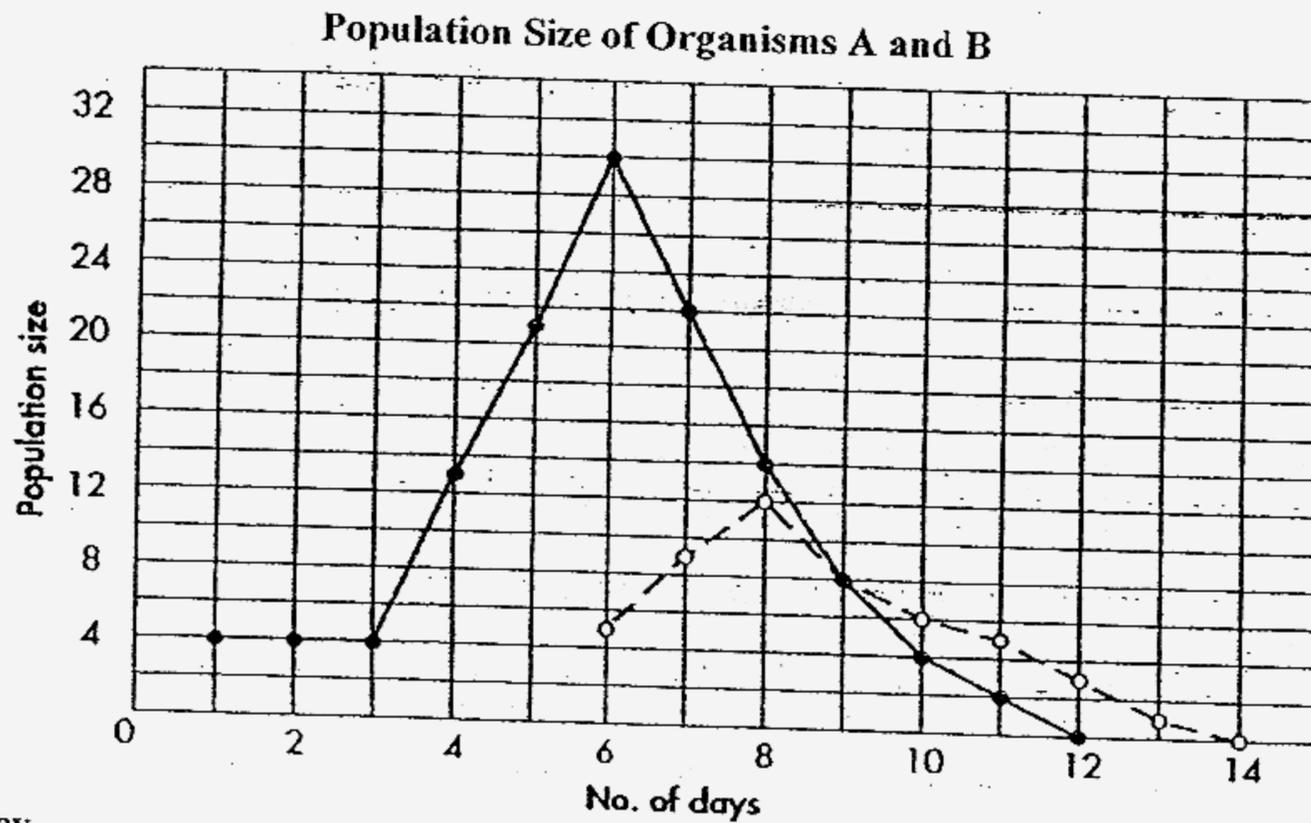
How do the needle-like leaves of the cactus plant help it to survive in the desert?

- A: They store water for the plant.
- B: They help to reduce the loss of water.
- C: They trap sunlight for photosynthesis.
- D: They protect the plant from water-seeking animals.

- A and B
- A and C
- B and D
- C and D

12. A number of organism A was placed in an aquarium. Some time later, a number of organism B was placed in the same aquarium. The number of organisms A and B was counted at the end of each day for a period of two weeks. The condition in the aquarium was favourable for both organisms during the period of investigation.

The graph below shows the predator-prey relationship between the 2 organisms over the 2-week period.



Key

— Organism A
 - - - Organism B

Four pupils make the following statements about the experiment.

Nadia : The biggest population size of organism A was 31 while that of organism B was 12 during the 2-week period.

Alice : The population size of both organisms was the same on one of the days.

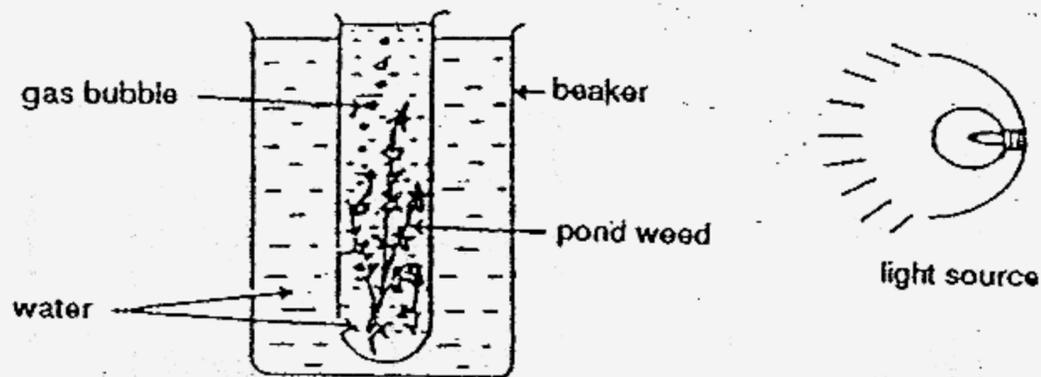
John : Organism A was the predator and organism B was the prey.

Kumar: There were no more organisms A and B at the end of the 2-week period.

Using the information from the graph only, whose statements are correct?

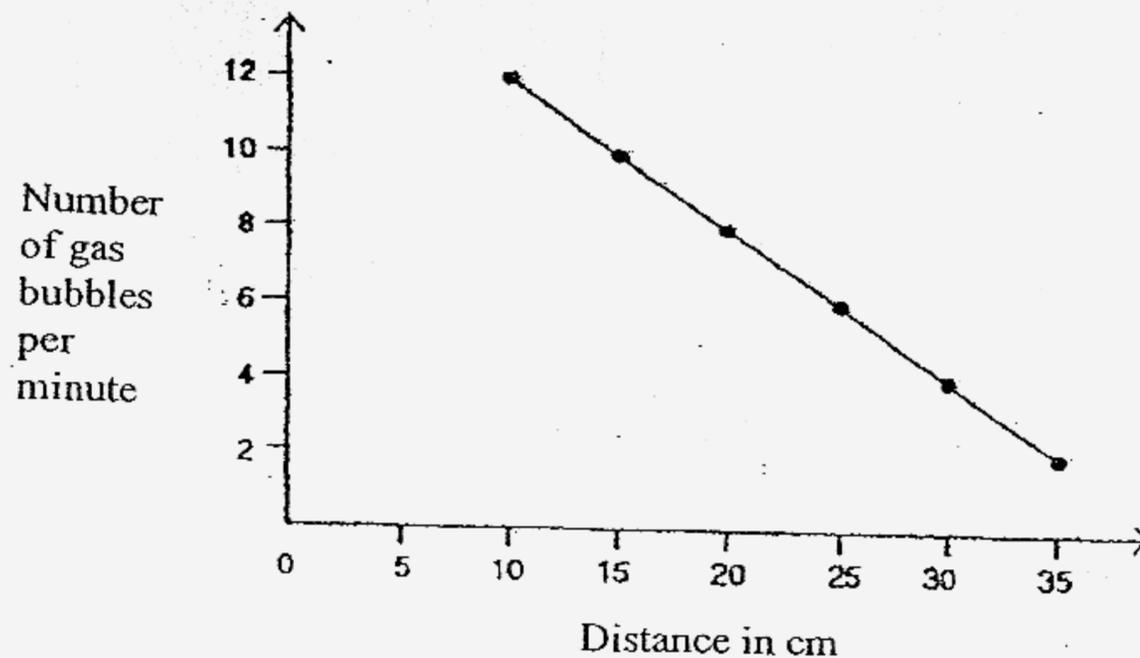
- (1) Nadia and Alice
- (2) Nadia and John
- (3) Alice and Kumar
- (4) John and Kumar

13. Jia Ming set up an experiment with a pond weed as shown in the diagram below to investigate how the rate of photosynthesis depends on the intensity of light.



He measured the distance of the light source from the beaker and the number of gas bubbles given out by the plant.

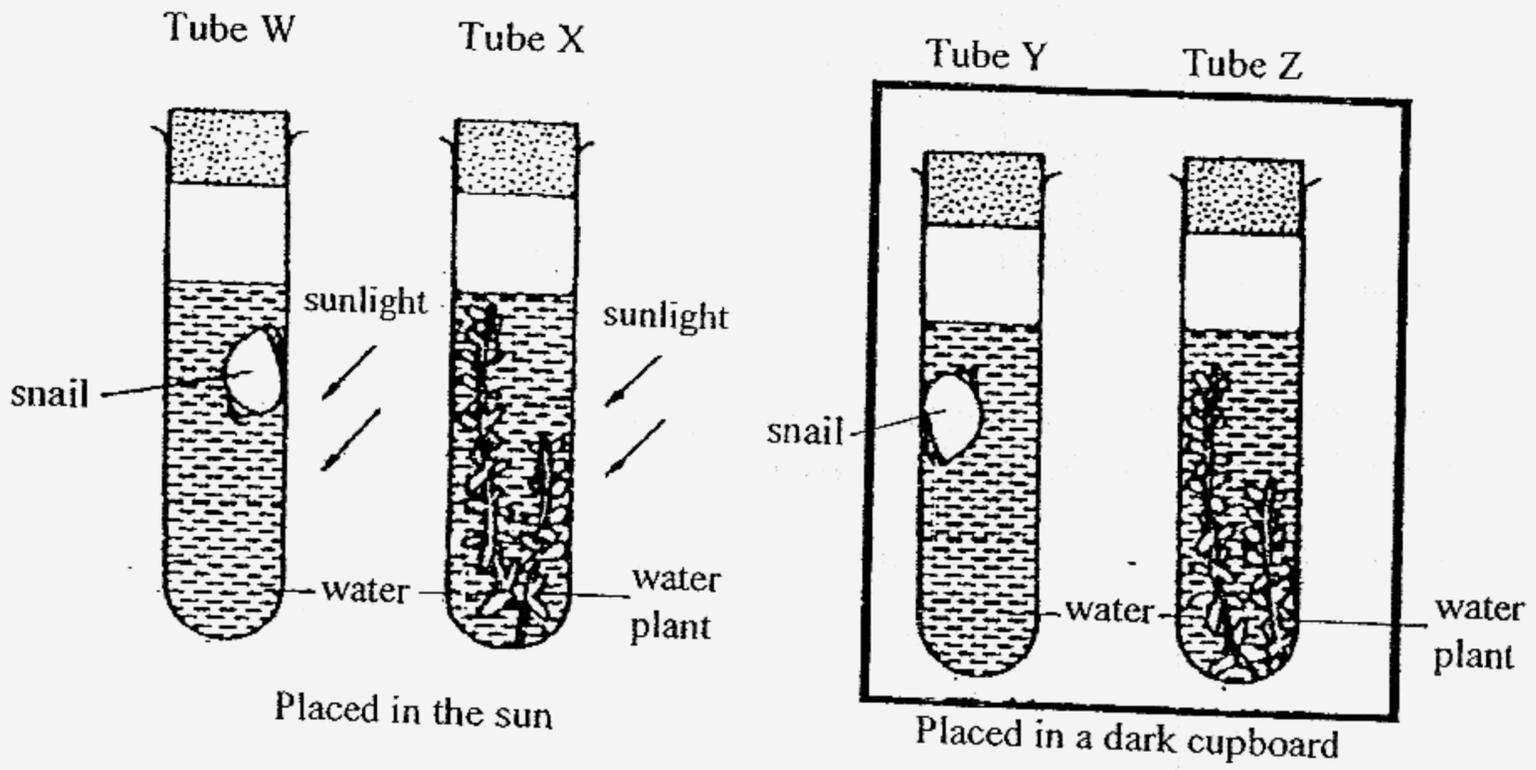
The results of his experiment are shown in the graph below.



What conclusion can Jia Ming draw from the results of his experiment?

- (X) Pondweed will photosynthesize at any light intensity.
- (X) Light intensity has no effect on the rate of photosynthesis.
- (X) The rate of photosynthesis decreases as the light intensity increases.
- (X) The rate of photosynthesis increases as the light intensity increases.

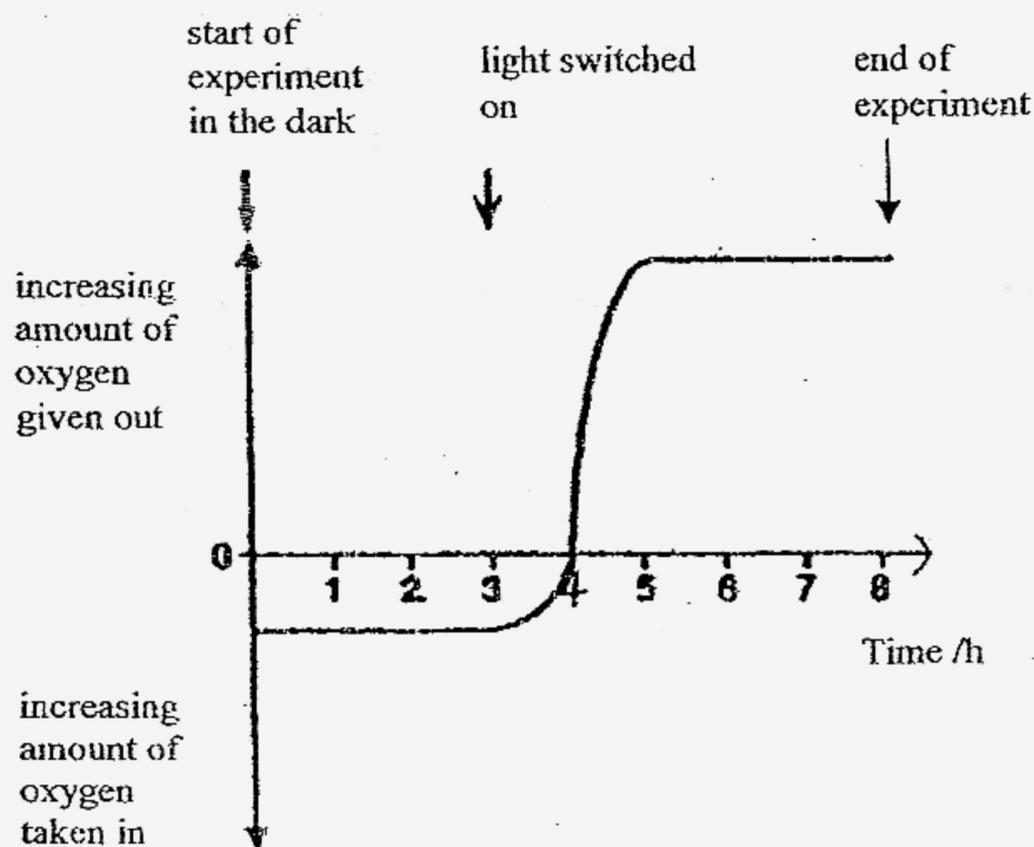
14. The experiment below was set up as shown below. Tubes W and X were left in the sun while Tubes Y and Z were left in a dark cupboard.



After one hour, the water in Tube _____ had less carbon dioxide as compared to the beginning of the experiment.

- (1) W
- (2) X
- (3) Y
- (4) Z

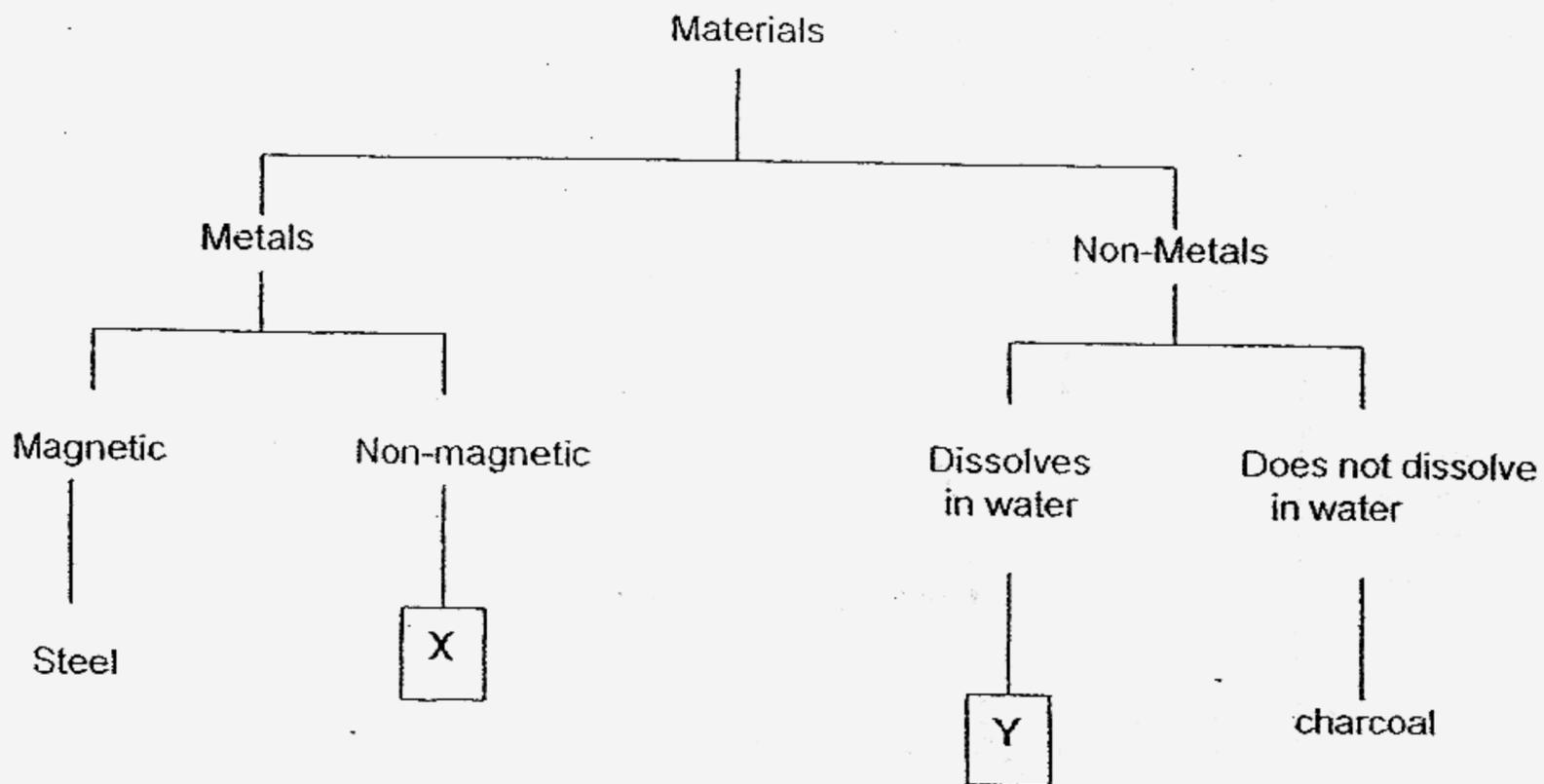
15. An experiment was carried out to investigate the amount of oxygen given out and taken in by a plant in different light conditions. The graph below shows the results of the investigation.



Two processes that took place during the experiment were respiration and photosynthesis. Based on the graph, for how many hours did respiration and photosynthesis take place?

	Respiration	Photosynthesis
(1)	8	5
(2)	8	4
(3)	4	8
(4)	3	5

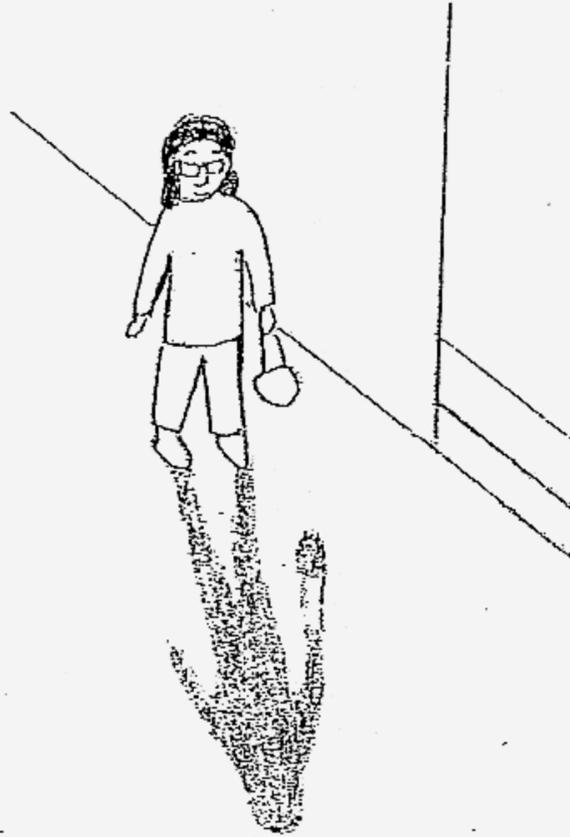
16. The following shows a classification table.



What do X and Y represent ?

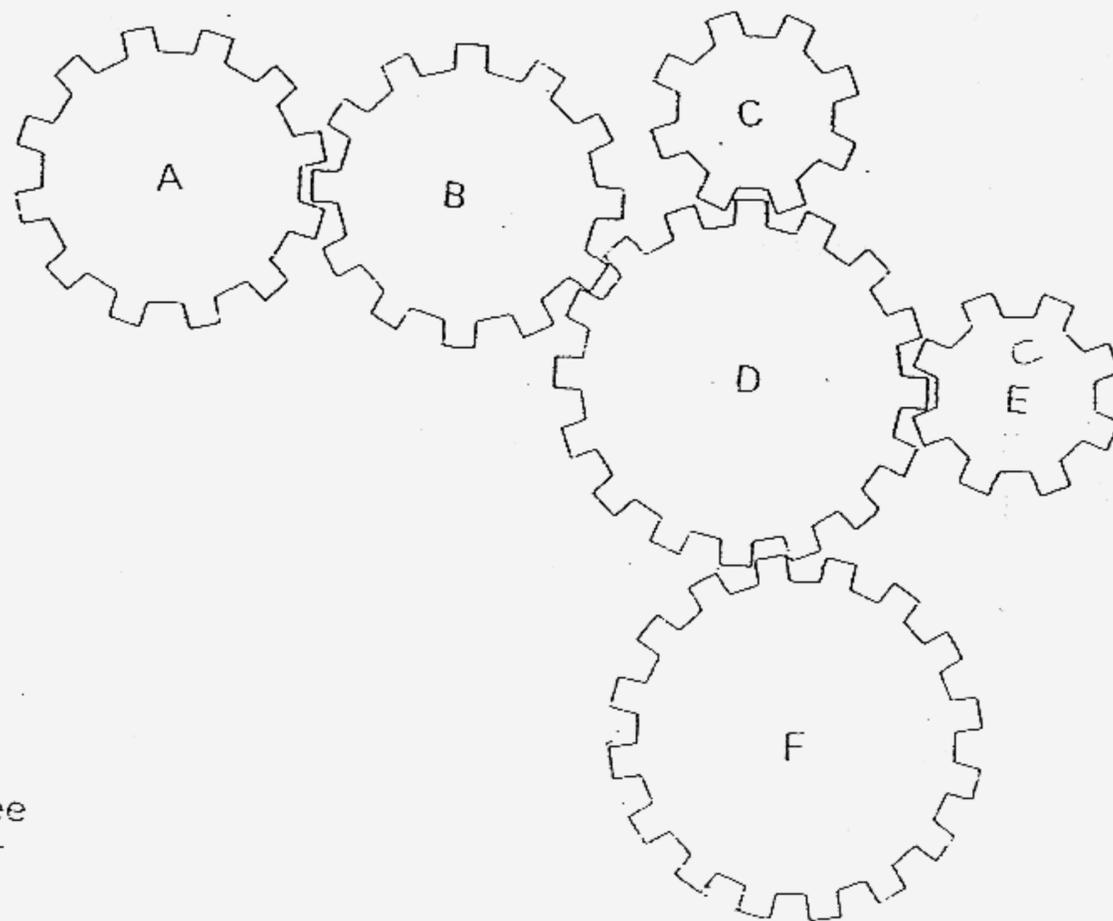
	X	Y
(1)	aluminium foil	pencil lead
(2)	carbon	toothpick
(3)	ceramic tile	salt
(4)	copper	sugar

17. The picture shows a woman walking past a building in the late afternoon. She is moving in the direction she is facing.



What is the direction on the left of the woman ?

- (1) North
 - (2) South
 - (3) East
 - (4) West
18. Six
- Five gears have been set up as shown in the diagram below.
How many gears can turn in the same direction as Gear B but faster ?

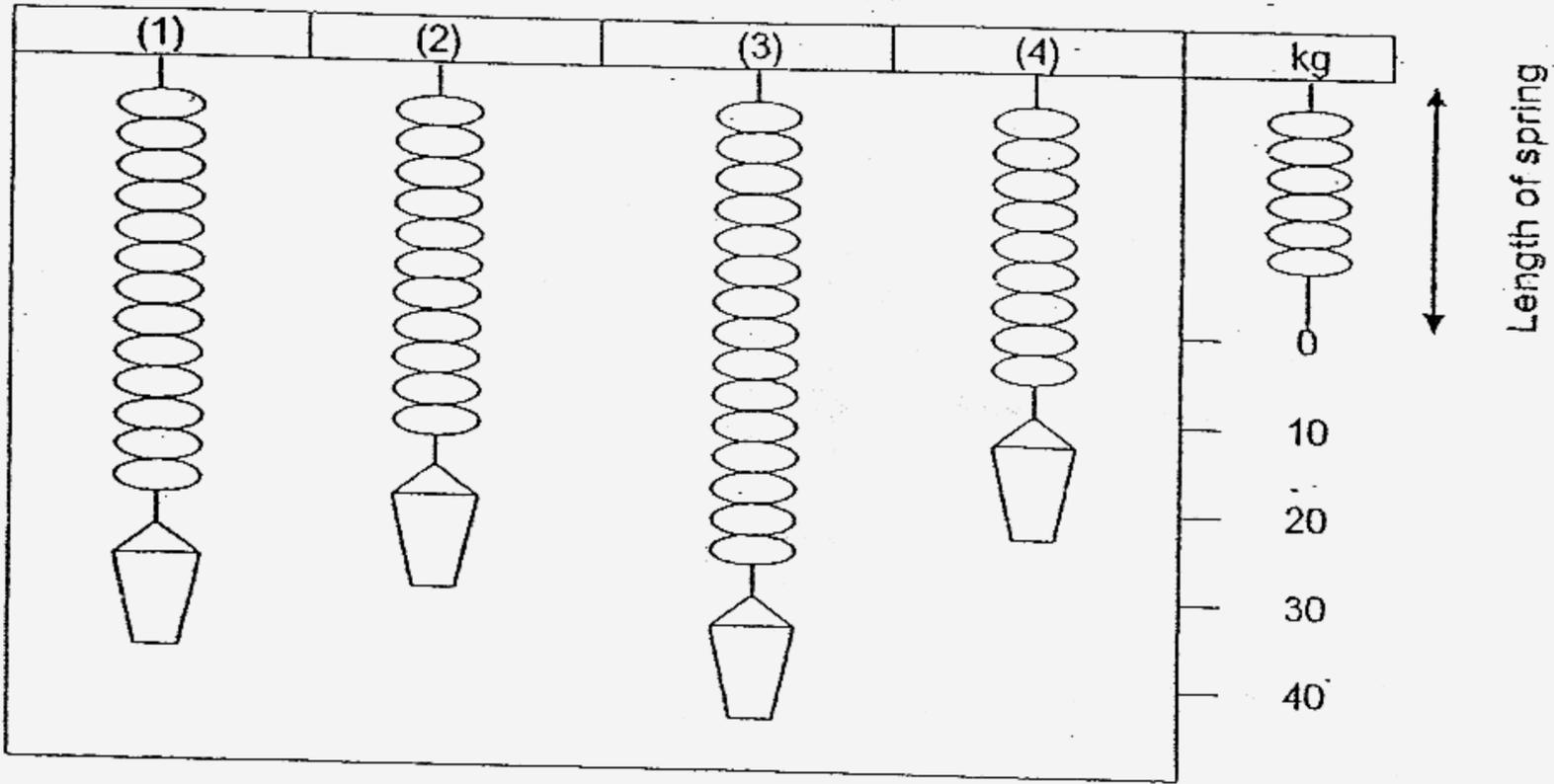


- (1) One
- (2) Two
- (3) Three
- (4) Four

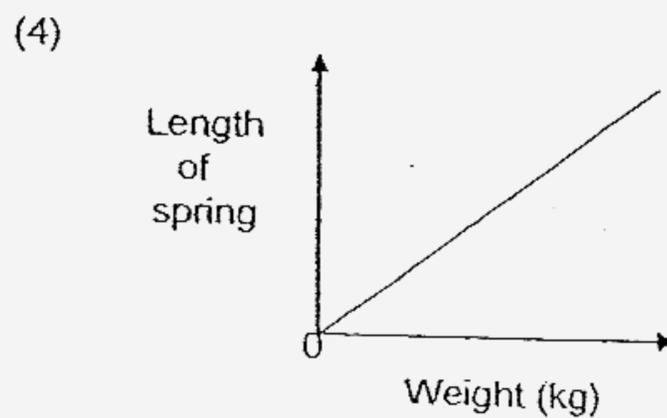
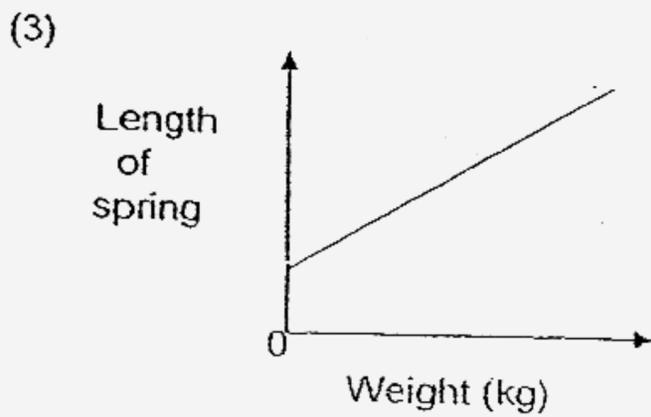
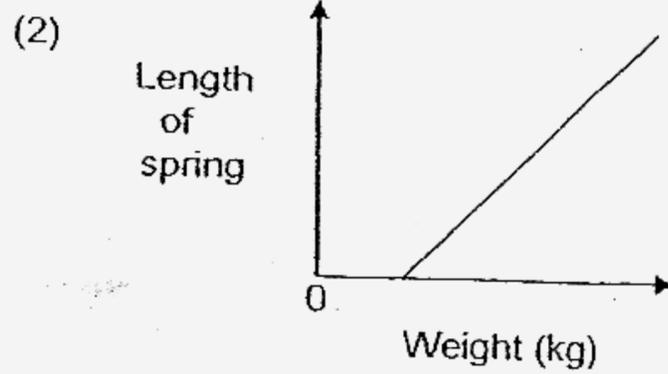
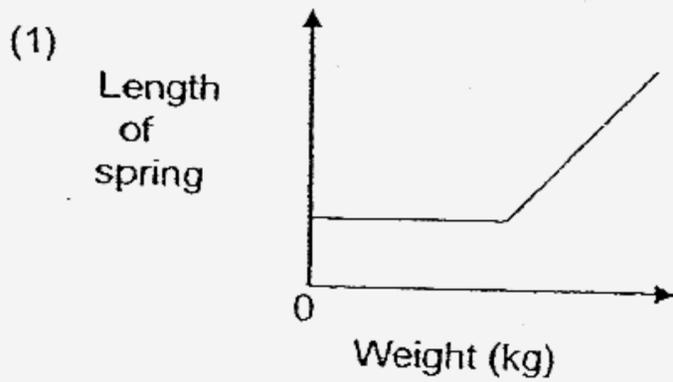
For Questions 19 and 20, refer to the following information.

19. A bucket that is filled with 30 kg of soil is hung from a spring.

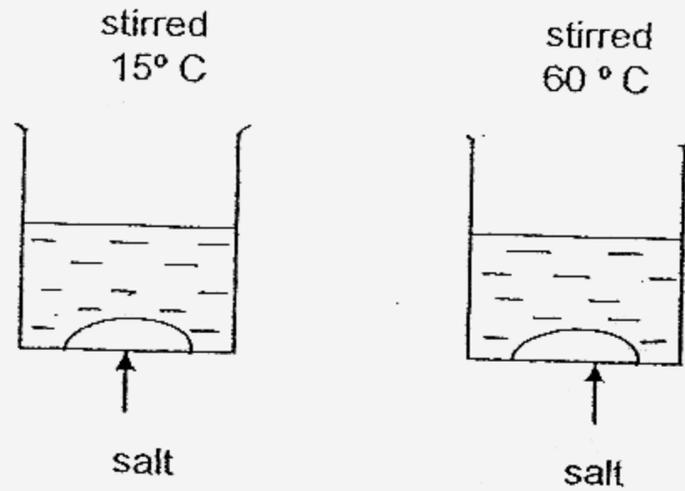
Which scale shows the weight of the bucket of soil ?



20. Which one of the graphs shows the correct length of the spring if the bucket is filled with more soil ?

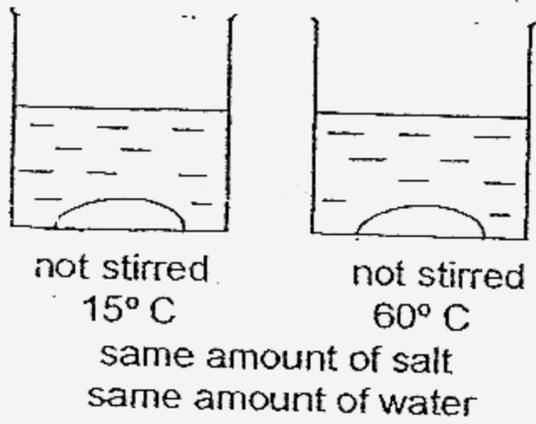


21. Maria wanted to find out how temperature and stirring affect how quickly salt dissolves in water. She set up two identical beakers and put in the same amount of water and salt. However, she needs two more beakers in order to carry out a fair test.

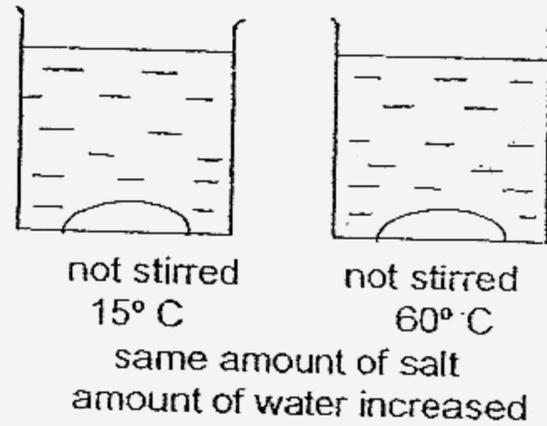


Which pair of beakers should she use?

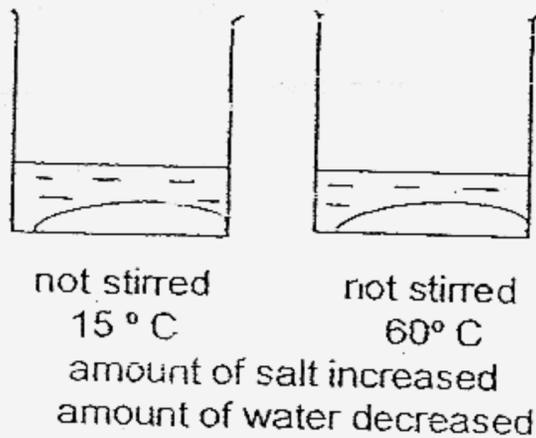
(1)



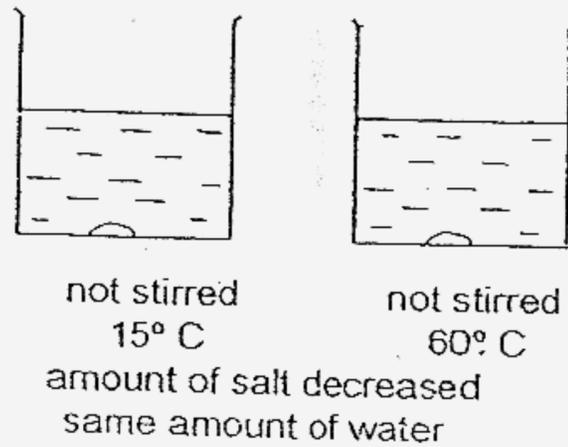
(2)



(3)



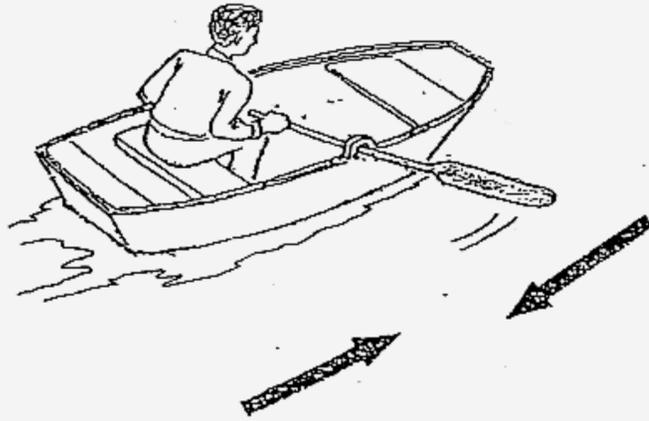
(4)



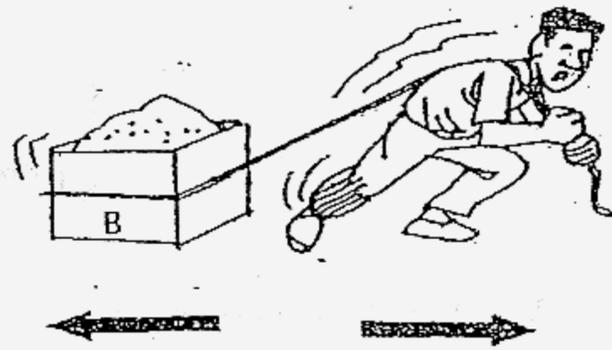
22. In the pictures below, arrows are drawn to represent the direction of the forces.

Which of the following pictures shows the wrong direction of the forces exerted ?

(1) man rowing a boat



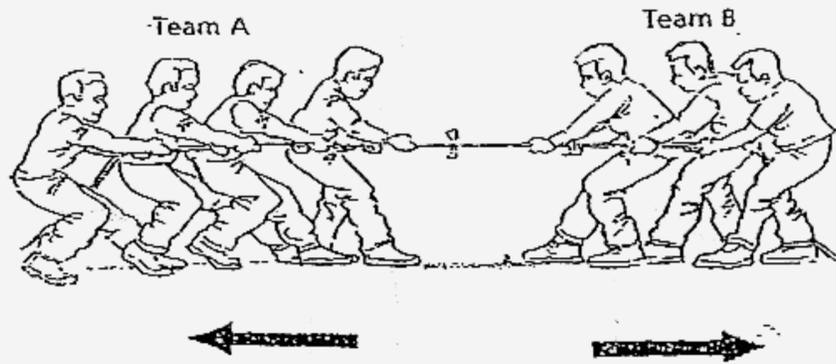
(2) man moving a load



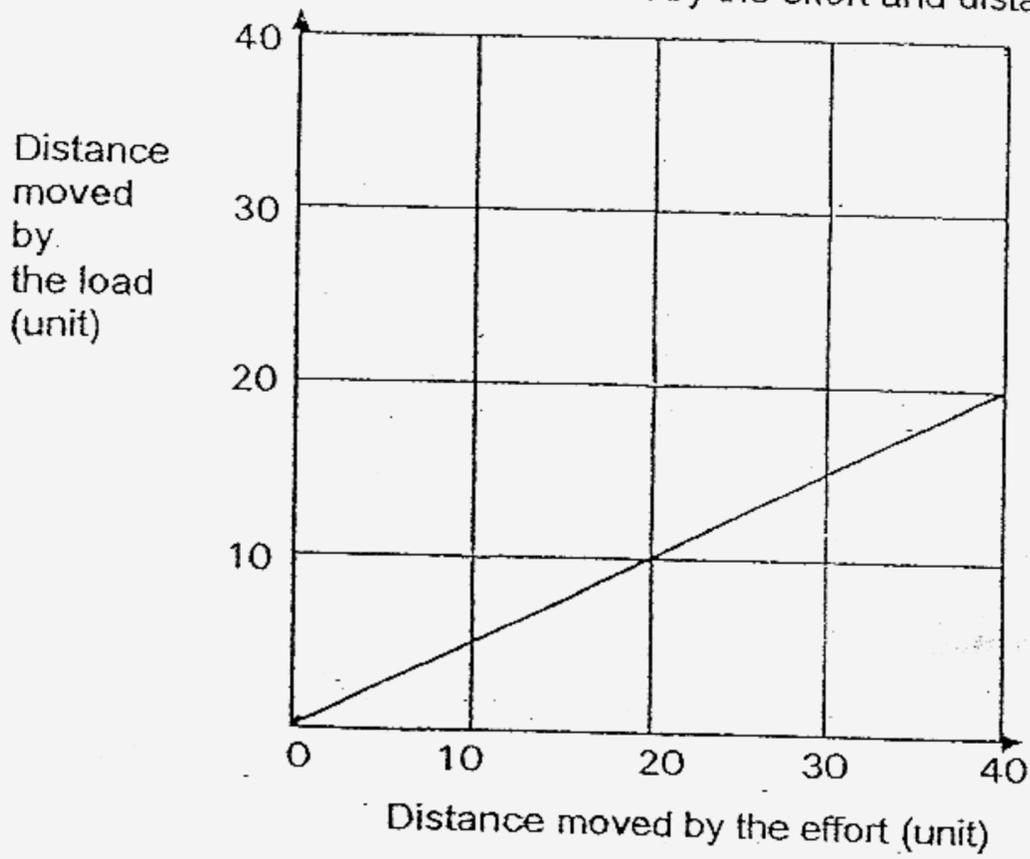
(3) boy kicking a ball



(4) a game of tug-of-war

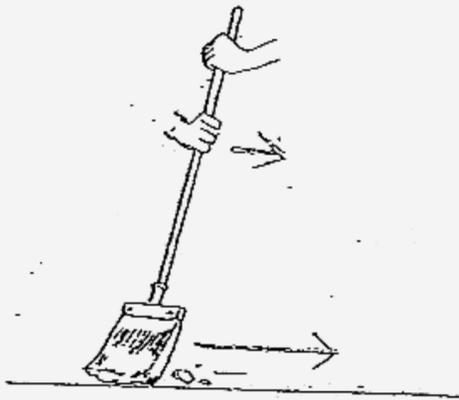


25. A machine is used to move a load. The graph below shows the relationship between the distance moved by the effort and distance moved by the load.

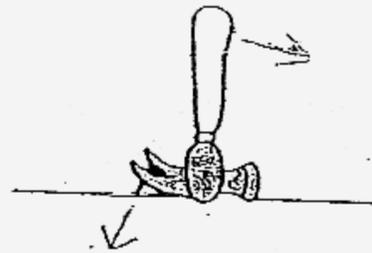


Which of the machines does not represent the results shown in the graph ?

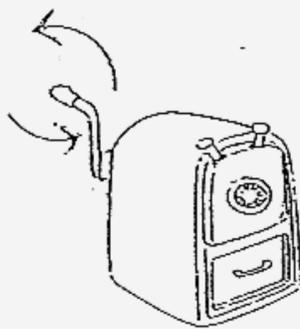
(1)



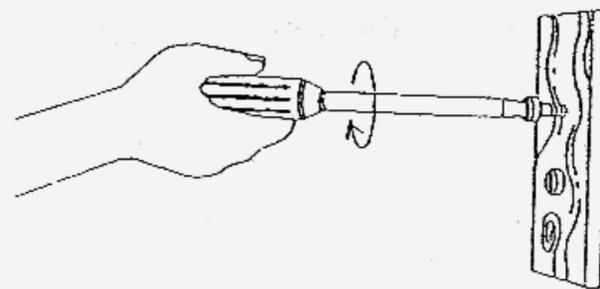
(2)



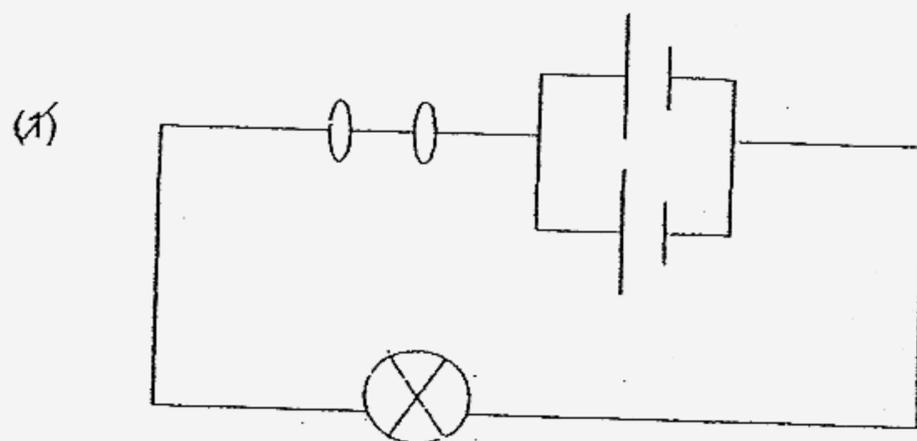
(3)



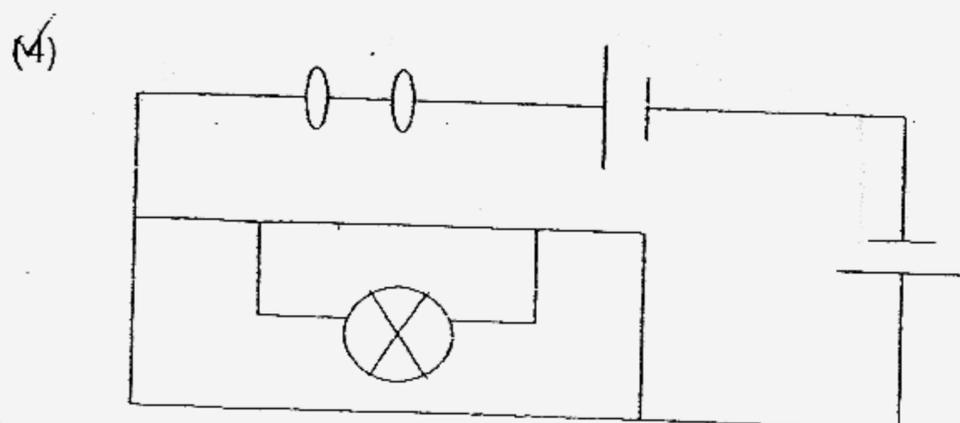
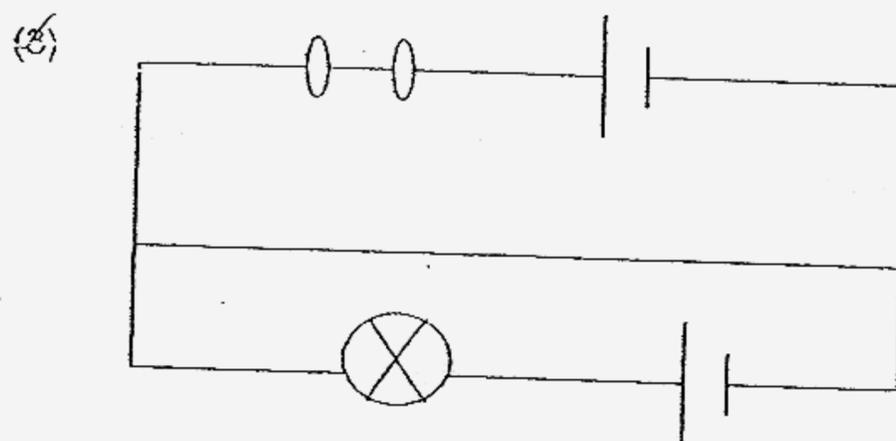
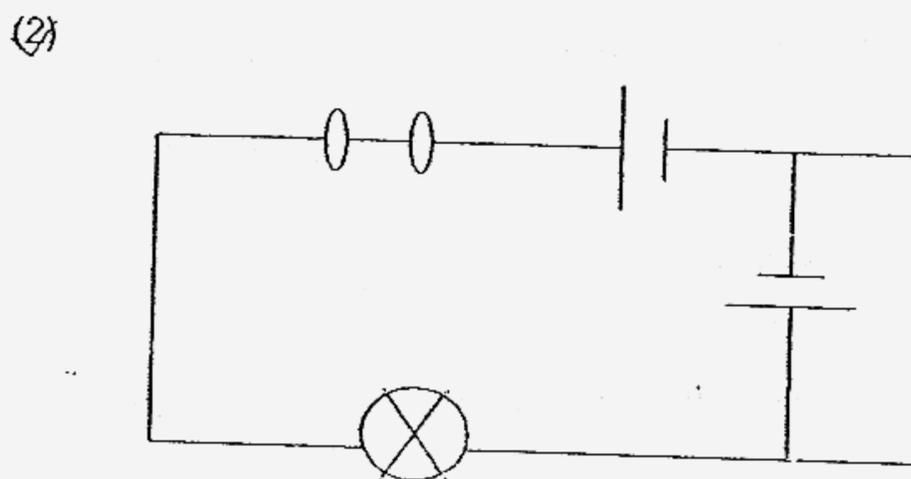
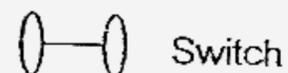
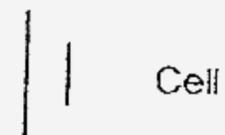
(4)



26. In the following circuits, each cell is 1.5 V and each bulb is 1.5 V.
 In which of the circuits will the bulb not light up ?



Key:



27. Siew Mei was filling a cup with water when the water gushed out of the jug, splashing all over the cup. She then emptied the cup and refilled the jug with the same amount of water. She repeated the experiment. This time, she managed to fill the cup without spilling the water.

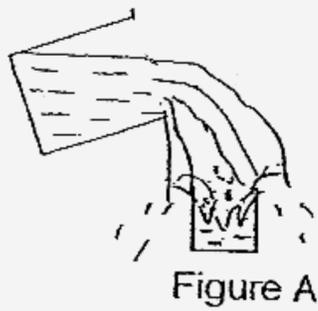


Figure A

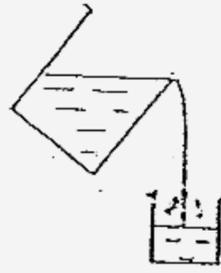
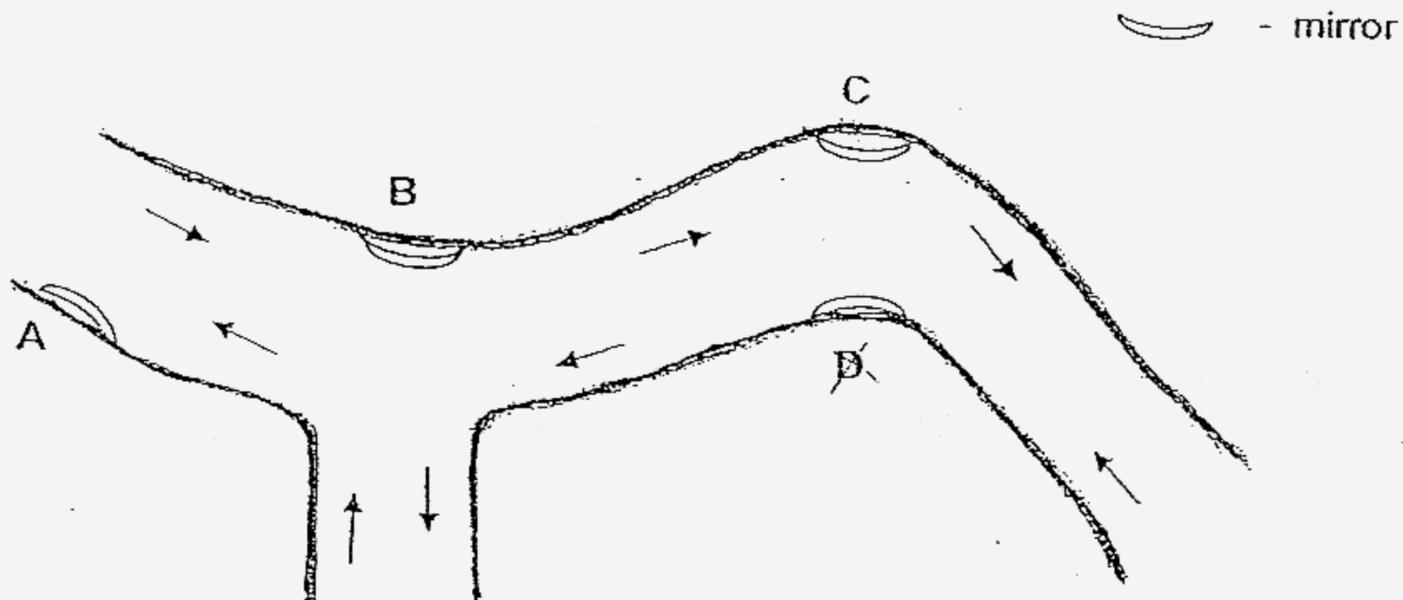


Figure B

Based on the information above, what conclusion could Siew Mei draw ?

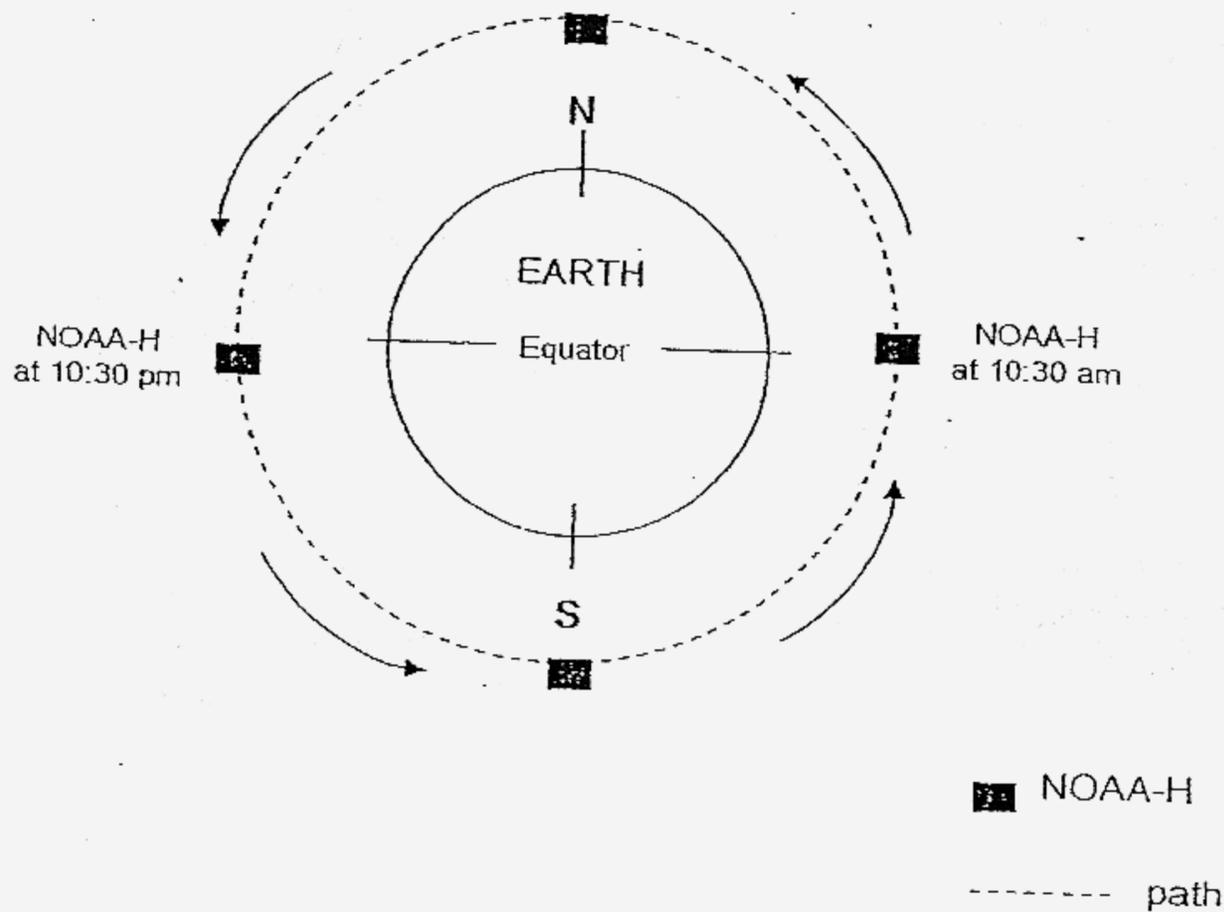
- (1) In figure A, more air escaped from the jug and more liquid flowed out from the jug.
 - (2) In figure A, the jug was tilted at a greater angle, increasing the force of the water flowing out of the jug.
 - (3) In figure B, less air escaped from the jug and less liquid flowed out from the jug.
 - (4) In figure B, the cup has less gravitational force, so water flowed out more slowly from the jug.
28. The diagram shows a section of a road. The arrows indicate the directions of the road. Mirrors are set up to help guide motorists travelling on this road. Which two mirrors are correctly set up ?



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

29. A polar satellite named "NOAA-H" was launched by NASA in 1988. It takes 99 minutes for "NOAA-H" to complete one orbit around the Earth. When the satellite passes the Equator, the local time is always either 10.30 a.m. or 10.30 p.m.

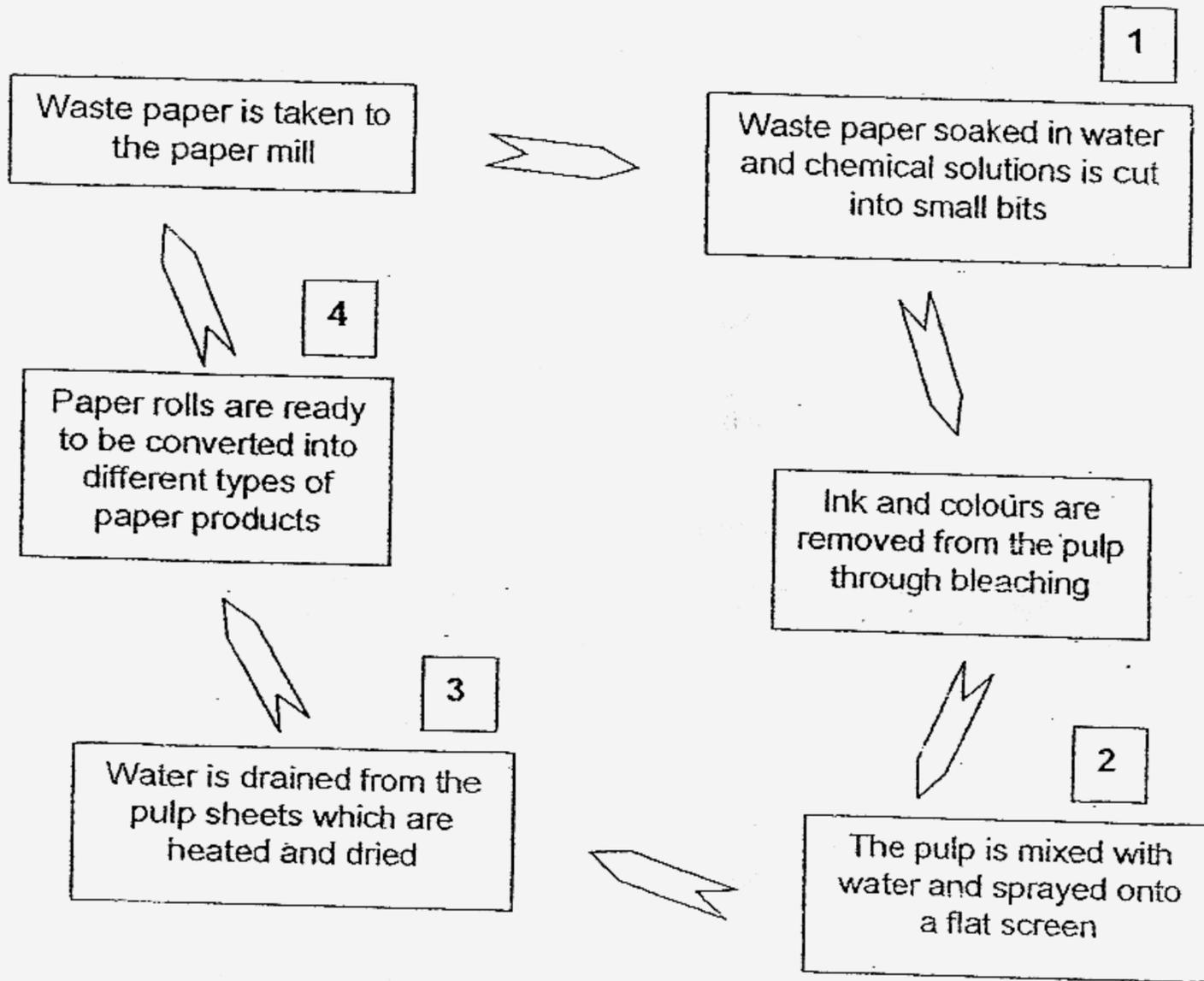
The diagram shows the Earth, the North and South Poles, the equator and the path of the satellite.



Approximately how many minutes does the satellite take to travel from the North Pole to the South Pole ?

- (1) 15 minutes
- (2) 25 minutes
- (3) 49 minutes
- (4) 90 minutes

30. The following flowchart shows the recycling process of paper.



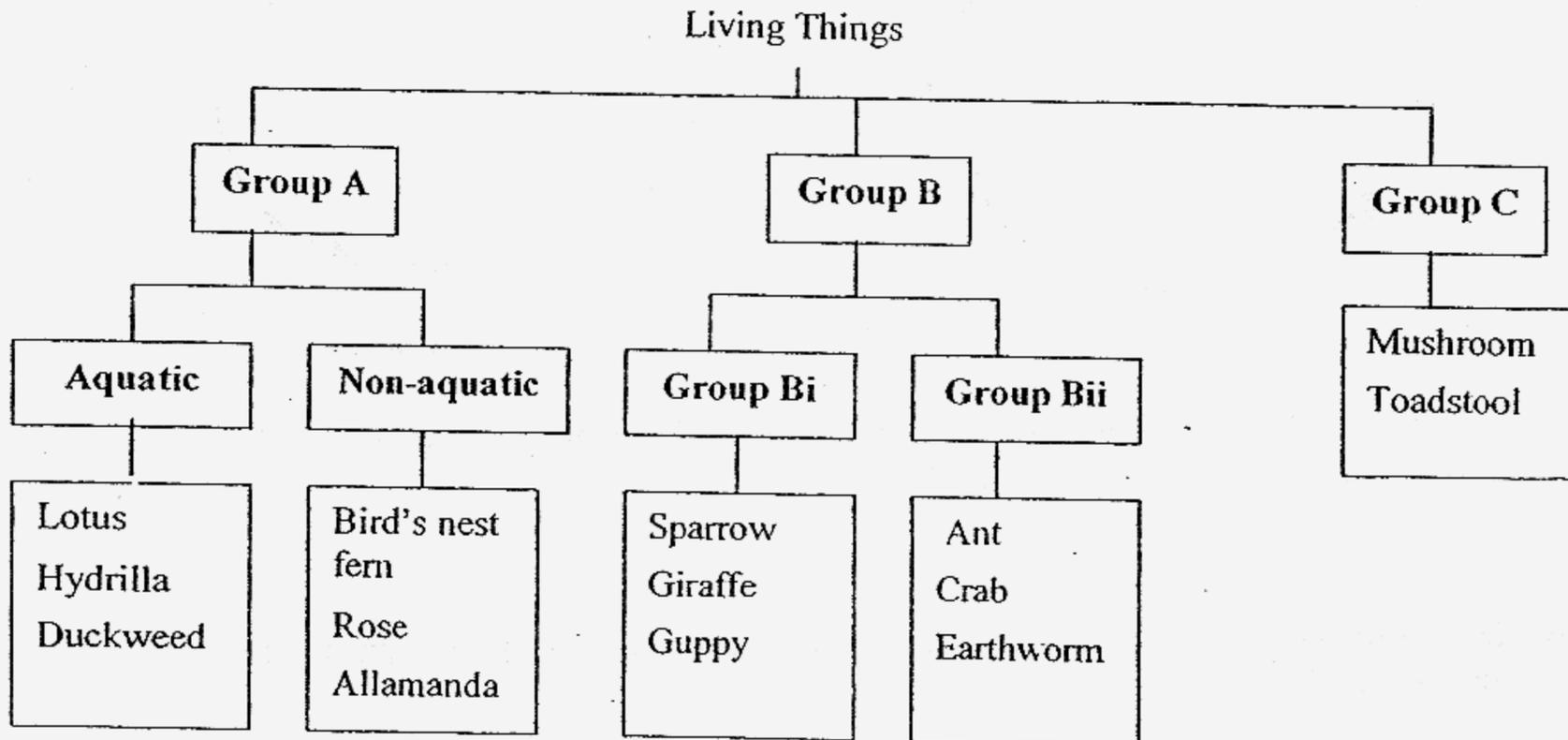
At which one of the stages, 1, 2, 3 or 4, is the waste paper considered recycled?

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

Section B (40 marks)

For questions 31 to 46, write your answers in the spaces provided.

31. Study the classification table below carefully.



(a) Write down suitable headings for Groups Bi and Bii. (1)

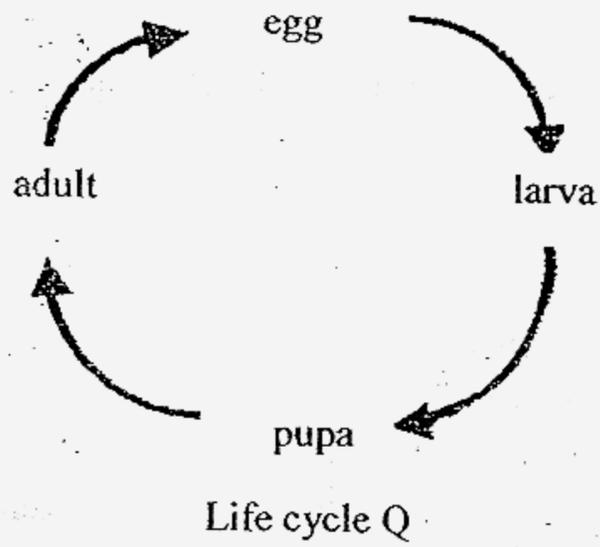
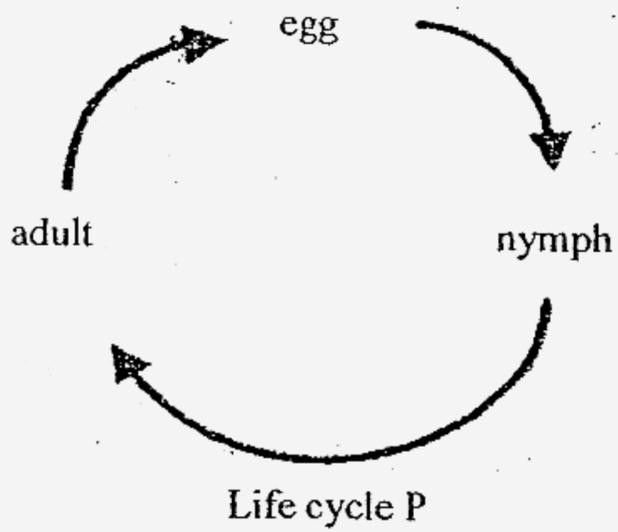
Group Bi : _____ Group Bii : _____

(b) In what way are the three groups of living things, A, B and C different in their movement? (1)

32. Fill in each of the following blanks with the correct answer. (2)

Children have characteristics that they inherit from their _____ . The information that is passed from one generation to the next is contained in the genes that are found in the _____ of the cell. Some of these characteristics can be affected by the _____ . For example, a person's skin colour can become darker if he or she stays in the Sun for too long.

33. Study the two life cycles below.



(a) Both the nymph and the larva go through a similar process during their growth to become adults. Name this process. (1)

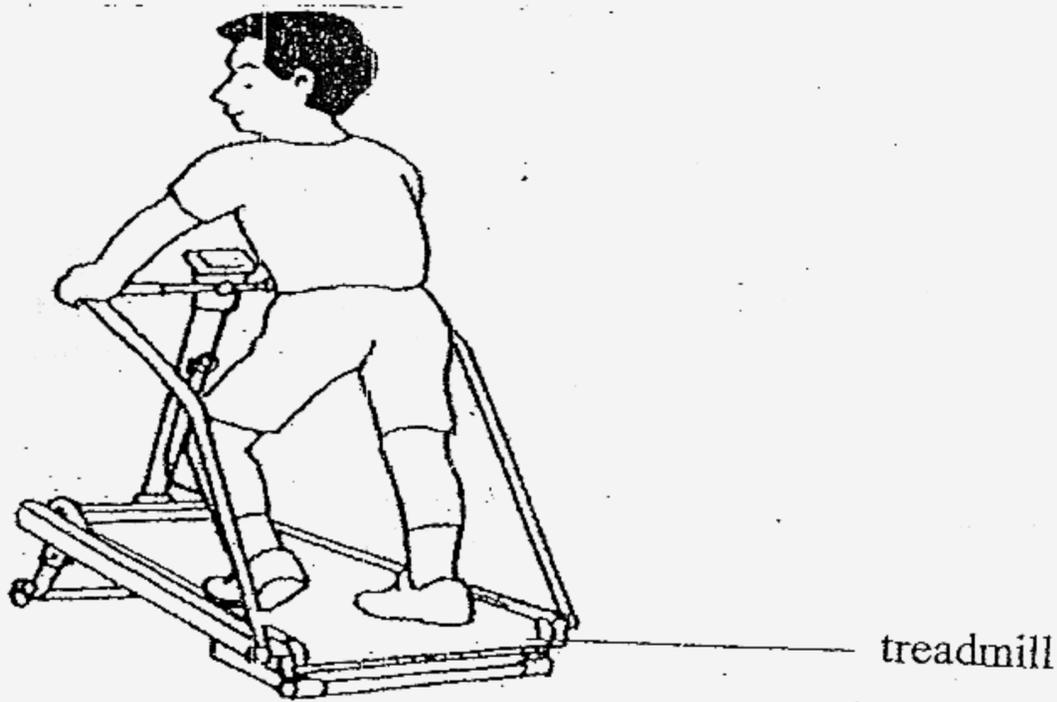
(b) How is the process mentioned in (a) important to the growth of the nymph and the larva? (1)

(c) For each life cycle P and Q, name an insect that goes through such a life cycle. (1)

An insect that goes through life cycle P : _____

An insect that goes through life cycle Q : _____

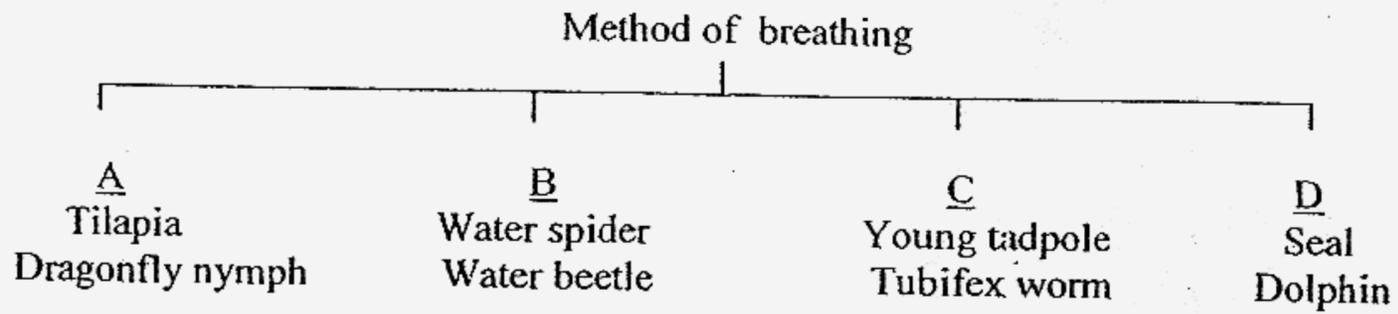
34. Wei Jie starts exercising slowly on the treadmill at first and gradually increases his speed.



(a) Wei Jie knows that his heartbeat increases after exercising on the treadmill. Using a stop-watch, what steps should he take to find out the change in his heartbeat? (2)

(b) Why does Wei Jie's heartbeat increase when he is exercising on the treadmill? (1)

35. Some aquatic animals are grouped according to how they breathe.

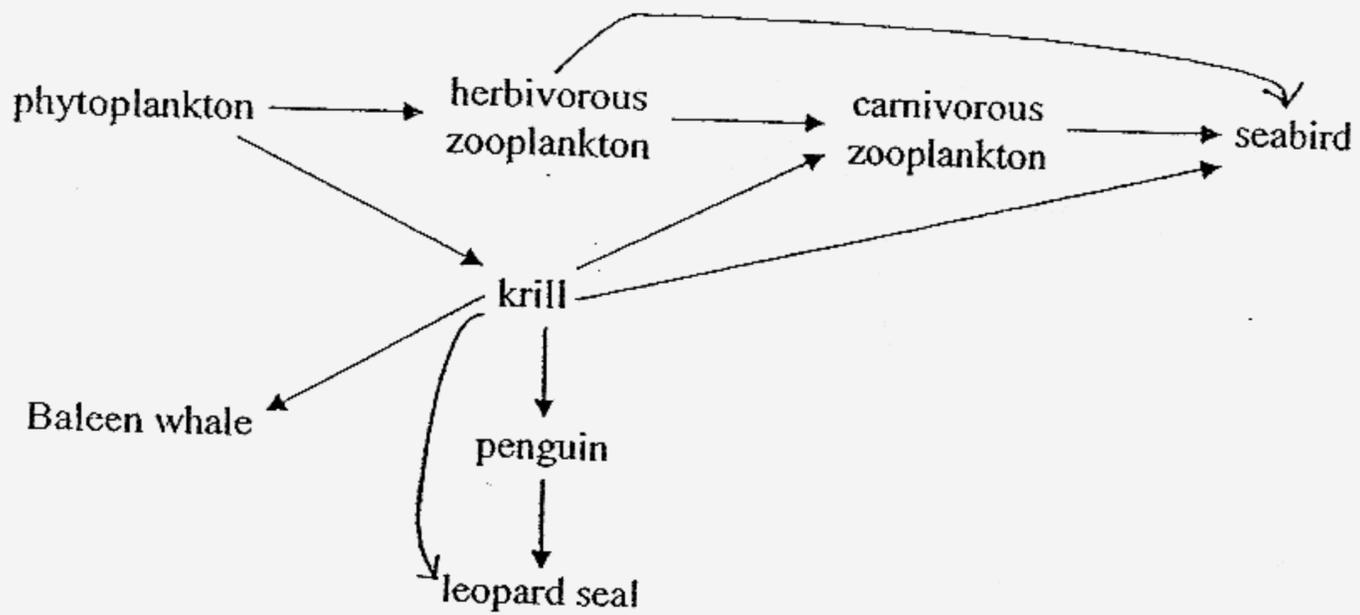


(a) One animal in the diagram has been classified wrongly. (1)
Which animal is it?

In which group, A, B, C or D should this animal be classified?

(b) The water stick insect cannot be placed in any of the groups above.
How does it breathe in water? (1)

36. Study the food web below carefully.

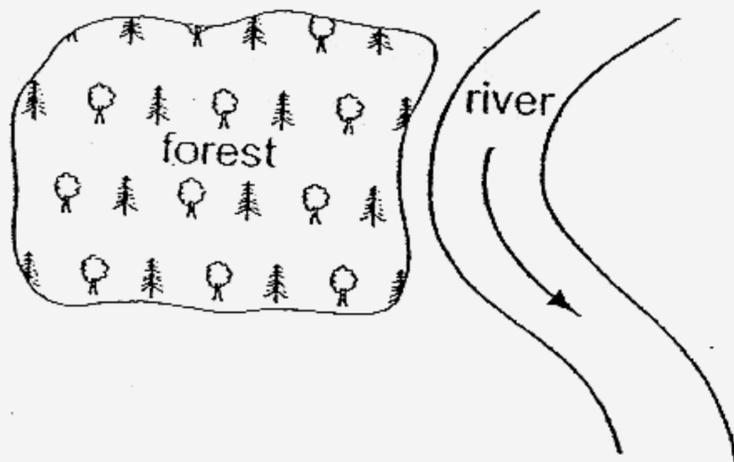


(a) Write down a food chain that involves the penguins. (1)

(b) In recent years, large populations of Baleen whales have been killed. What effect does the killing of Baleen whales have on the penguin population? (1)

(c) Explain your answer in (b). (1)

37. The diagram below shows a forest beside a river.

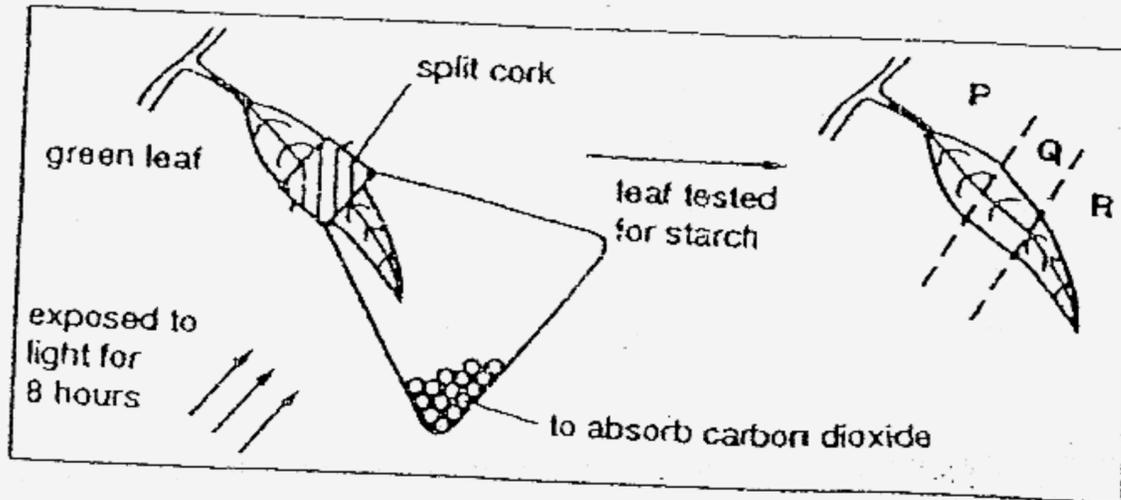


The forest is cut down.

(a) State the immediate effect of deforestation. (1)

(b) How does deforestation affect the cleanliness of the water in the river? (1)

38. Bala carried out the following experiment to investigate the process of photosynthesis.



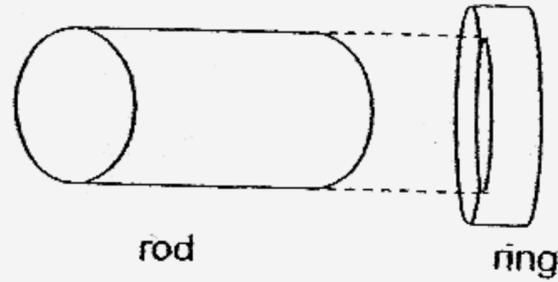
The leaf was tested for starch using iodine solution at the end of eight hours.

- (a) Indicate the colours of regions P, Q and R in the table below by writing 'dark blue' or 'brown'. (1½)

Region	Colour
P	
Q	
R	

- (b) Explain why regions P, Q and R have the colours as indicated in the table above. (1½)

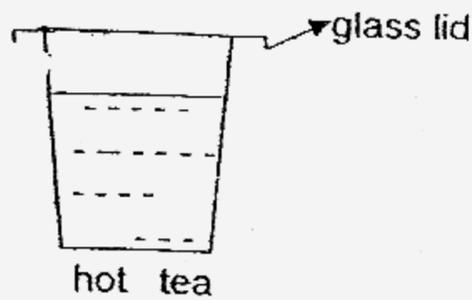
39. The diagram below shows a metal ring and a metal rod. The diameter of the rod is about the same as the inner diameter of the ring. Some students tried to push the rod through the ring but the rod could not go through the ring.



- (a) Without using any mechanical tools, what could be done to the rod in order to make it go through the ring? (1)

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

40. A glass of hot tea was placed on a table at room temperature. The glass was covered with a glass lid as shown in the diagram below:



After some time, water droplets were formed on the lid.

- (a) Draw the water droplets formed on the glass lid. (1)

- (b) The glass lid _____ heat while the tea _____ heat. (1)

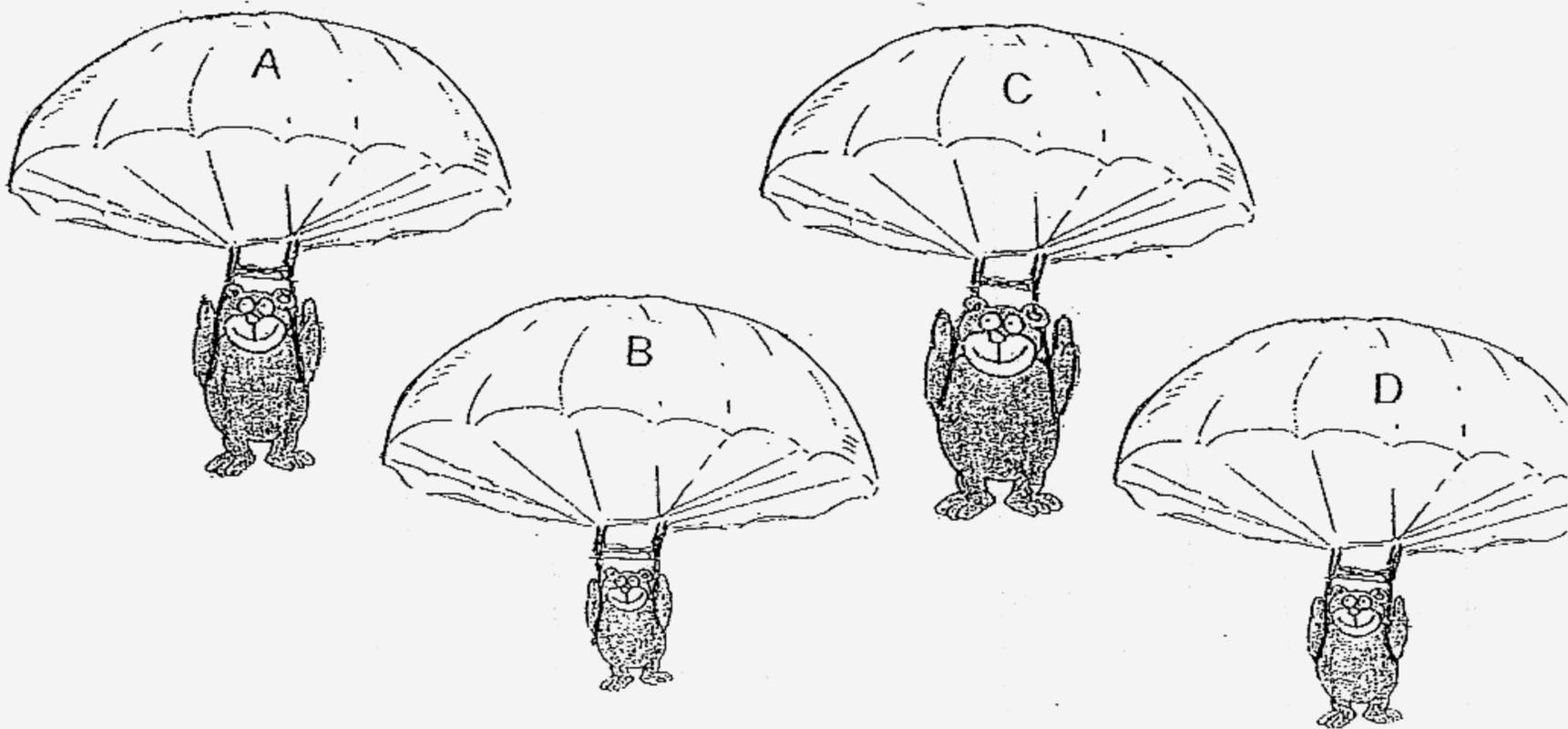
- (c) Name the process that causes the formation of water droplets. (1)

41. Some students wanted to find out if the mass of the toy figures would affect the time taken for the parachutes to reach the ground.

They controlled the following variables :

material of parachute	same
size of parachute	same
height from which the parachutes were released	same

The diagrams show the four parachutes, A, B, C and D.



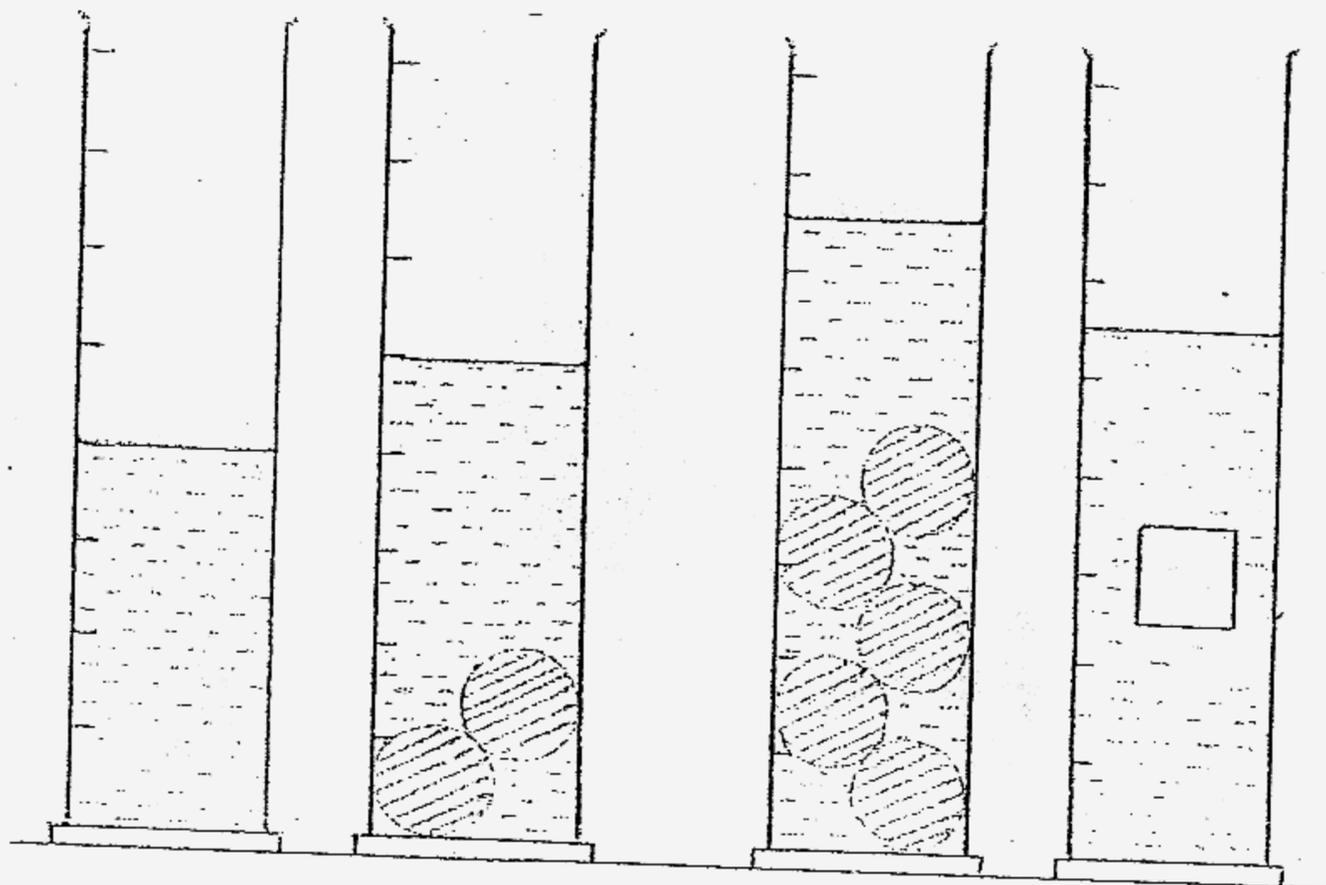
The students recorded their readings in the table below.

Parachute	Time taken to reach the ground (seconds)
A	19
B	29
C	11
D	26

- (a) Based on the information above, what could the students conclude? (1)

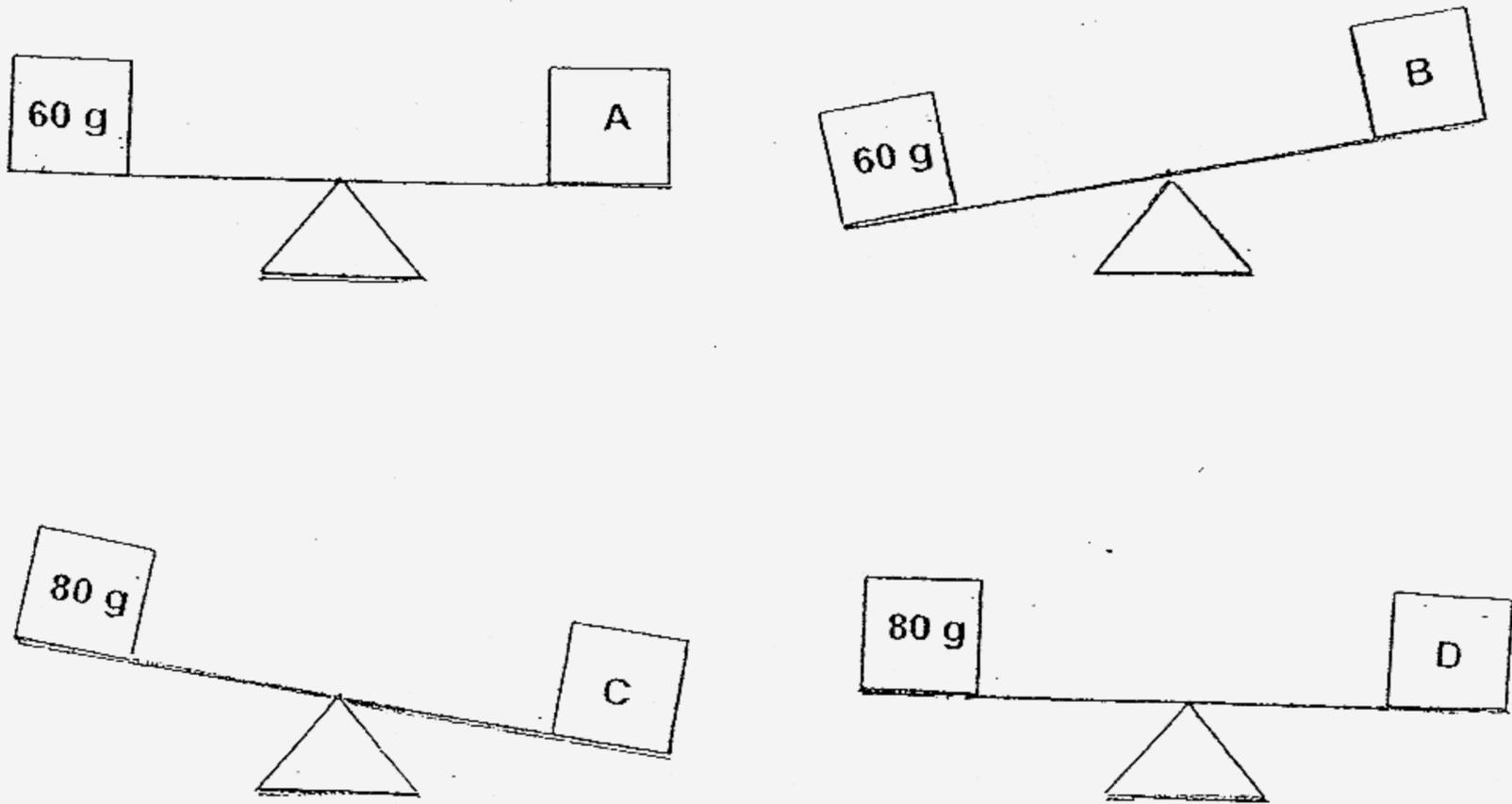
- (b) Describe how you would find out if the area of parachute would affect the time taken for it to reach the ground. (2)

42. The diagrams show the water levels in a measuring cylinder when a number of identical marbles were put into it.
The water level rose each time a marble was put into the cylinder.

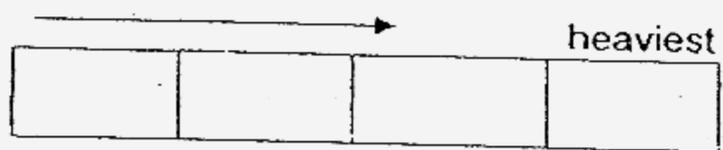


- (a) Write the number of marbles in the box in the last diagram. (1)
- (b) Name two properties of solids that are illustrated in this experiment. (1)
-

43. Lydia used a balance and some weights to measure the mass of four different blocks A, B, C and D.



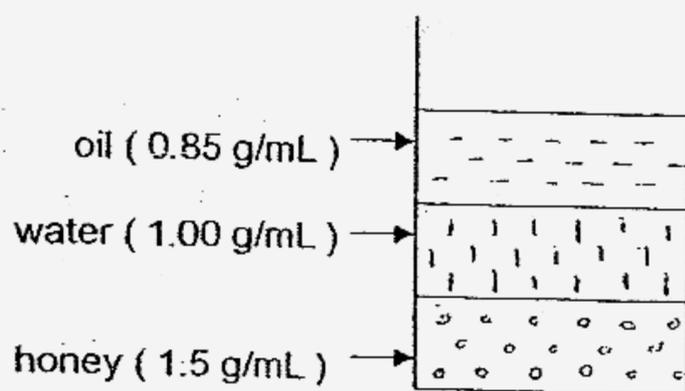
- (a) Based on the set-ups shown above, arrange the mass of the blocks, from the lightest to the heaviest. (1)



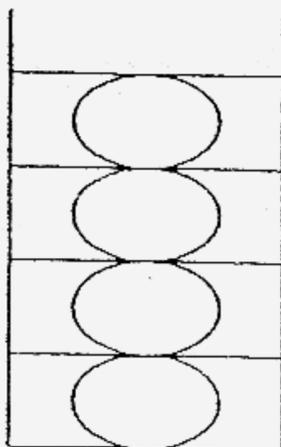
- (b) What should be done if Lydia wanted to balance C using the same weight? (1)

44. Some liquids do not mix together because they have different densities. Jean measured the densities of 4 different liquids, A, B, C and D, and recorded her results in the table below.

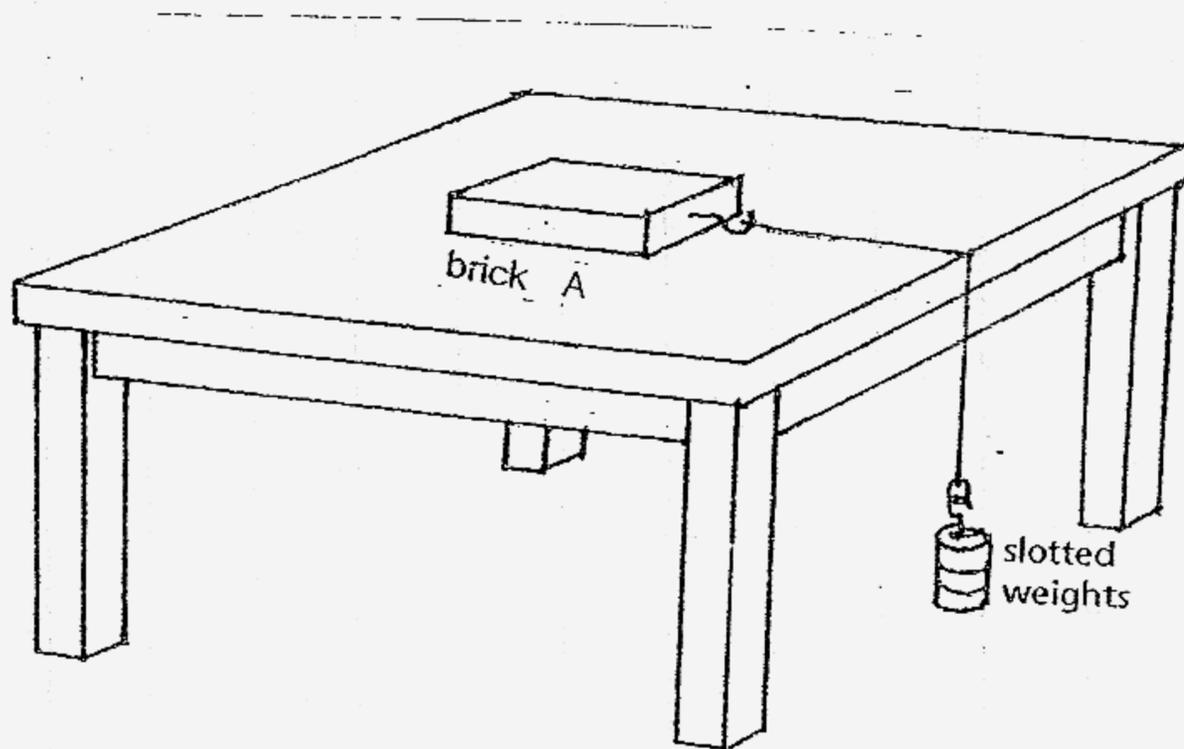
Liquids	Density (g /mL)
A	0.92
B	1.03
C	0.78
D	1.23



- (a) Based on the information in the table and the diagram shown above, which liquid is lighter than water but heavier than oil ? (1)
-
- (b) How would the liquids, A, B, C and D, settle in the container below ? (1)
Write A, B, C and D in the ovals.



45. In the experiment shown below, an object, brick A, was attached to a string. Weights were added to the other end of the string until the brick moved. The experiment was repeated by replacing brick A with brick B, brick C and brick D, respectively, using the same surface. All four bricks have similar size but are made of different materials.



The results are shown in the table below.

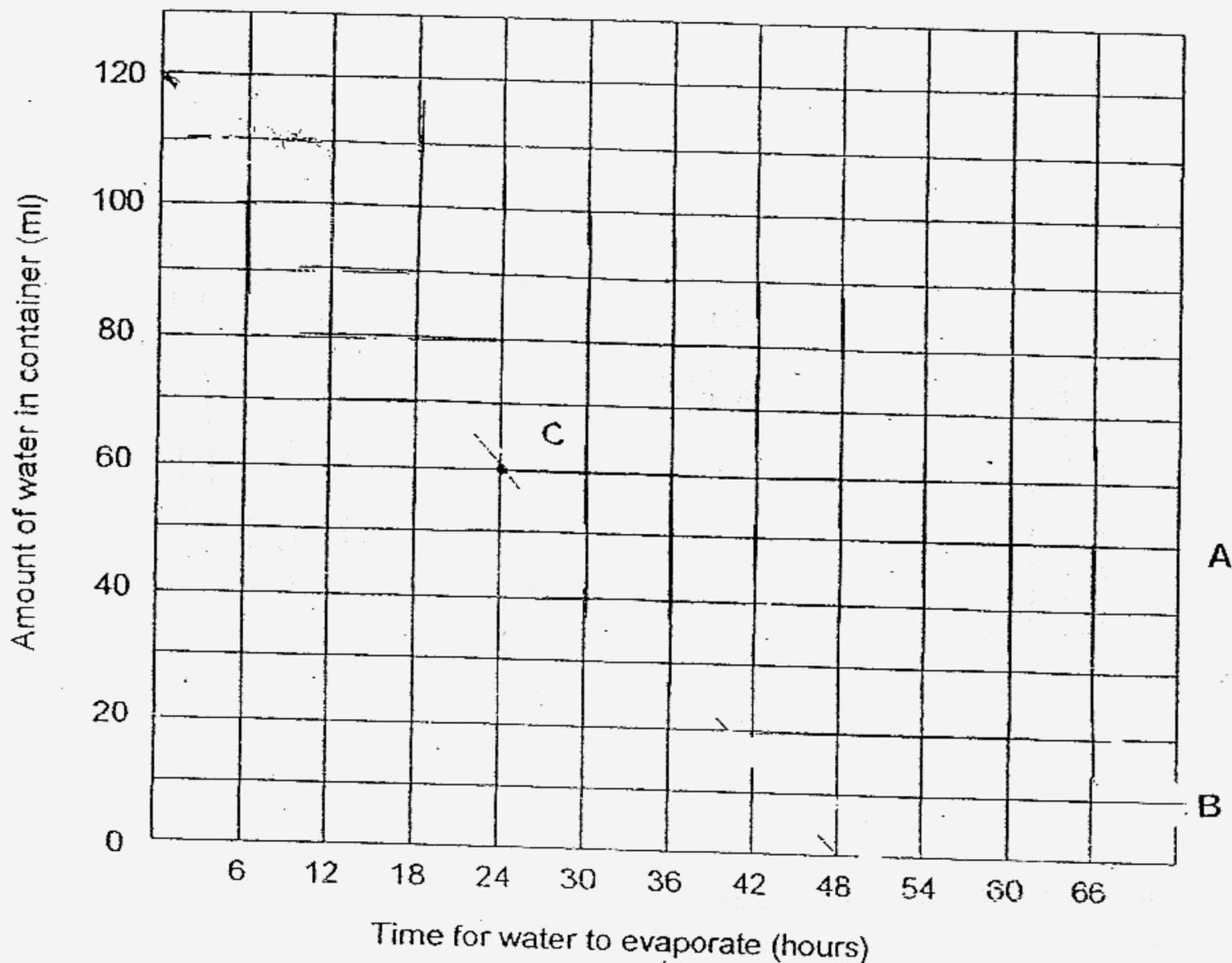
Bricks	A	B	C	D
Force required to move the bricks	140 g	150g	270 g	135g

- (a) What was the purpose of this experiment? (1)

- (b) Name the force that pulled all the ^{bricks} blocks and caused them to move. (1)

- (c) What are the weights used to measure? (1)

46. A group of students carried out an investigation on water evaporation. They poured the same amount of tap water into three different containers, A, B and C. They checked the amount of water in the containers every six hours and plotted their results on a graph.



- (a) After 12 hours, there were 90 ml of water in Container C. Draw a line graph and label it 'C' to show the results of C on the graph. (1)

- (b) Name the other important variable they must keep the same in order to carry out a fair test. (1)

- (c) What is the pattern between the exposed surface area of the container and the time for water to evaporate? (1)

- 1) 2 31) a) No segmented bodies Segemented bodies
- 2) 4
- 3) 1 b) Group A and C cannot move freely from one place to another by themselves while Group B can move freely from one place to another by itself.
- 4) 1
- 5) 3 32) parents
- 6) 2 nucleus
- 7) 2 environment
- 8) 3 33) Moulting
- 9) 4 b) It is important as when the nymph and the larve grow, they would outgrow their skins and need new skin.
- 10) 3 c) Cockroach
- 11) 2 Butterfly
- 12) 3 34) a) Before exercising, Wei Jie should measure his heartbeat for a minute using the stopwatch. After exercising, we should measure his heartbeat again for a minute. The differeence in the two measurements will give the change in his heartbeat.
- 13) 4
- 14) 2
- 15) 1
- 16) 4 b) His heartbeat increases because when we are exercising as our body needs more oxygen and energy. Also, our heart pumps faster to supply more oxygen to all parts of our body.
- 17) 1
- 18) 2 35) a) Young tadpole Group A
- 19) 3 b) It breaks altmospheric oxygen through a breathing tube at the surface of the water.
- 20) 3
- 21) 1 36) a) Phytoplankton --- krill ---- penguin --- leopard seal.
- 22) 3 b) The penguin population would increase.
- 23) 2 c) There would be less animals competing for krill, therefore there would be more krill for the penguins to eat and their population would increase.
- 24) 4
- 25) 1
- 26) 4
- 27) 2 28) 3 29) 3 30) 4

37) There will be loss of habitat.

b) When the trees are cut down, there is nothing to prevent the soil from sliding. Therefore, soil might slide into the river, causing it to be dirty.

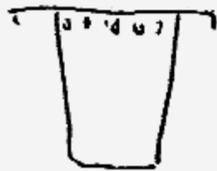
38) a) Dark blue
Brown
Brown

b) Beside chlorophyll and water which all the regions have, two other conditions necessary for photosynthesis are sunlight and carbon dioxide. P has these two conditions, but Q lacks sunlight while R lacks carbon dioxide. Therefore, starch is present in P, but not in Q and R.

39) a) The metal rod could be placed in a basin of cold water.

b) Metal contracts when cooled. The metal rod would contract, making it smaller so that the rod can go through ring.

40) a)



b) gained

lost

c) condensation

41) a) The heavier the mass of the toy figures are, the faster it takes to reach the ground.

b) I would make the area of all the parachutes different and make all the mass of the toy figures the same. Then, I would drop all the parachutes from the same height and record their time taken to reach the ground.

42) a) 3

b) All solids occupy space and have a definite volume.

43) a) B A D C

b) Lydia should place C near to the fulcrum.

44) a) Liquid A

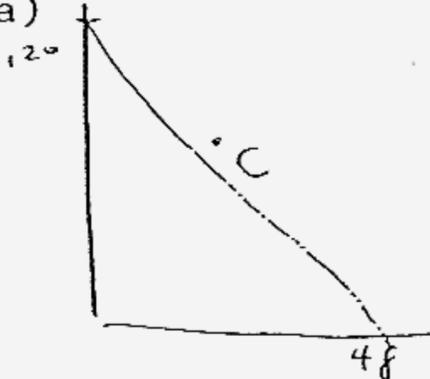
b) C A B D

45) a) To investigate if the mass of the bricks affect the force required to move the bricks.

b) Gravitational force

c) They are used to measure how much force is needed to move the bricks.

46) a)



b) Where the containers are placed.

c) The larger the exposed surface area is, the faster it takes for the water to evaporate.