



RAFFLES GIRLS' PRIMARY SCHOOL

SEMESTRAL ASSESSMENT (1)
2009

Name : _____ Index No: _____ Class: P 6 _____

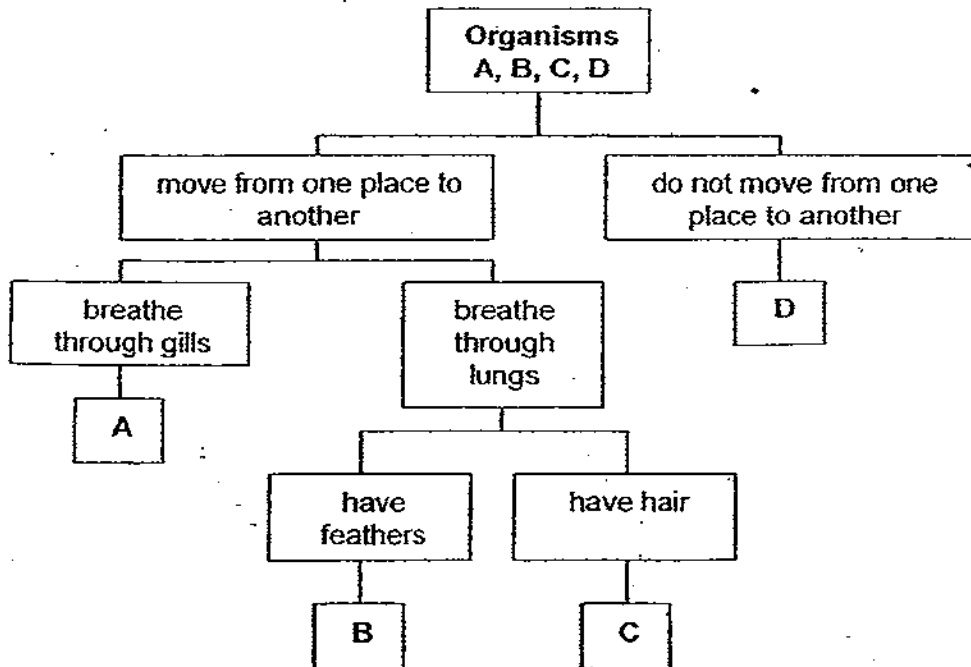
7 May 2009 **SCIENCE** Att: 1 h 45 min

Your score out of 100 marks	100	
	Class	Level
Highest score		
Average score		
Parent's signature		

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 on the Optical Answer Sheet (OAS) provided.

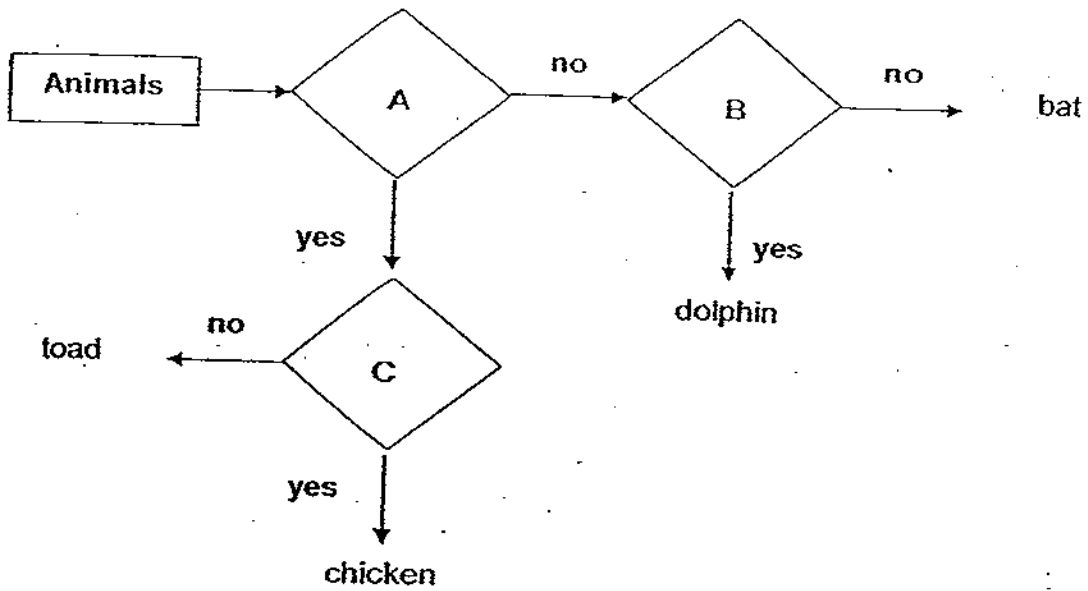
1 The chart below shows how organisms A, B, C and D are classified.



Which one of the following groups, A, B, C or D, does a penguin belong to?

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

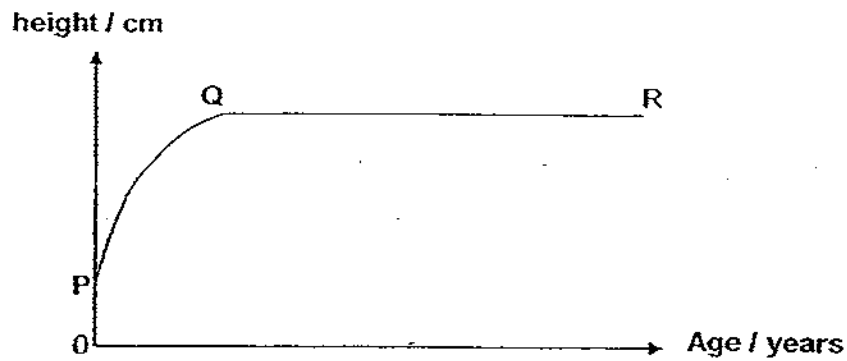
2 The flow chart below compares the characteristics of four animals.



Based on the flow chart above, which one of the following correctly represents A, B and C?

	A	B	C
<input checked="" type="checkbox"/>	Can it swim?	Does it give birth to its young alive?	Does it live on land?
<input checked="" type="checkbox"/>	Does it live on land?	Does it lay eggs?	Can it fly?
<input checked="" type="checkbox"/>	Does it lay eggs?	Does its young live in water?	Does it have wings?
<input checked="" type="checkbox"/>	Does it have hair?	Can it swim?	Does it have feathers?

- 3 The graph below shows the changes in the height of a pupil over a period of time.



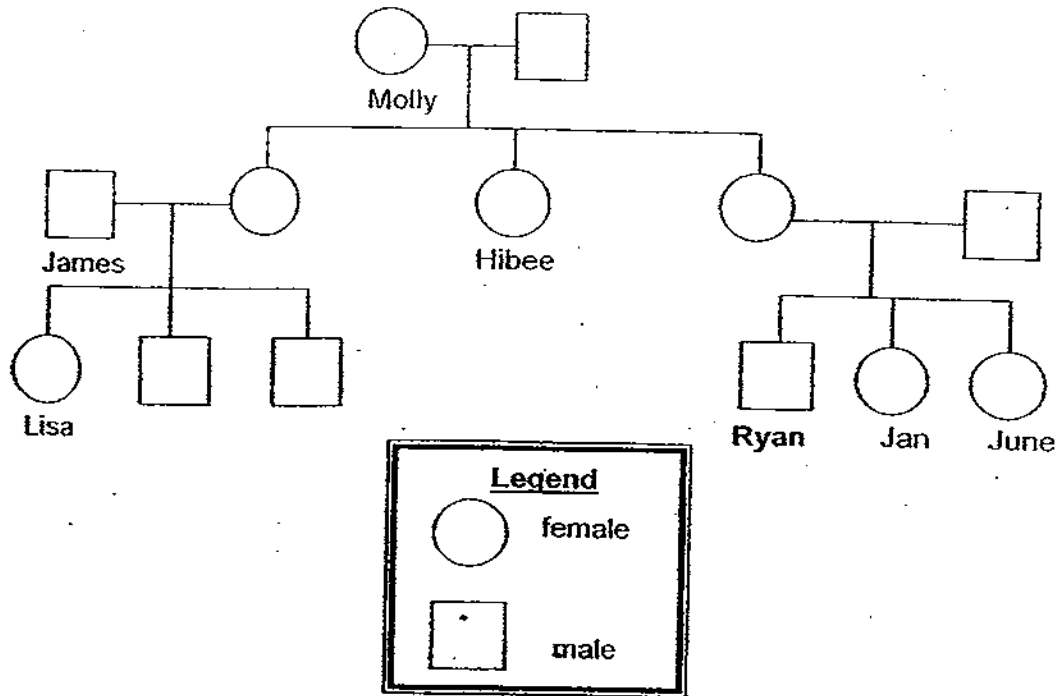
After studying the graph, each of the 3 pupils made a statement as shown below:

- Ishak: From P to Q, there is an increase in height as the number of cells in the body increases.
- Jena: From Q to R, there is no change in height because there is no cell division.
- Kathy: There is an increase in height from P to Q as the size of the cells in the body grows bigger.

Which of the following pupils had made the correct conclusion(s)?

- Ishak only
- Jena and Kathy only
- Ishak and Jena only
- Ishak, Jena and Kathy

4 The diagram below shows Ryan's family tree.



Based on the diagram above, which of the following statements is / are true?

- Jan and June are sisters.
- Lisa has 3 aunts altogether.
- James and Hibee are siblings.
- Molly has a total of 6 grandchildren.

A only

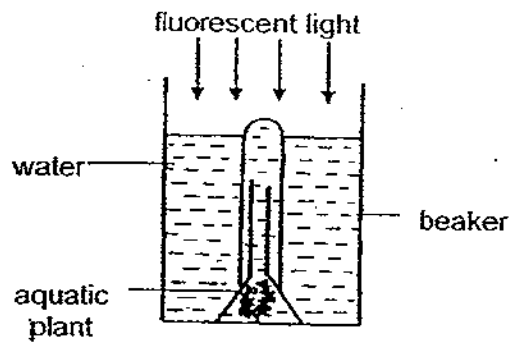
A and D only

C only

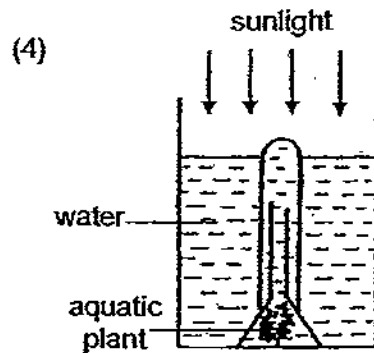
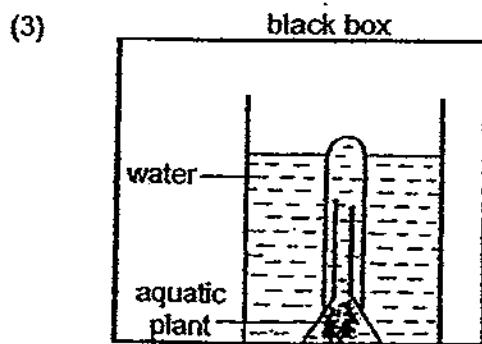
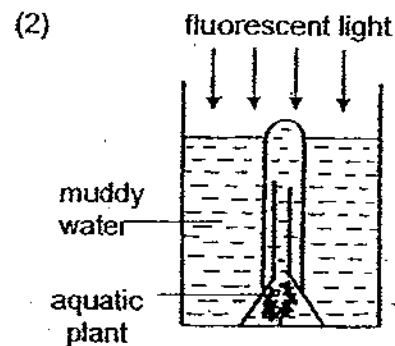
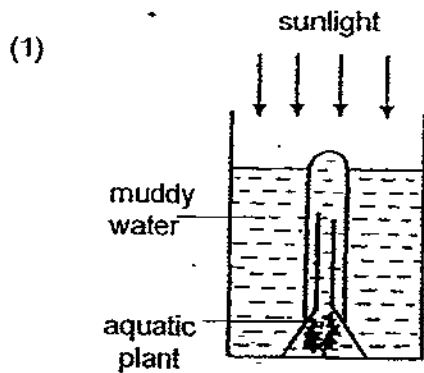
B and C only

- 7 Sam wanted to find out if an aquatic plant can photosynthesise better under fluorescent light or sunlight.

He prepared the following set-up for his experiment.

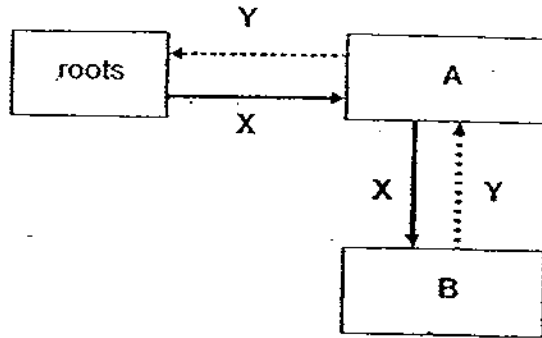


Which one of the following set-ups should Sam prepare in order to conduct a fair test?



- 8 Arrows X and Y in the diagram below represent the transportation of water and food from one part of a plant to another.

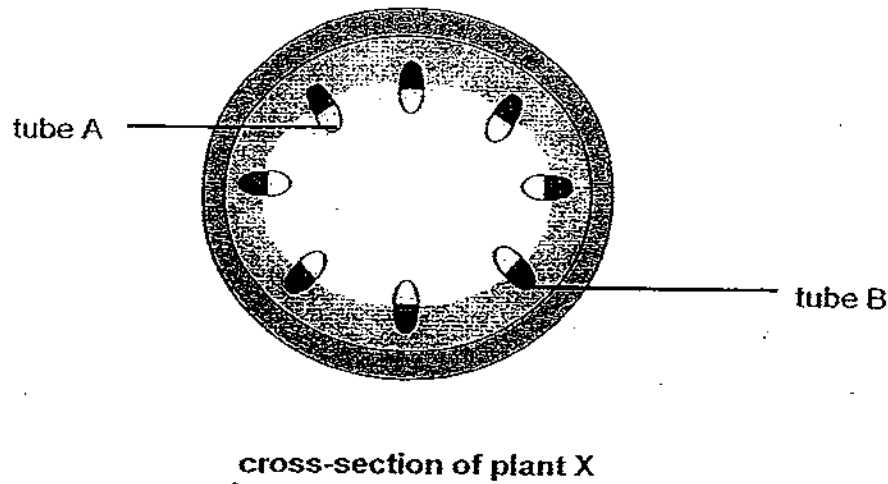
A and B represent different parts of the plant.



Which one of the following correctly represents A and B and arrows X and Y?

	A	B	X	Y
X	stem	leaf	water	food
X	fruit	leaf	food	water
X	leaf	stem	water	food
X	stem	fruit	food	water

- 9 3 pupils left plant X in a beaker of red-coloured water. 5 hours later, they cut a cross-section of plant X and observed that tube A (as shown below) had turned partially red but NOT tube B.



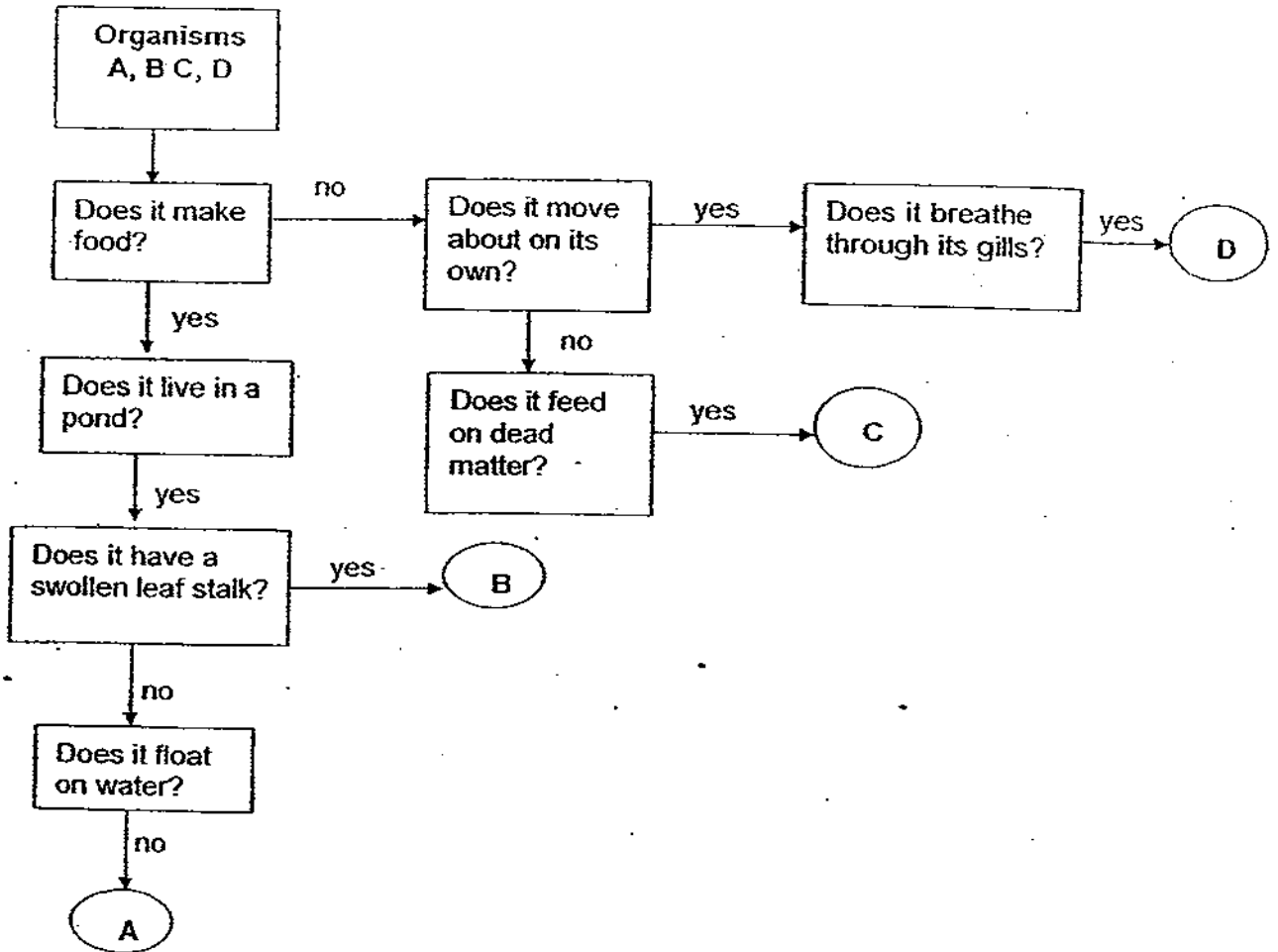
Based on their observations, the pupils made the following statements:

- ~~Jeremy~~ : The plant depended on tube A to transport food to all its other parts.
- Miranda : Tube A ensured that water from the roots were transported to all parts of the plant.
- ~~Randy~~ : The plant depended on tube B to transport food from its leaves to its roots only.

Based on the above experiment, which of the following pupils made the correct inference(s)?

- Jeremy only
- Miranda only
- Jeremy and Miranda only
- Jeremy, Miranda and Randy

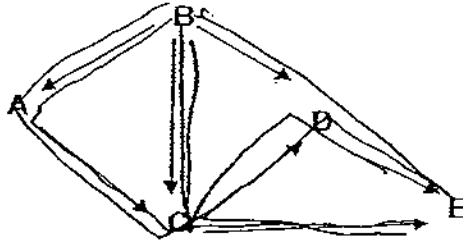
10 The flow chart below shows how organisms A, B, C and D are classified.



Based on the flow chart above, which one of the following could organisms A, B, C and D be?

	organism A	organism B	organism C	organism D
X	water lily	hydrilla	bacteria	mudskipper
X	hydrilla	water hyacinth	toadstool	dragonfly nymph
X	cattail	water lotus	millipede	water scorpion
X	cabomba	water lettuce	bracket fungus	crab

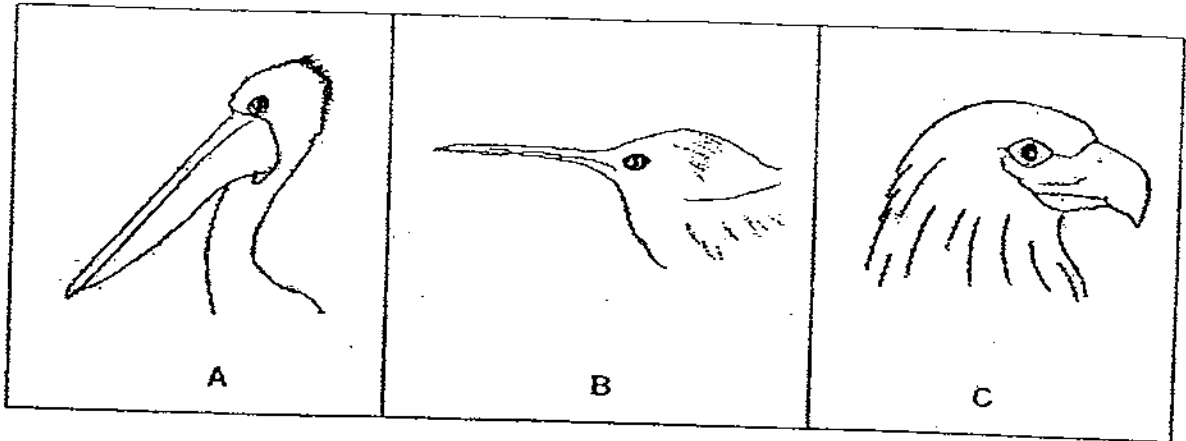
- 11 The food web below shows the transfer of energy among 5 populations of organisms, A, B, C, D and E, in an environment.



Based on the food web above, which one of the following statements is true?

- C and D are predators.
- There are a total of 6 food chains that end with organism E.
- An increase in the population of organism C will cause an increase in the population of organism A.
- Organisms A, C, D and E would be wiped out eventually if organism B was removed from the environment.

12 The diagrams below show the beaks of 3 different types of birds, A, B and C.



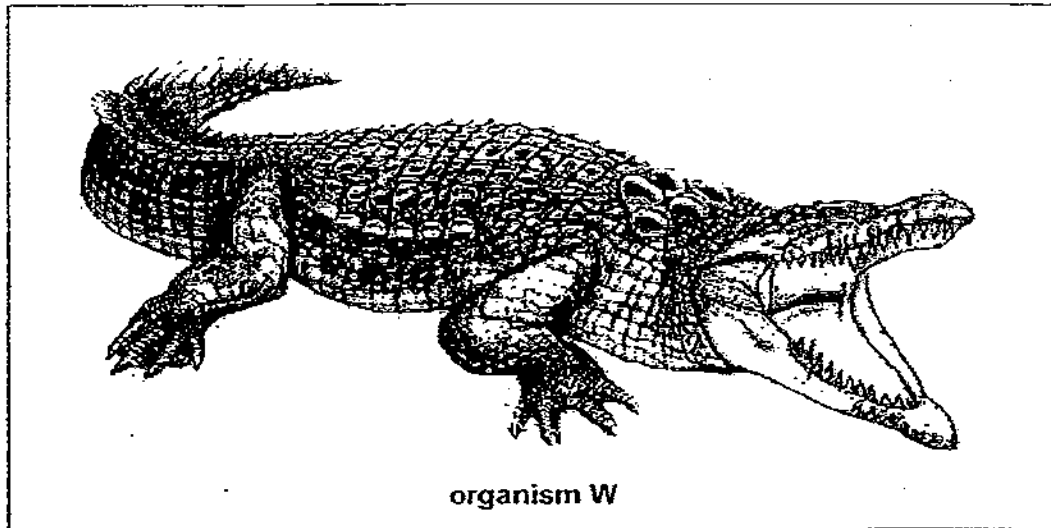
Based on the type of beak that each bird has, four pupils made the following statements:

- Anne : Bird B is a producer.
- Brad : Only bird C is a predator.
- Cindy : Birds A, B and C are consumers.
- Dave : Only birds A and C are carnivores.

Which of these pupils made the correct statements?

- Anne and Cindy only
- Brad and Cindy only
- Brad and Dave only
- Cindy and Dave only

- 13 The diagram below shows organism W, which is an efficient swimmer.



Which of the following adaptations of organism W enable it to be an efficient swimmer?

- A long powerful tail
- B razor sharp teeth
- C streamlined body shape
- D sharp and powerful claws

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

- 14 Which of the following are behavioural adaptations of animals?
- A Some animals have scents to attract mates.
 - B Male peacocks display their feathers to attract mates.
 - C Owls have large eyes to help them see better in low light environments.
 - D African hunting dogs hunt in packs to catch their prey more easily.
- A and D only B and C only
 B and D only A, B and C only

- 15 Which of the following are possible ways to reduce pollution?
- A Buy biodegradable soap and detergent.
 - B Buy items that are sold in reusable containers.
 - C Bring your own bag when you go shopping for groceries.
 - D Turn off main switches of electrical appliances only at the end of each day.
- (1) A and D only (2) B and C only
 (3) A, B and C only (4) B, C and D only

- 16 The table below shows the melting points and boiling points of 4 substances, P, Q, R and S.

substance	melting point ($^{\circ}\text{C}$)	boiling point ($^{\circ}\text{C}$)
P	35	78
Q	52	87
R	49	91
S	24	69

At which one of the following temperatures are the four substances, P, Q, R and S, in the same state?

- 28 $^{\circ}\text{C}$ 50 $^{\circ}\text{C}$
 61 $^{\circ}\text{C}$ 89 $^{\circ}\text{C}$

- 17 The table below shows information of some planets, E, F, G and H.

planet	E	F	G	H
distance from the Sun (millions of km)	57.91	149.60	2870.97	4498.25
diameter of planet (km)	4879	12756	51118	49528
mass of planet (number of times of planet F's mass)	0.055	1.00	14.37	17.15

Data source: www.nasa.gov

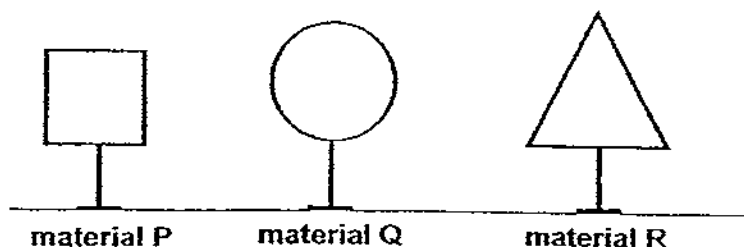
Information of another 2 planets, X and Y, is given below:

Planet X	<ul style="list-style-type: none"> • is located between Planets E and F • is about the same size as Planet H
Planet Y	<ul style="list-style-type: none"> • is located between Planets G and H • has about the same mass as Planet H

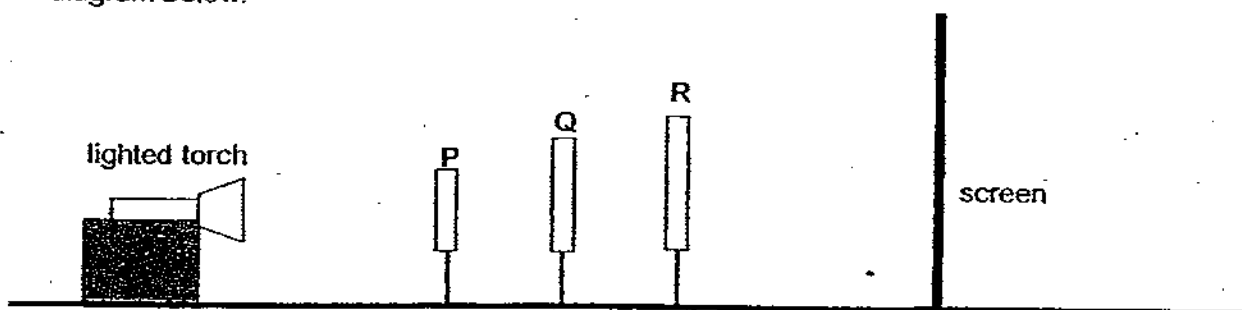
Based on the information given above, which one of the following statements is true?

- Planet X is hotter than Planet Y.
- Planet X is smaller than Planet Y.
- Planet Y is heavier than Planet H.
- Planets X and Y have the same mass.

18 Jiaqi used 3 different materials, P, Q and R, to make the following cut-outs.





He placed the cut-outs between a screen and a lighted torch as shown in the diagram below.



The diagram below shows the shadows which were cast on the screen.

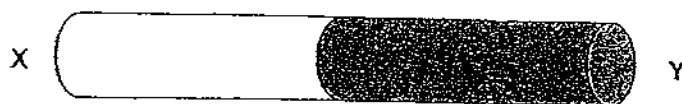


Legend	
	lighter shadow
	dark shadow

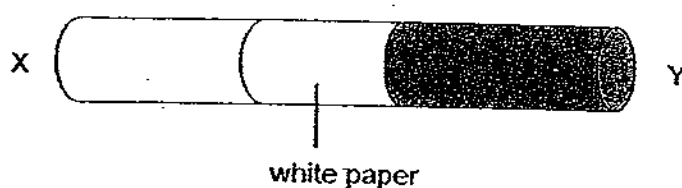
Which one of the following identifies materials P, Q, and R correctly?

	Material P	Material Q	Material R
(1)	translucent	not possible to tell	transparent
(2)	not possible to tell	opaque	translucent
(3)	translucent	transparent	opaque
(4)	translucent	not possible to tell	opaque

- 19 Mrs Chen had a rod made of 2 different materials, X and Y, as shown in the diagram below.

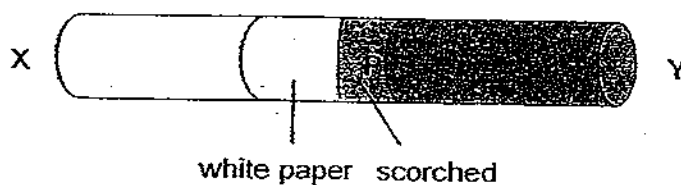


She wrapped the centre of the rod with a piece of white paper as shown below.



Mrs Chen passed the flame of a candle over the white paper several times.

After a while, Mrs Chen observed that only P (the end of the piece of white paper nearer to Y) was scorched as shown in the diagram below.

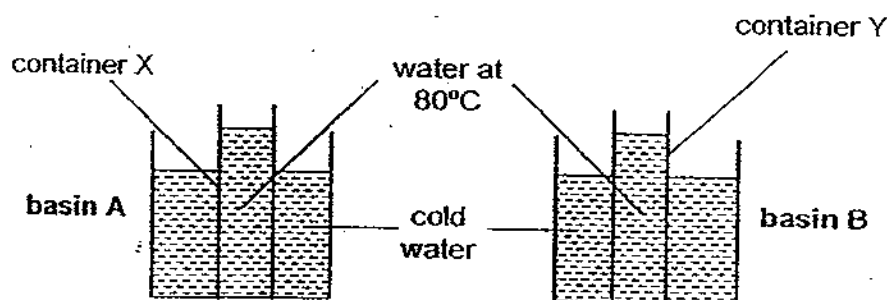


Which one of the following reasons best explains why P was scorched?

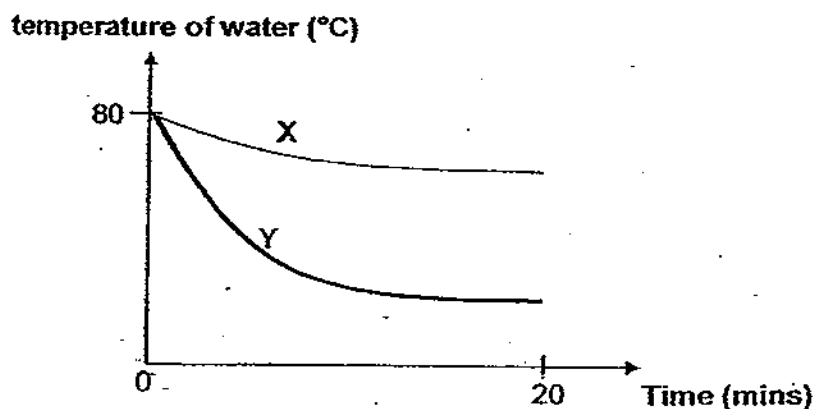
- (A) Heat travelled from X to Y, so P retained more heat.
- (B) X trapped more heat than Y, so less heat was transferred to P.
- (C) Y was a better conductor of heat than X, so more heat was absorbed by P.
- (D) Y was a poorer conductor of heat than X, so heat was conducted slowly away from P.

- 20 Khalid had 2 containers, X and Y, of the same size but each made of a different material.

He poured an equal amount of water at 80°C into each container. Next, he placed X and Y into two identical basins, A and B, each filled with an equal amount of cold water, as shown in the diagram below.

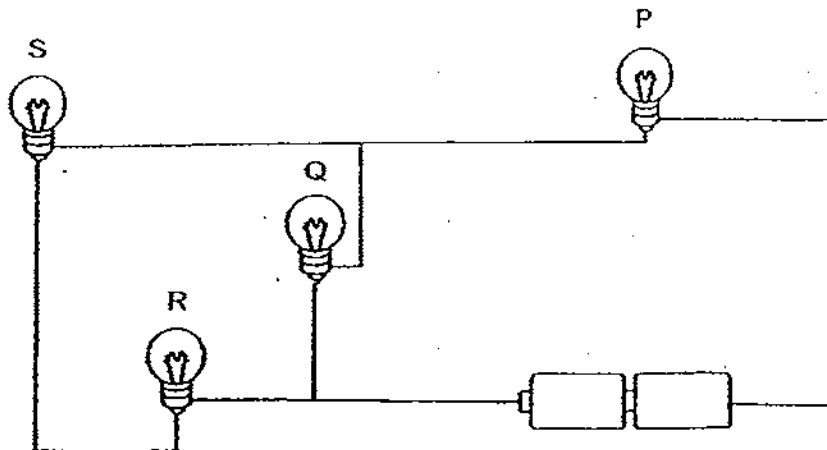


Khalid recorded the temperature of the water in each container, X and Y, every 2 minutes for 20 minutes and plotted the graph below.



- Based on the information above, which one of the following statements is true?
- (1) Container Y is more suitable to keep drinks cool for a longer time.
 - (2) The cold water in basin A gained heat faster than the cold water in basin B.
 - (3) Container X would be able to keep food warm for a longer time than container Y.
 - (4) The water in container X would gain heat faster than the water in container Y if both containers were heated.

21 John set up the electric circuit below to conduct an experiment.

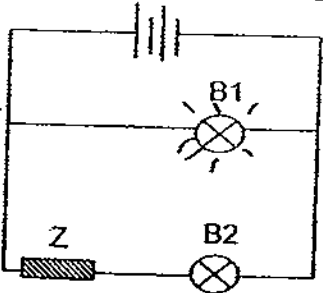
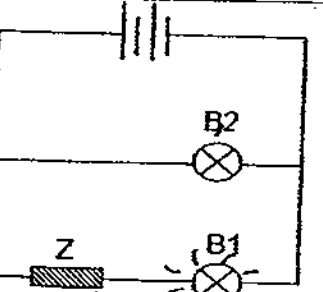


Which one of the following bulbs, P, Q, R or S, will cause all the **OTHER** bulbs to go out when it fuses?

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

22 4 pupils set up 2 closed circuits, X and Y, to conduct two experiments.

They recorded their observations in the table below.

set-up	observations
 <p style="text-align: center;">X</p>	<ul style="list-style-type: none"> • B1 lit up • B2 did NOT light up
 <p style="text-align: center;">Y</p>	<ul style="list-style-type: none"> • B1 lit up • B2 did NOT light up

Based on their observations above, each pupil gave a reason to explain why B2 did NOT light up.

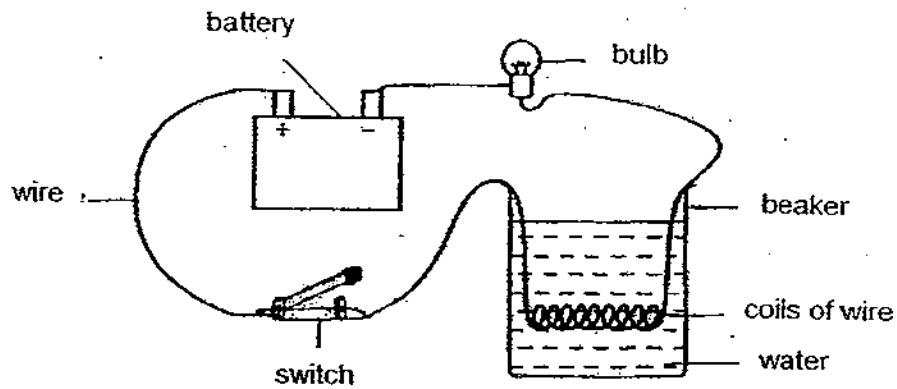
- Alice: The filament in B2 had melted.
- Bala: Z was NOT properly connected to the circuit.
- Chun: Z was a non-conductor of electricity.
- Dolah: B1 was NOT properly connected to the circuit.

Which of the following pupils made the correct observation(s)?

- Alice only
- Alice and Dolah only
- Bala and Chun only
- Bala, Chun and Dolah only

23 Priya set up an experiment as shown below.

When she closed the switch, the bulb lit up and the water boiled after 10 minutes.



What could Priya do to speed up the rate at which the water would boil?

- A Remove the bulb from the circuit.
- B Connect another bulb to the circuit.
- C Connect another switch to the circuit.
- D Connect another battery in series to the circuit.

A and C only

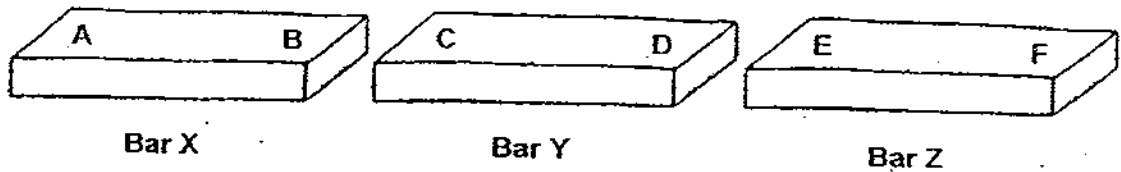
A and D only

B and C only

C and D only

24 Jim had 3 bars, X, Y and Z. Their ends were labelled A, B, C, D, E and F respectively.

He drew the ends of Bar X, Bar Y and Bar Z close to one another as shown in the diagram below to find out if they would repel or attract.



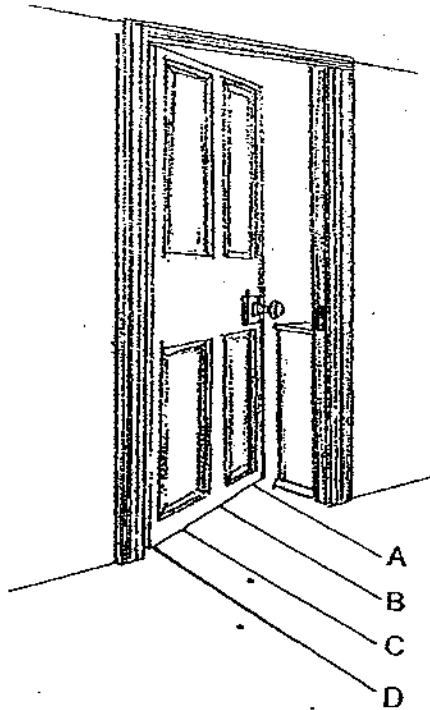
The table below shows the results of Jim's experiment.

		Bar Y		Bar Z	
		C	D	E	F
Bar X	A	attract	attract	attract	attract
	B	attract	attract	attract	attract
Bar Y	C			attract	repel
	D			repel	attract

Based on the results above, which of the following statements is/ are true?

- Only Bar Y is a magnet.
 - Bars X, Y and Z are magnets.
 - Only Bars Y and Z are magnets.
 - Bars X, Y and Z are made of a magnetic material.
-
- A only
 - B and D only
 - B only
 - C and D only

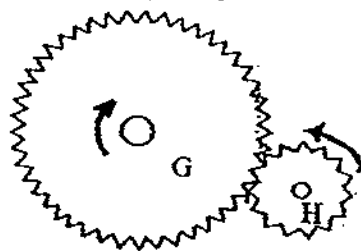
- 25 Priscillia wants to use a rubber door wedge to prevent a door from slamming due to the wind.



rubber door wedge

At which one of the above positions, A, B, C or D, of the door should Priscillia place the door wedge such that the door can withstand the strongest wind **WITHOUT** slamming?

- (1) A (2) B
 (3) C (4) D
- 26 The diagram below shows 2 gears, G and H, used in a clock.



Gear G has 45 teeth and gear H has 15 teeth.

When gear H makes 6 complete turns, how many complete turns does gear G make?

- (1) 12 (2) 2
 (3) 3 (4) 18

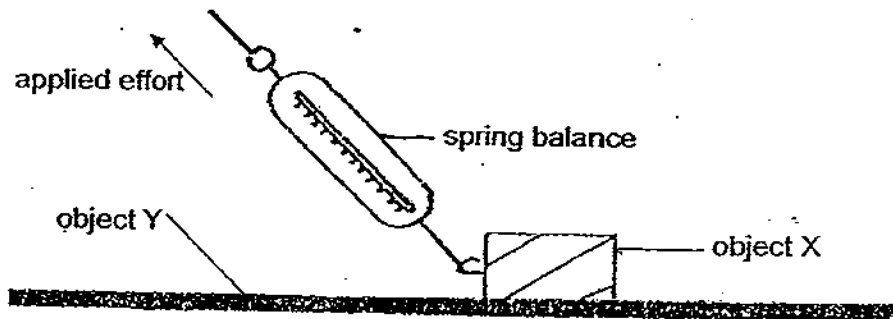
- 27 Mr Seah was driving his car uphill. He observed that his car slowed down when it was going uphill.

Which of the following forces caused Mr Seah's car to slow down?

- A frictional force
- B magnetic force
- C gravitational force

- A only
- A and C only
- C only
- A, B and C

- 28 A group of pupils pulled object X across the surface of object Y as shown in the diagram below.



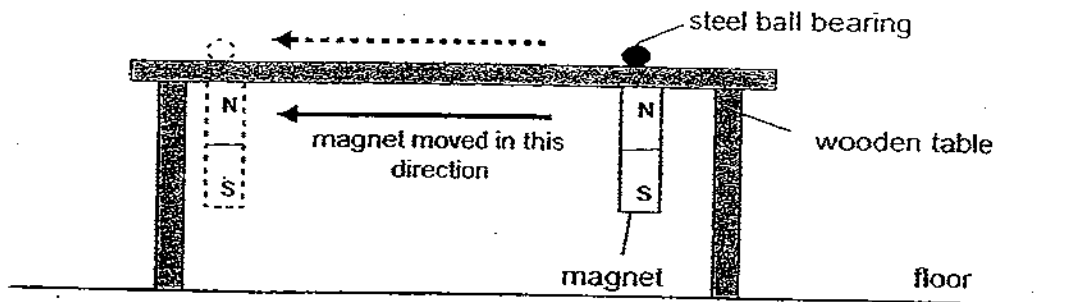
The group of pupils made the following statements:

- Aishah : More force was required to move object X when the surface of object Y was rougher.
- Beatrice : The reading on the spring balance would be smaller when the surface of object Y was oiled.
- Cleo : As the mass of object X increased, the amount of applied effort would remain the same.

Which of the following pupils made the correct statement(s)?

- Beatrice only
- Aishah and Beatrice only
- Aishah and Cleo only
- Aishah, Beatrice and Cleo

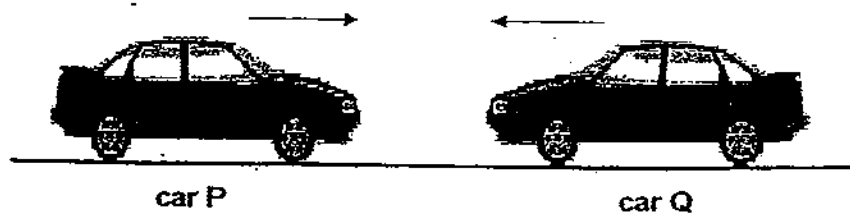
- 29 Carene set up an experiment as shown in the diagram below.



As Carene slid the strong magnet beneath the wooden table, the steel ball bearing followed the movement and direction of the magnet.

What did Carene's experiment show?

- Magnetic force can pass through wood.
 - NOT all metals are attracted to a magnet.
 - Magnetic force can pass through non-metallic materials.
 - Frictional force prevents the ball bearing from moving faster.
- 30 The diagram below shows two identical cars, P and Q, moving at the same speed and heading directly towards each other.



When the two cars collide, which one of the following changes is NOT possible?

- The shape of car P changes.
- The speed of car Q increases.
- The direction of car Q changes.
- The volume of car P decreases.

Name: _____ Index No: _____ Class: P6 _____

40

SECTION B (40 marks)

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

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

- 31 (a) Complete the table below to compare the male and female reproductive systems of animals. [1]

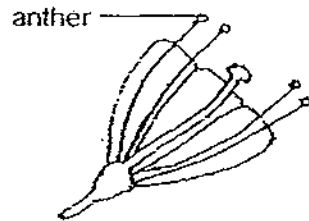
	female reproductive system	male reproductive system
type of reproductive cells produced	(i) _____	(ii) _____
organ that produces the reproductive cells	(iii) _____	(iv) _____

- (b) Sexual reproduction takes place in both plants and animals.

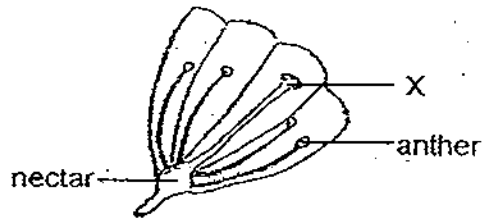
State a similarity between the sexual reproduction in plants and in animals.

[1]

32 The diagrams below show two flowers, P and Q.



flower P



flower Q

Based on the diagrams above, answer the following questions:

(a) Which flower, P or Q, is more likely to be pollinated by wind?

Flower _____

State 2 reasons to support your answer.

[2]

1 st REASON	
2 nd REASON	

(b) If part X of flower Q was removed, could flower Q develop into a fruit?

Explain your answer.

[1]

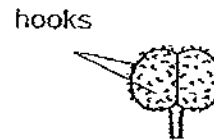
33 The diagrams below show three fruits, D, E and F.



fruit D

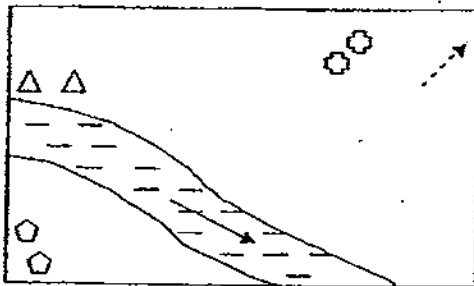


fruit E

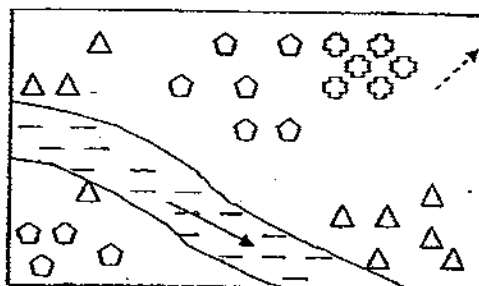


fruit F

The maps below show the locations of three types of plants, W, X and Y, in a town in Years 2006 and 2008.



Year 2006



Year 2008

Legend:

⬡ plant W

⬠ plant X

△ plant Y

→ direction of river flow

--> direction of wind

Based on the information above, answer the following questions:

(a) Which plant, W, X or Y, is the parent plant of fruit E?

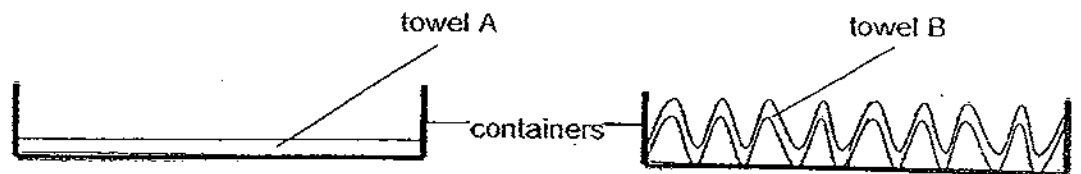
Explain your answer.

[1]

(b) How is Fruit F dispersed? Give a reason for your answer.

[1]

- 34 Ken was given two towels, A and B, of the same material and thickness. He laid towels A and B in a container each. The containers were of the same size and material.

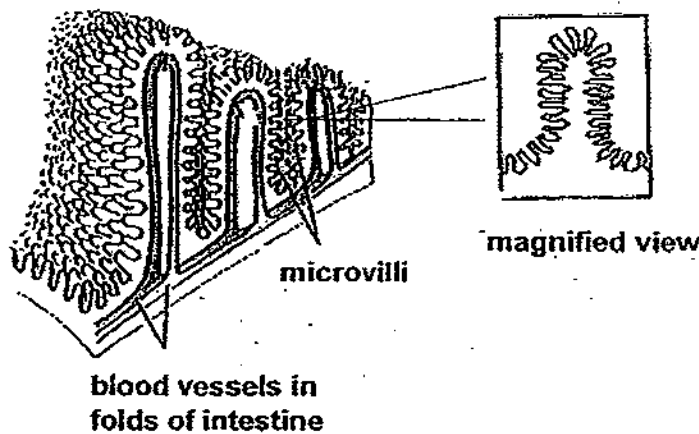


- (a) Ken poured 500 ml of water onto each towel and found out that towel B absorbed more water than towel A.

Explain why this is so.

[1]

The diagram below shows part of a small intestine found in a human digestive system.

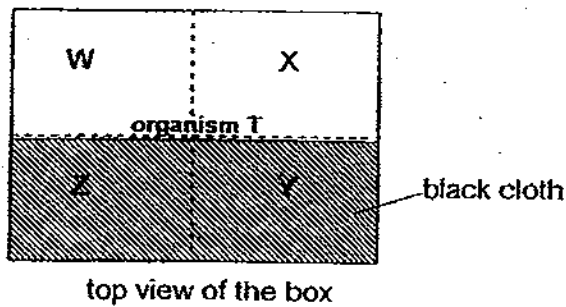


Microvilli are finger-like structures found in the small intestine and digested food is absorbed into them for respiration to be carried out.

- (b) Based on the information above, explain how having so many tiny structures, microvilli, aid digestion in the human body. [1]

- 35 Oliver set up an experiment as shown below to find out what kind of living conditions organism T preferred.

He took a box and divided it into 4 equal sections, W, X, Y and Z. He poured an equal amount of water on sections W and Z and covered sections Y and Z with a black cloth. He left the box on a window sill.



Oliver used the following checklist to note down the conditions of each section. A tick (✓) shows the condition present in the section.

condition \ section	wet	dry	dark	bright
W	✓			✓
X		✓		✓
Y		✓	✓	
Z	✓		✓	

He placed 50 such organisms onto the centre of the box. 3 hours later, he recorded the number of organisms in each section in the table below.

section	W	X	Y	Z
number of organism T	6	0	2	42

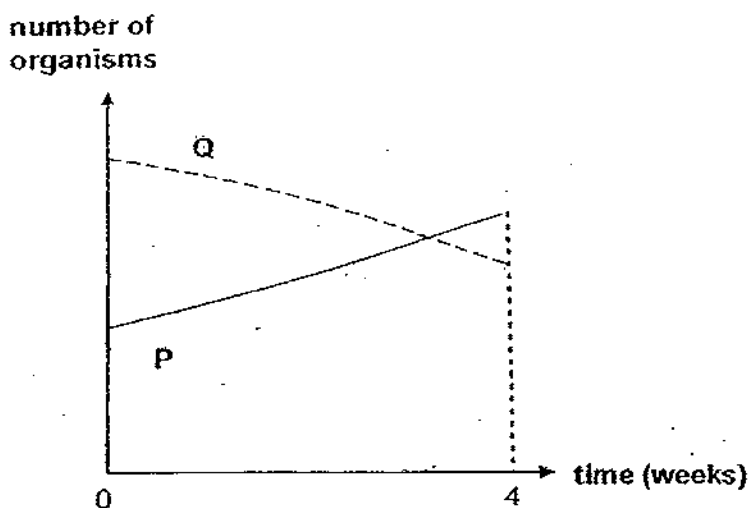
Based on the information above, answer the following questions:

- (a) What would happen to organism T when Oliver put the box in an open field? Explain why. [1]

- (b) What could organism T be?

36 John set up a terrarium and put organisms P and Q into it.

The graph below shows the populations of organisms P and Q in a terrarium over a period of 4 weeks.



Based on the graph above, answer the following questions:

(a) What is the relationship between organisms P and Q?

Explain your answer.

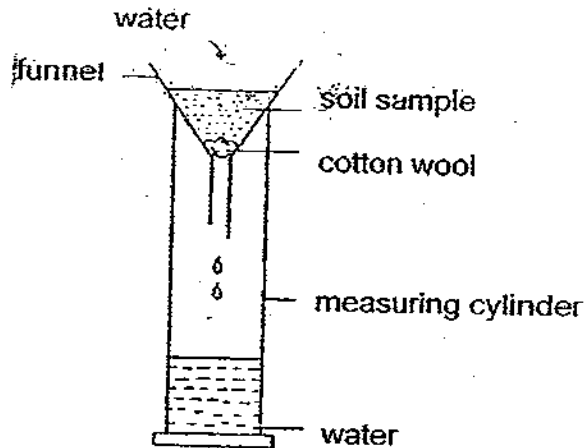
[1]

(b) 4 weeks later, organism R was added to the terrarium. The number of organism P declined while the number of organism Q increased.

Explain the changes in the population sizes of organisms P and Q. [1]

- 37 Jon was given 3 different soil samples, garden soil, clayey soil and sand. Each soil sample was of the same amount. Each soil sample was labelled as W, X and Y.

He set out to identify what the soil sample was. He placed a soil sample in a funnel and poured 50 ml of water into it as shown in the set-up below.



Jon measured the amount of water collected in the measuring cylinder at the end of 10 minutes. He repeated the experiment **ANOTHER** two times for each soil sample.

The table below shows the amount of water that Jon had collected at the end of 10 minutes for each try.

number of tries	amount of water collected for each soil sample at the end of 10 minutes (ml)		
	W	X	Y
1 st	18	40	25
2 nd	20	39	24
3 rd	17	41	23

Based on the information above, answer the following questions:

- (a) Which soil sample, W, X or Y, was sandy soil?

Explain your answer.

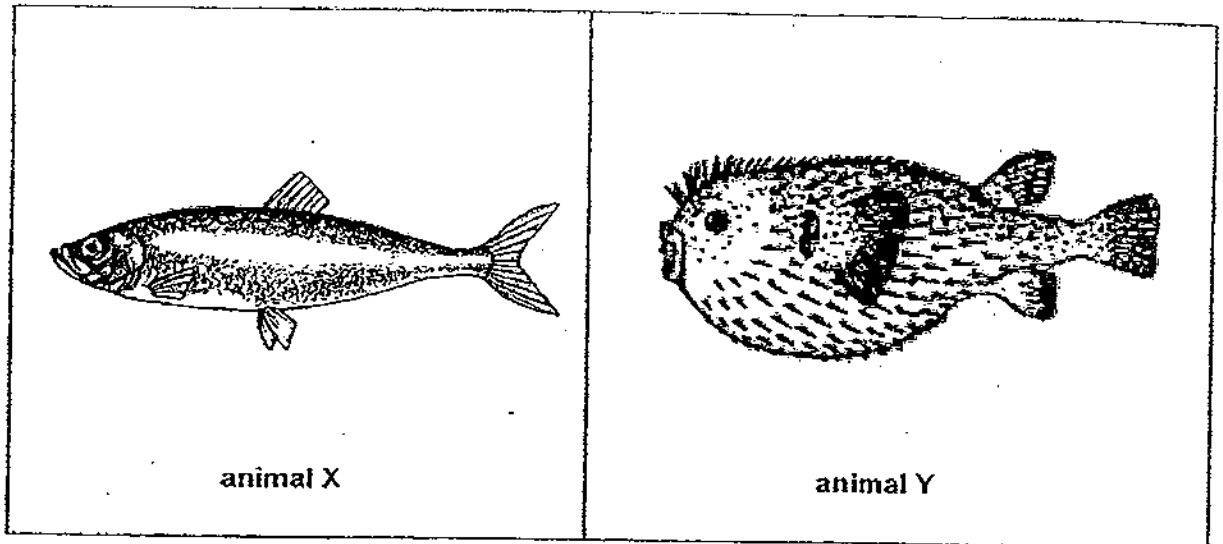
[1]

- (b) Jon carried out the experiment with each soil sample 3 times.

State a reason why he did that.

[1]

38 The diagrams below show animals X and Y.

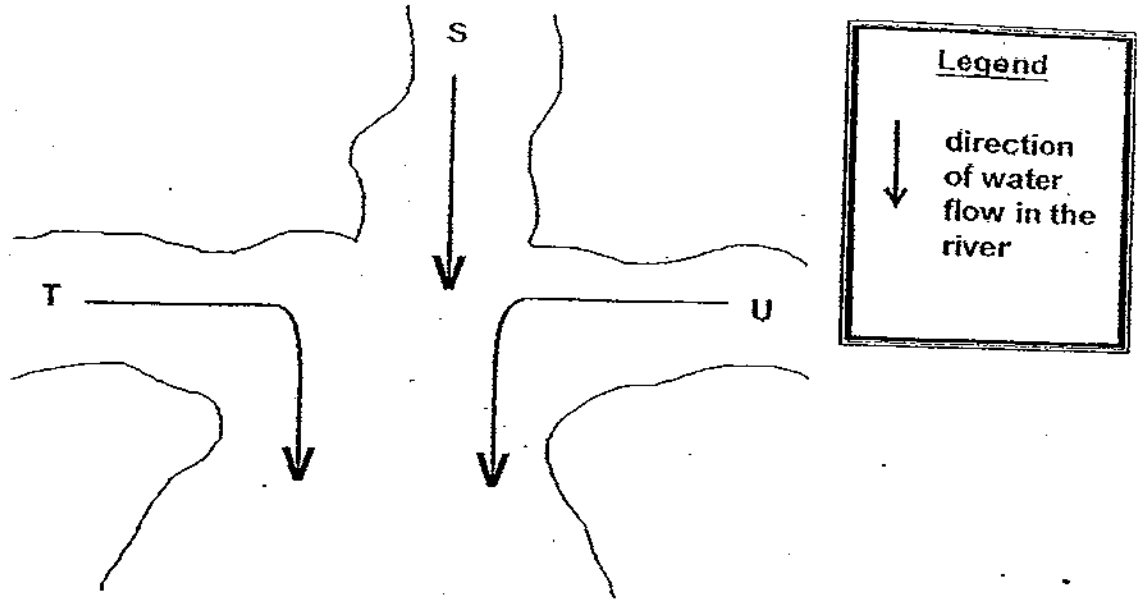


Which animal, X or Y, is structurally adapted to swim faster in water?

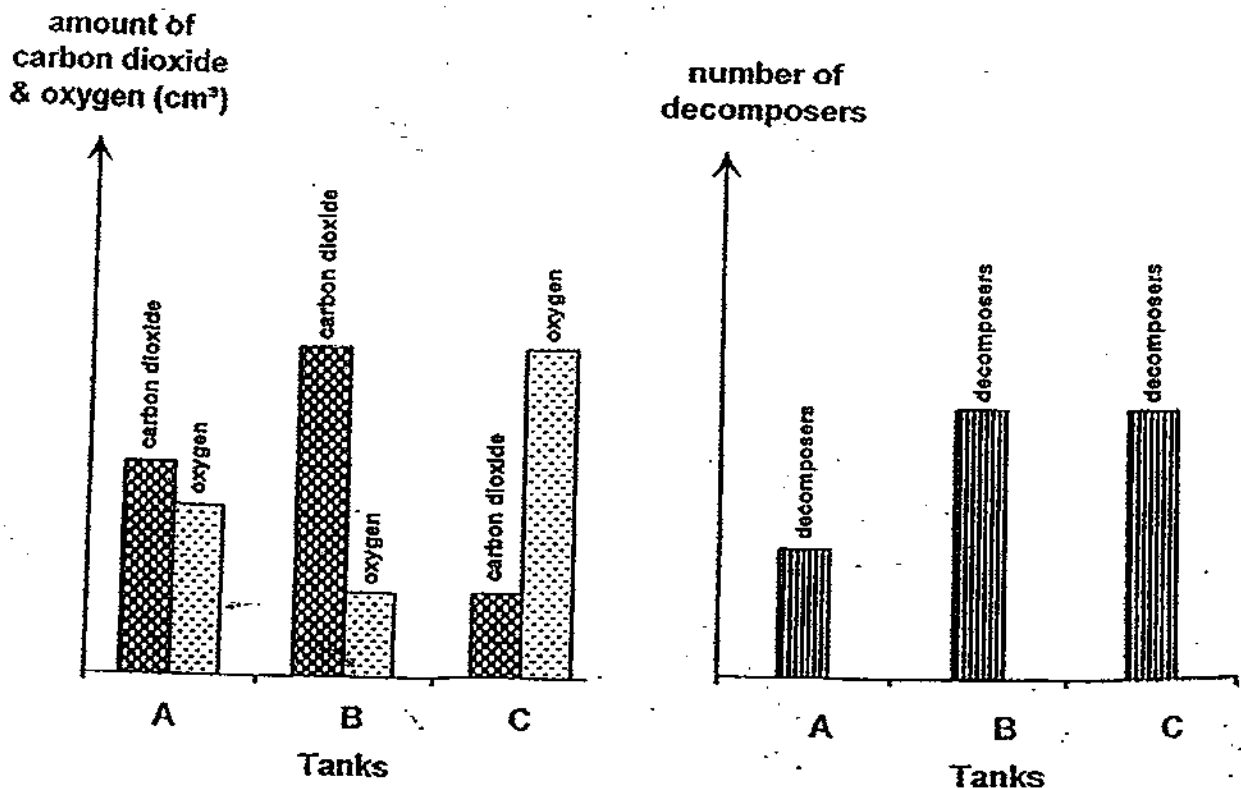
Explain your answer.

[2]

39 Mathew collected water samples from different parts of a river, S, T and U, as shown in the diagram below.



Mathew placed the water sample from S, T and U into Tanks A, B, and C respectively. He analysed the contents of the water in each of these tanks. Then he plotted the following graphs to show the amount of oxygen, carbon dioxide and the number of decomposers in each water sample.



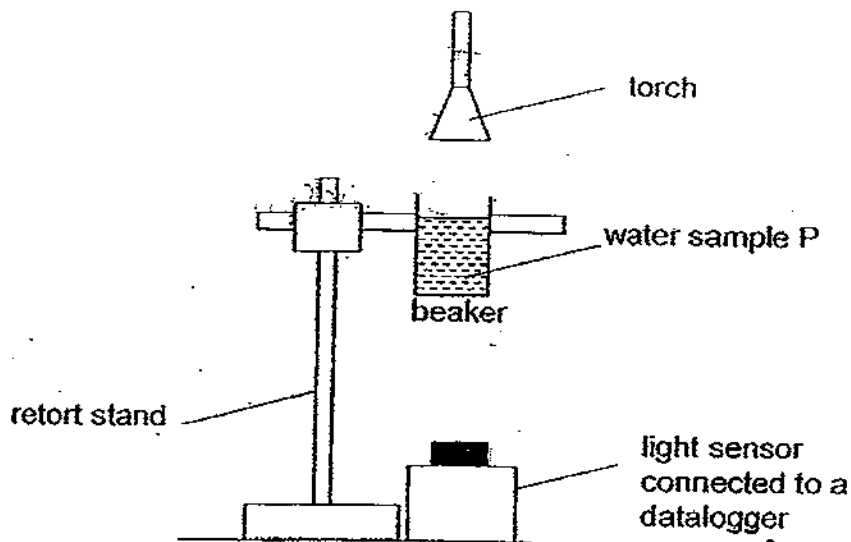
Based on the information given on page 34, answer the following questions:

Which part of the river, S, T, or U, was the most polluted?

Explain your answer.

[2]

- 40 Shaun collected 4 water samples, P, Q, R and S, from 4 different ponds. He placed 50 ml of water sample P into a small beaker and set up the experiment as shown below.



Shaun lit his torch and shone it over water sample P in the beaker. He used a datalogger to measure how much light is able to pass through water sample P in the beaker. He recorded three sets of readings for water sample P.

Shaun repeated the **SAME** experiment for the **OTHER** 3 water samples, Q, R and S, **ONE** at a time. He recorded his observations in the table below.

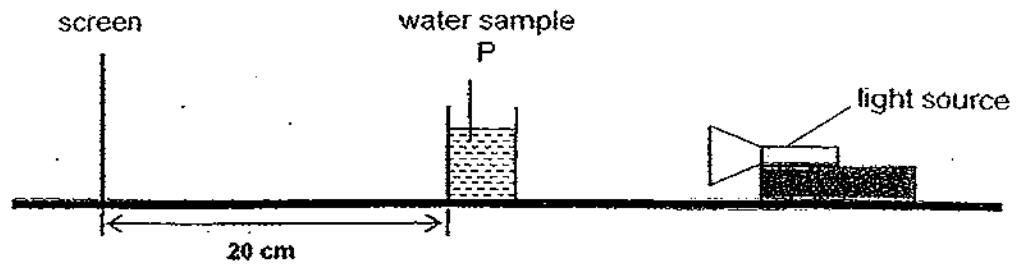
number of readings	reading on the light sensor for each water sample (Lux)			
	P	Q	R	S
1 st	500	800	60	1105
2 nd	480	805	64	1100
3 rd	495	810	58	1007

- (a) In which water sample, P, Q, R or S, will an elodea plant grow best?

Explain your answer.

[2]

Using the **SAME** water samples P, Q, R and S, Shaun set up **ANOTHER** experiment as shown below.



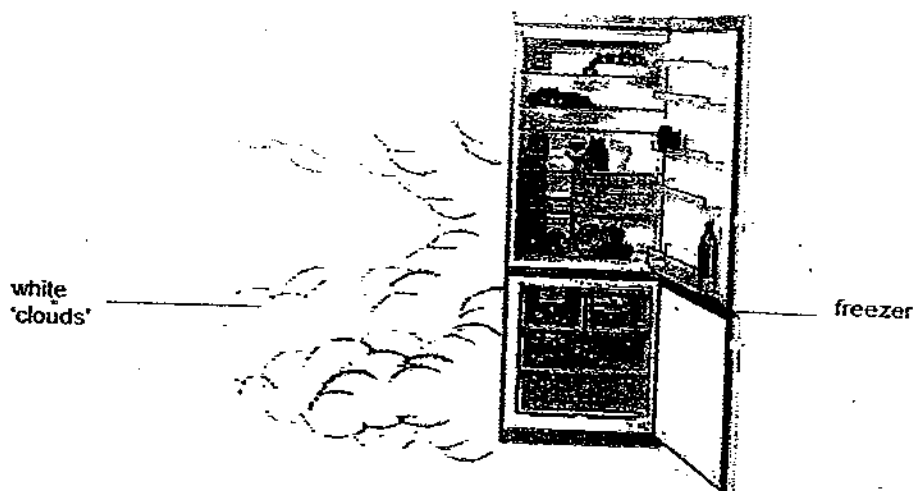
Each water sample, P, Q, R, and S, was placed between a white screen and a light source, **ONE** at a time, and the shadow cast on the screen was noted.

- (b) Shaun observed that water sample R cast a darker shadow than water sample P.

Give a reason for his observation.

[1]

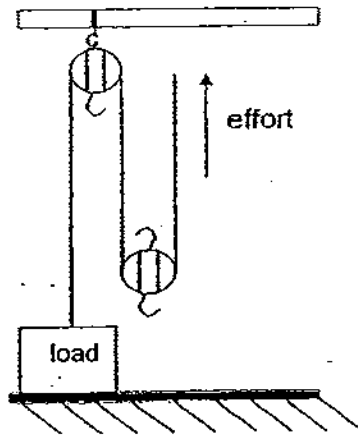
- 41 Danial opened his freezer door and observed white 'clouds' escaping from the freezer.



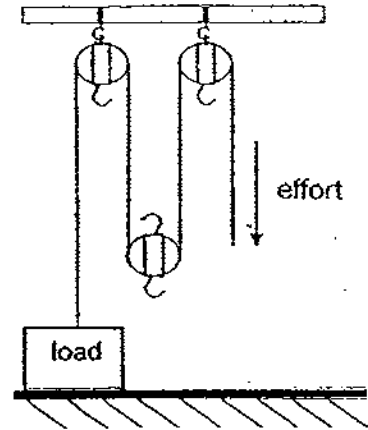
Explain how the white 'clouds' were formed.

[2]

42 The diagrams below show pulley systems A and B.



pulley system A



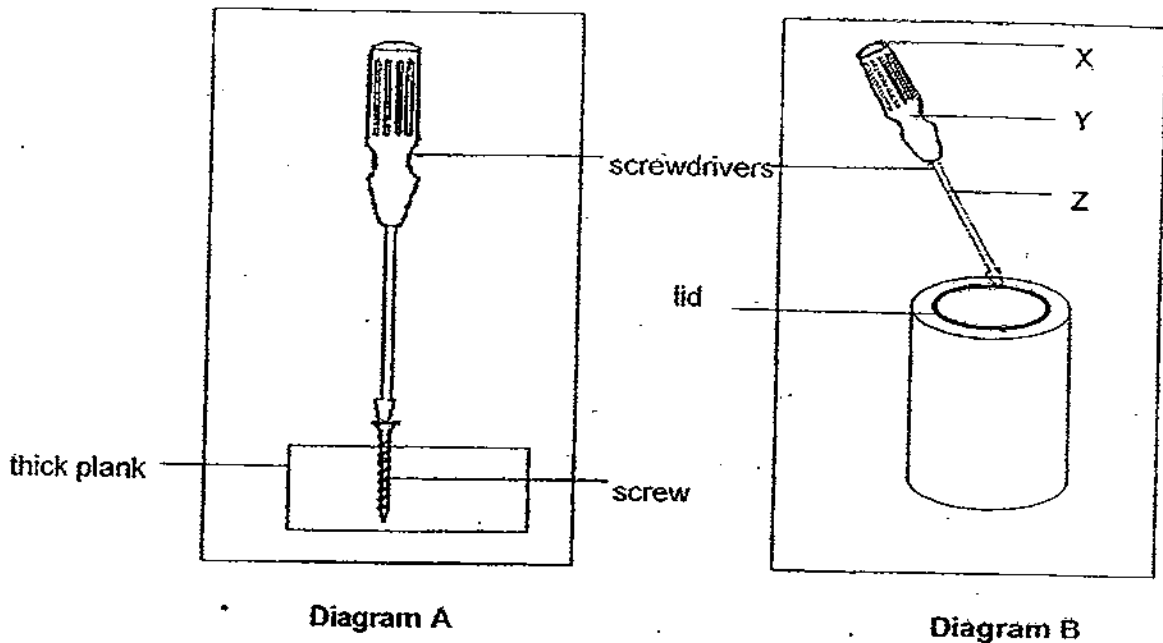
pulley system B

- (a) *1 advantage*
State 2 advantages of pulley system A. [2]

- (b) **WITHOUT** considering friction and mass of the pulleys, state how the amount of effort in pulley system A above would be affected by adding another fixed pulley into the system (as shown in pulley system B).

[1]

43 Diagrams A and B show two different ways in which a screwdriver can be used.



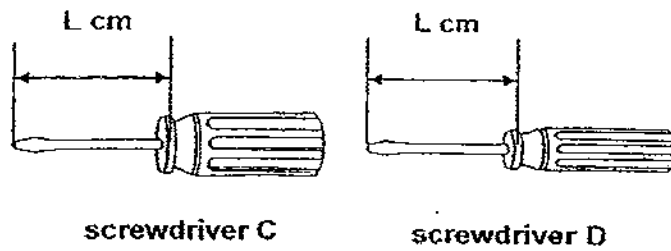
(a) State the type of simple machine that the screwdriver is used as in each of the diagrams above: [1]

Diagram A	
Diagram B	

(b) At which position, X, Y or Z, would the least force be required to open the lid in Diagram B?

Explain your answer. [1]

The diagrams below show two screwdrivers, C and D, which are of the same length, L cm.

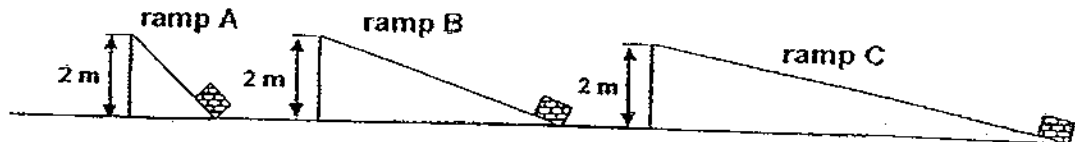


(c) Which screwdriver can loosen a screw with less effort?

Give one reason for your answer.

[1]

- 44 Tatum prepared the following set-ups to find out which one of these ramps, A, B or C, would enable her to move the **SAME** box to a height of 2 m above the ground using the least effort.

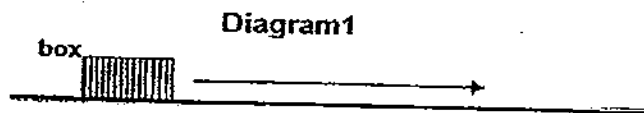


- (a) In which one of the ramps, A, B or C, would Tatum use the least effort to lift the box?

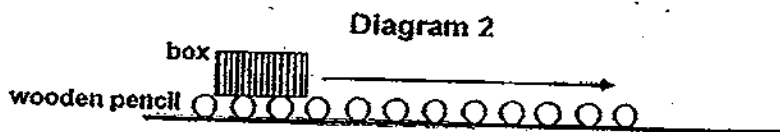
Explain your answer.

[1]

In another experiment, Tatum pushed a box across a wooden floor as shown in Diagram 1 below.



She placed some cylindrical wooden pencils under the **SAME** box as she pushed it across the same stretch of wooden floor shown in Diagram 2 below.

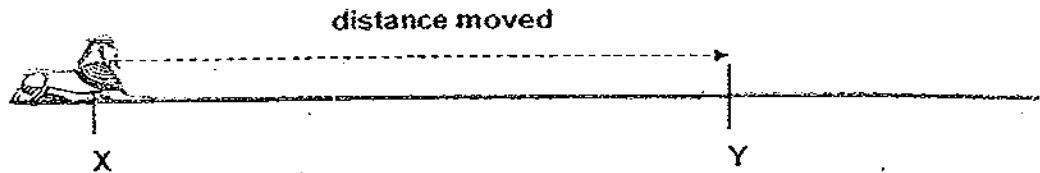


- (b) In which Diagram, 1 or 2, would Tatum require less effort to move the box across the same stretch of wooden floor?

Explain your answer.

[1]

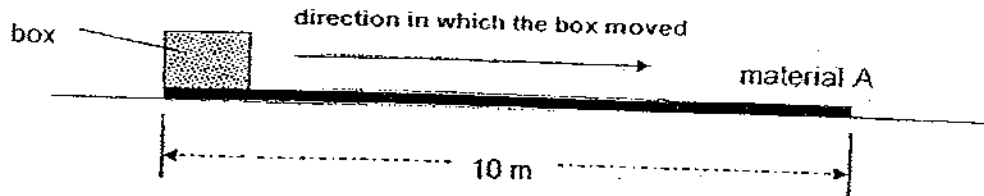
The ancient Egyptians needed to move a huge heavy sphinx statue over a distance.



- (c) State the two forces acting on the sphinx when it was moved from X to Y. [1]

- (d) Suggest why the Egyptians should use rollers instead of the ramp to move the sphinx from X to Y. [1]

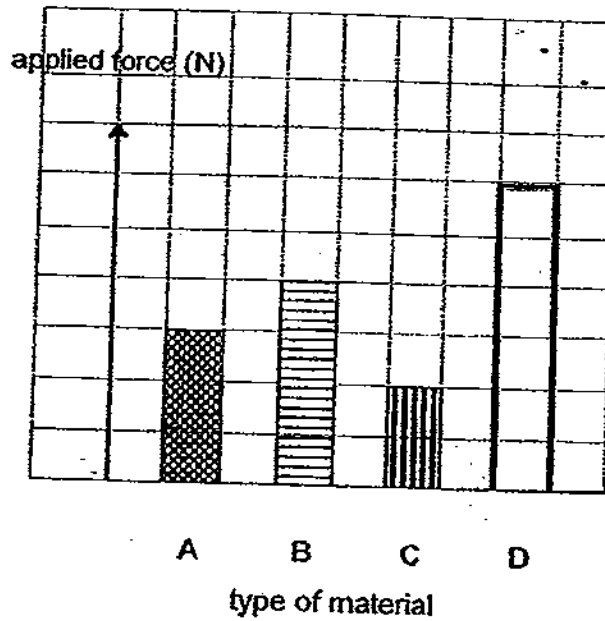
- 45 Rebecca pushed a heavy box over a distance of 10 m on material A.



She used another 3 identical boxes and repeated the experiment using materials B, C and D, ONE at a time.

The graph below shows the force (N) required to move the box on different materials over the 10 m distance.

Rebecca also measured the temperature of the contact surface of each box immediately after each of the boxes had been pushed over the 10 m distance.



material	temperature increase from the start of the experiment ($^{\circ}\text{C}$)
A	2
B	5
C	1
D	8

Based on the information given on page 44, answer the following questions:

- (a) Suggest what Rebecca could infer regarding the texture of material D in comparison to the other 3 materials. [1]

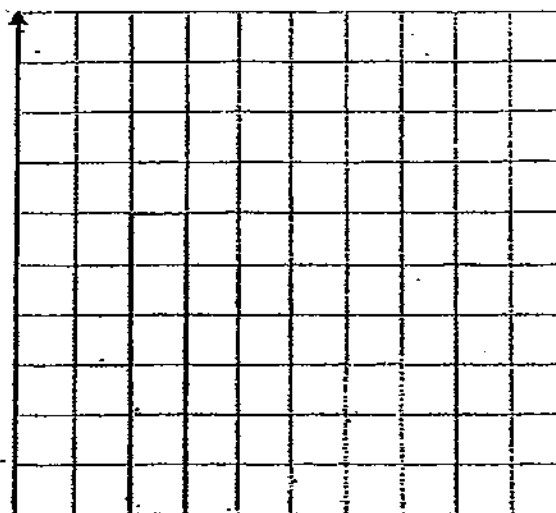
- (b) State the relationship between the texture of the materials and the amount of heat gained by the box when it moved over the SAME distance. [1]

- (c) Some oil was applied on the surface of material D and the experiment was conducted again.

Predict the amount of applied force required to move the box over the SAME distance on the oiled surface of material D.

DRAW it in the graph given below. [1]

applied force (N)

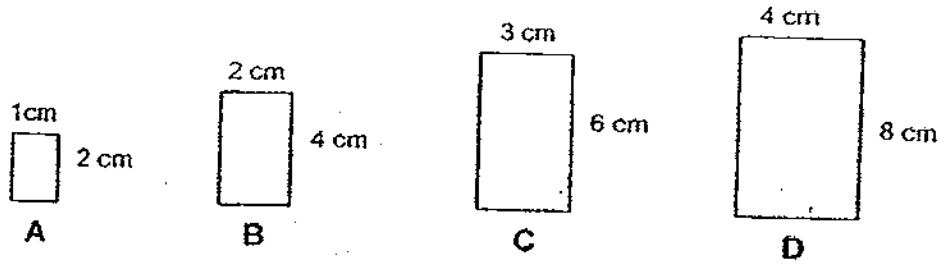


without oil with oil

surface of material D

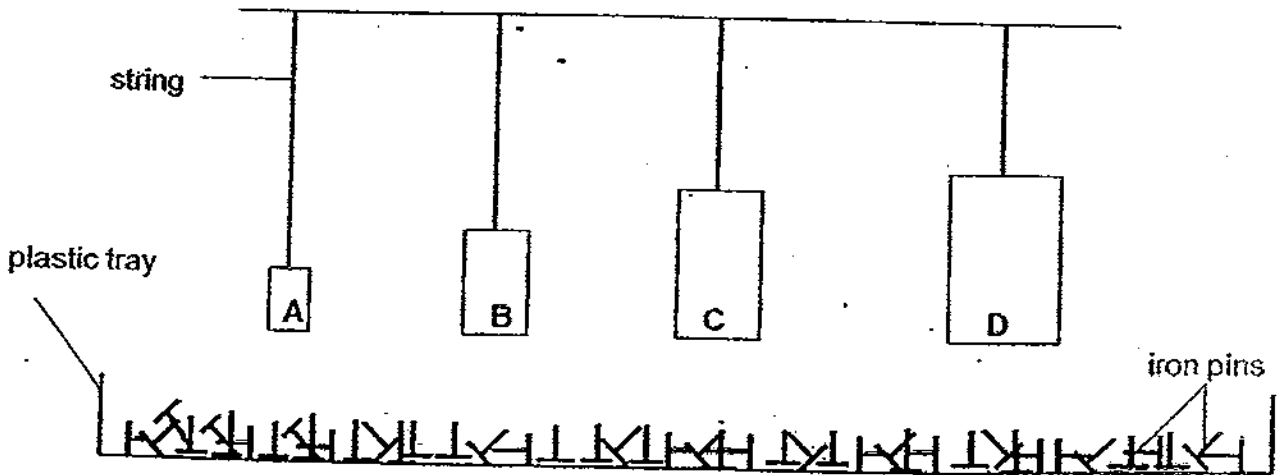
46 Kimberly had 4 different magnets, A, B, C and D, as shown in Diagram 1 below.

Diagram 1



She hanged each of these magnets an equal distance away from a tray of pins as shown in Diagram 2 below.

Diagram 2



Kimberly carried out the experiment 3 times and recorded her observations in the following table:

magnet	number of pins attracted to the magnets		
	1 st time	2 nd time	3 rd time
A	18	17	19
B	7	6	7
C	12	14	11
D	5	3	3

Based on the information given on page 46, answer the following questions:

- (a) What was the aim of Kimberly's experiment? [1]

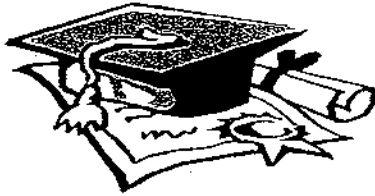
- (b) From the data collected, what could Kimberly conclude about the magnets? [1]

- (c) Kimberly suggested cutting magnet D into two equal parts, X and Y. Predict how many pins Part X would be able to attract.

[1]

-- END OF PAPER --

Setters: Ms Aishah Aris, Mdm Ong Shueh Nee, Ms Pek Xue Yan, and Mr Tan Siew Whatt



ANSWER SHEET

EXAM PAPER 2009

SCHOOL : RAFFLES GIRLS' PRIMARY
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

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

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

- 31)a) i) ovum ii) sperm iii) ovaries in) testis
 b) Both require the fusion of male and female sex cells.

32)a) P

- 1) The anther and stigma are located above the petal.
 - 2) Flower P does not have nectar to attract animals for pollination.
- b) No, since there is no stigma to receive the pollen grains, pollination does not occur, fertilization does not take place either. Hence the flower cannot develop into a fruit.

33)a) plant W. The seeds are dispersed in a circular manner and it is not very far away from the parent plant so it is the parent plant of fruit E which is dispersed by splitting.

b) Fruit F is dispersed by animals. It has hooks on the fruit to cling on the hair of the animals to allow the animals to help disperse it when the animals walk around.

34)a) Towel B is larger in size than Towel A.

b) Microvilli have a greater surface area, thus increasing the rate of digestion.

35)a) More organism T will go to part Z. Since the open field is normally bright and dry, organism T will gather at part Z of the box as they prefer dark and wet conditions.

b) Millipede.

36)a) P is a predator of Q. There are only two animals in the tank and P increases so the number of Q will decrease as it is eaten and P will increase.

b) R preyed on P and due to the decrease in population P, Q's birthrate could have exceeded the death rate as less P fed on them. Hence, population for Q increased.

37)a) Soil sample X. As sandy soil does not retain as much water as garden or clayey soil, it would allow the most amount of water to be collected in the measuring cylinder within the given time period of 10 minutes.

b) He wanted to obtain more reliable and valid results.

38) Animal X. Animal X has a streamlined body to reduce water resistance while animal Y does not have so it will swim slower as it cannot reduce water resistance as better as animal X.

39) Part T of the river. Since the highest amount of decomposers were found in two parts of the river, the largest amount of carbon dioxide produced would indicate that there was a higher rate of decomposition due to larger quantity dead organic matter in the river.

40)a) Water sample S. Elodea is a submerged plant and water sample S enables the most amount of light to go through which is essential for the plant to carry out photosynthesis.

b) Sample R is murkier than sample P. Hence, the amount of light able to pass through sample R is less than sample P.

41) Warmer water vapour in the surrounding air condenses on the cooler air from the freezer forming the "white clouds".

42)a) Less effort will be needed and the effort and the load move in the same direction.

b) The amount of applied effort would not be affected.

43)a) A: Wheel and axle. B: Lever

b) Position X. At position X, the effort is the furthest away from the fulcrum, making the effort used lesser.

c) Screwdriver C. The bigger the wheel, the lesser the effort. The wheel of screwdriver D, so the effort used will be lesser.

44)a) Ramp C. The smaller the angle, the less effort used. The angle of ramp C is the smallest so less effort will be needed.

b) Diagram 2. The pencils acted as rollers to reduce friction.

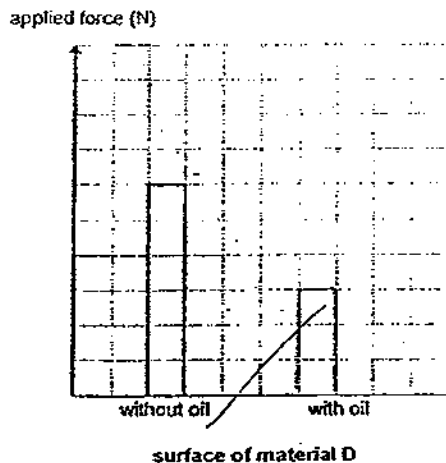
c) Frictional force and gravitational force.

d) Using rollers will reduce friction but using a ramp would cause more friction than the rollers when pushed so the Egyptians used rollers instead.

45)a) The texture of material D is rougher than the rest.

b) The rougher the texture of the material, the more heat gained.

c)



46)a) To find out if the size of the magnet would affect the number of iron pins collected.

b) The size of the magnet does not affect number of iron pins attracted.

c) 3, 4 or 5