



**AI TONG SCHOOL**

**2009 SEMESTRAL ASSESSMENT (1)**

**PRIMARY SIX SCIENCE**

**DURATION : 1hr 45 min**

**DATE: 18 MAY 2009**

**INSTRUCTIONS**

**Do not open the booklet until you are told to do so.**

**Follow all instructions.**

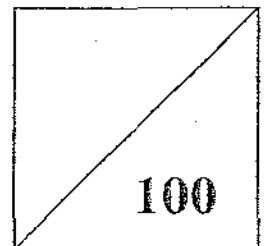
**Answer all questions.**

**Name : \_\_\_\_\_ ( )**

**Class : Primary 6 \_\_\_\_\_**

**Parent's Signature : \_\_\_\_\_ Marks :**

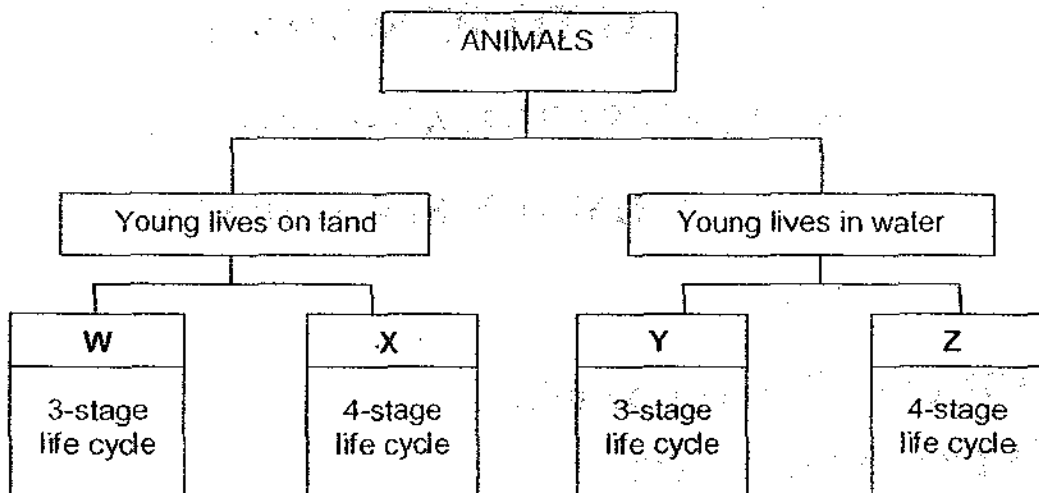
**Date : \_\_\_\_\_**



**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.**

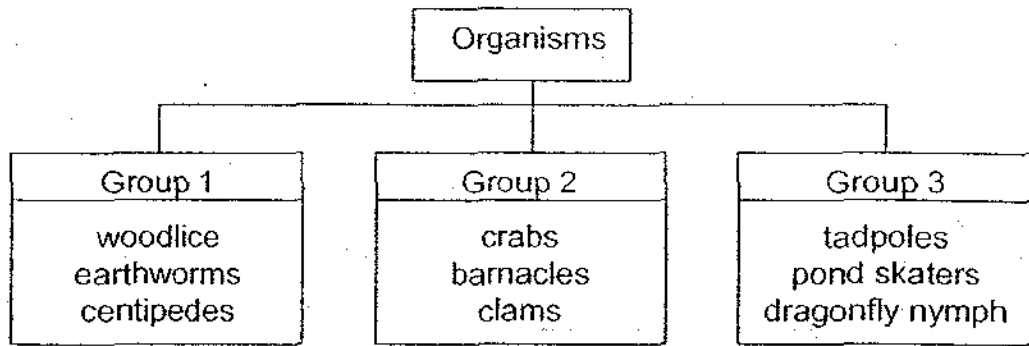
1. Look at the classification diagram below.



Which of the following animals represents W, X, Y and Z?

	W	X	Y	Z
(1)	Cockroach	Mosquito	Butterfly	Mealworm Beetle
(2)	Mealworm Beetle	Frog	Damselfly	Dragonfly
(3)	Grasshopper	Butterfly	Dragonfly	Mosquito
(4)	Butterfly	Damselfly	Cockroach	Frog

2.



In the above classification table, the organisms are classified according to \_\_\_\_\_.

- (1) their diet
- (2) their habitats
- (3) the way they move
- (4) the way they reproduce

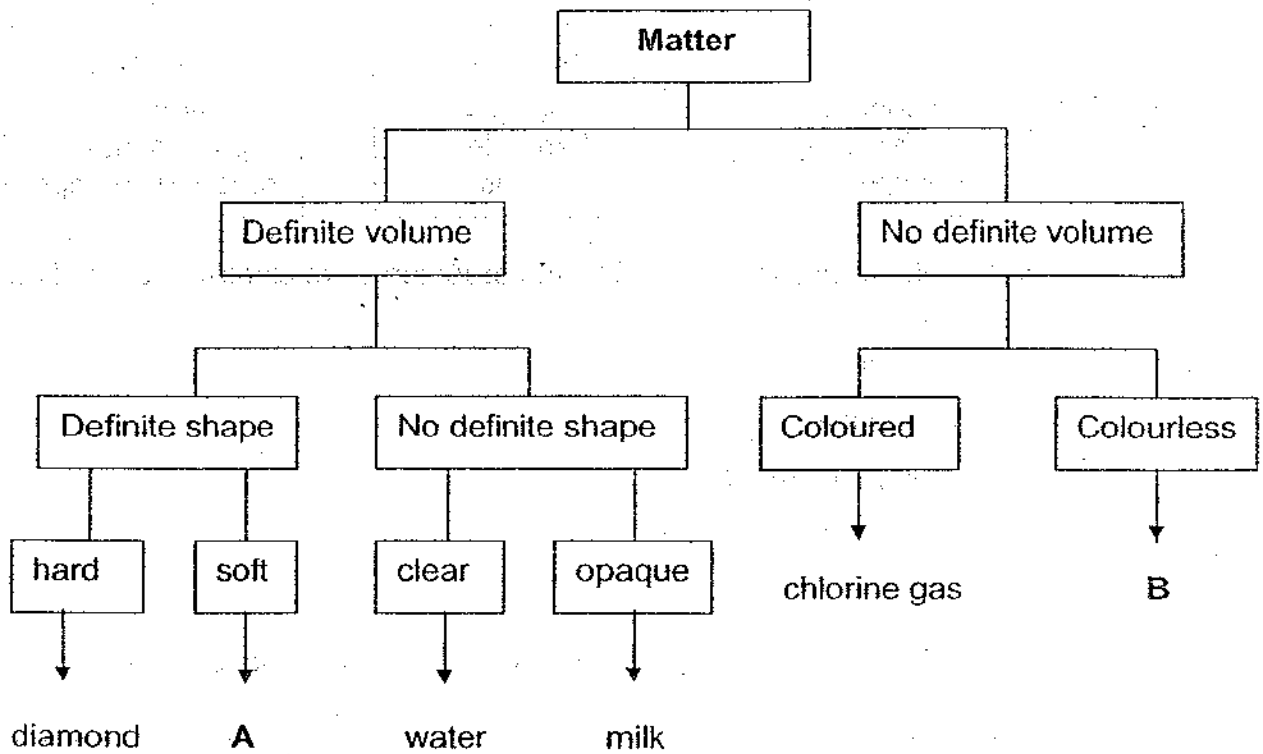
3. Study the characteristics of the four objects given in the table below.

Properties Objects	Hard	Transparent	Conductor of Heat	Magnetic
A	Yes	No	Yes	Yes
B	No	No	No	No
C	Yes	No	No	No
D	Yes	No	Yes	Yes

What could objects A, B, C and D be made of?

	A	B	C	D
(1)	Steel	Rubber	Wood	Nickel
(2)	Copper	Cotton	Wood	Rubber
(3)	Nickel	Wood	Copper	Steel
(4)	Steel	Cotton	Copper	Wood

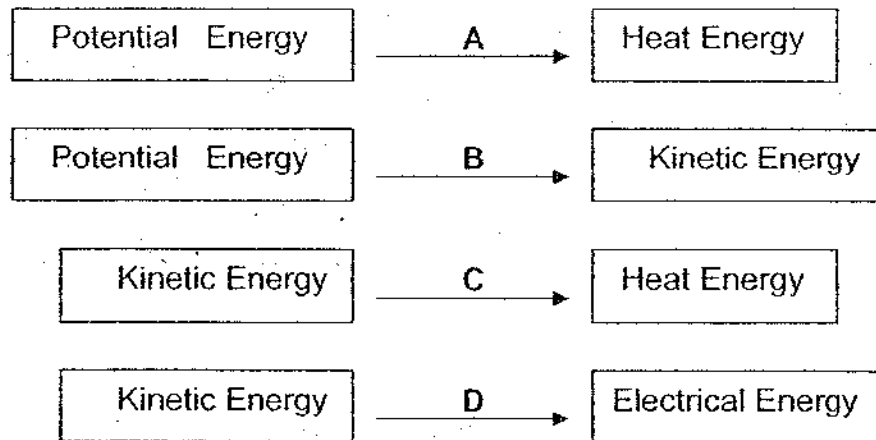
4. The classification chart below shows how matter can be classified.



What could **A** and **B** be?

	<b>A</b>	<b>B</b>
(1)	ceramic	smoke
(2)	plasticine	carbon dioxide
(3)	gold	oxygen
(4)	cotton	dust

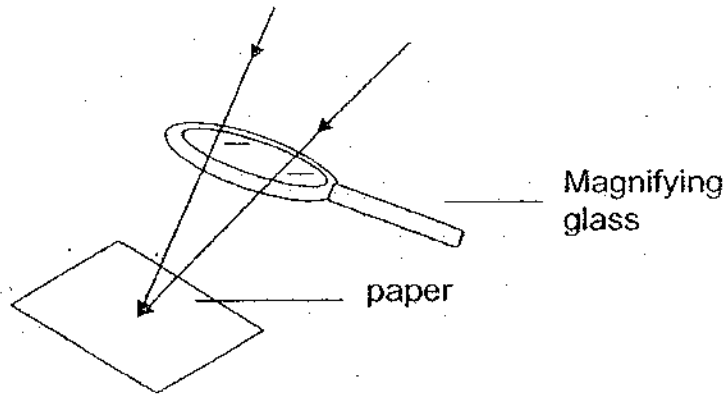
5. Energy can be converted from one form to another as shown in the representations below.



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

	A	B	C	D
(1)	Rubbing of two hands together	Using running water to spin a water wheel connected to an electric generator	Throwing a ball down from the 10 <sup>th</sup> storey	Burning of fuel
(2)	Throwing a ball down from the 10 <sup>th</sup> storey	Burning of fuel	Using running water to spin a water wheel connected to an electric generator	Rubbing of two hands together
(3)	Burning of fuel	Throwing a ball down from the 10 <sup>th</sup> storey	Rubbing of two hands together	Using running water to spin a water wheel connected to an electric generator
(4)	Using running water to spin a water wheel connected to an electric generator	Burning of fuel	Rubbing of two hands together	Throwing a ball down from the 10 <sup>th</sup> storey

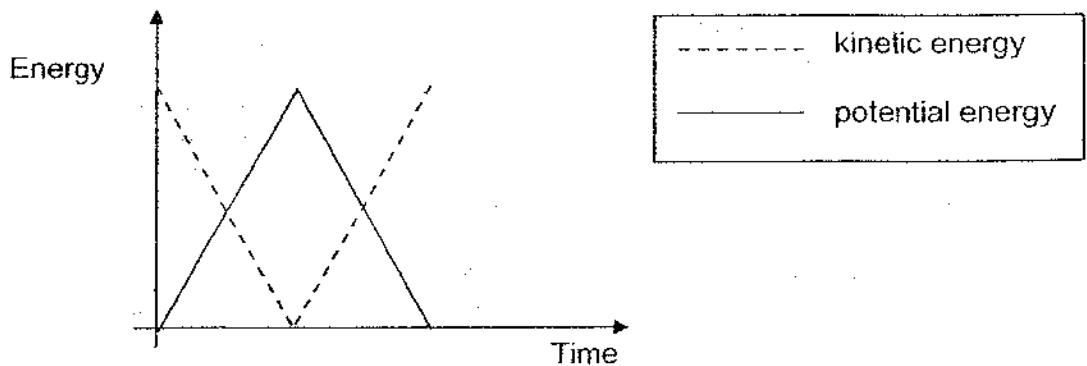
6. John was playing with his new magnifying glass under the hot sun and noticed that energy conversion had taken place when the paper caught fire.



What energy conversion has caused the paper to have burn marks on the paper?

- (1) Solar energy → light energy
- (2) Heat energy → light energy
- (3) Light energy → heat energy
- (4) Kinetic energy → heat energy

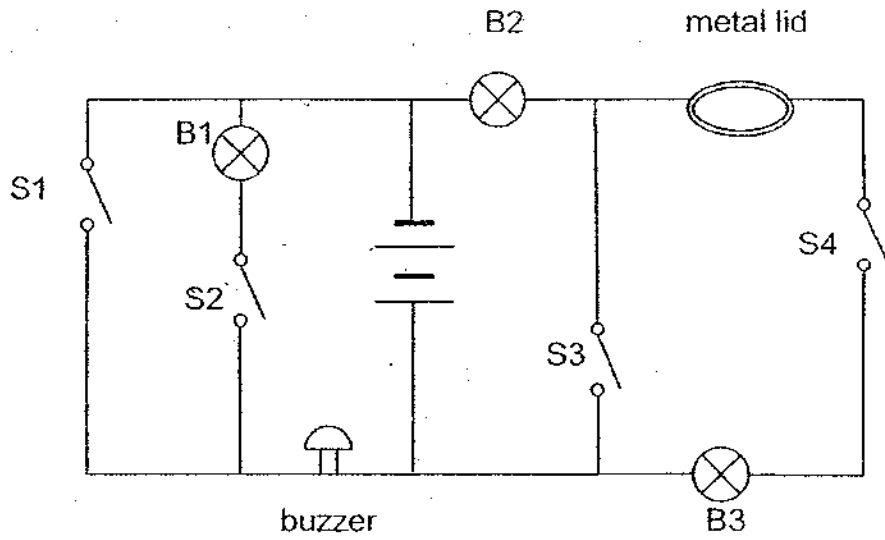
7. The graph below shows two types of energy Karen possessed when she carried out an activity.



Which one of the following could the activity be?

- (1) Jogging in the park.
- (2) Playing on a swing.
- (3) Playing a game of squash.
- (4) Climbing up a flight of stairs.

8. An electric circuit was set up as shown in the diagram below.

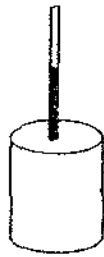


Which one of the following actions will sound the buzzer and light up one bulb only?

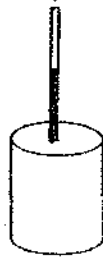
	S1	S2	S3	S4
A	open	close	open	open
B	close	open	open	close
C	open	close	close	close
D	close	open	close	open

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

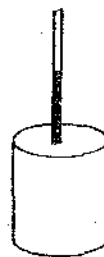
9. Timothy carried out an experiment to investigate the effect of the Sun's heat on paper of various colours. He wrapped 4 identical tin cans with papers of different colours, W, X, Y and Z. A thermometer was placed in each container to measure the temperature of air in it. All 4 cans were placed under the Sun.



Coloured paper W



Coloured paper X



Coloured paper Y



Coloured paper Z

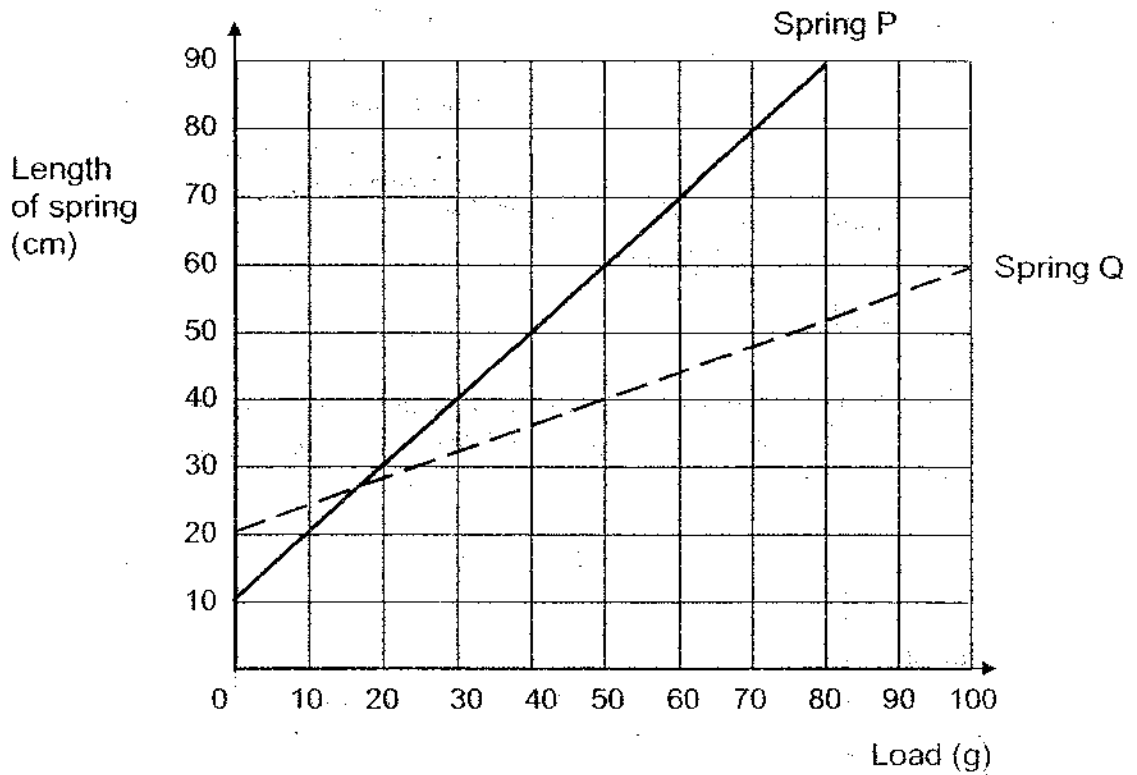
He recorded the temperature readings of all the thermometers in the table below.

Can wrapped with coloured paper	Time interval (min)				
	0	5	10	15	20
W	30°C	31.5°C	32°C	32.5°C	33.5°C
X	30°C	32°C	34.5°C	37°C	40°C
Y	30°C	31.5°C	33.5°C	35°C	36.5°C
Z	30°C	30.5°C	31.5°C	32.5°C	33.5°C

Based on his results, which colours W, X, Y and Z are most suitable for the purpose shown below?

	Purpose	
	Clothing to keep cool	Making solar heaters
(1)	W	Y
(2)	X	Z
(3)	Z	X
(4)	Y	W

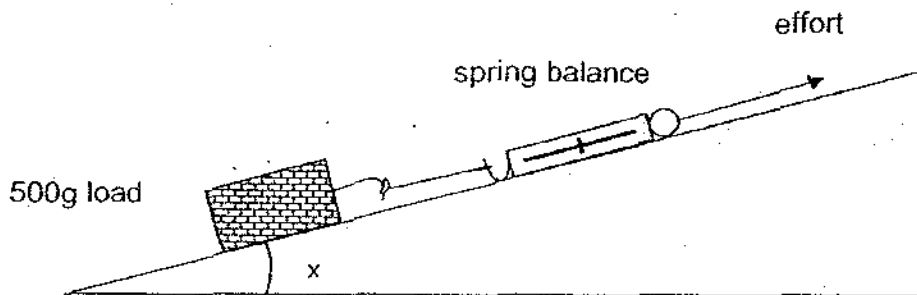
10. Annabel carried out an experiment with 2 springs, P and Q. She hung various loads on the 2 springs and measured their corresponding lengths. She recorded the results and plotted the graph as shown below.



Based on the graph above, which of the following shows the correct information about Springs P and Q?

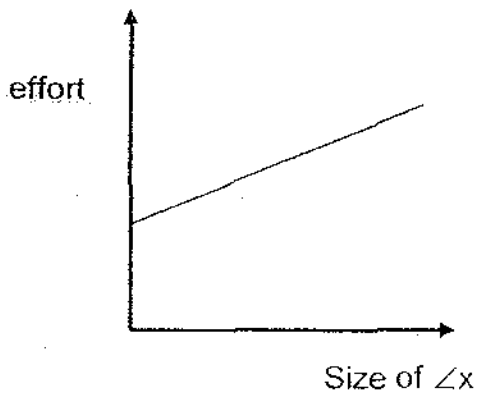
	Spring with a shorter original length	Spring that stretched more
(1)	Spring P	Spring P
(2)	Spring Q	Spring P
(3)	Spring P	Spring Q
(4)	Spring Q	Spring Q

11. Kim pulled a 500g load up an inclined plane with the help of a spring balance as shown below. The effort required was measured and recorded. The experiment was repeated but the angle of the inclined plane ( $\angle x$ ) was increased by  $10^\circ$  each time till it reached  $90^\circ$ .

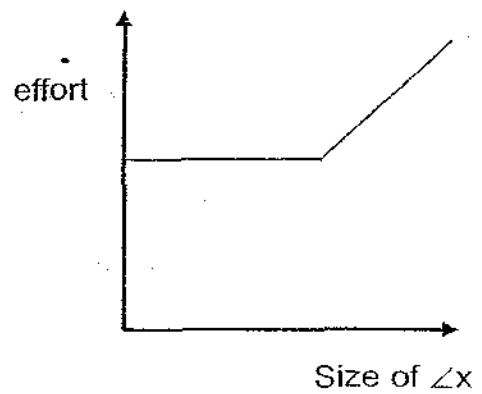


Which one of the following graphs would best represent the relationship between the angle of the inclined plane and the effort needed to pull the load up?

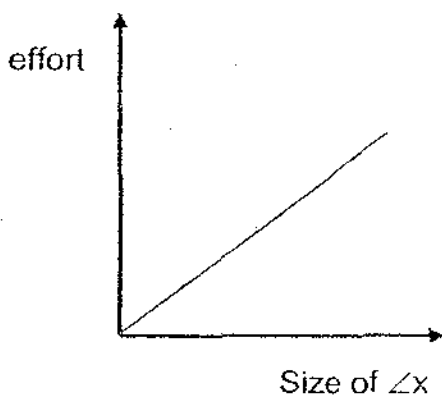
(1)



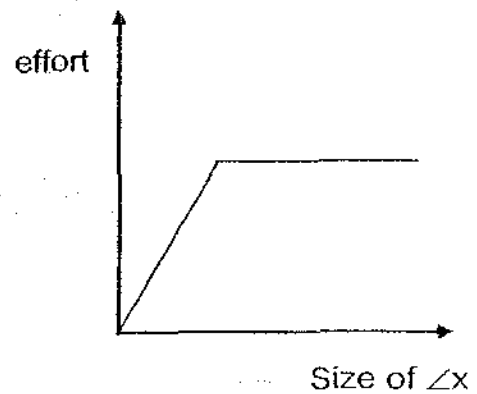
(2)



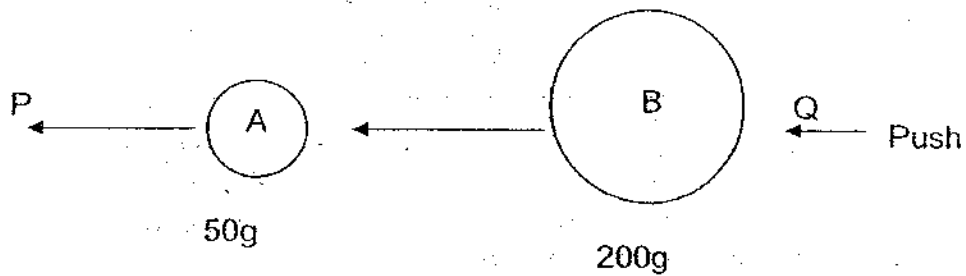
(3)



(4)



12. The diagram below shows Ball A moving in the direction shown by arrow P. Another Ball B was given a push in the direction shown by arrow Q. It hits Ball A.



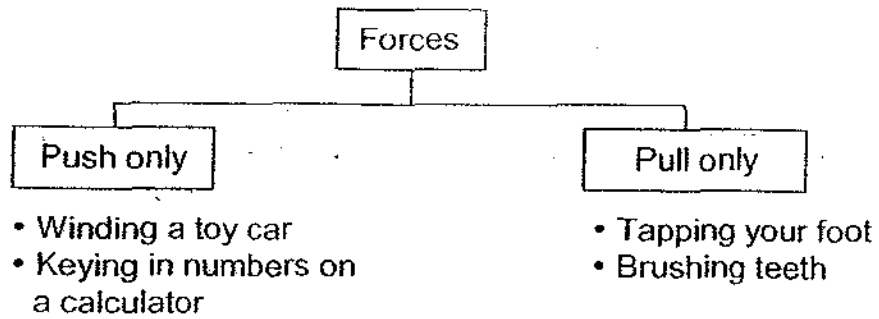
Which of the following changes are likely to happen to Ball A immediately after it was hit by Ball B?

- A Stop moving
- B Change in size
- C Change in position
- D Decrease in speed
- E Increase in speed

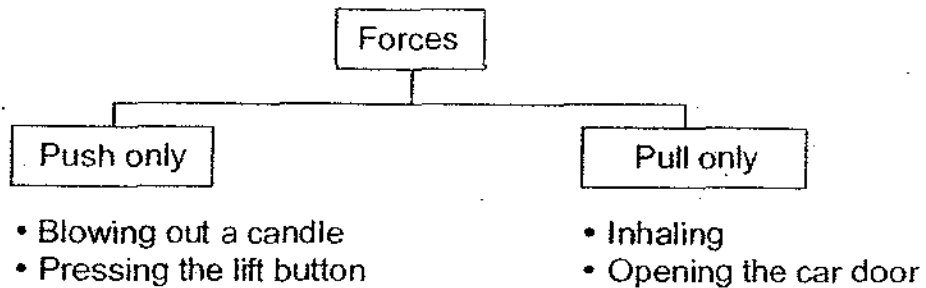
- (1) A and B only
- (2) C and D only
- (3) B and E only
- (4) C and E only

13. Which of the following classification charts correctly classifies a person's actions or activities?

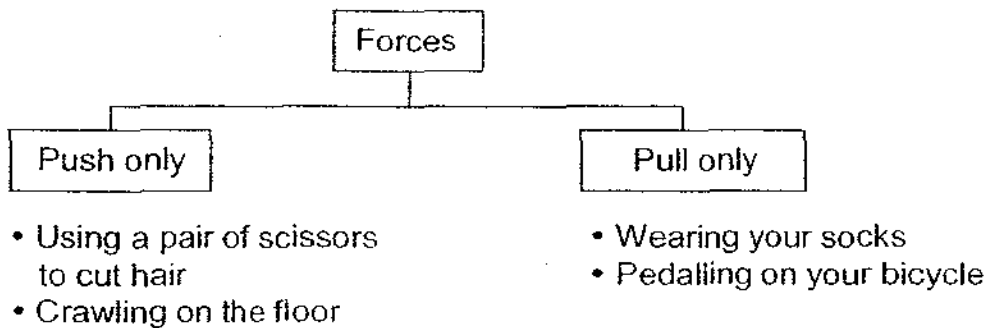
(1)



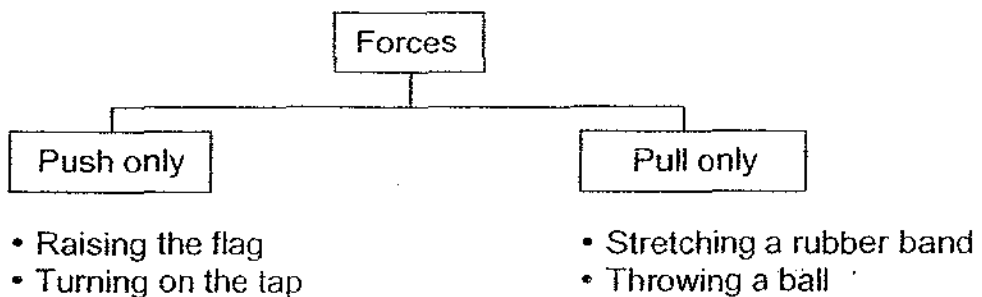
(2)



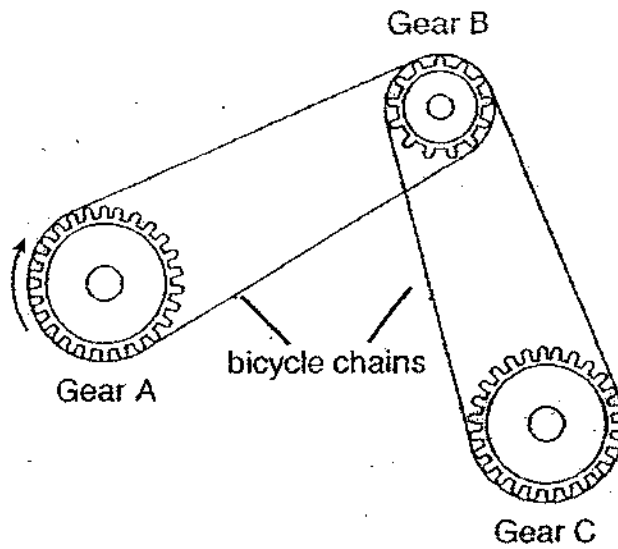
(3)



(4)



14. Three gears, A, B and C, are connected using two bicycle chains as shown below.

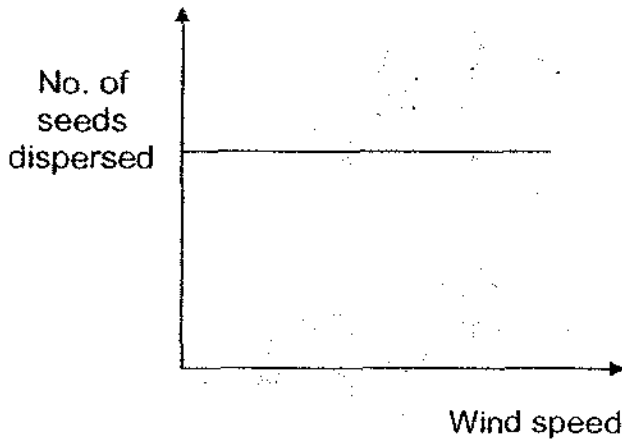


When Gear A turns 2 rounds in the direction shown above, what would be the effect on Gear B or Gear C?

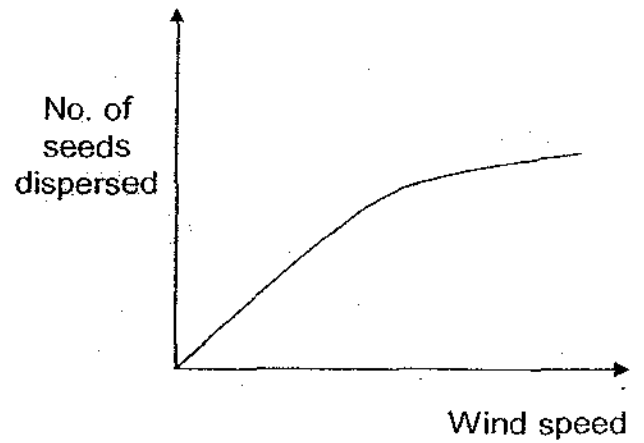
- (1) Gear B turns 1 round in a clockwise direction.
- (2) Gear C turns 2 rounds in a clockwise direction.
- (3) Gear B turns 4 rounds in an anti-clockwise direction.
- (4) Gear C turns 2 rounds in an anti-clockwise direction.

15. The fruit of Plant Z has feather-like structures and is small and light. Which one of the following graphs would most likely show how the number of seeds dispersed changes with the wind speed?

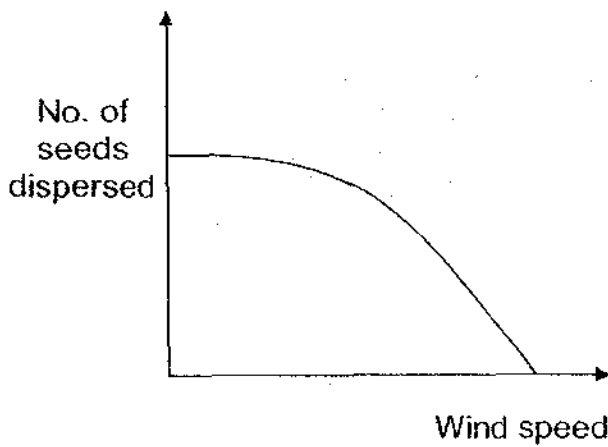
(1)



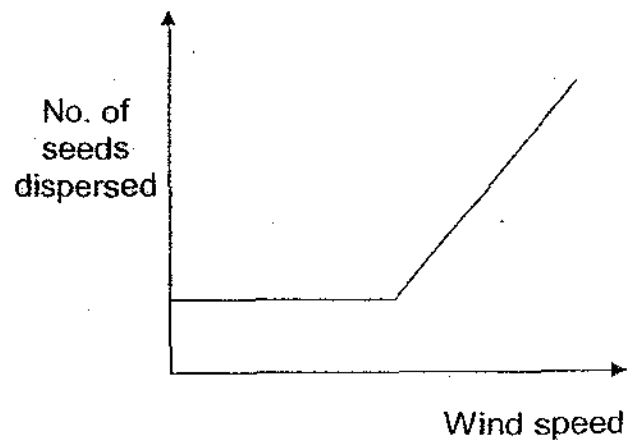
(2)



(3)



(4)



16. Jacinta collected some samples of organisms from a pond near her school. She identified them and classified them in the table below.

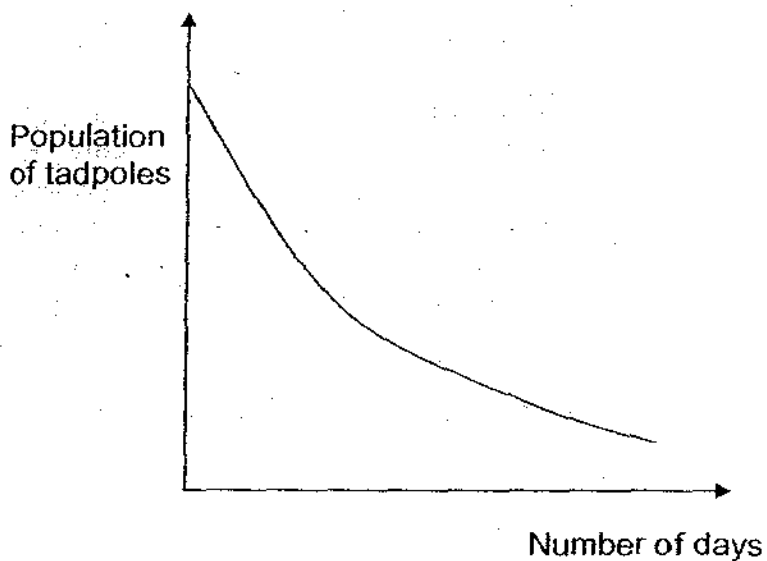
Aquatic Plants	Aquatic Animals
water moss fern arrowhead duckweed cabomba hydrilla elodea	dragonfly nymph water boatman pond skater frog eggs tadpole guppy frog

How many populations of organisms did Jacinta collect altogether?

- (1) 10  
 (2) 11  
 (3) 12  
 (4) 13
17. The table below shows the characteristics of the environment found in four different habitats. In which one of the habitats would you most likely find banded geckos, snakes and cacti?

Habitat	Characteristics of the environment			
	Humidity	Temperature	Water	Light
(1)	High just above the surface	Higher in the day than at night	Completely covered in water	More on the surface and less below the surface
(2)	Moderate	Moderate	Found in damp soil	Very little most of the time
(3)	Low	Very low all the time	Found as icebergs and in icy streams	Only during summer months
(4)	Very low	Very high in the day, very low at night	Found in rivers, streams and oases	Plentiful in the day

18. The graph below shows the population of tadpoles in a pond over a period of time.



What are the likely reasons for the change in the population of tadpoles in the pond?

- A There was a period of dry weather.
- B The tadpoles have changed into frogs.
- C The number of dragonfly nymphs increased.
- D There was an abundance of algae in the pond.

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

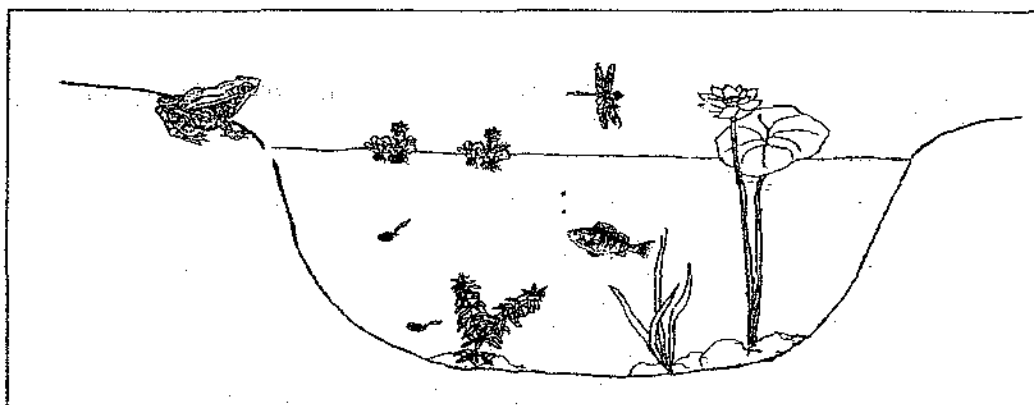
19. The table below shows some characteristics of 4 different types of plants.

Plants	Type of stems		Flowers	
	Woody	Non-woody	Flowering	Non-flowering
P	✓	x	x	✓
Q	✓	x	✓	x
R	x	✓	✓	x
S	x	✓	x	✓

Which one of the following statements is most probably true?

- (1) Plant P needs a support to hold itself up and is pollinated by insects.
- (2) Plant Q has a strong stem and it is reproduced from a seed.
- (3) Plant R has a layer of bark surrounding its trunk and bears flowers.
- (4) Plant S has a soft, weak stem and has big fragrant flowers.

20. The diagram below shows a pond community.



Which of the following are possible reasons why aquatic plants and animals cannot survive in a pond that contains mud particles?

- A The water carries diseases.
- B Sunlight cannot reach the aquatic plants.
- C The aquatic animals cannot get enough dissolved oxygen.
- D There is not enough clean water for the aquatic plants and animals.

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

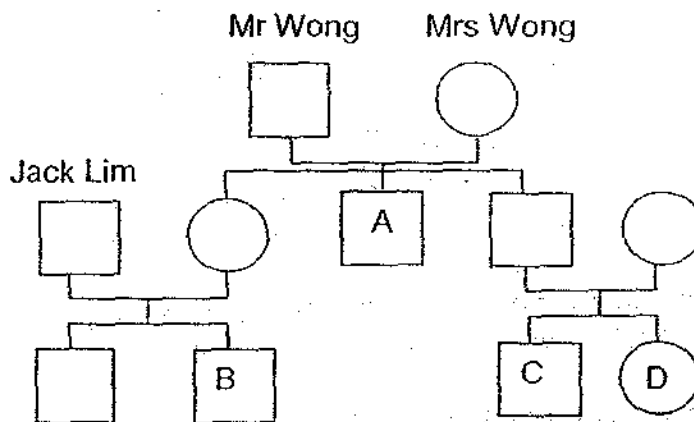
21. Tom wants to find out the effect of overcrowding on the growth of the chilli plant.

Study the table below and decide which three pots should he set up to carry out a fair test?

Pot	Number of chilli seeds	Type of soil	Size of pot
A	10	Garden soil	Big
B	5	Garden soil	Small
C	5	Loamy soil	Medium
D	5	Garden soil	Medium
E	5	Garden soil	Big
F	3	Loamy soil	Small

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

22. The diagram below shows a family tree which represents the Wong Family.



Which one of following A, B, C or D represents Mr Wong's grandson, Allan Wong?

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

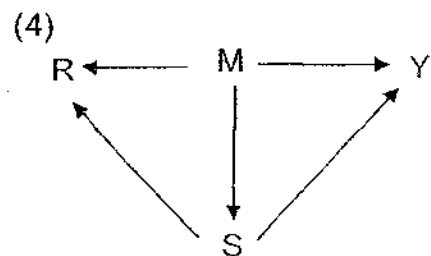
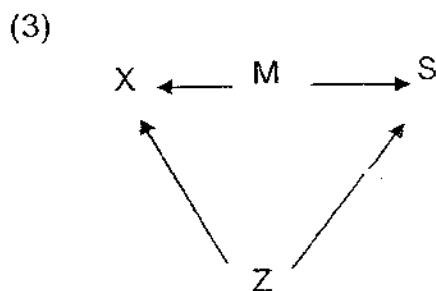
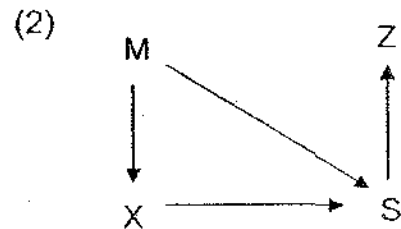
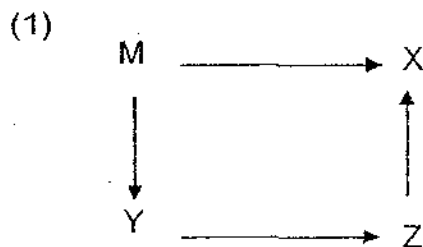
23. Mrs Lum's neighbour gave her a fruit when he came back from a trip to Malaysia. When Mrs Lum cut it open, she found that it contained many seeds. She made several inferences about the flower that produced this fruit. Which one of the inferences best supports the observation she made?

- (1) The flower grew in bunches.
- (2) The flower produced many pollen grains.
- (3) There were many ovules in the ovary of the flower.
- (4) The pollen grains that fertilised the flower came from many flowers.

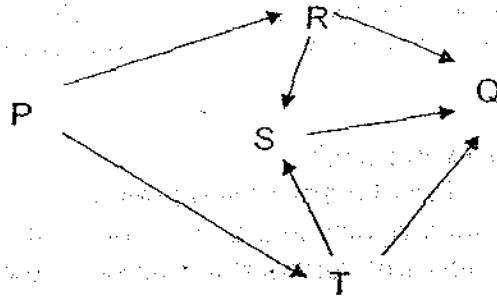
24. The table below shows how some organisms are classified.

Plant	Herbivore	Carnivore	Omnivore
M	X and Y	Z	R and S

Which one of the following food webs shows the correct energy transfer of the organisms in the table above?



25. Study the food web below.

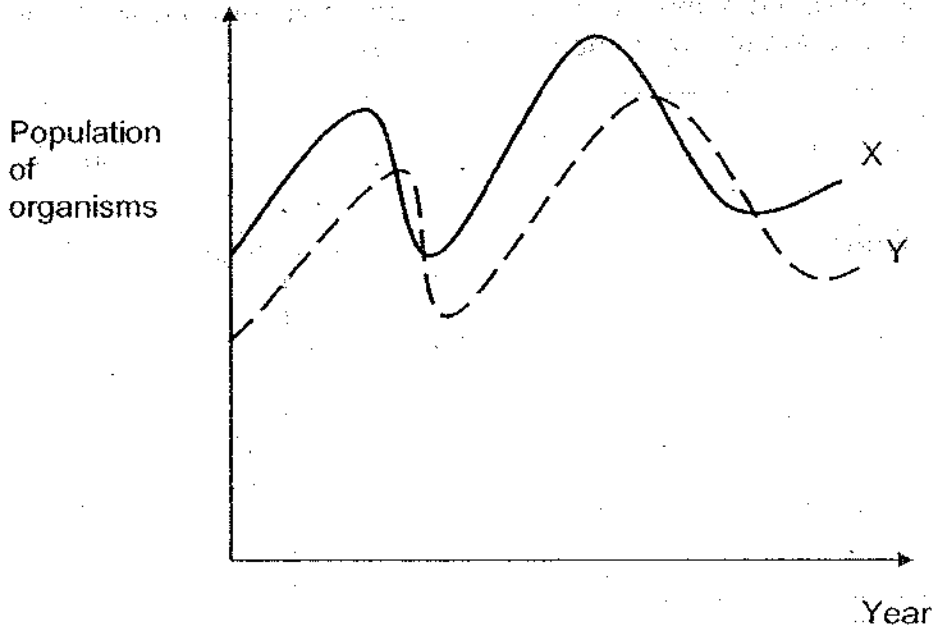


If a disease were to destroy the entire population of organism R, which of the following would most likely happen?

- A S would increase in number.
- B P would decrease in number.
- C Q would eat more of S and T.
- D T would have more food to eat.

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

26. The graph below shows the changes in the number of two populations of organisms in a field. Study it carefully.



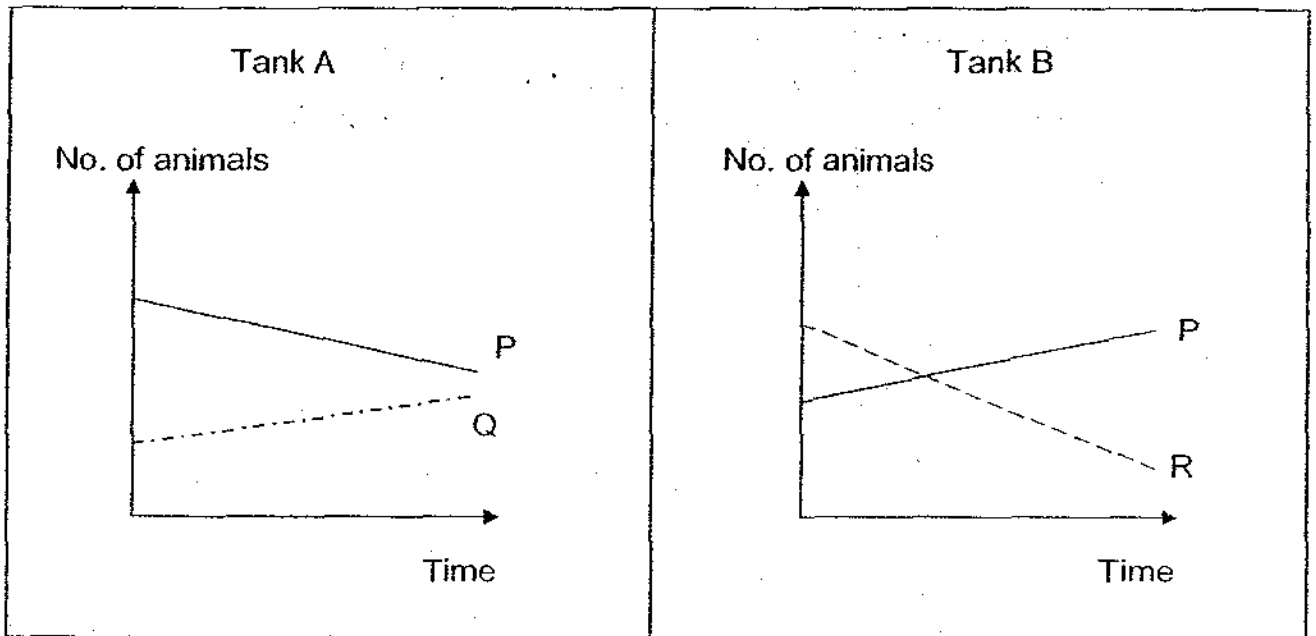
What can you infer from the graph?

- A If X is a plant, Y is likely to be an animal that feeds on X.
- B If both X and Y are animals, X is probably the prey of Y.
- C If both X and Y are animals, Y is probably the prey of X.

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

27. Kelvin bought a number of animals P, Q and R and two glass tanks from a pet shop. He put some animals P and Q in one tank and labelled it Tank A. He put the rest of animals P and R in the other tank and labelled it Tank B. He also put some rocks, sand and plants in both tanks.

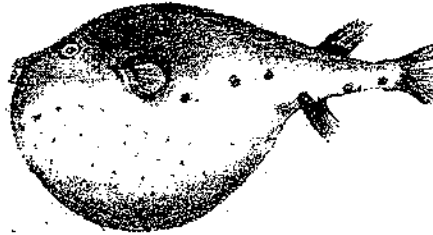
He counted the number of animals in both tanks every week for a month. His results are shown in the graphs below.



Based on the graphs above, which one of the following shows correctly the food chain linking the three animals?

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

28. The puffer fish has the ability to gulp down water and inflate itself to appear much bigger. How is this characteristic important to the puffer fish?



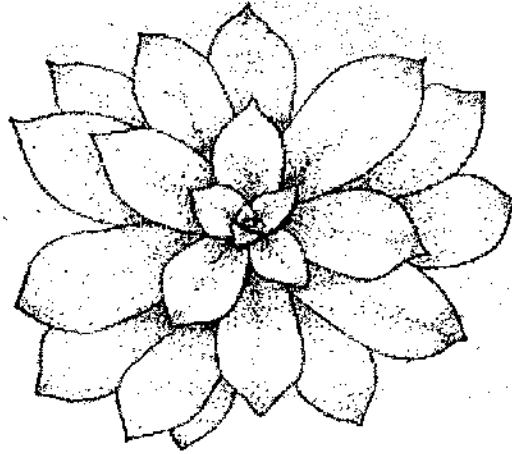
- (1) It increases water resistance.  
 (2) It helps the fish to attract a mate.  
 (3) It enables the fish to swim faster.  
 (4) It helps to scare away its predators.
29. The table below shows the functions of four different adaptations of an animal.

Adaptation	Function
A	Stores fat to release energy when animal has no food.
B	Helps them to blend into their environment.
C	Protects the animal from burns when it kneels on hot sand.
D	Prevents the animal from sinking into the sand

Which one of the following correctly represents A, B, C and D?

	A	B	C	D
(1)	Blubber	Streamlined body	Thick body covering	Webbed feet
(2)	Hump	Body colouring	Thick skin on knees	Broad, flat feet
(3)	Stomach	Body shape	A hard shell	Soles covered with stiff hairs
(4)	Liver	Patterns on body	Stiff hairs on knees	Long legs

30. The diagram below shows the arrangement of leaves of a plant from the top view. It has been adapted to grow in this manner to benefit the plant.



How is this adaptation important to the plant?

- (1) It helps the plant to bear more flowers.
- (2) It helps the plant to get more sunlight.
- (3) It helps to prevent water loss through transpiration.
- (4) It helps the plant to attract more insects to pollinate its flowers.

Name: \_\_\_\_\_ ( )

Class : P6 ( )

**Section B: 40 marks**

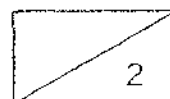
Read the questions carefully and write down your answers in the spaces provided.

31. The classification table below shows how some objects have been grouped according to the materials used to make them. The letters A, B, C and D represent 4 different types of materials.

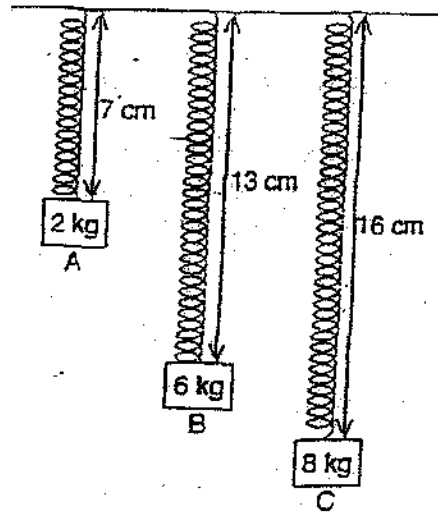
Objects			
Material A	Material B	Material C	Material D
balloon	window pane	frying pan	story book
eraser	spectacle lens	wok	birthday card
Object P	Object Q	Object R	Object S

Based on the classification table above, put a tick ( ✓ ) if the following statements are "True", "False", or "Not possible to tell". [2]

Statements	True	False	Not possible to tell
Object P is waterproof and flexible.			
Object Q allows no light to pass through.			
Object R is good conductor of heat.			
Object S is heavier than Object P.			



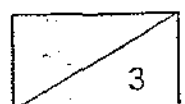
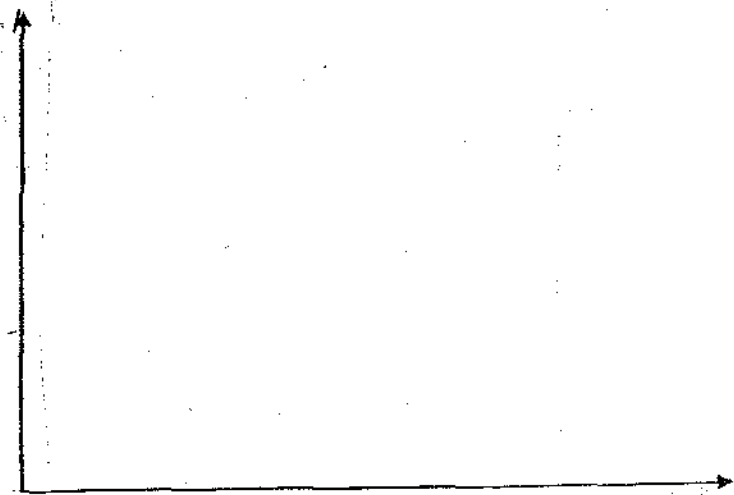
32. The diagram below shows the length of a spring when three different objects, A, B, C are hung on it one at a time. The original length of the spring is 4cm.



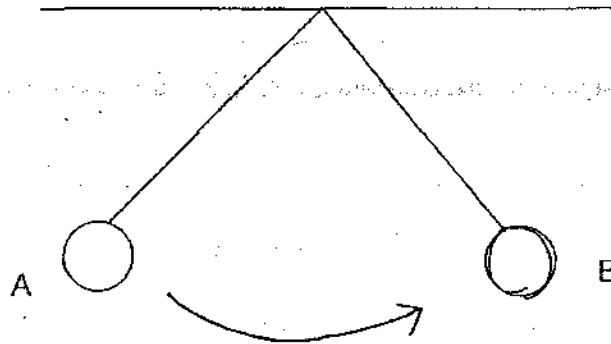
(a) The table below shows the mass of the objects and the extension of the spring. Fill in the empty box to complete the table. [1]

Mass (kg)	Final length (cm)	Extension (cm)
0	4 (initial)	0
2	7	3
6	13	9
8	16	<input type="text"/>

(b) Use the data to construct a line graph below that shows the relationship between the mass of the object and the extension of the spring. [2]



33. A suspended pendulum swings from point A to point B as shown in the diagram below.



(a) At which point, A or B, is the gravitational potential energy the greatest? [1]

---

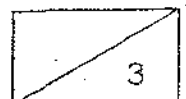
(b) Explain your answer in (a) [1]

---

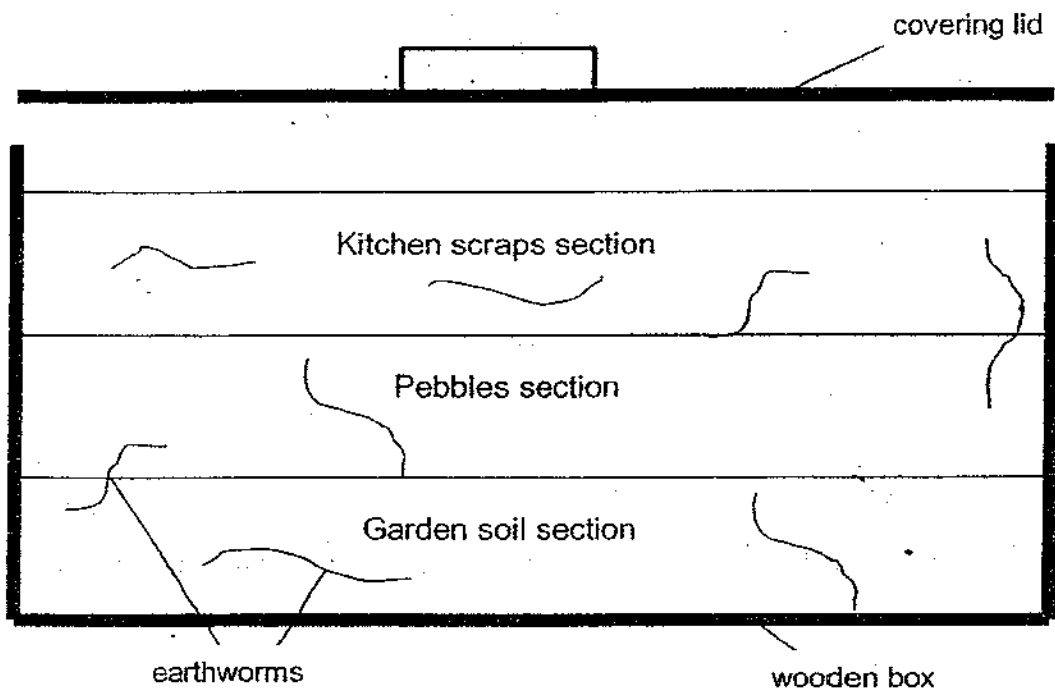
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(c) State the energy change from point A to point B. [1]

---

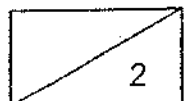


34. Some earthworms were placed into a wormery as shown below. The temperature in the wormery is about 28°C. Sufficient water was added in regularly.

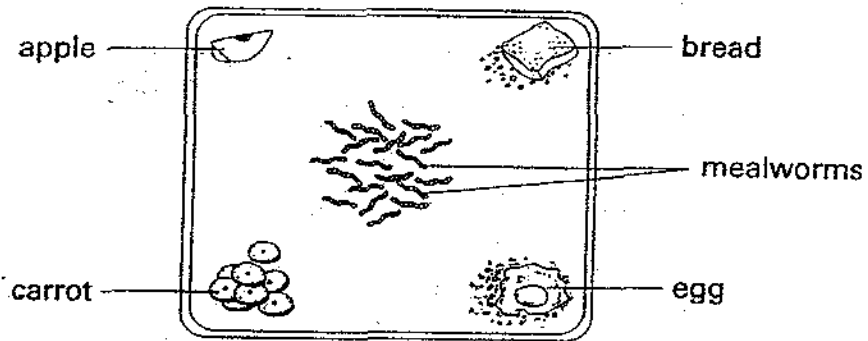


(a) After some time, most of the earthworms were found in a particular section. In which of the above sections would we find most of the earthworms? [1]

(b) Explain your answer in (a). [1]



35. An experiment was carried out with 20 mealworms. The mealworms were placed in the centre of a tray as shown in the diagram below. A different type of food was placed at each corner of the tray.



After a while, the number of mealworms at each corner was counted. The results were recorded in the table below.

Food	Apple	Bread	Carrot	Egg
Number of mealworms	5	12	2	1

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

---



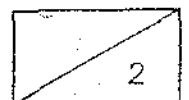
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(b) What can you conclude from the experiment? [1]

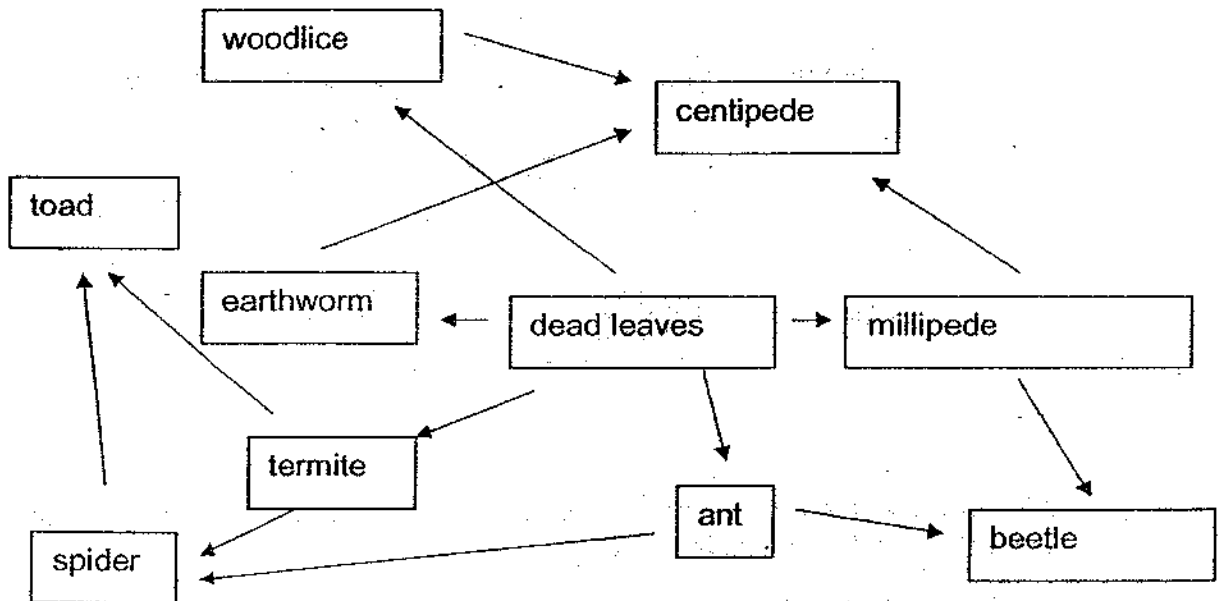
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36. Study the food web below.



(a) Describe two living conditions of this habitat.

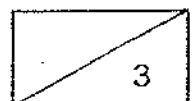
[1]

(b) What would happen to the population of earthworms if there was an increase in the ant population?

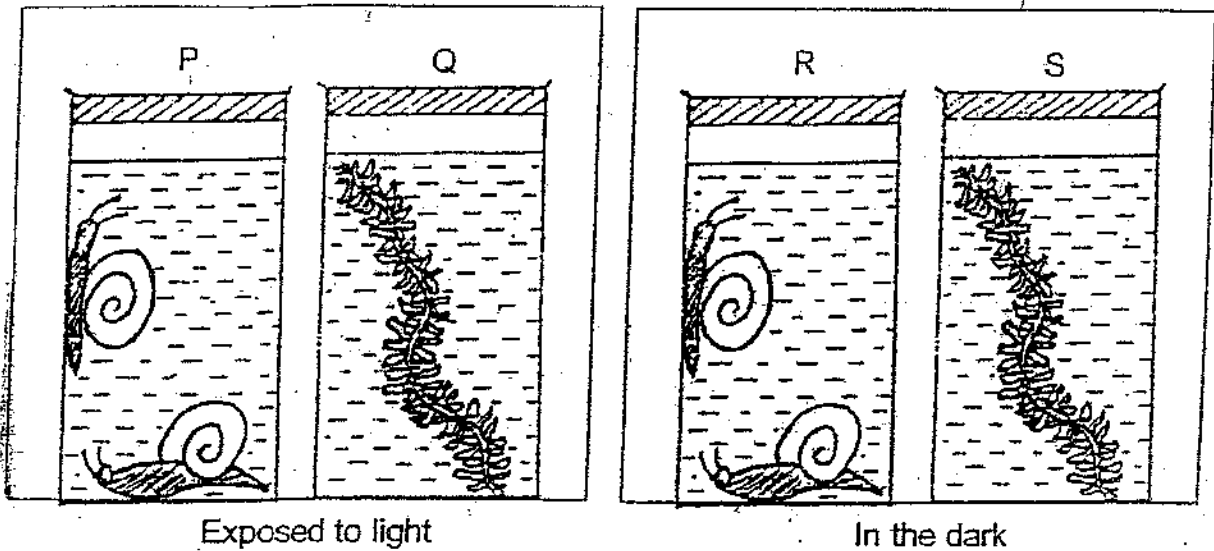
[1]

(c) Explain your answer in (b).

[1]

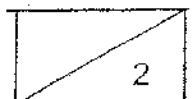


37. Mrs Tan set up the following apparatus as shown below. Containers P and R contained 2 water snails each while Containers Q and S contained an identical water plant each. The containers were sealed and left standing for a few days.

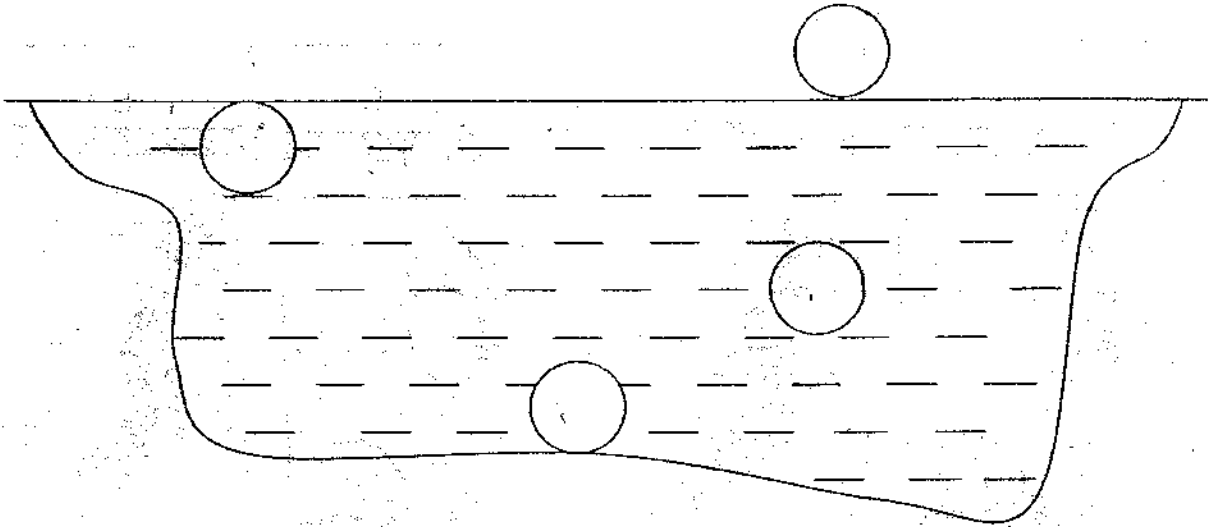


(a) At the end of the experiment, which container, P, Q, R or S, has the least amount of carbon dioxide? [1]

(b) Explain your answer in (a). [1]



38. The diagram below shows the cross-section of a pond. The circles below show where some organisms could be found.



Given that

A : water stick insect

B : tubifex worm

C : water hyacinth

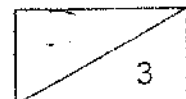
D : elodea

(a) Label the circles in the diagram A, B, C or D correctly. [2]

(b) Explain why one of the organisms is able to float on water. [1]

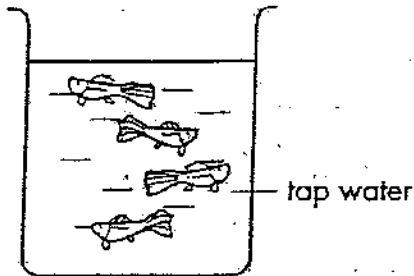
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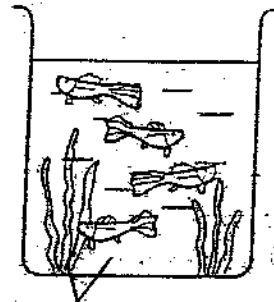


39. Study the four set-ups, A, B, C and D, shown below.

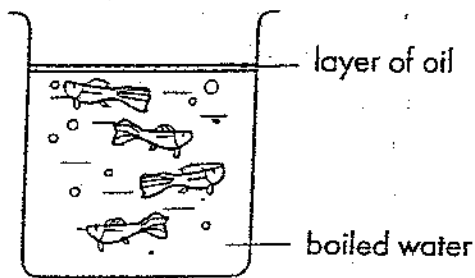
Set-up A



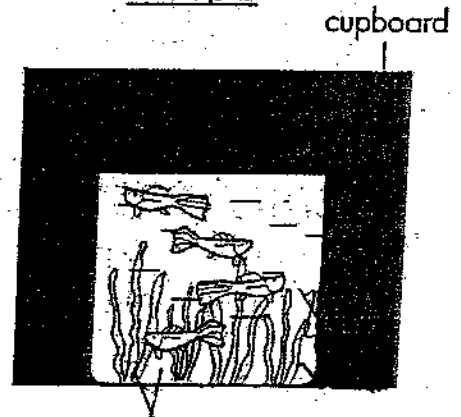
Set-up B



Set-up C

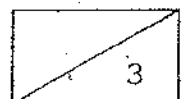


Set-up D



(a) In which set-up, Set-up A, B C or D, would the guppies survive the longest? [1]

(b) Explain your answer in (a). [2]



40. A, B, C, D and E are five living things in a community.  
The following is information about these living things.

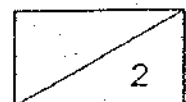
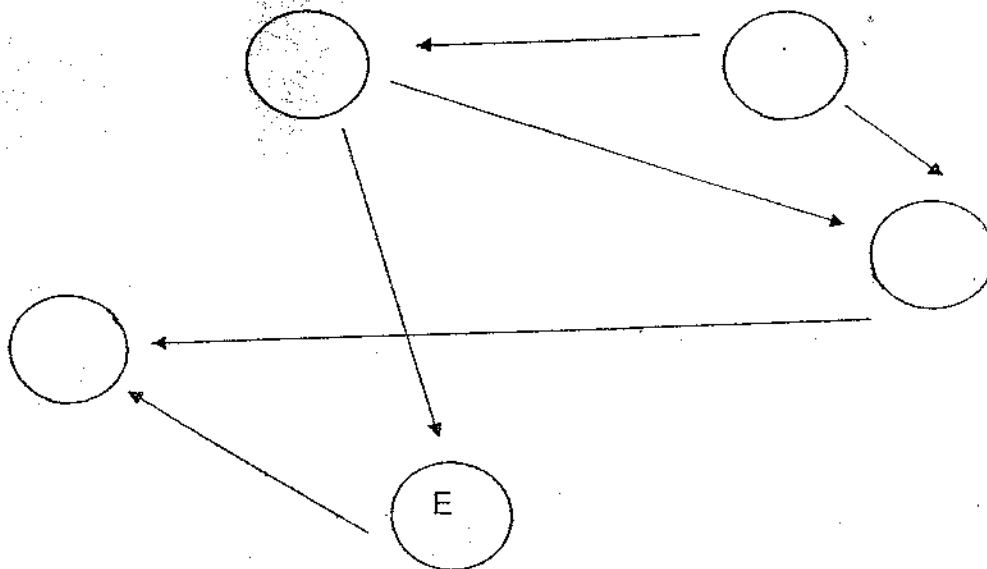
D is a food producer.

D is eaten by B and C.

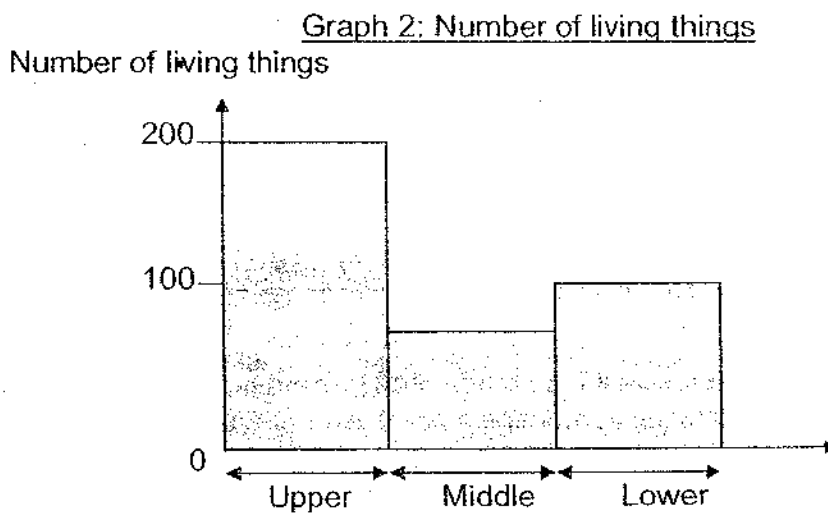
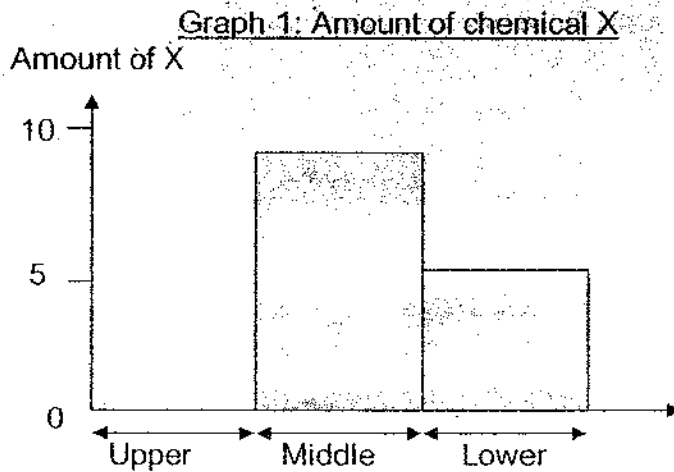
A eats E and C.

B is eaten by C and E.

Use the information above to help you complete the food web below. Write the correct letter, A, B, C and D in each circle. Letter E has been written for you. [2]

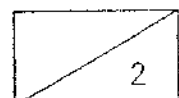


41. Ben collected a small sample of water from the upper, middle and lower parts of a river. He also counted the number of living things that lived in those parts of the river. He then tested the water for chemical X which could harm living things. The amount of chemical X is measured on a scale of 0 to 10. The reading "0" indicates that there is no chemical X and the reading "10" indicates that the amount of chemical X is the highest. The results of the study are shown in graphs 1 and 2.



(a) Which part of the river, the upper, middle or lower part, has the highest amount of chemical X? [1]

(b) What is the relationship between the number of living things in the river and the amount of chemical X in the river? [1]



42. Look at the picture below.



A Hawk

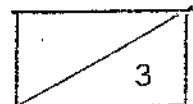
(a) The hawk is a predator. Name two adaptations of the hawk which allow it to succeed as a predator.

(i) \_\_\_\_\_ [1]

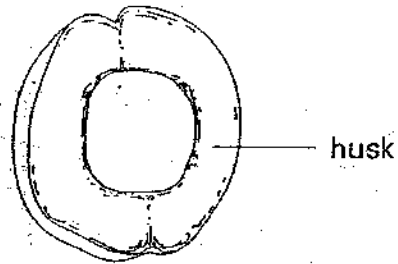
(ii) \_\_\_\_\_ [1]

(b) The hawk feeds on small mammals such as rabbits. Name one adaptation which enables the rabbit population to survive despite being prey to the hawk. [1]

\_\_\_\_\_  
\_\_\_\_\_



43. A coconut has a husk with a lot of air spaces.

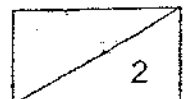


(a) How does this adaptation help the coconut survive better in its environment? [1]

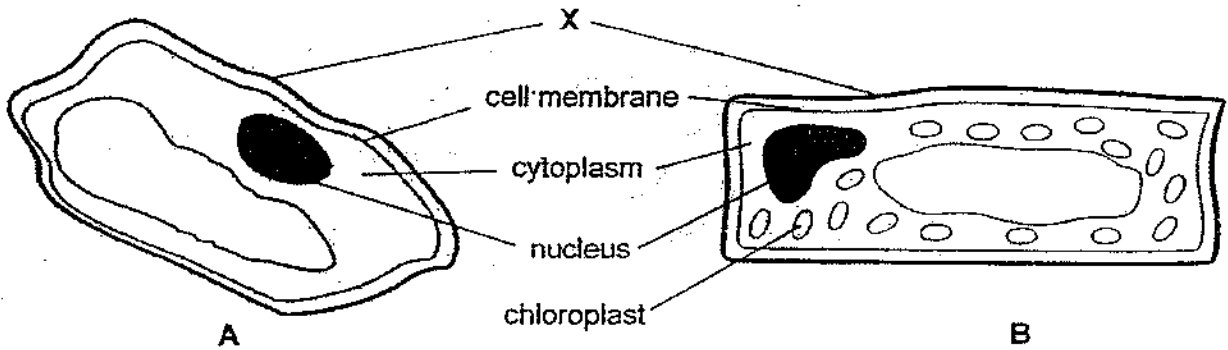
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(b) The hair of a polar bear helps it to trap a layer of air around its body. Explain how this adaptation helps the polar bear keep warm in its environment. [1]

---



44. Ray observed two different types of cells, A and B, from the same plant, as shown in the diagram below.



(a) What is the function of part X?

[1]

---

(b) Which part of the cell makes food for the plant?

[1]

---

(c) In which part of the plant are you likely to find cell A? Give a reason for your answer.

[1]

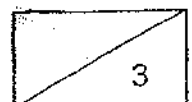
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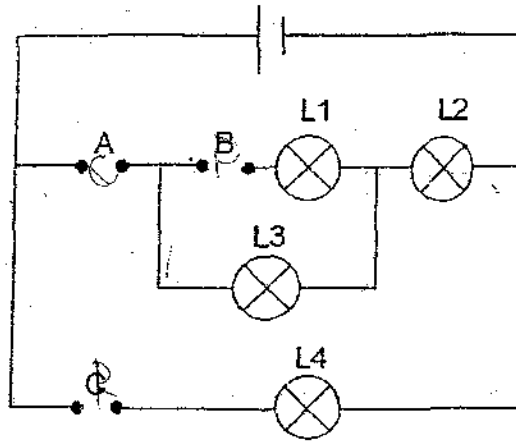
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45. Sean had three rods, P, Q and R, of unknown materials. He placed them in various positions, A, B and C, of the circuit shown below.



The results of the experiment are shown in the table below. When any of the lamps, L1, L2, L3 or L4, lit up during the experiment, a tick (✓) was placed in the box.

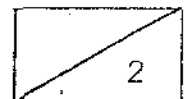
Positions where rods were placed			Lamp			
A	B	C	L1	L2	L3	L4
P	Q	R		✓	✓	✓

(a) Put a tick (✓) in the box to indicate which lamp, L1, L2, L3 or L4 will lit up when Sean changed the position of rods P, Q and R. [1]

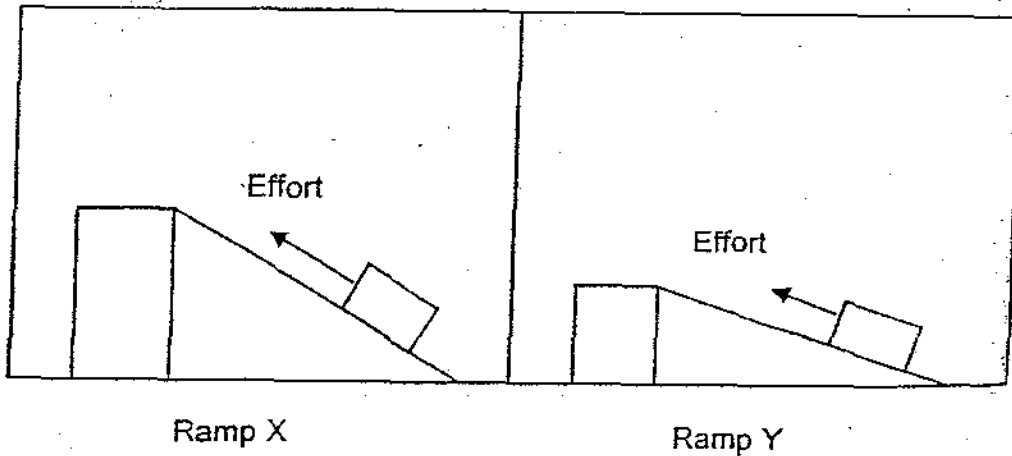
Positions where rods were placed			Lamp			
A	B	C	L1	L2	L3	L4
Q	P	R				

(b) State one property of Rod P. [1]

---



46. Mary carried out an experiment as shown below.



She pulled the same load up each of the ramps shown above. Then she measured and recorded the effort used each time.

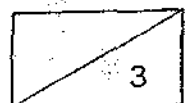
(a) What was Mary trying to find out?

[1]

(b) In order for Mary to carry out a fair test, she had to consider some variables that had to be kept the same or changed. Tick the appropriate boxes in the table below for each variable so that the experiment is a fair one.

[2]

Variables	Kept the same	Changed
Height of ramp	<input type="checkbox"/>	<input type="checkbox"/>
Surface of ramp	<input type="checkbox"/>	<input type="checkbox"/>
Mass of load	<input type="checkbox"/>	<input type="checkbox"/>
Length of ramp	<input type="checkbox"/>	<input type="checkbox"/>



# ANSWER SHEET

EXAM PAPER 2009

SCHOOL : AITONG PRIMARY SCHOOL

SUBJECT : PRIMARY 6 SCIENCE

TERM : SA 1

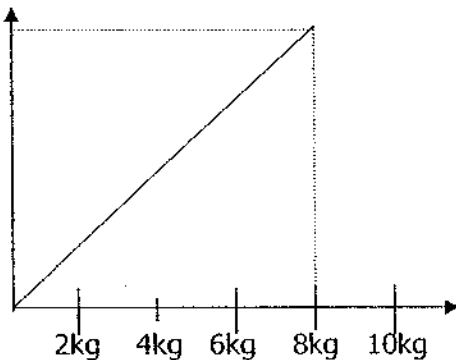
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
3	2	1	2	3	3	2	1	3	1	1	4	2	2	2	2	4

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

31) P: T Q: F R: T S: Not

32)a) 12cm

b)



33)a) At point A.

b) Point A is higher than point B, thus when the ball reached point B most of the energy is being converted to other types of energy.

c) Heat + sound energy → Gravitational potential energy.

**34)a)Garden soil section.**

**b)The earthworm prefers dark/warm/damp/moist places.**

**35)a)The aim of the experiment is to find out which food the mealworms are mostly attracted with.**

**b)The mealworm prefer bread most.**

**36)a)It must be damp and dark.**

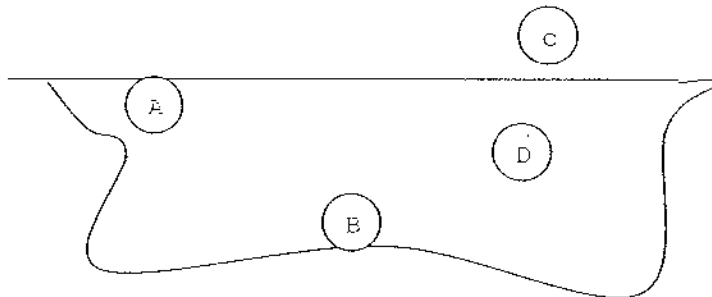
**b)The population of the earthworms will decrease.**

**c)When there is an increase in the ant population means ants will consume more dead leaves leaving very litter for the earthworm.**

**37)a)Container Q.**

**b)This is because when the plant received sunlight in the day, it will absorb the sunlight and photosynthesis, when this happen, the plant will take the carbon dioxide and give out oxygen.**

**38)a)**

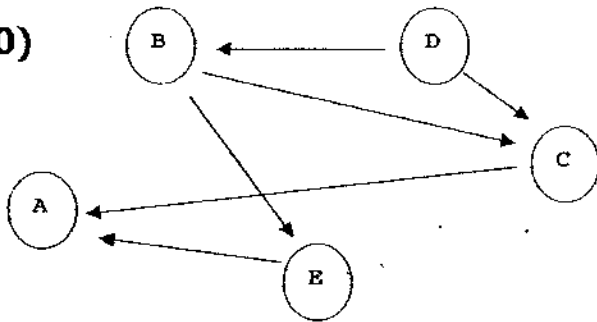


**b) has swollen leaf stalks.**

**39)a)Set-up B guppies would live longest.**

**b)This is because there is some plants in the set-up B, so when the plant is exposed to the sunlight, the plant will photosynthesis and take in carbon dioxide and give out oxygen for the fishes to take in.**

40)



41)a)The middle part of the river.

b)When the amount of chemical X being put in the most, the least the number of living things.

42)a)i)Large broad wings to enable it to fly fast to catch it prey.

ii)It is able to tear it prey a part.

b)The rabbits are able to run away from its predator very fast.

43)a)The coconut husk help the fruit to float on water and being dispersed around the environment.

b)As air is a poor conductor of heat, it helps to trap heat produced by polar bear around its body and thus able to kep polar bear warm.

44)a)Part X help to give the cell its shape.

b)Chloroplast help the cell to make food.

c)Since cell A does not contain chloroplast it cannot be found in the leaves. It should be found in the leaves. There are no chloroplast that trap sunlight in cell A so it should be in the plants roots.

45)a) ✓ ✓ ✓ ✓

b)Rod P is a conductor of electricity.

46)a)Mary was trying find out if the height of the ramp affects the effort used to pull the box.

b) ✓

✓

✓

✓