



AI TONG SCHOOL

2013 SEMESTRAL ASSESSMENT (1)

PRIMARY FOUR SCIENCE

DURATION: 1hr 45 min

DATE: 17 May 2013

INSTRUCTIONS

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

Name: _____ ()

Class: Primary 4 _____

Parent's Signature: _____

Date: _____

Section A	60
Section B	40
Total	100

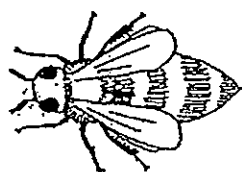
Section A (30 x 2 marks)

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 diagrams below show two animals, X and Y.



Animal X



Animal Y

Based on the diagrams above, which of the following statements correctly describe both animals?

- A Animal Y has wings but Animal X does not have.
- B Both animals have a pair of feelers.
- C Animal X has 3 body parts but Animal Y has 2 body parts.
- D Both animals have legs.

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

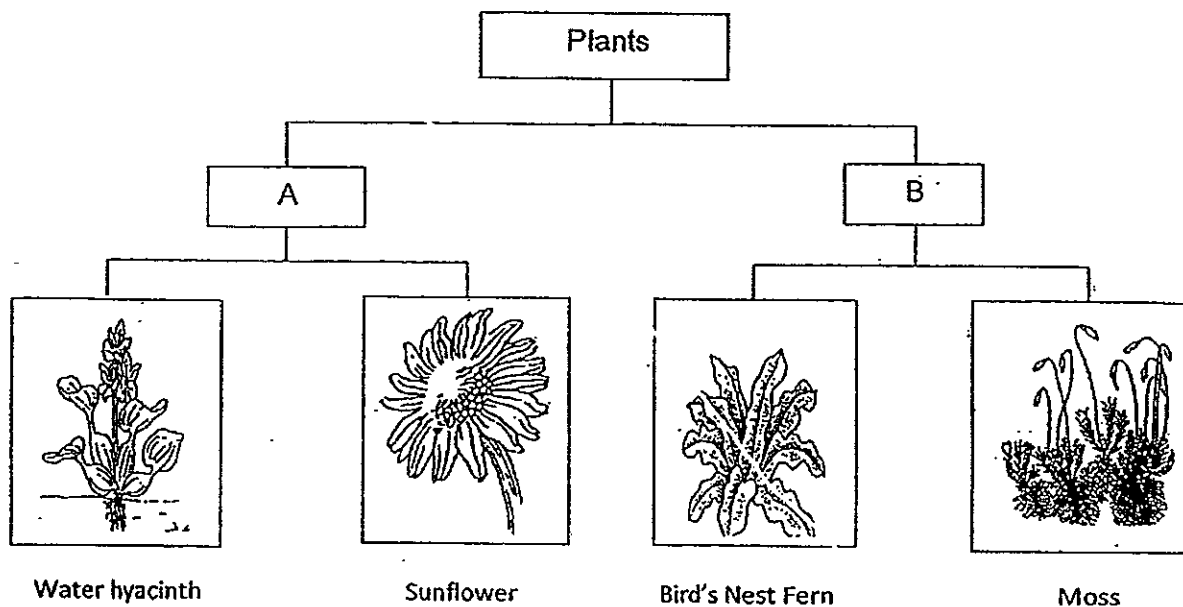
2. When Daniel tried to catch a bird, it flew away.

Which of the following characteristics of living things explain(s) this behaviour?

- A Living things reproduce.
- B Living things respond to changes around them.
- C Living things need air, water and food to stay alive.

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

3. Study the classification chart below.



Which of the following are suitable headings for A and B?

	A	B
(1)	Plants	Fungi
(2)	Non-poisonous	Poisonous
(3)	Live in water	Live on land
(4)	Flowering Plants	Non-Flowering Plants

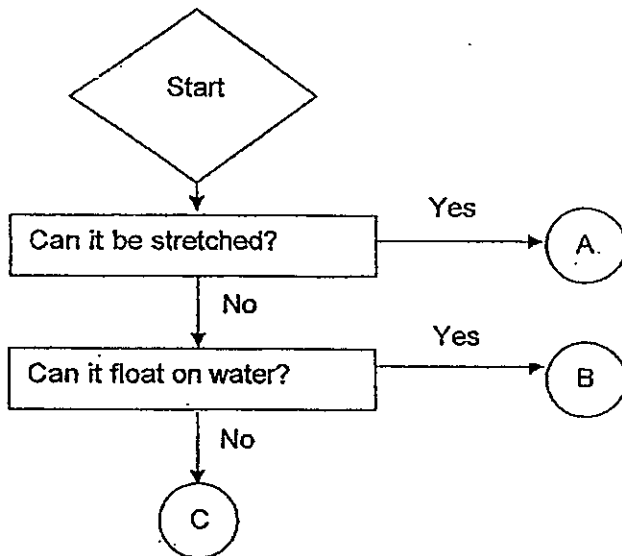
4. John wrote a few statements about fungi in his journal.

- A Fungi reproduce by spores.
- B Fungi need light to grow.
- C Fungi feed on decaying matter.
- D Fungi grow in dry places.

Which of the above statements are true?

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

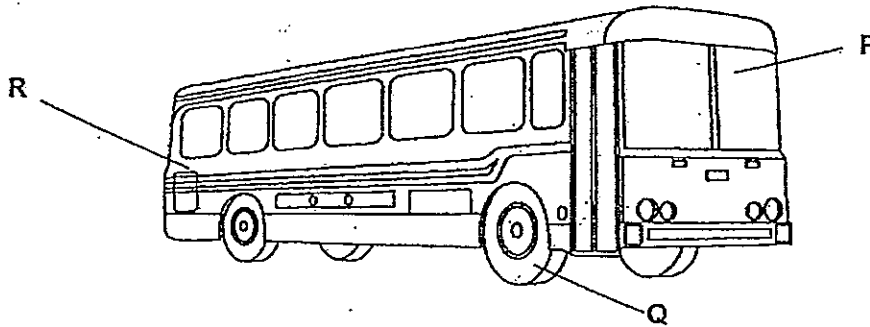
5. The flow chart below shows the characteristics of objects A, B and C.



Which of the following could objects A, B and C be?

	A	B	C
(1)	Rubber band	Styrofoam	Coin
(2)	Rubber band	Eraser	Styrofoam
(3)	Eraser	Styrofoam	Rubber band
(4)	Coin	Rubber band	Styrofoam

6. The diagram below shows a bus.



Which materials are most likely used to make the parts labelled P, Q and R?

	P	Q	R
(1)	Glass	Rubber	Wood
(2)	Metal	Wood	Plastic
(3)	Glass	Rubber	Metal
(4)	Plastic	Metal	Glass

7. Alice compared the hardness of four materials A, B, C and D, by scratching them with different rods. She recorded her observations in the table below, using a tick (✓) to indicate the presence of marks on the materials.

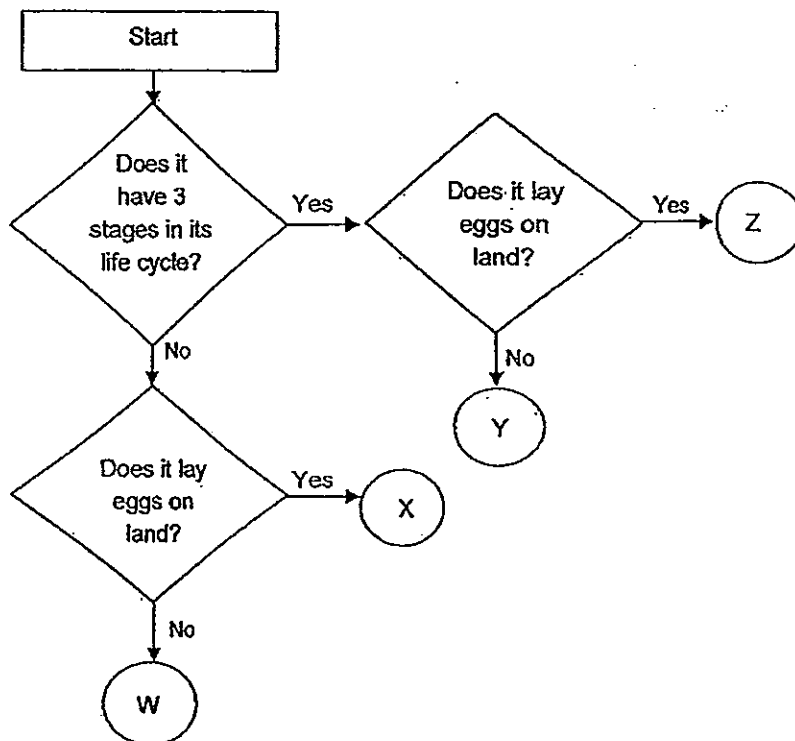
Material	Presence of scratch marks made by		
	iron rod	Plastic rod	Wooden rod
A	✓	✓	
B			
C	✓	✓	✓
D	✓		

Which of the following correctly shows the four materials arranged in increasing order of hardness?

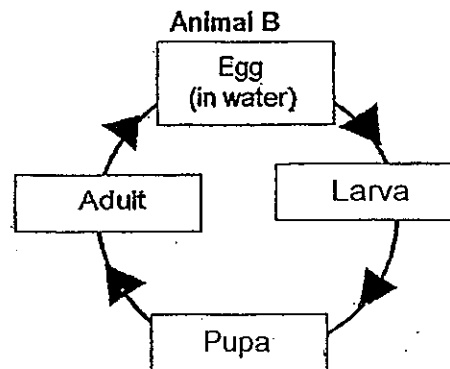
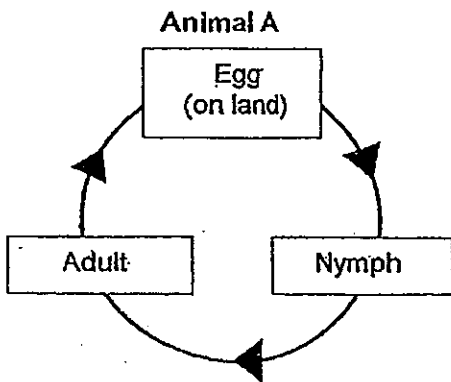
Softest \longrightarrow Hardest

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

8. Study the flow chart below.



The diagrams below show the life cycle of animals A and B.



Based on the flow chart, which of the following could animals A and B be?

	A	B
(1)	W	Z
(2)	X	Y
(3)	Y	X
(4)	Z	W

9. Nancy studied animals, P and Q and made some observations. A tick (✓) means that the animal has the characteristic.

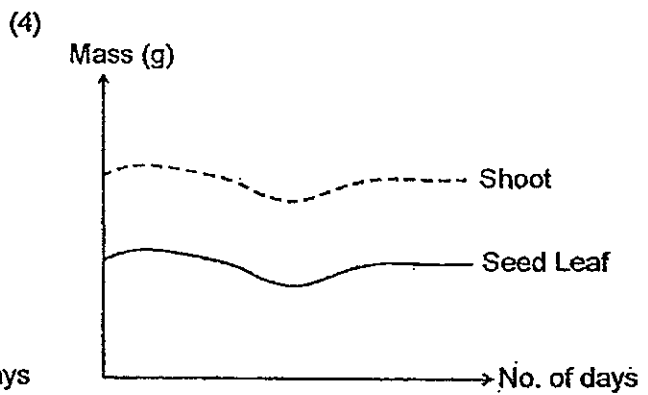
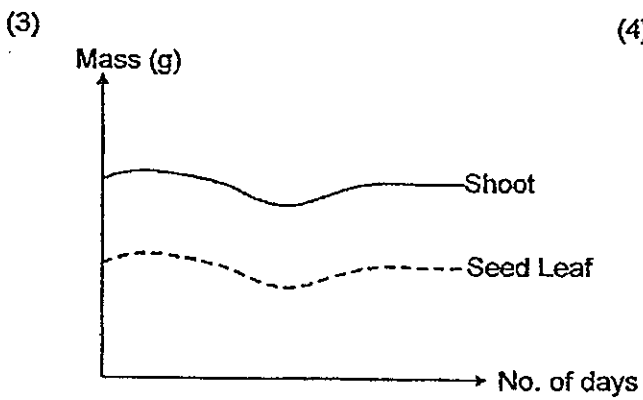
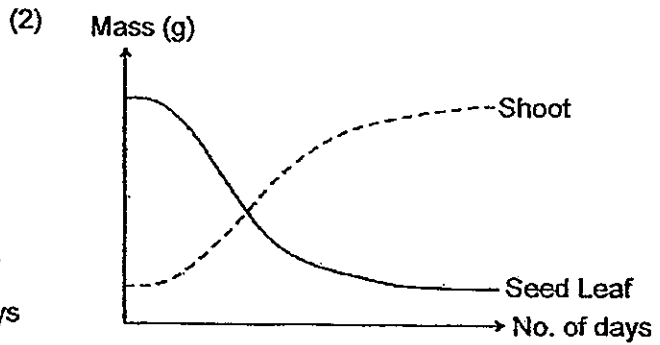
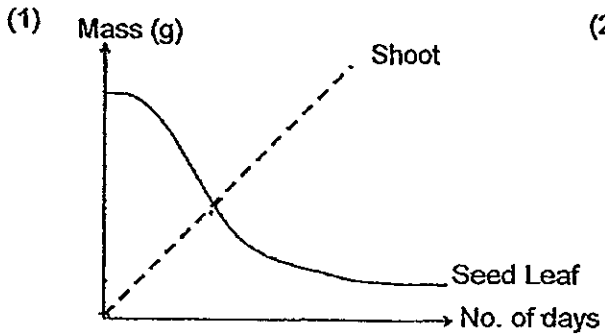
Observation	Animal P	Animal Q
It has wings.	✓	✓
Eggs are laid in water.	✓	
There are 3 stages in its life cycle.		✓

Which of the following represents animals P and Q?

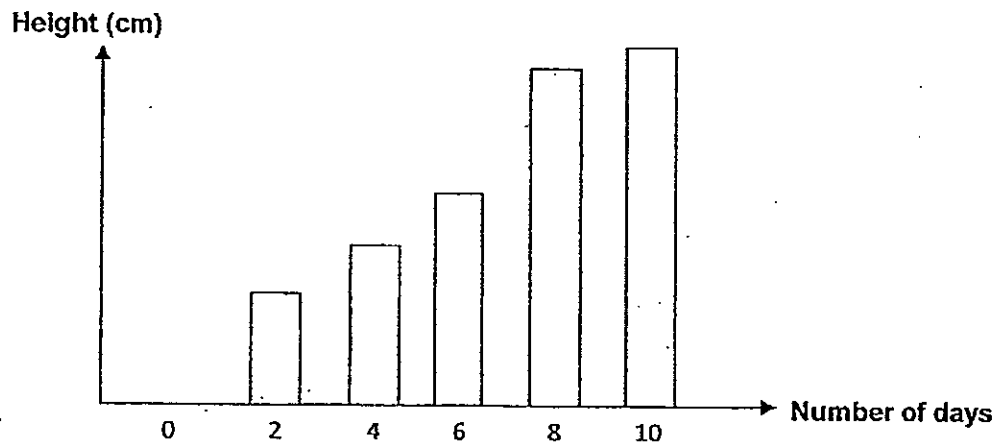
	Animal P	Animal Q
(1)	Frog	Cockroach
(2)	Mosquito	Frog
(3)	Butterfly	Mosquito
(4)	Mosquito	Cockroach

10. Ben carried out an experiment on a seed germinating into a seedling. He observed and recorded the mass of the seed leaf and the shoot of the seedling over several days.

Which of the following graphs shows the changes in the mass of the seed leaf and shoot of the seedling during the experiment?



11. Ali placed a green bean in a container with some wet cotton wool and watered the seedling daily. The graph below shows the growth of the seedling for the next 10 days when it was still in the container.



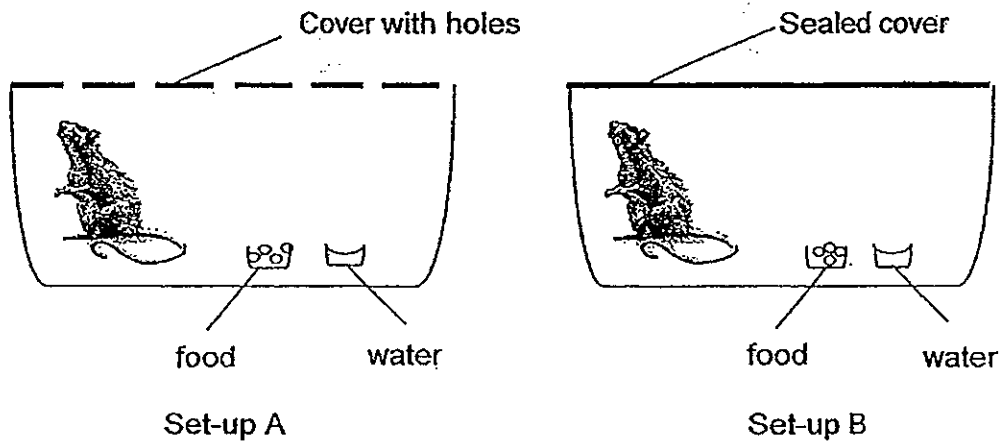
Based on the graph above, during which period did the seedling grow at the fastest rate?

- (1) From Day 2 to 4
 - (2) From Day 4 to 7
 - (3) From Day 6 to 8
 - (4) From Day 8 to 10
12. Which of the following is not a matter?

- A Light
- B Wind
- C Shadow
- D Rain

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

13. Kumar conducted an experiment as shown below.



After one week, he observed that the rat in Set-up B had died while the other in Set-up A was still alive.

What can Kumar conclude from this experiment?

- (1) Living things can reproduce.
- (2) Living things need air to survive.
- (3) Living things can move on its own.
- (4) Living things need food and water to survive.

14. Jean wanted to find out if the type of soil would affect the growth of balsam plants. She planted 3 balsam plants of similar size in three pots, X, Y and Z. The three plants were placed in the garden.
The table below provides some information on the three pots.

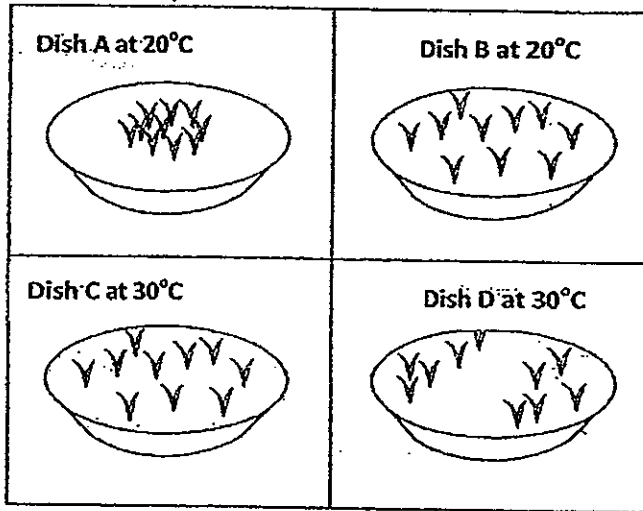
Pot	X	Y	Z
Material of pot	plastic	plastic	plastic
Type of soil	garden soil	clay	sand
Size of pot	big	small	medium
Amount of water given daily	200 ml	200 ml	200 ml

Jean's teacher told her that her experiment was not a fair test.
Why was the experiment not a fair test?

- A The size of the pot was different.
- B The material of the pot is the same.
- C The type of soil in each pot was different.
- D The three pots were given the same amount of water.

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

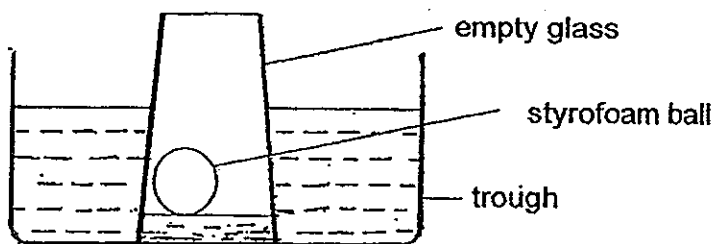
15. Gary wants to find out if temperature affects the growth of plants.



Which 2 dishes should Gary use to conduct a fair test?

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

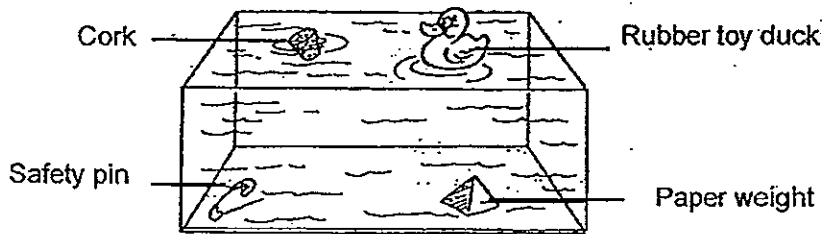
16. Kim lowered an empty glass with a small styrofoam ball into a container of water until it touched the bottom of the container. She observed that the water level inside the glass is lower than the water level outside. The styrofoam ball floated on the water as shown below.



Which of the following is the reason for the difference in the water level inside and outside the glass?

- (1) The air trapped in the glass occupied space.
- (2) The styrofoam ball occupied most of the space.
- (3) The styrofoam ball absorbed the water in the glass.
- (4) The weight of the styrofoam ball forced the water out from the glass.

17. Study the things in the diagram below.



Based on the diagram above, which of the following is the best way to classify the objects into group P and group Q?

	Group P	Group Q
(1)	Will sink	Will float
(2)	Easily broken	Not easily broken
(3)	Scratch easily	Does not scratch easily
(4)	Stretchable	Not stretchable

18. The table below shows the properties of four materials.

Material	Is it strong?	Is it hard?	Is it flexible?
A	Yes	No	Yes
B	Yes	Yes	No
C	No	Yes	No
D	Yes	No	Yes

Which of the following materials is suitable to make a steel key?

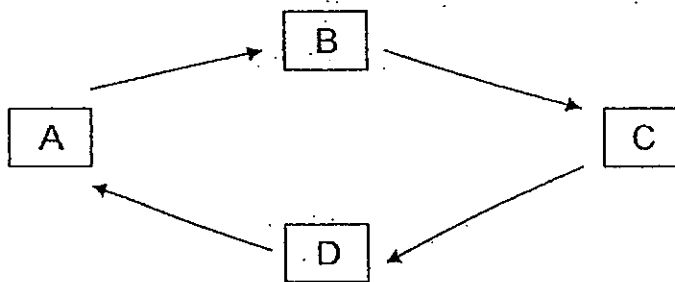
- (1) A
- (2) B
- (3) C
- (4) D

19. When food is in our mouth, the tongue is used to _____.

- A digest the food slowly
- B roll the food into a ball
- C mix the food with saliva to make it soft
- D move the food to both sides of the mouth for grinding

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

20. Four children are having a discussion on a diagram of the life cycle of a butterfly. The children were told that B represents the adult stage of the butterfly.



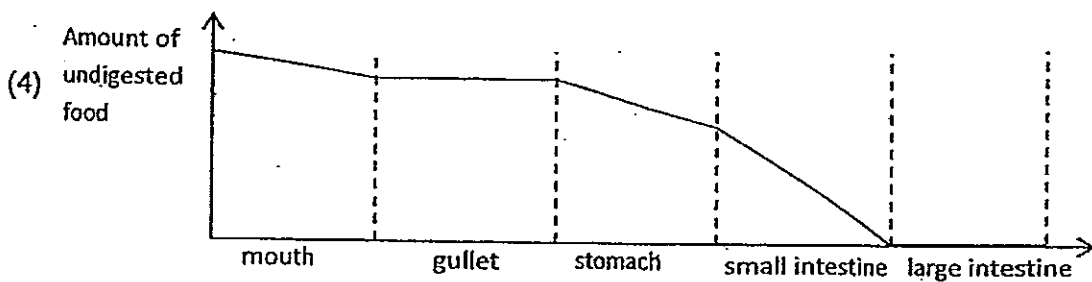
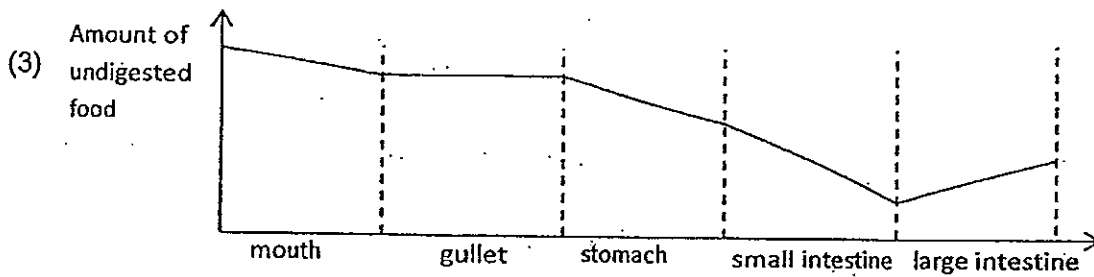
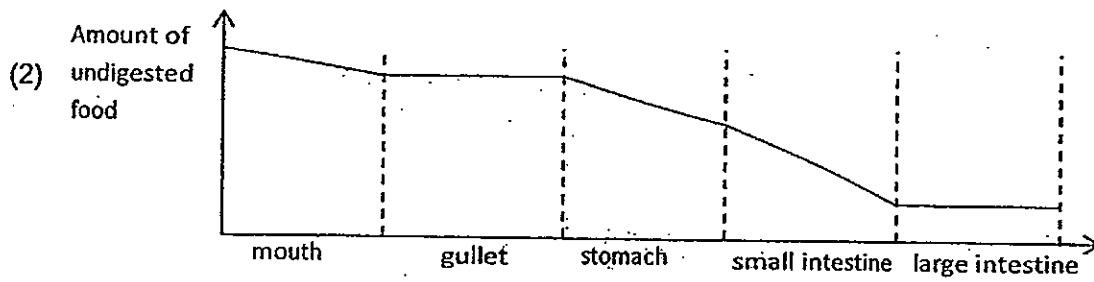
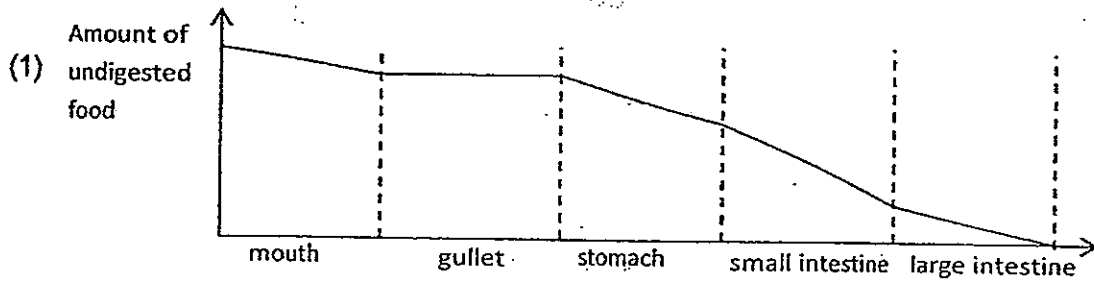
They then made a statement each about the butterfly at the various stages.

- Adam : At stage A, it does not eat and does not move around.
- Ben : At stage B, it does not move around at all.
- Cathy : At stage C, it moults several times as it grows.
- David : At stage D, it spends most of its time eating.

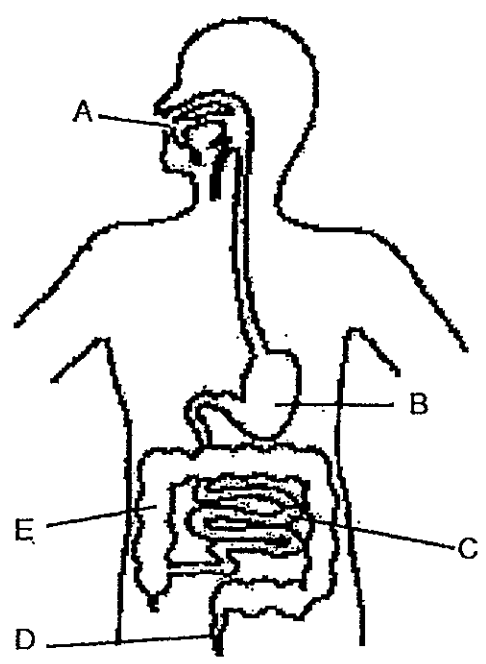
Which of the children made the correct statements?

- 1) Adam and David only
- 2) Ben and Cathy only
- 3) Cathy and David only
- 4) Adam and Cathy only

21. Which of the following graphs correctly shows the amount of undigested food in the digestive system as food travelled from the mouth to the large intestine?



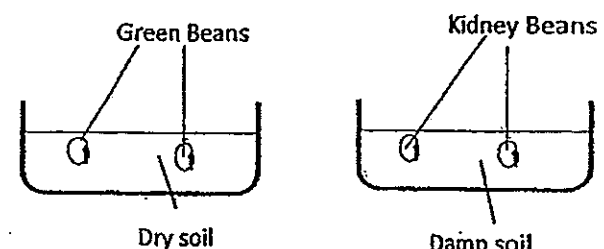
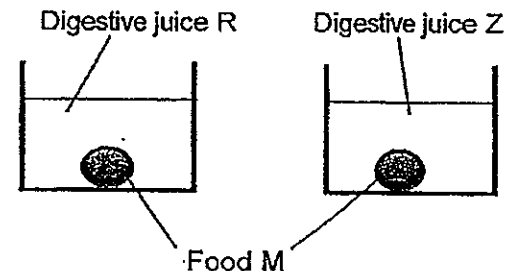
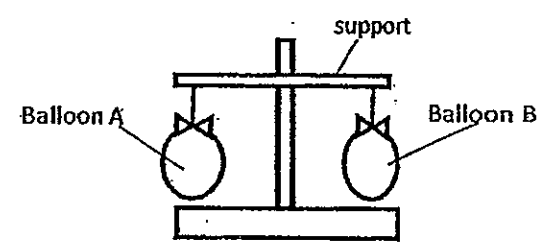
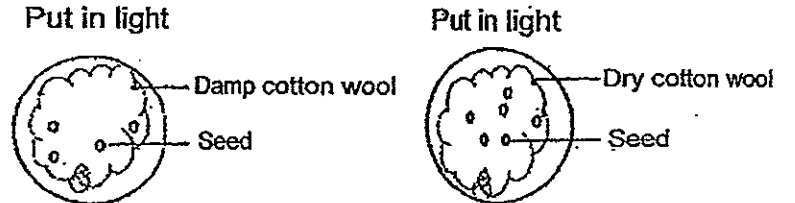
22. The diagram below shows the digestive system of a human body.



Which parts (A, B, C, D or E) of the system does not contain digestive juice?

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

23. The following table gives the aim of four different experiments and diagrams to show the set-ups for each experiment. Which of the experiments have been correctly carried out?

	Aim of Experiment
(1)	<p>To find out if water is needed for germination</p> 
(2)	<p>To find out if types of digestive juices affect the rate of digestion</p> 
(3)	<p>To find out if air occupies space</p> 
(4)	<p>To find out if light is needed for germination</p> 

24. Study the diagrams below. Which of the following diagrams shows the correct path of light?

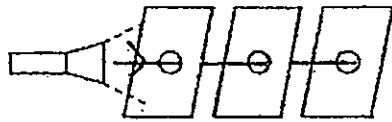
(1)



(2)



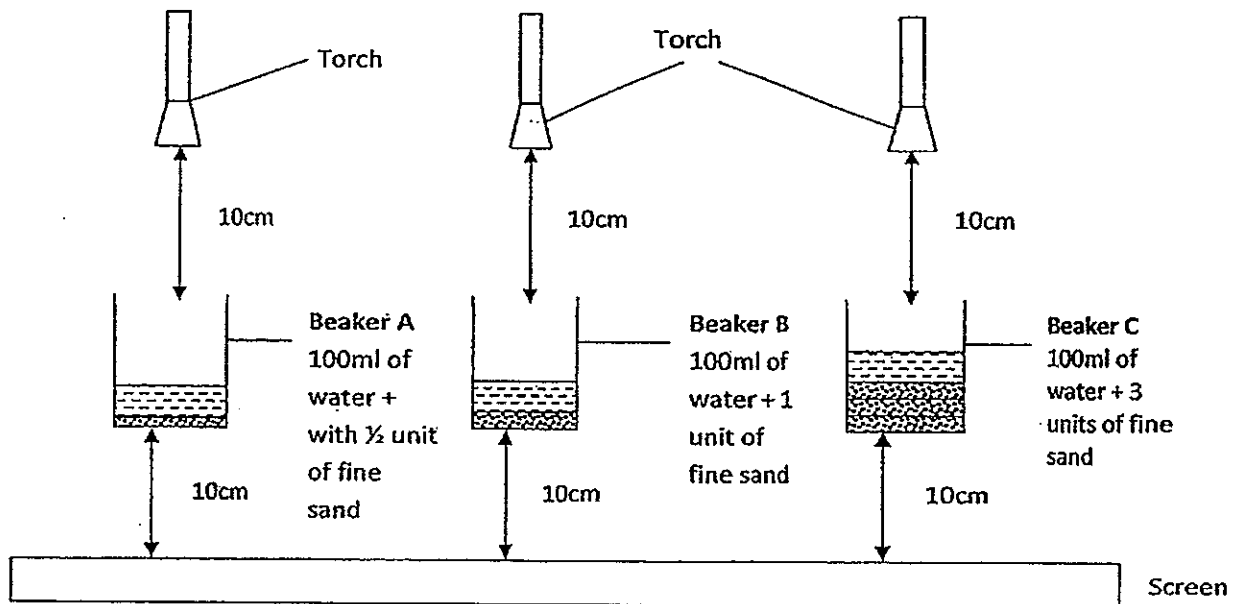
(3)



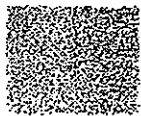
(4)



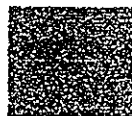
25. Kevin added different amounts of sand into three beakers A, B and C, each containing 100ml of water. He then shone a torch through the water as shown in the diagram below.



When he switched on the torch, shadows of different darkness were formed as shown below.



Beaker A



Beaker B

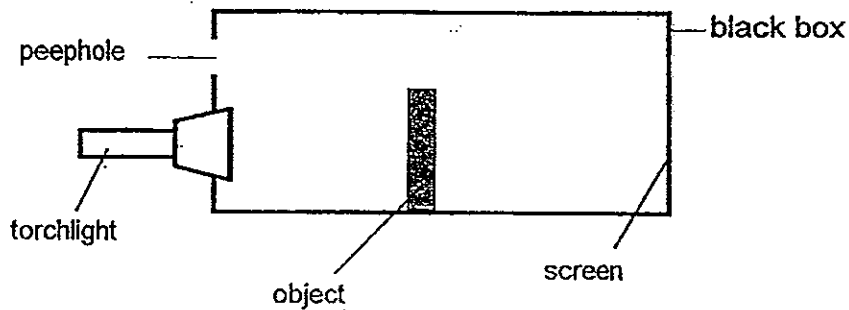


Beaker C

Based on the shadows obtained above, what can Kevin conclude about the relationship between the amount of sand and the darkness of the shadow cast?

- (1) The greater the amount of sand added, the darker the shadow cast.
- (2) The greater the amount of sand added, the lighter the shadow cast.
- (3) The lesser the amount of sand added, the darker the shadow cast.
- (4) The amount of sand added has no effect on the darkness of the shadow cast.

26 The diagram below shows a black box with an opaque object placed inside.

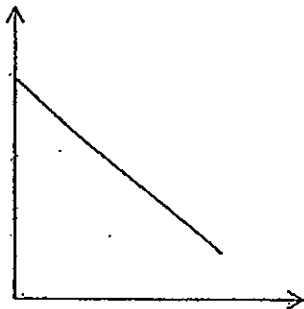


Peter turned the torchlight on and looked through the peephole. He saw that the shadow of the object was cast on the screen.

He then repeated the experiment with torches of higher light intensity.

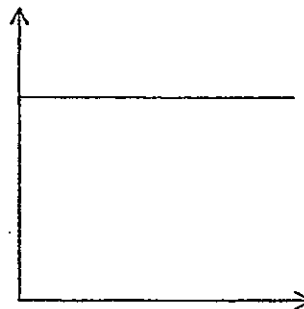
Which of the following graphs below shows the correct relationship between the intensity of light of the torch and the darkness of the shadow of the object cast on the screen?

(1) Darkness of shadow



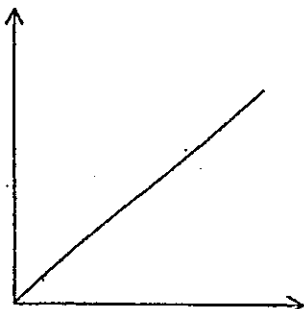
Intensity of light

(2) Darkness of shadow



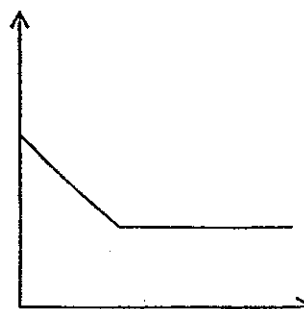
Intensity of light

(3) Darkness of shadow



Intensity of light

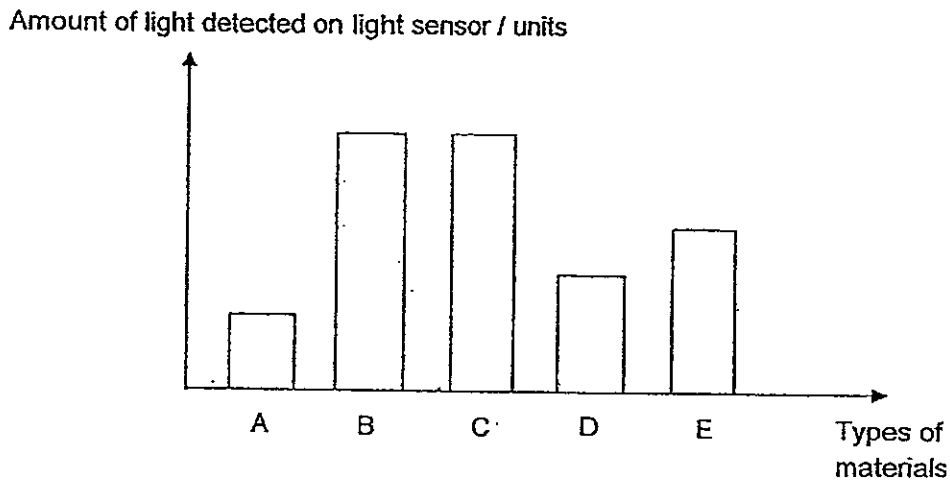
(4) Darkness of shadow



Intensity of light

For Questions 27 and 28, refer to the graph below.

Pauline used a torchlight and a light sensor to measure the amount of light that passed through 5 different materials. She recorded and plotted the results in the graph below.



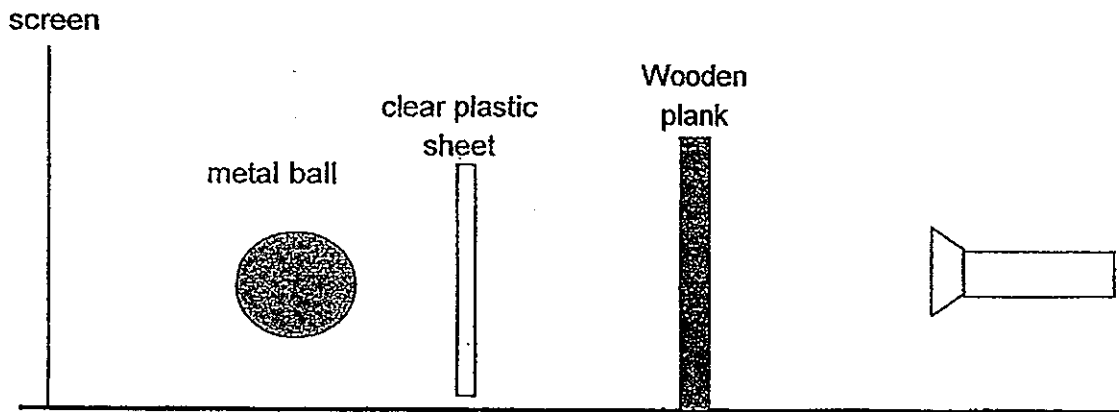
27. Based on the graph above, which of the following is a correct conclusion?

- (1) Material D forms a darker shadow than material A.
- (2) Material B forms a darker shadow than material D.
- (3) Material B forms a lighter shadow than material E.
- (4) Material D forms a lighter shadow than material E.

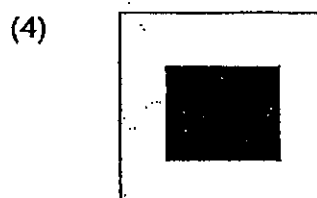
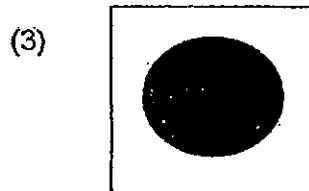
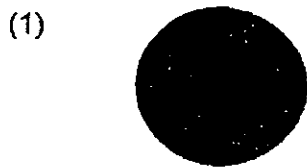
28. Based on the graph, which object blocks the most amount of light?

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

29. Peter shines a torch at a metal ball, a piece of clear plastic sheet and a wooden plank as shown below.

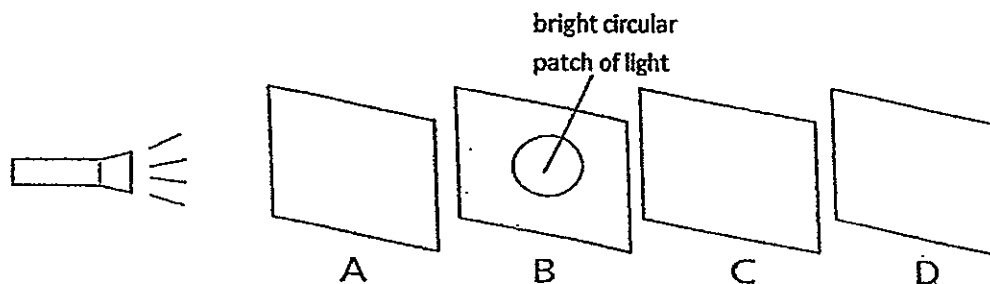


Which one of the following shows the shadow that will be cast on the screen?



30. Henry conducted an experiment using four pieces of different materials; A, B, C and D to find out which sheet would allow light to pass through. He arranged the four sheets in a straight line as shown below.

When he switched on the torch, a bright circular patch of light was seen on sheet B only.



Which of the following best describes the properties of materials A; B, C and D?

	Allows light to pass through	Does not allow light to pass through	Not possible to tell
(1)	A	B	C and D
(2)	B	C and D	A
(3)	A and D	B	C
(4)	B and D	C	A

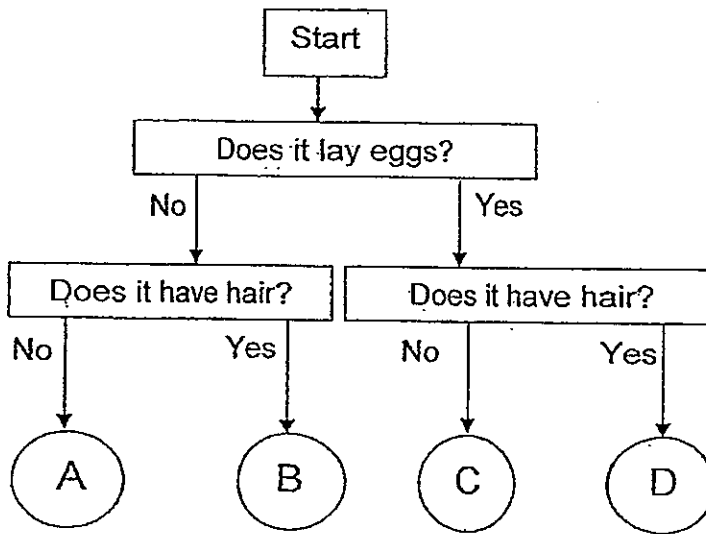
Name: _____ ()

Class P4 ()

Section B: 40 marks

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

31. The flow chart below shows the characteristics of 4 animals A, B, C and D.

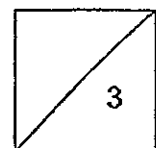


(a) Which letters A, B, C or D best represents the following animals? [1]

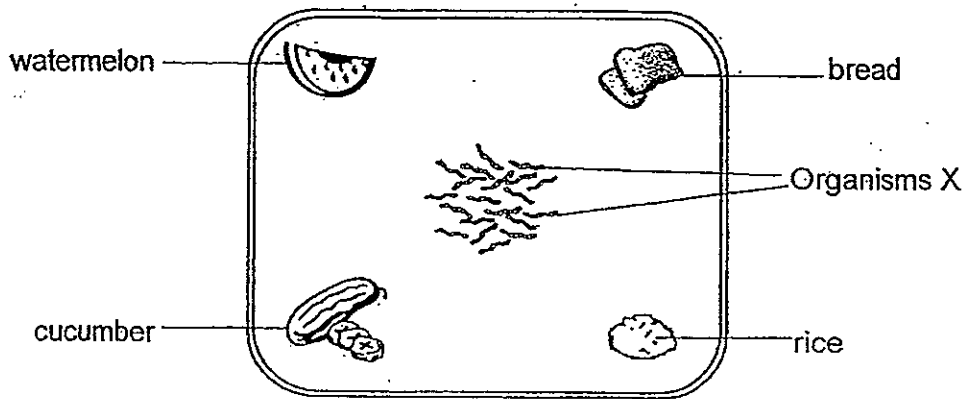
i) Tiger: _____ ii) Goldfish: _____

(b) State one difference between animals B and C. [1]

(c) Based on the flow chart, state all the characteristics of animal D. [1]



32. Siva conducted an experiment with 20 Organism X. The organisms 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.

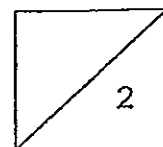


After a while, the number of organisms at each corner was counted. The results were recorded in the table below.

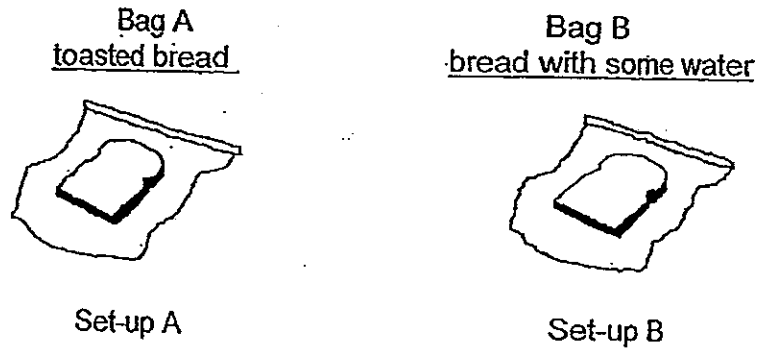
Type of food	Watermelon	Bread	Rice	Cucumber
Number of Organism X	5	13	0	2

- (a) Based on the above experiment, what can Siva conclude? [1]

- (b) How does placing the organisms at the centre of the tray at the start of the experiment make this a fair test? [1]



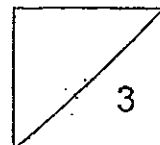
33. Michael wanted to conduct a test. He used two pieces of bread. He toasted one of them. Next, he put each of the bread in sealed bags, A and B, as shown in set-ups A and B below.



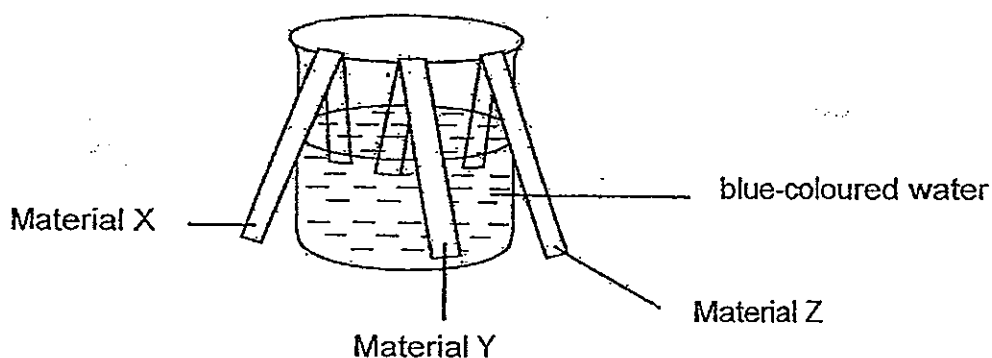
- (a) Write down Michael's observation of the bread in bags A and B after a week. [2]

	Bread in Bag A	Bread in Bag B
Observation after a week		

- (b) Explain the observation for the bread in Bag B. [1]



34. Three equal strips made of different materials, X, Y and Z, were cut and dipped into a beaker containing blue-coloured water as shown below.

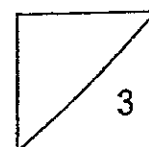


After 15 minutes, the length of the strip stained blue was measured for all the materials and recorded below.

Material	X	Y	Z
Length of strip stained blue colour	10 cm	8 cm	0 cm

- (a) Based on the table above, which material, X, Y or Z, is the most absorbent? Explain your answer. [1]

- (b) If a fourth strip of material taken from a raincoat was dipped into the beaker of blue coloured water, predict the length of the strip that would be stained blue colour after 15 minutes. Explain your answer. [2]

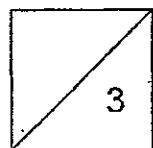


35. The table below shows information on animals P, Q, R and S.

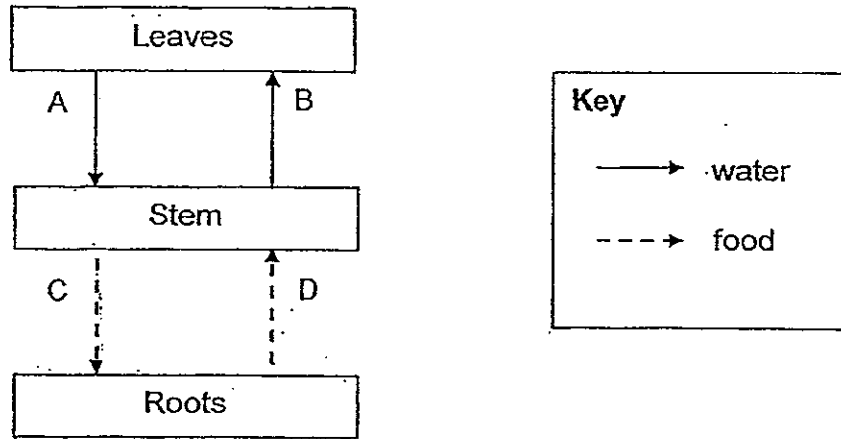
Animal	P	Q	R	S
What is the number of eggs laid at a time?	6 million	50 – 200	3 – 6	1-2
Where are the eggs likely to be found?	Water	Land	Land	Land
Do the parents take care of the eggs?	No	No	Yes	Yes
Are there animals feeding on the eggs?	Yes	Yes	Yes	Yes

(a) Based on the table, what is the relationship between the number of eggs laid by an animal and the amount of care given to the eggs? [1]

(b) The table shows that the animals lay different number of eggs at a time. How does laying many eggs at a time help animal P in their survival? [2]



36. The diagram below shows the movement of food and water in a plant.



Which two arrows A, B, C or D, have been wrongly drawn?
Explain your answer.

[2]

37. Jamie carried out an experiment using similar Plant X as shown in set-ups A and B. Plant X in set-up B has its roots wrapped in a plastic bag before placing it into the beaker of water. Both beakers contain same amount of water. The water levels in beakers A and B were measured 2 days later.

Diagram 1: Start of experiment

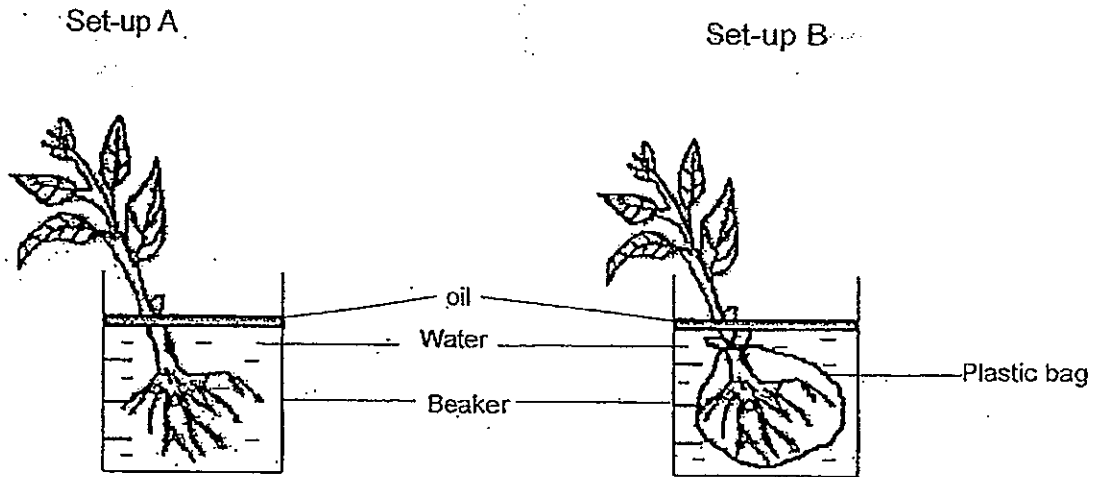
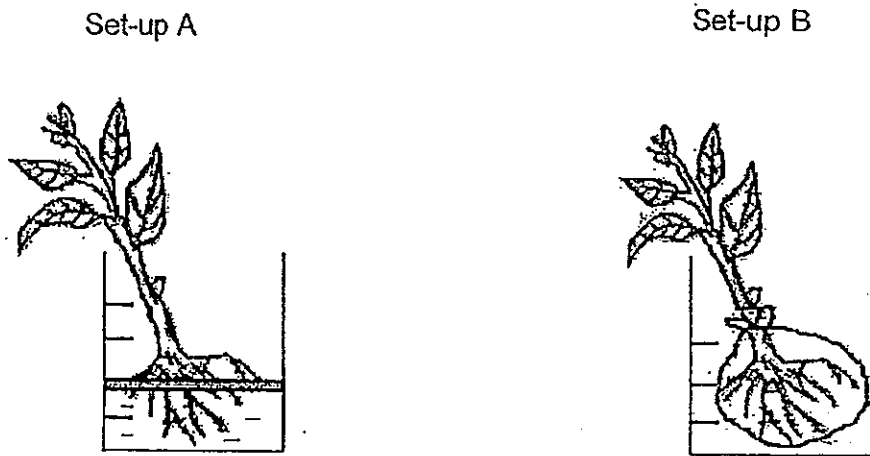


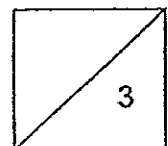
Diagram 2: 2 days later



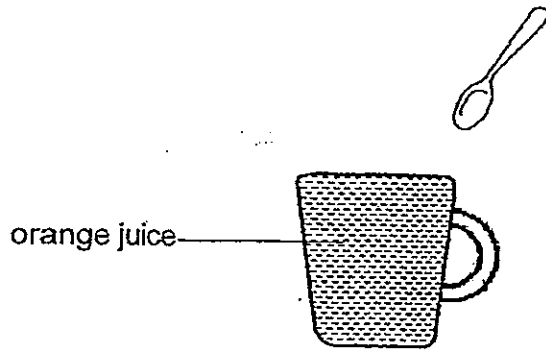
- (a) On diagram 2 above, draw what the water level in set-up B would look like 2 days later. [1]

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

- (c) What do you think was the aim of Jamie's experiment? [1]



38. Russell had a cup that was filled to the brim with orange juice as shown.

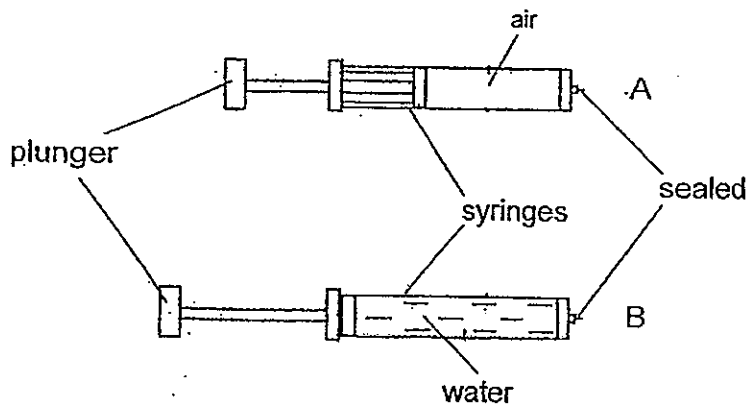


He wanted to place a spoon into the cup to stir the juice. However, his mother told him not to as the juice would overflow.

Explain why the juice would overflow if Russell put the spoon in.

[2]

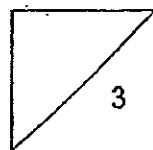
39. The diagrams below show 2 syringes, A and B. Syringe A is filled with air and syringe B is filled with water.



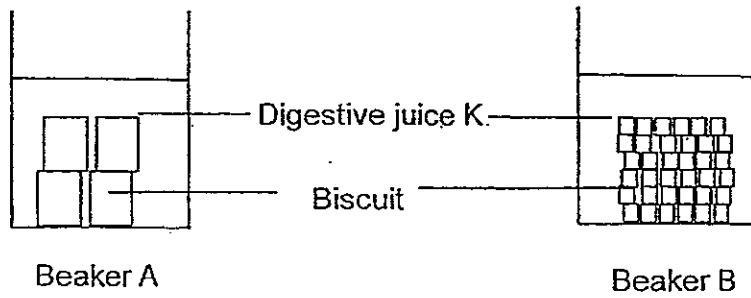
Peter pushed the plunger of syringe A and found that it could be pushed in but plunger of syringe B could not be pushed in at all.

What does the experiment show about the properties of air and water?

[1]

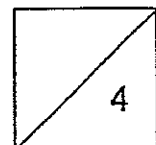
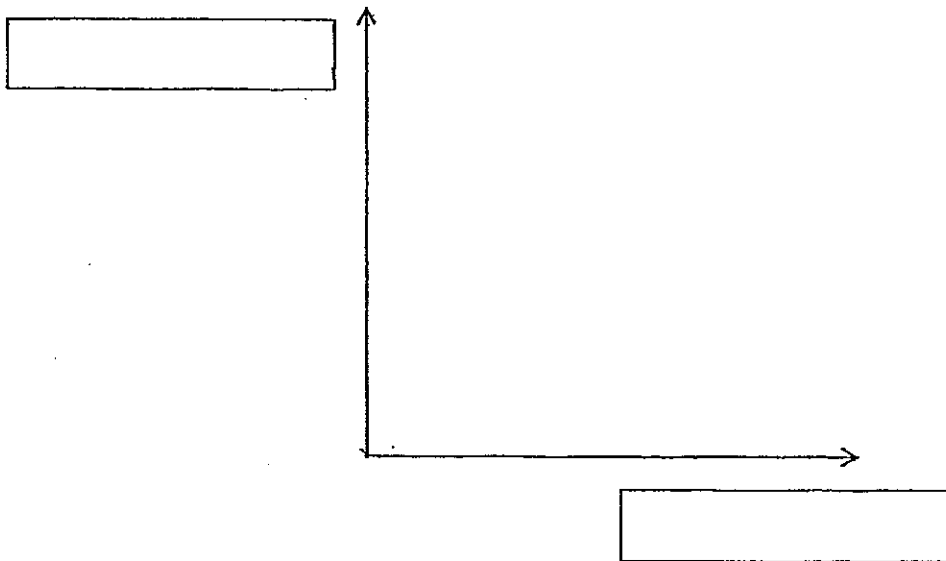


40. Tom conducted an investigation to find out if the size of food particles affects the rate of digestion. He set up 2 beakers, A and B, containing the same amount of biscuit but each biscuit was cut into pieces of different sizes. He then poured the same amount of digestive juice K into each beaker.

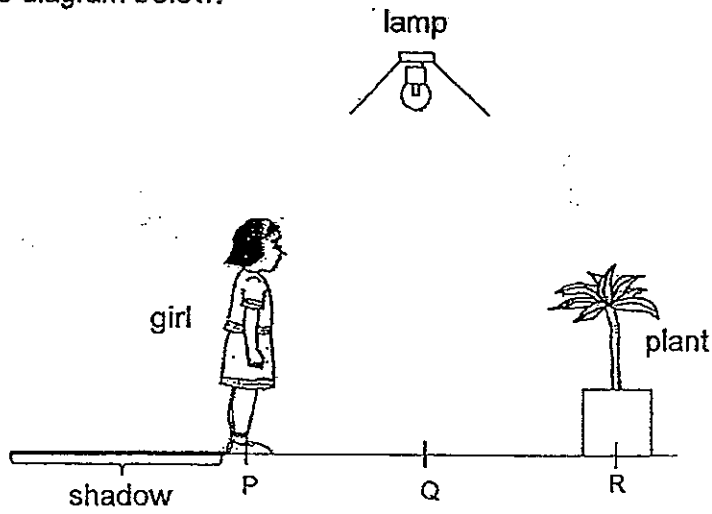


- (a) In which beaker, A or B, would the biscuit be digested first? Explain your answer. [2]

- (b) In the space below, draw a line graph to show the relationship between the size of biscuit pieces and the rate of digestion. Label the axes. [2]



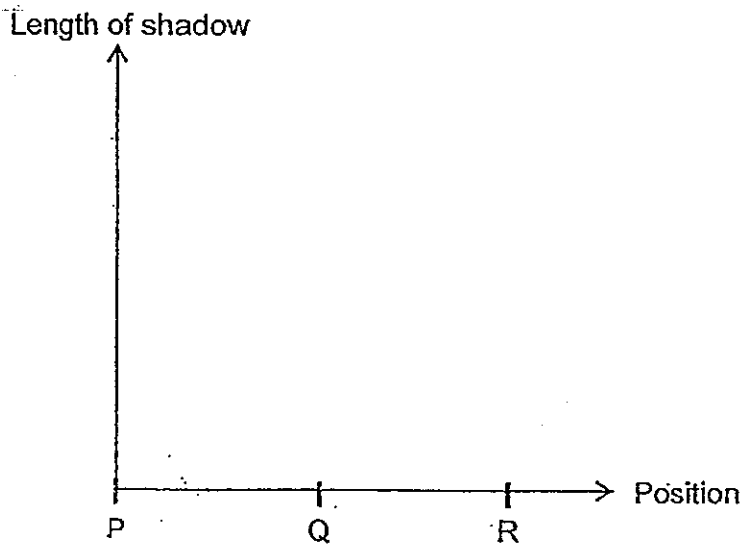
41. Study the diagram below.



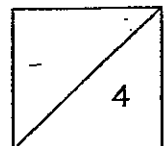
(a) Draw the path of light that makes it possible for the girl to see the plant. [1]

(b) The girl casts a shadow behind her as she stands at point P. [1]

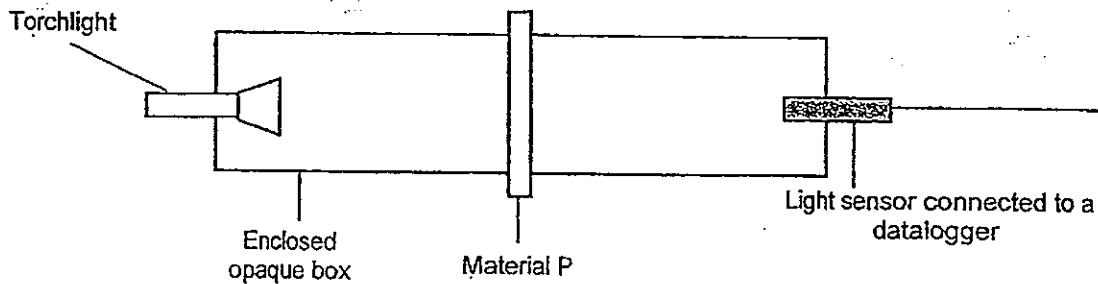
On the graph below, draw the length of her shadow as she walks from point P to R.



(c) What are the two properties of light that enable shadows to form? [2]



42. Joseph wanted to find out the degree of transparency to light of three materials, P, Q, and R. He had each material cut into a rectangular shape and made sure each piece was of equal thickness and size. He set up an experiment as shown in the diagram below. Material P was placed between the torch and light sensor which was connected to a datalogger that will record the amount of light passing through material P.

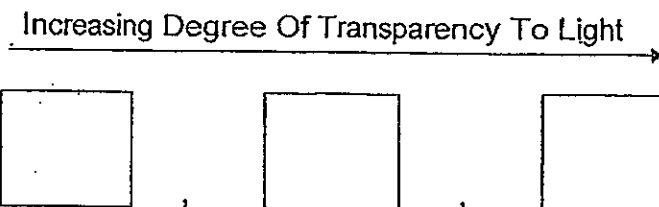


The experiment was repeated with materials Q and R. The amount of light that passed through each material was recorded in the table below.

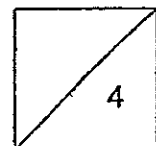
Materials Tested	Datalogger Reading (lux)
P	1000
Q	600
R	0

- (a) What is the purpose of the enclosed opaque box? [1]

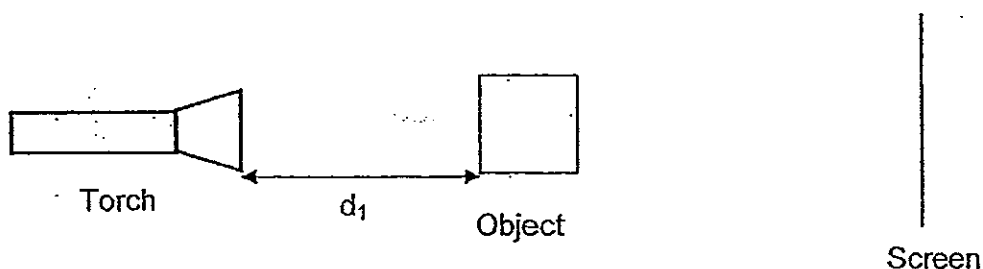
- (b) Arrange the degree of transparency to light of materials, P, Q and R, starting with the least transparent. Write your answers in the boxes below. [1]



- (c) Joseph wants to choose a material to make a door for his bathroom. Which material, P, Q or R, should Joseph choose to make the door for his bathroom? Explain your choice. [2]



43. Fiona prepared the set up below and conducted an experiment in a dark room. She placed the object at various distances, d_1 . d_1 is the distance between the torch and object.



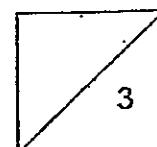
The height of shadow cast on the screen was measured when the torch was switched on. She recorded her results in the table below.

Distance between torch and object, d_1 , (cm)	50	140	160
Height of shadow cast (cm)	85	50	35

- (a) List down 1 important variable that must be kept constant in this experiment. [1]

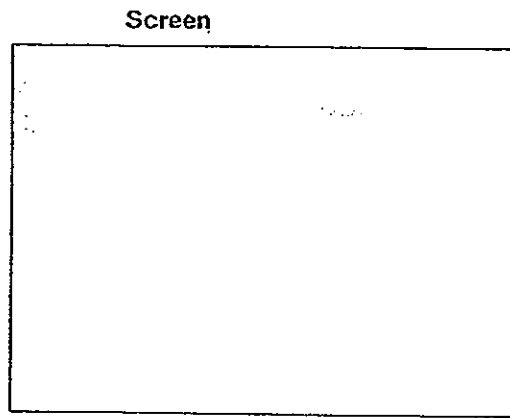
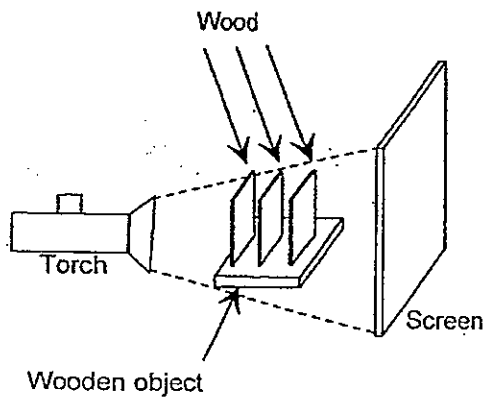
- (b) What is the effect of moving the torch closer to the object on the height of the shadow cast? [1]

- (c) Besides moving the torch away from the object, what else can Fiona do to make the height of the shadow cast on the screen smaller? Suggest 1 more method. [1]

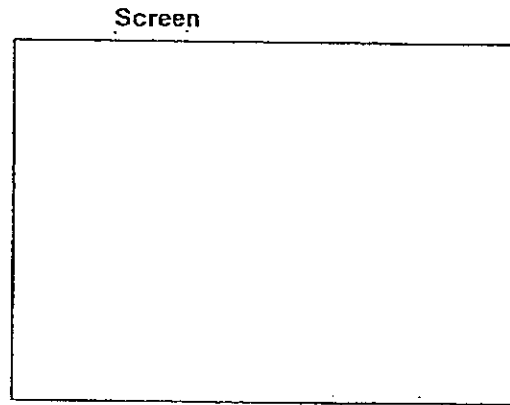
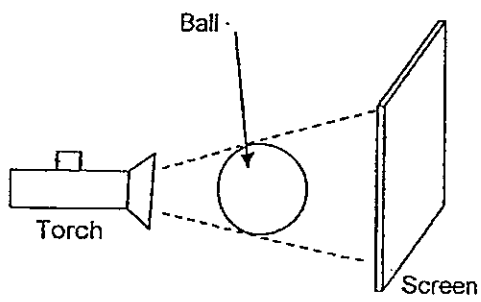


44. Look at the diagrams below. Draw and shade the shadow cast on the screen in the boxes provided. [3]

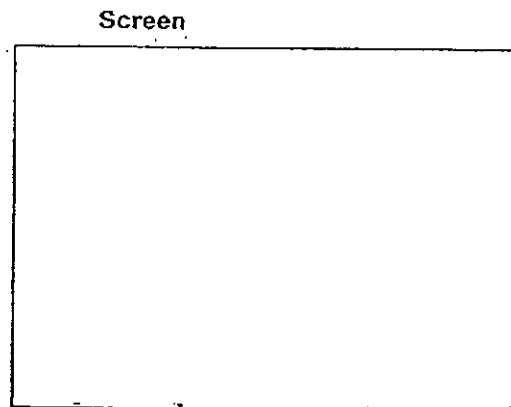
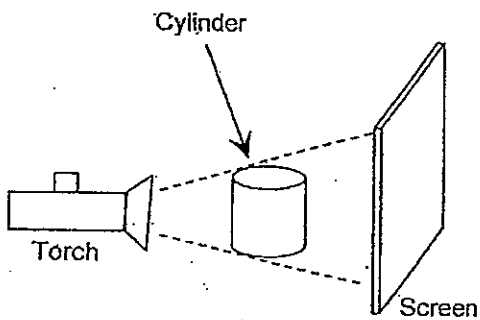
(a)



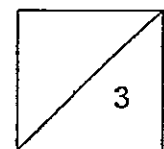
(b)



(c)



End of Paper



ANSWER SHEET

EXAM PAPER 2013

SCHOOL : AI TONG

SUBJECT : PRIMARY 4 SCIENCE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
3	2	4	1	1	3	1	4	4	2	3	2	2	13	1	1	2

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

Section B

Q31

- ai) B ii) C
b) B does not lay eggs while C lays eggs
c) It lays eggs and has hair

Q32

- a) Organism prefers bread to most other food
b) All the food will be at the same distance away from the Organism X

Q33

a)

	Bread in Bag A	Bread in Bag B
Observation after a week	No Mould	Mouldy

- b) Bread in Bag B has moisture in it. This allows bread mould to grow on it as bread mould needs moisture to grow.

Q34

- a) The length of the strip stained blue is the longest
b) 0cm. Raincoats do not absorb water.

Q35

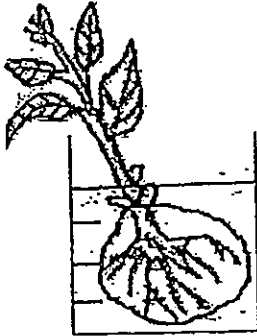
- a) The higher number of eggs laid the lesser care was given
- b) To increase their chances of survival so that when animals eat their eggs there will still be eggs left behind.

Q36

A and D. Roots do not make food hence no food will be transported to the stem. The leaves do not absorb water hence no water will be transported into the stem.

Q37

a)



- b) The roots cannot absorb any water as it was tied up with a plastic bag.
- c) To find out if roots absorb water

Q38

The spoon will occupy space so some juice will be discharged to provide space for the spoon

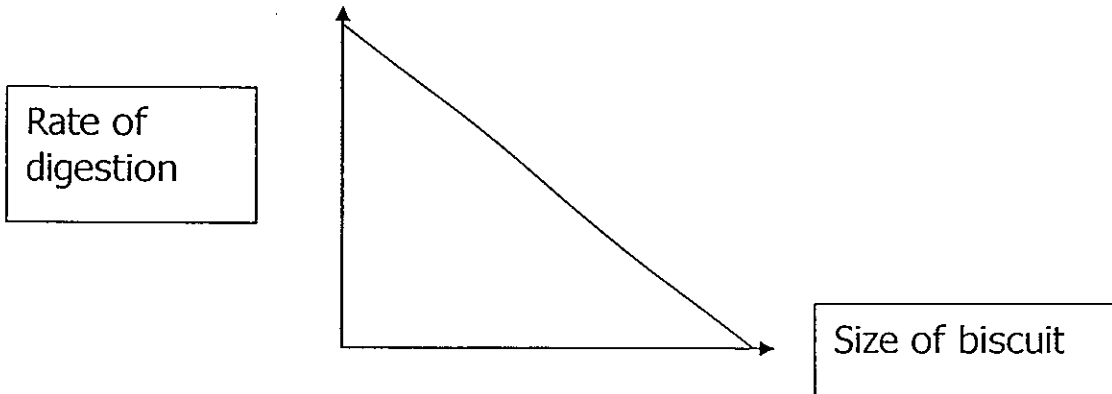
Q39

Air can be compressed but not water.

Q40

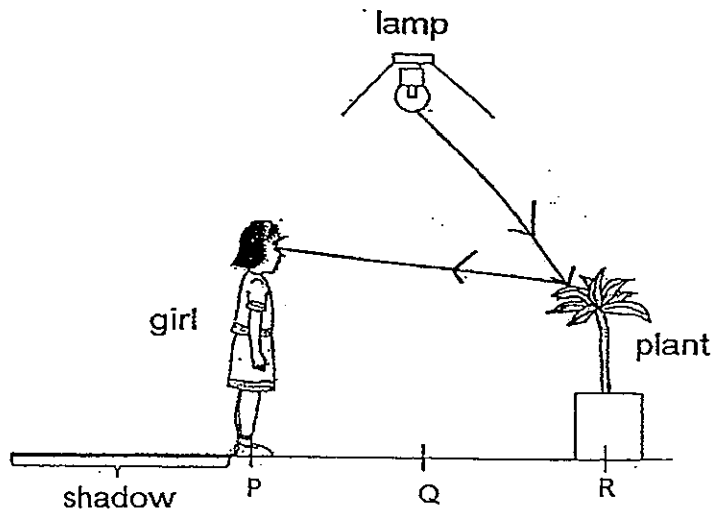
a) Beaker B. The biscuit are cut into smaller pieces so there is more exposed surface area for more digestive juices to act on.

b)

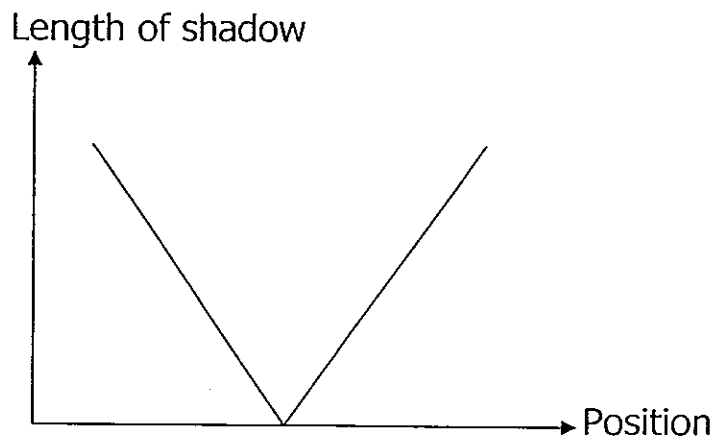


Q41

a)



b)



c) Light travels in a straight line. A shadow is formed when light is blocked by an object.

Q42

a) To make sure no other light except from the torchlight is detected by the light sensor

b) R, Q, P

c) R: The door has to be opaque so that other people will not be able to see through the door.

Q43

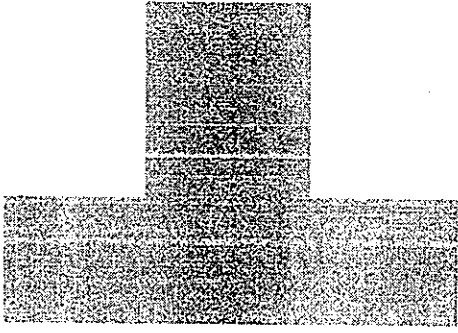
a) Distance between the torch and the screen remains the same

b) The further the object is moved its shadow becomes taller.

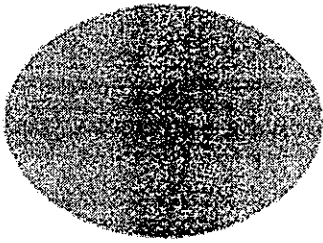
c) Move the object closer to the screen

Q44

a)



b)



c)

