



## AI TONG SCHOOL

### 2014 MID-YEAR EXAMINATION PRIMARY FOUR SCIENCE

DURATION: 1hr 45 min

DATE: 16 May 2014

#### 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 : \_\_\_\_\_

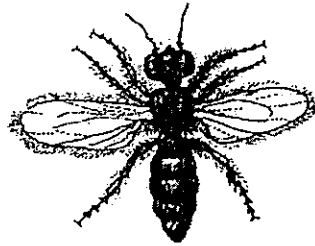
Date : \_\_\_\_\_

Section A	60
Section B	40
Total	100

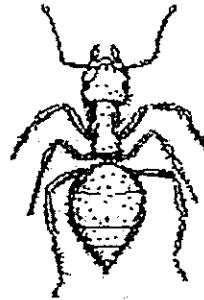
Section A (30 x 2 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. Dawn found animals Y and Z in the school garden. Both animals were insects.



Animal Y

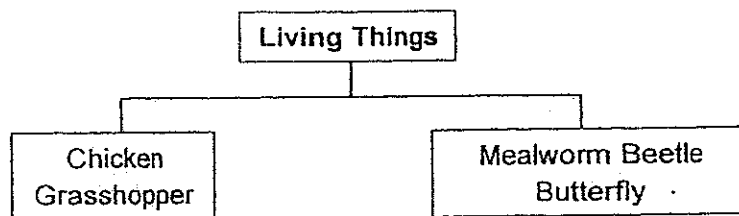


Animal Z

Based on the diagrams above, which of the following statements is (incorrect?)

All insects have \_\_\_\_\_.

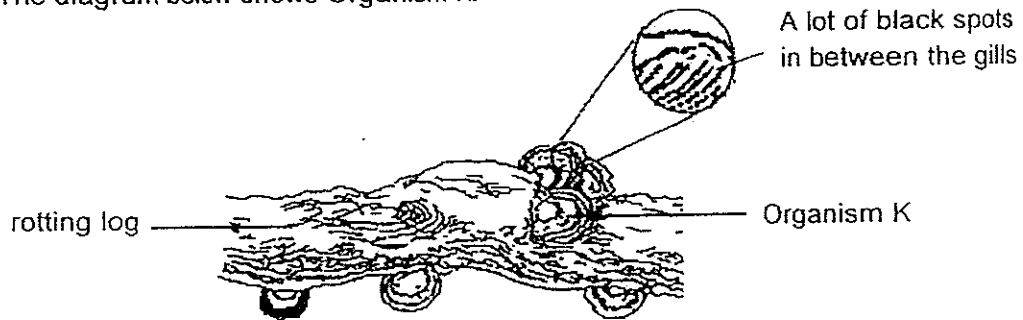
- (1) wings
  - (2) feelers
  - (3) three body parts
  - (4) three pairs of legs
2. Catherine classified some living things as shown below.



Which of the following characteristics did she use to classify them?

- (1) The way they move
- (2) The way they reproduce
- (3) The number of legs they have
- (4) The number of stages in their life cycle

3. The diagram below shows Organism K.

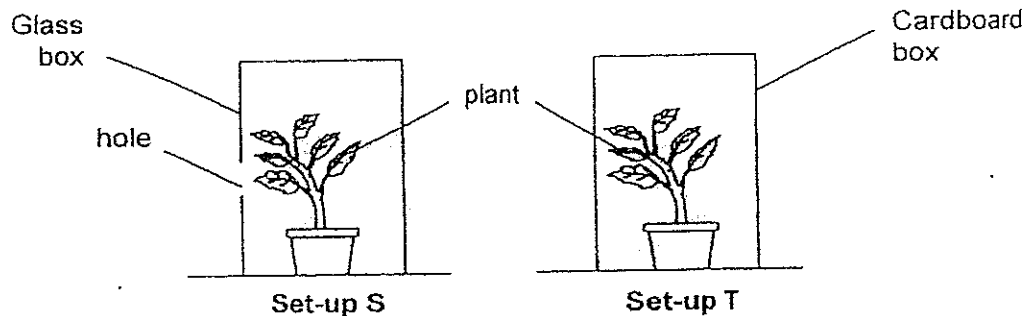


The characteristics of organisms A, B, C and D are shown below.

	A	B	C	D
Makes its own food	Yes	No	Yes	No
Bears flowers	No	No	Yes	No
Reproduces by spores	Yes	Yes	No	No

Which of the organisms, A, B, C or D is similar to K?

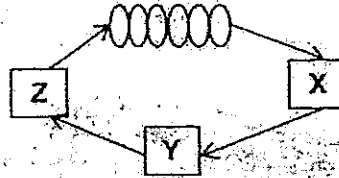
- (1) A
  - (2) B
  - (3) C
  - (4) D
4. Tania wanted to find out if plants need light to grow. She set up an experiment as shown below and placed them in her garden for 7 days.



Why was the experiment not a fair test?

- (1) Only one of the boxes had a hole.
- (2) Different types of boxes were used.
- (3) Different types of plants were used.
- (4) The duration of the experiment was too long.

5. The diagram below shows the life-cycle of an animal.



What are stages X and Z of this animal's life cycle?

	X	Z
(1)		
(2)		
(3)		
(4)		

6. Four children studied the life cycle of the mosquito and the butterfly and made some statements about the two organisms.

Shane: They have a four-staged life cycle.

Russell: Their young live in water.

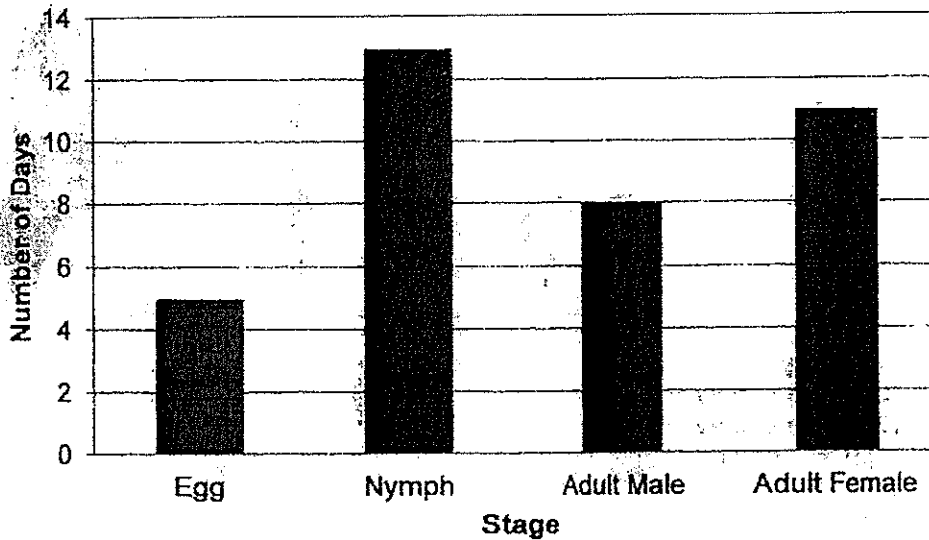
Melissa: They are considered pests at the adult stage.

Nancy: The young of both organisms resembles the adult.

Who made the correct statement?

- (1) Shane only  
 (2) Melissa and Nancy only  
 (3) Shane and Melissa only  
 (4) Russell, Melissa and Nancy only

7. The graph below shows the number of days of each stage in organism K's life cycle.



Based on the graph, which of the following statements about Organism K is true?

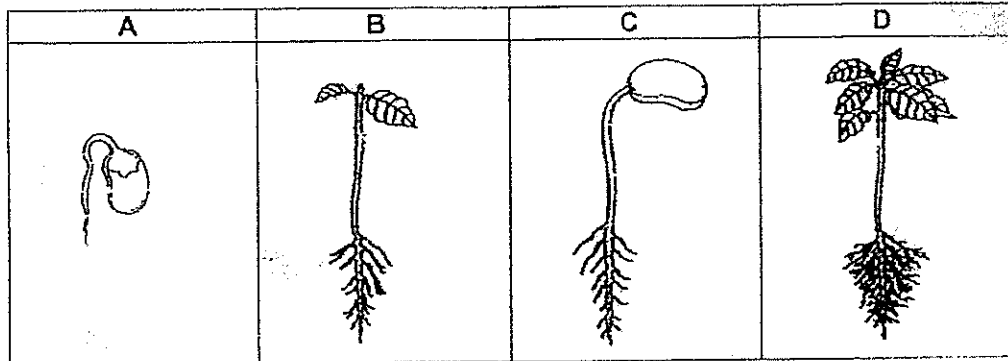
- (1) Organism K lives as an adult for 21 days.
  - (2) There are 4 stages in Organism K's life cycle.
  - (3) The lifespan of Organism K is more than 5 weeks.
  - (4) The young takes 13 days to become an adult after the egg is hatched.
8. Gerald observed two animals X and Y. He drew a checklist and placed a tick (✓) in the box when he made the observation. His checklist is as follows.

	Animal X	Animal Y
It has 3 body parts	✓	✓
It lays eggs on land	✓	
There are 3 stages in its life cycle	✓	

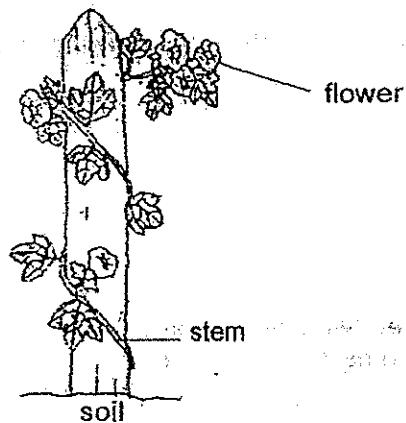
Which of the following best represents Animal X and Y?

	Animal X	Animal Y
(1)	Frog	Butterfly
(2)	Grasshopper	Dragonfly
(3)	Cockroach	Mosquito
(4)	Beetle	Frog

9. At which of the following stages, A, B, C and/or D can the plant make its own food?



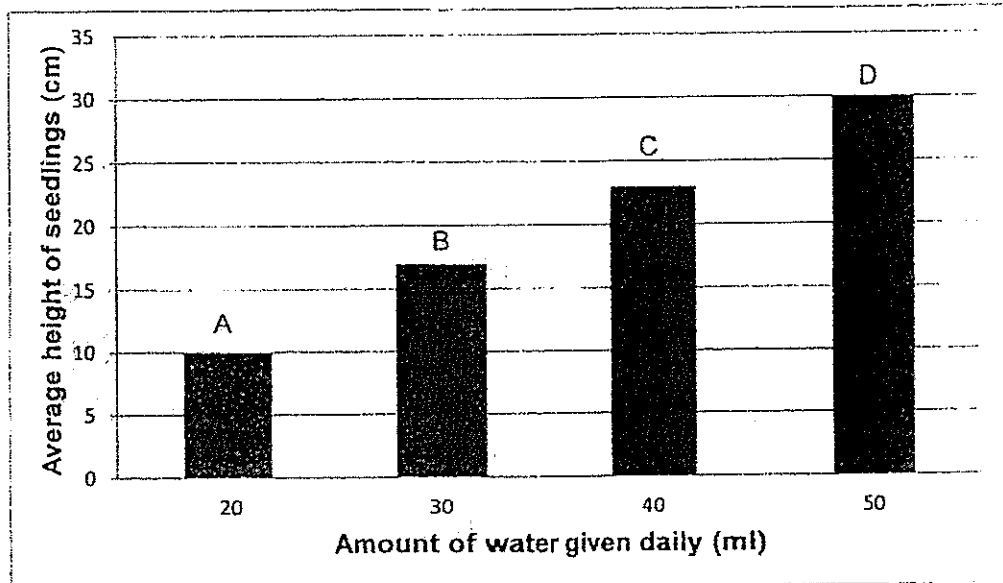
- (1) D only  
 (2) A and C only  
 (3) B and D only  
 (4) B, C and D
10. The diagram below shows a plant.



Which of the following statements correctly describe the plant?

- A The plant has leaves with entire edges.  
 B The plant has a weak stem.  
 C The plant is a flowering plant.
- (1) A and B only  
 (2) A and C only  
 (3) B and C only  
 (4) A, B and C

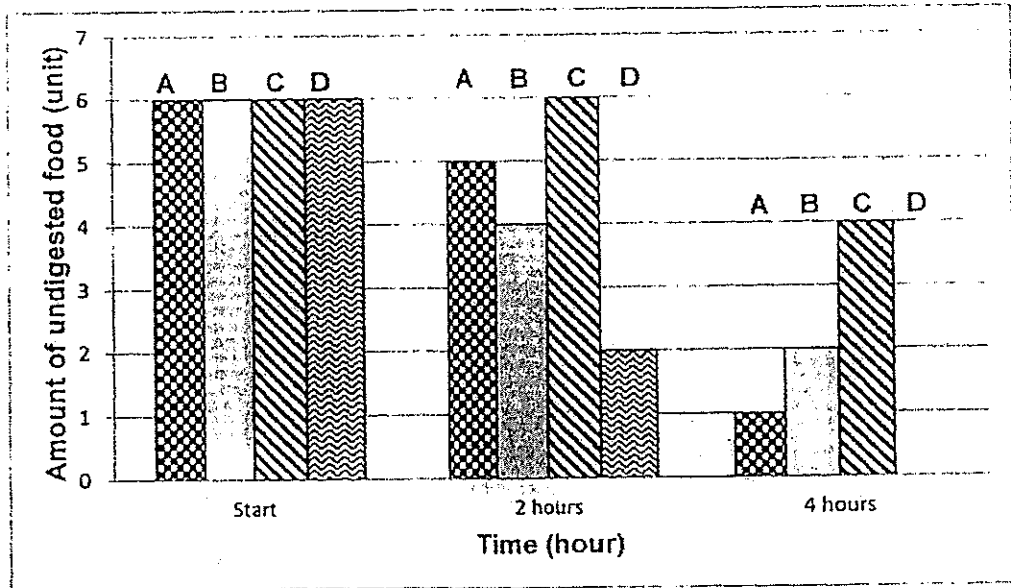
11. John planted 4 pots of seeds labelled A, B, C and D. In each pot, there were 5 seedlings and 50g of soil. He watered them daily with different amounts of water and measured their average heights after one week.



From this experiment, what can John conclude?

- (1) The more the number of seedlings, the taller the seedlings grow.
  - (2) The more the amount of water given daily, the taller the seedlings grow.
  - (3) The more the seedlings grow, the more the amount of water given daily.
  - (4) The more the amount of water given daily, the slower the seedlings grow.
12. Which of the following statements about the small intestine is true?
- (1) Digestion ends in the small intestine.
  - (2) Digestion does not take place in the small intestine.
  - (3) In the small intestine, water is absorbed from the undigested food.
  - (4) In the small intestine, waste is stored until it is ready to be excreted.

13. Janice ate four types of food, A, B, C and D. The graphs below show the changes in the amount of undigested food for A, B, C and D found in the human digestive system over time.

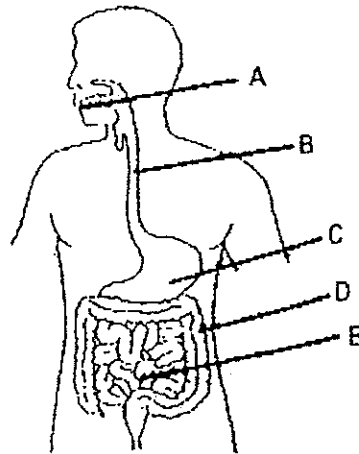


Based on the graph, which type of food is the most difficult to digest?

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



14. The diagram below shows the human digestive system.



Which of the following tables correctly describe parts A, B, C, D and E?

(1)

	Parts of the Digestive System				
	A	B	C	D	E
Contains digestive juice	√	√			√
Absorbs digested food	√				
Absorbs excess water			√		

(2)

	Parts of the Digestive System				
	A	B	C	D	E
Contains digestive juice	√				√
Absorbs digested food	√				
Absorbs excess water			√	√	

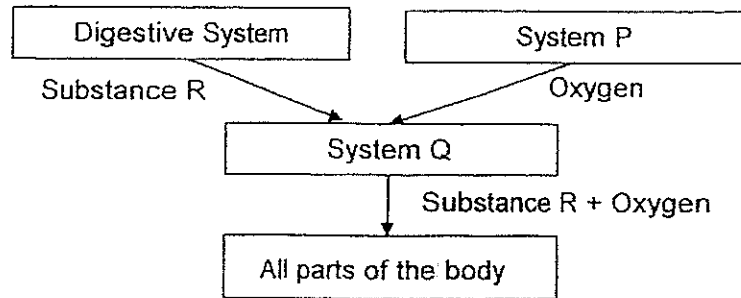
(3)

	Parts of the Digestive System				
	A	B	C	D	E
Contains digestive juice	√		√		√
Absorbs digested food					√
Absorbs excess water				√	

(4)

	Parts of the Digestive System				
	A	B	C	D	E
Contains digestive juice	√	√		√	
Absorbs digested food					√
Absorbs excess water			√		

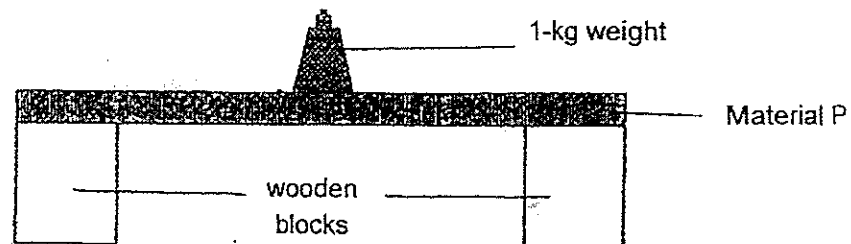
15. The diagram below shows how some systems in the human body work with one another.



Which of the following best represents system P and Q and substance R in the diagram?

	System P	System Q	Substance R
(1)	Respiratory System	Muscular System	Undigested food
(2)	Circulatory System	Respiratory System	Digested Food
(3)	Muscular System	Circulatory System	Undigested food
(4)	Respiratory System	Circulatory System	Digested Food

16. Jaden set up an experiment. He put as many 1-kg weights as he could on Material P, until it broke.



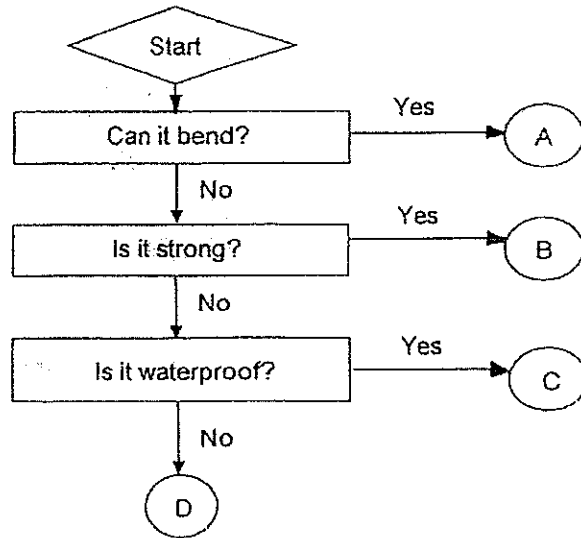
He repeated the experiment with Materials Q, R and S. The number of weights was recorded in the table below.

Material	P	Q	R	S
Number of weights placed on the material until it broke	21	5	3	17

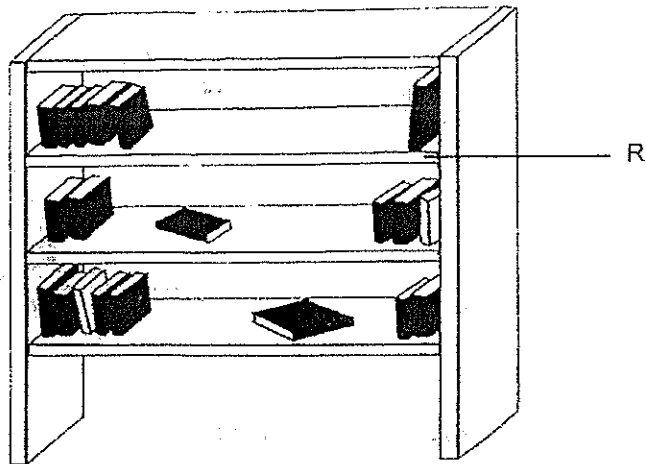
Which material, P, Q, R or S is the strongest?

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

17. The flowchart below shows the characteristics of materials A, B, C and D.



Based on the characteristics shown above, which of the following materials, A, B, C or D is most suitable to make the part labelled R?



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

18. Four similar objects of the same size were placed in a container of water as shown in diagram 1. They are made of different materials A, B, C and D.

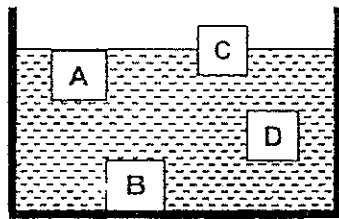


Diagram 1

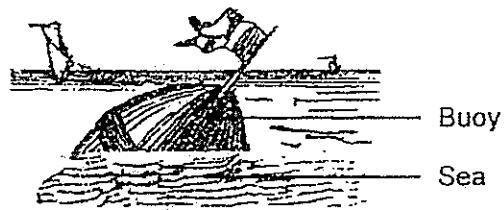
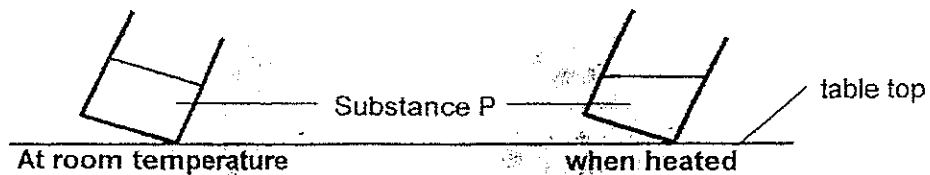


Diagram 2

Which material, A, B, C or D would be the most suitable to make the buoy shown in Diagram 2?

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

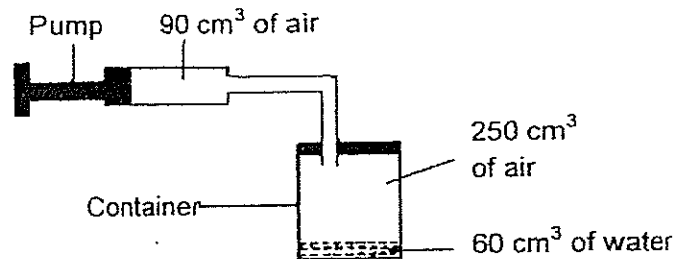
19. The diagram below shows Substance P in a tilted cup when it is at room temperature and when it is heated.



Which of the following best represents substance P when it is heated?

	Has mass	Definite shape	Definite volume
(1)	No	No	No
(2)	No	Yes	No
(3)	Yes	No	Yes
(4)	Yes	Yes	Yes

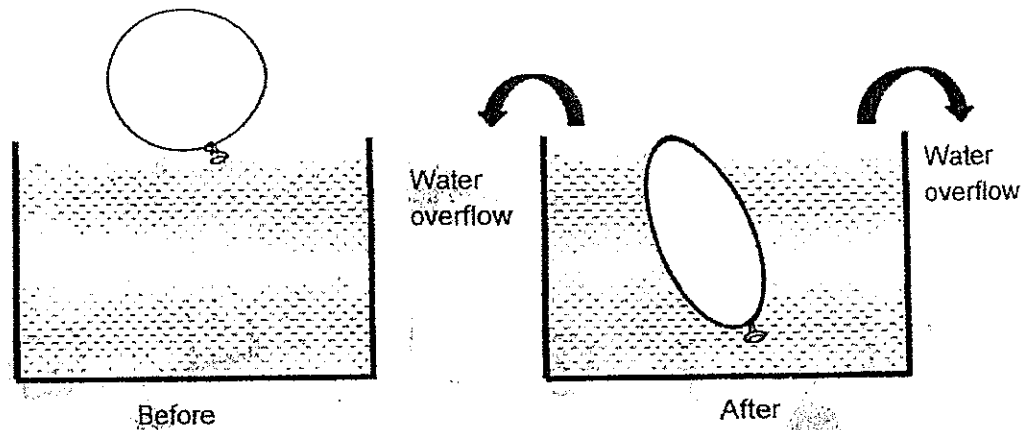
20. Vivian connected a pump to a container.



She pushed the pump in completely and 90 cm<sup>3</sup> of air was forced into the container.

Which of the following shows the correct volume of the air after the pump?

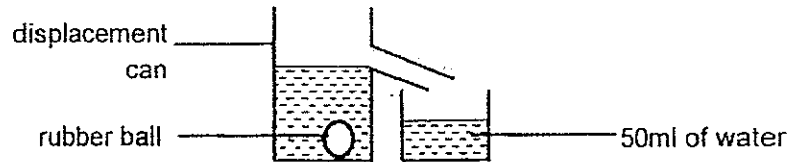
- (1) 150 cm<sup>3</sup>
  - (2) 250 cm<sup>3</sup>
  - (3) 340 cm<sup>3</sup>
  - (4) 400 cm<sup>3</sup>
21. Jimmy filled a container with water and a balloon with air. He then pushed the balloon into the container of water and observed that the water in the container overflowed.



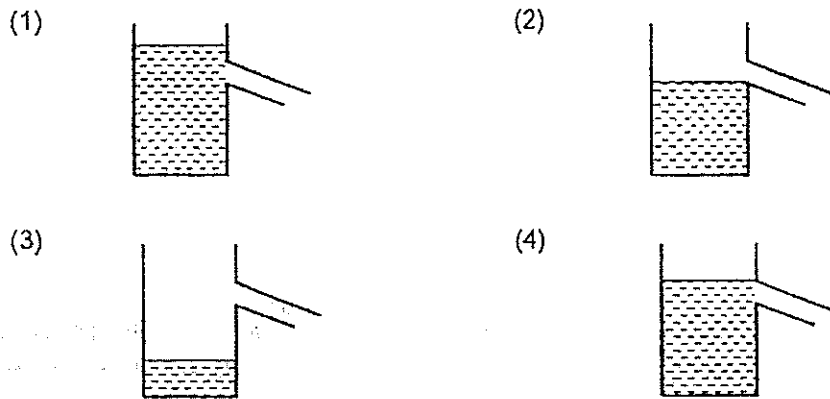
Which of the following is not shown by the experiment?

- (1) Air has weight.
- (2) Air takes up space.
- (3) Air can be compressed.
- (4) Air has no definite shape.

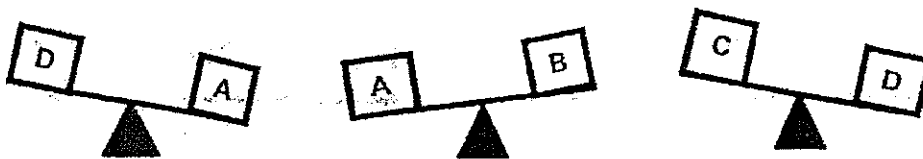
22. When a rubber ball was placed into a displacement can as shown below, the amount of water collected was 50ml.



Which of the following diagrams correctly shows the water level in the displacement can before the rubber ball was placed inside?



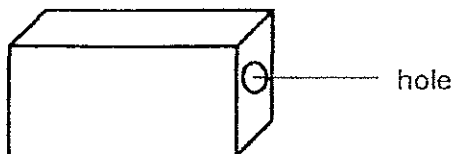
23. Four cubes A, B, C, and D, are of the same volume but made of different materials. The masses are compared against each other as shown.



Which of the four objects has the largest mass?

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

24. Jim placed three objects in a black box that does not allow light to pass through. He then peeped through the small hole at the side to see if he could see the objects. He then repeated the experiment but placed a torch that was switched on in the box.

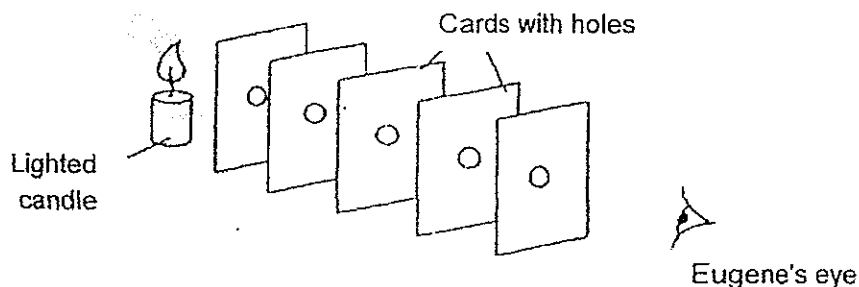


The table below shows his observations. A tick (✓) shows that Jim could see the object.

Objects	With torchlight	Without torchlight
A	✓	
B	✓	
C	✓	✓

Which of the following objects, A, B and/or C gives out light of its own?

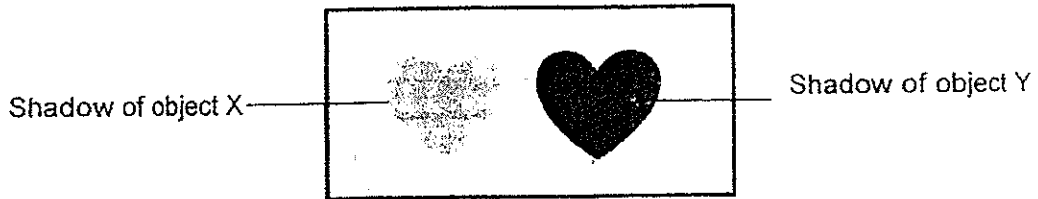
- (1) A only
  - (2) C only
  - (3) A and B only
  - (4) A, B and C
25. Eugene set up an experiment as shown below. He placed five identical cards with holes in front of a lighted candle. He then lined up the holes and looked through them to make some observations.



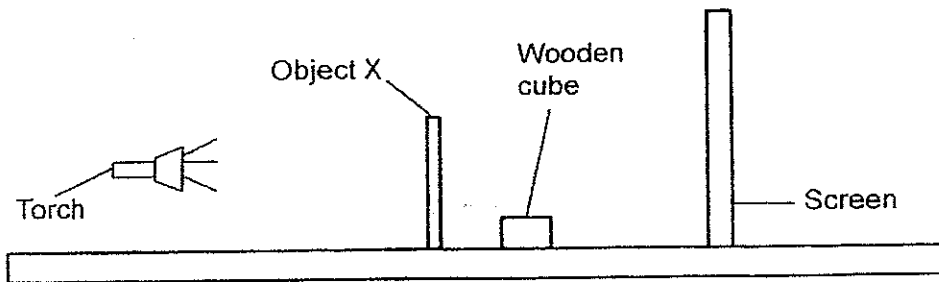
What was the aim of Eugene's experiment?

- (1) To find out if light can be reflected.
- (2) To find out if light travels in a straight line.
- (3) To find out the brightness of the candle flame.
- (4) To find out if light can pass through an opaque object.

26. Matthew shone a torch onto two objects, X and Y, and the shadows cast by the objects are as shown below.



He then placed a wooden cube behind Object X as shown below.



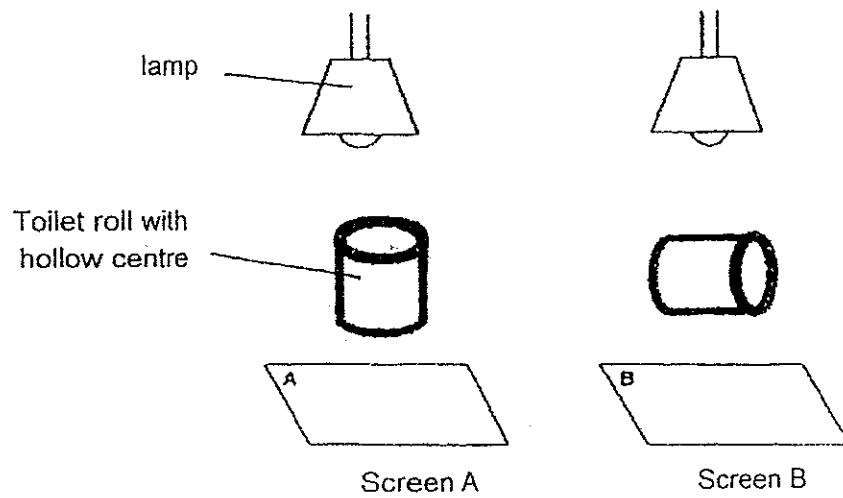
He repeated the experiment using Object Y.

Which of the following correctly shows what would happen to the shadows of X and Y?

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



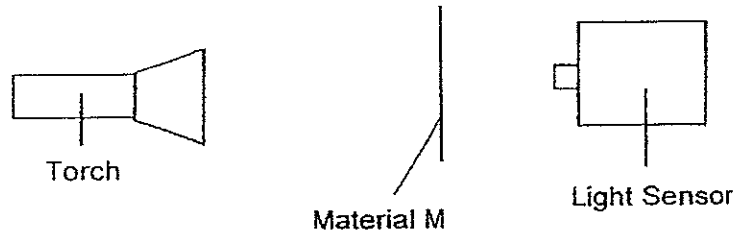
27. Tom placed two identical toilet rolls with hollow centres directly under the lamps as shown in the diagram below.



What would he observe on the screens when the lamps are switched on?

	Screen A	Screen B
(1)		
(2)		
(3)		
(4)		

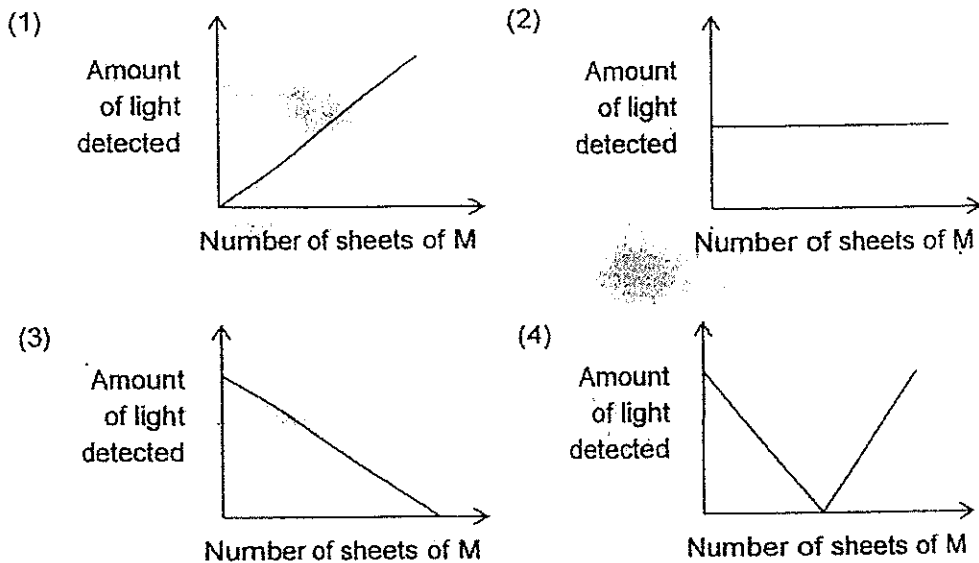
28. Ziming conducted an experiment using Material M. He set up an experiment as shown below.



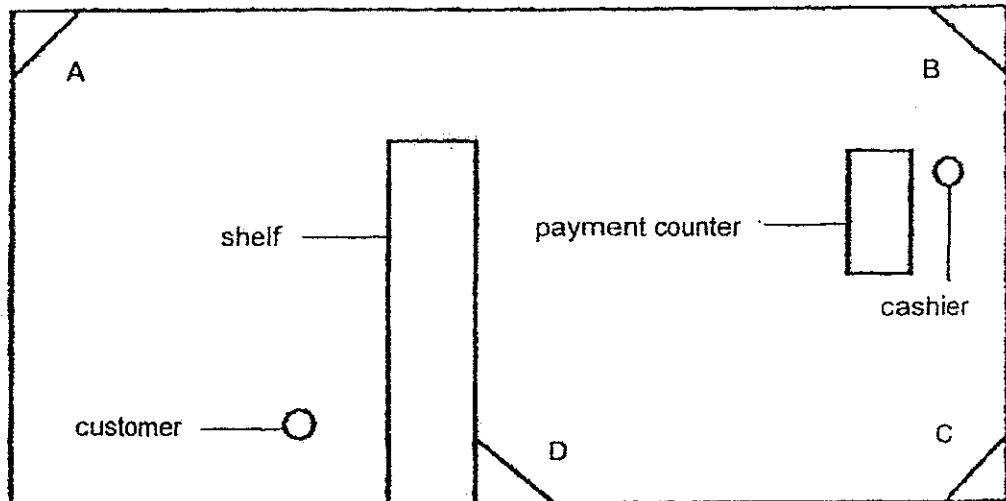
He then placed sheets of Material M in between the light source and the light sensor one at a time. He recorded the amount of light passing through the object in the table below.

Number of Sheets of M	Amount of light detected (lux)
0	1100
2	900
4	700
6	500
8	300

Which of the following graphs shows the relationship between the number of sheets of M and the amount of light detected?



29. The diagram below shows a floor plan of a book store.

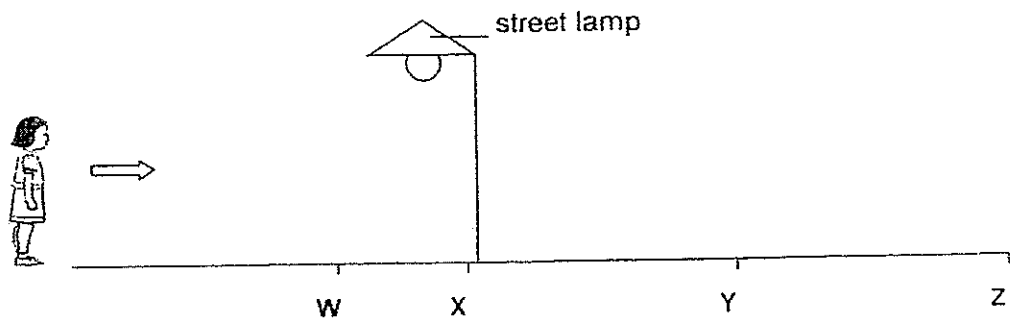


The owner wants to install two mirrors so the cashier can see any customer standing behind the shelf without having to leave the payment counter.

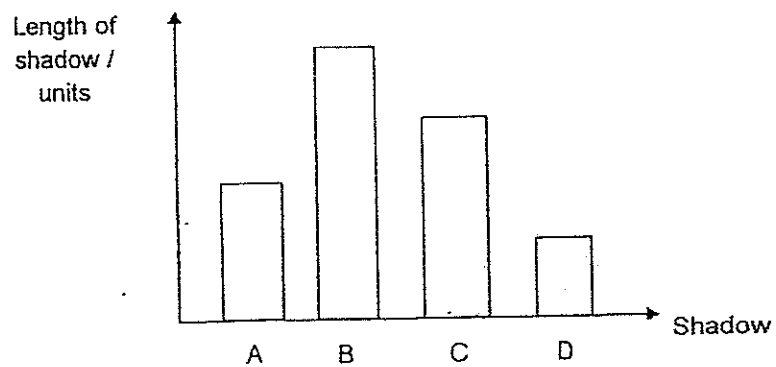
At which location A, B, C and/or D should he install the mirrors?

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

30. The diagram below shows Lisa walking towards W, X, Y and Z.



The graph below shows the possible lengths of Lisa's shadows A, B, C and D taken at positions W, X, Y and Z. Shadows A, B, C and D shown in the graph are not matched to positions W, X, Y and Z.



Which of the following shows the correct shadow when Lisa was at position Y?

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

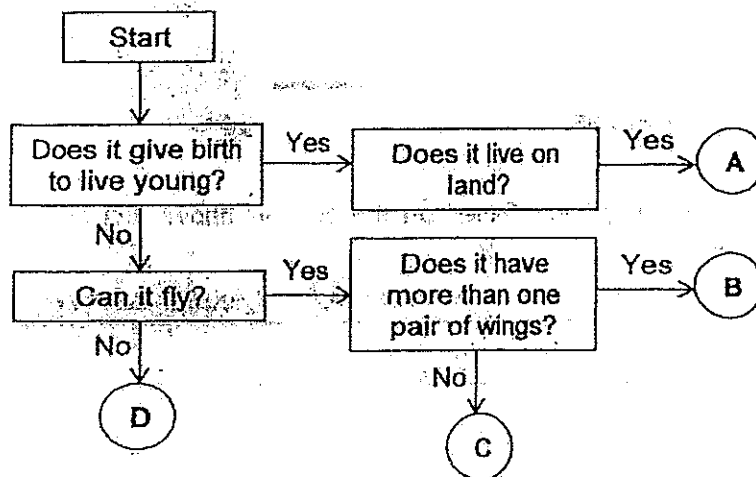
Name: \_\_\_\_\_ ( )

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)



ii)



(b) Based on the flow chart, state one difference between animals A and C.

---

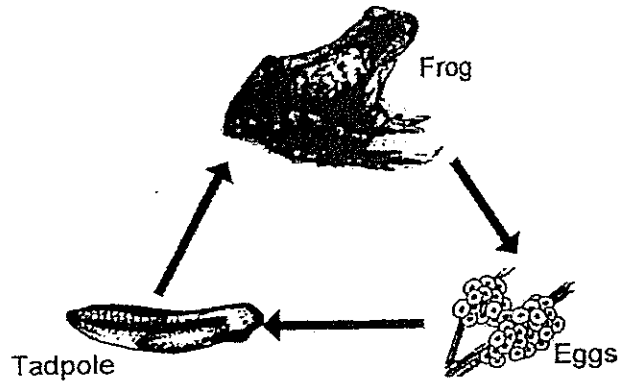
---

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

---

---

32. Study the diagram below carefully.



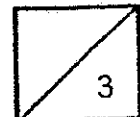
(a) The frog is a living thing. Based on the diagram above, list two characteristics of living things. [2]

i) \_\_\_\_\_  
\_\_\_\_\_

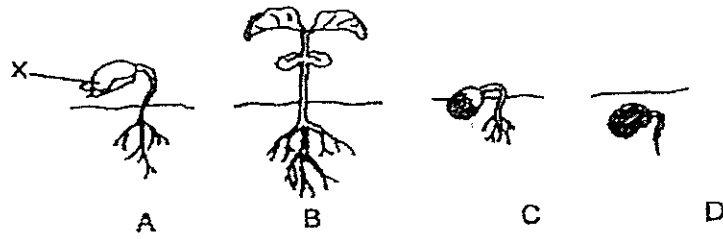
ii) \_\_\_\_\_  
\_\_\_\_\_

(b) The young of a frog lives in water while the adult frog lives on land. How does living in different surroundings ensure that the young obtains enough food? [1]

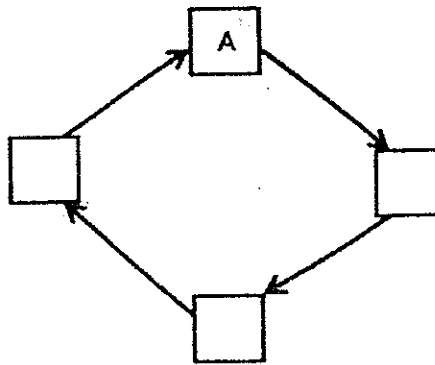
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



33. The pictures below show the stages of growth of a seed.



- (a) Arrange the stages A, B, C and D in the correct sequence to show the life cycle of the plant. [1]



- (b) Identify part X of the seedling. What would happen if part X was removed from the plant at stage A? [2]

---

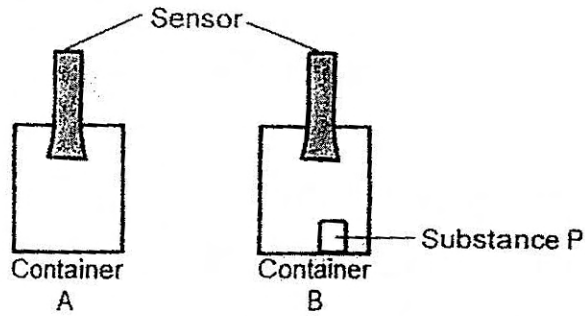


---



---

34. Miko carried out an investigation using Substance P.



She recorded the amount of moisture in containers A and B using a sensor. The table below shows her results.

	Amount of Moisture (units)	
	Container A	Container B
At first	100	100
After two hours	100	20

(a) Based on the results, describe the function of substance P. [1]

---



---

Miko decides to put substance P in the box storing his leather wallet.

(b) How does placing substance P in the box prevent mould from growing on the leather wallet? [2]

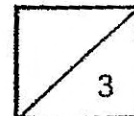
---



---

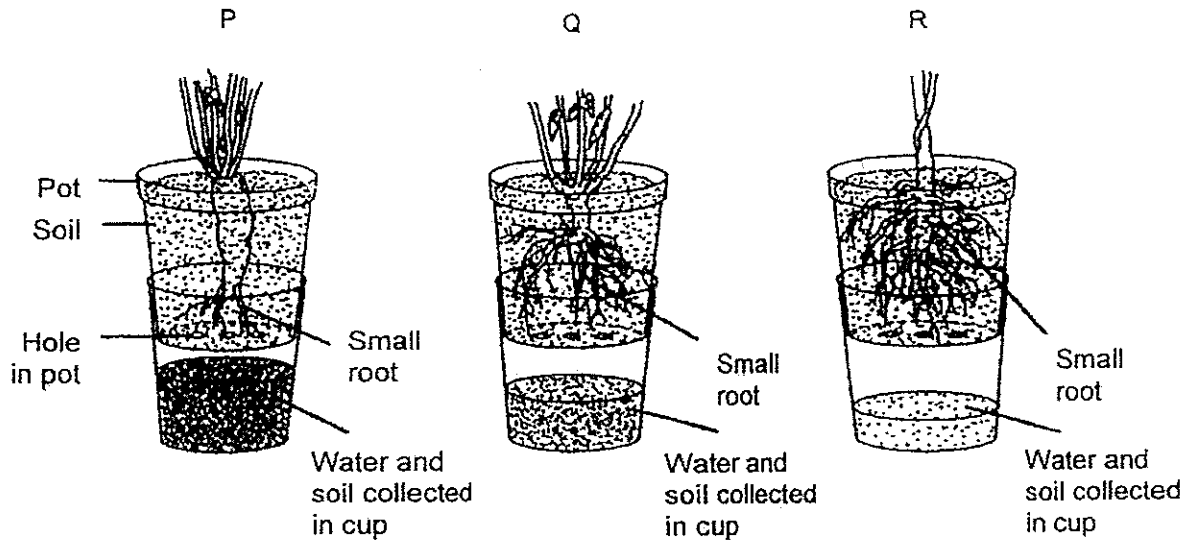


---





35. A farmer poured the same volume of water into each of the set-ups P, Q and R. He observed the volume of water and amount of soil collected in each cup after five minutes. His results are shown below.



(a) Which set-up, P, Q or R has

i) the highest volume of water and soil collected? [1]

\_\_\_\_\_

ii) the lowest volume of water and soil collected? [1]

\_\_\_\_\_

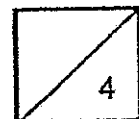
(b) Based on the results, how does having more small roots affect the functions of roots in terms of

i) the amount of water absorbed? [1]

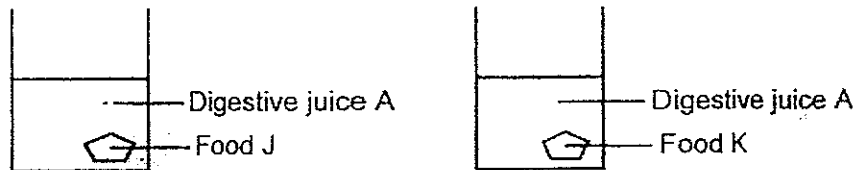
\_\_\_\_\_

[1]

\_\_\_\_\_



36. Amirah carried out an experiment using digestive juice A and two types of food, J and K, which contain starch. She placed equal amounts of digestive juice in each set-up. (Note: Iodine turns from yellowish brown to dark blue in the presence of starch.)



The food was left for 30 minutes, after which, 2 drops of iodine were placed in each set-up.

Amirah recorded down her observations of the colour of the mixture in the table below.

Type of Food	Colour of Mixture after Adding Iodine Solution
J	Solution turns dark blue.
K	Solution remains yellowish-brown.

- (a) Why did Amirah have to wait for 30 minutes before putting the iodine solution? [1]

---



---

- (b) Based on the results, which food is digestive juice A able to digest? Explain your answer. [2]

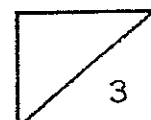
---



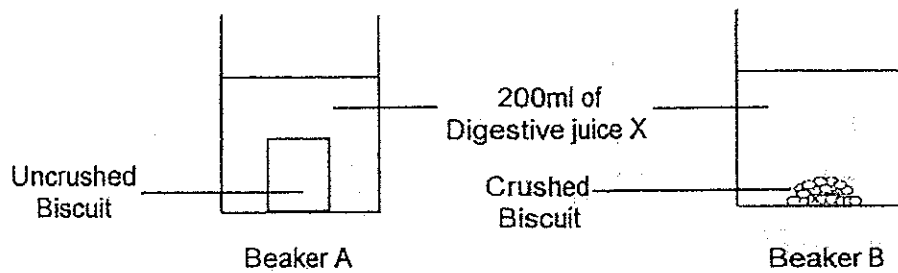
---



---



37. Benny carried out an experiment using two biscuits of the same size and mass. He then set up the experiment as shown below.



Digestive juice X will digest the biscuits and the biscuit will become mushy. The results of the experiment are as shown in the table below.

Set-up	Time taken for biscuit to turn mushy (hour)
A	3
B	1

- (a) Identify the following variables for the experiment [2]

i) changed variable: \_\_\_\_\_

\_\_\_\_\_

ii) measured variable: \_\_\_\_\_

\_\_\_\_\_

- (b) Why did the biscuit in set-up B become mushier first? [2]

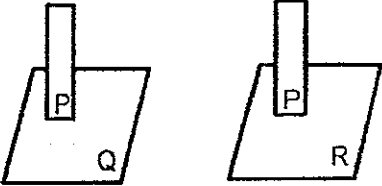
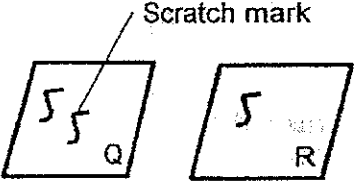
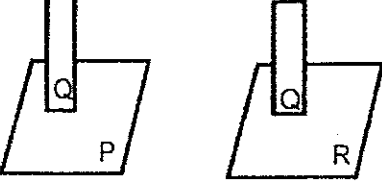

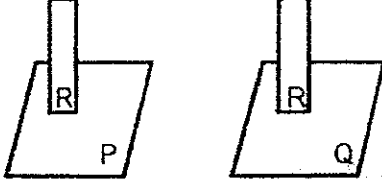

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



38. Sally had three unknown materials P, Q and R. She conducted an experiment by using each material to scratch another material and recorded her observations in the table below.

Scratch Test	Results
	
	
	

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

---



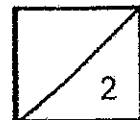
---

- (b) Is material P or R harder? Explain your answer. [1]

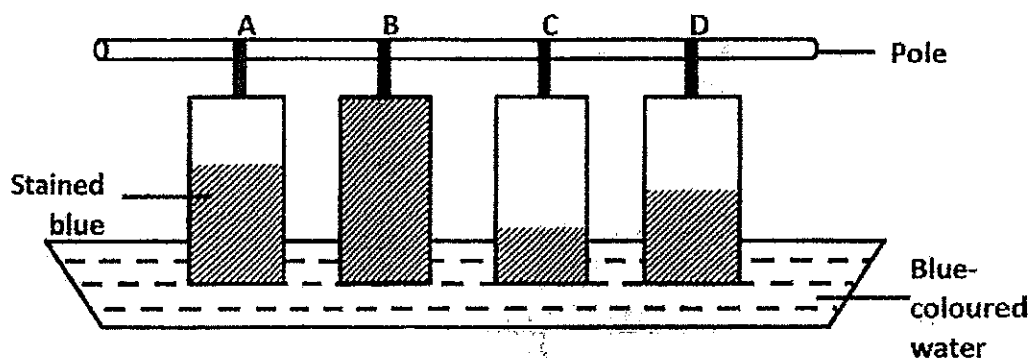
---



---



39. Jane carried out an experiment using 4 different types of materials, A, B, C and D of equal width and lengths. She dipped them into a container of blue-coloured water and noted the amount of blue stains on the materials.



- (a) Arrange the materials A, B, C and D according to their absorbency. Start with the most absorbent. [1]

Most absorbent	—————>	Least absorbent

- (b) Which material, A, B, C or D would be the most suitable to clean up a water spill most effectively? Explain your answer. [2]

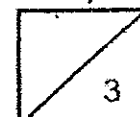
---



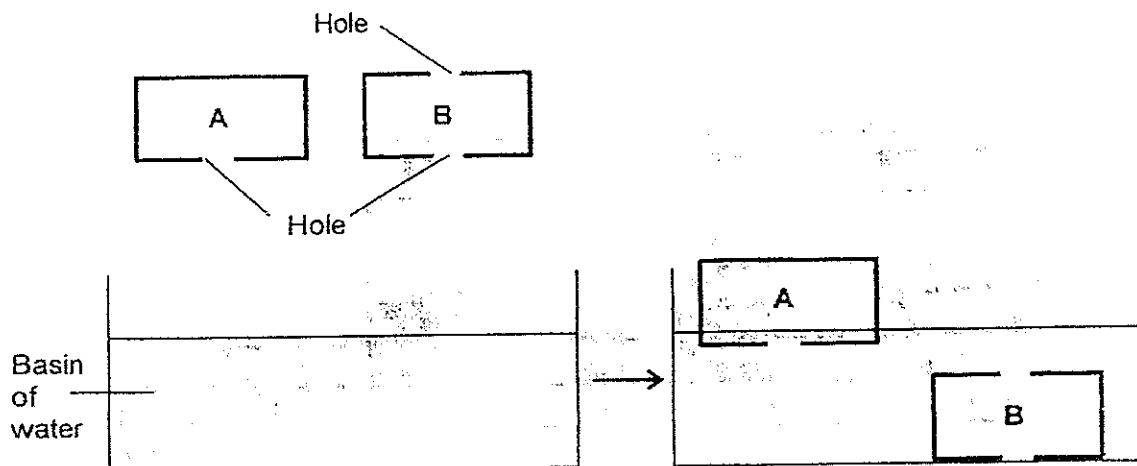
---



---

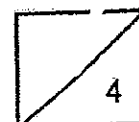


40. The diagram below shows containers A and B, which are made of the same material, being lowered into a basin of water.

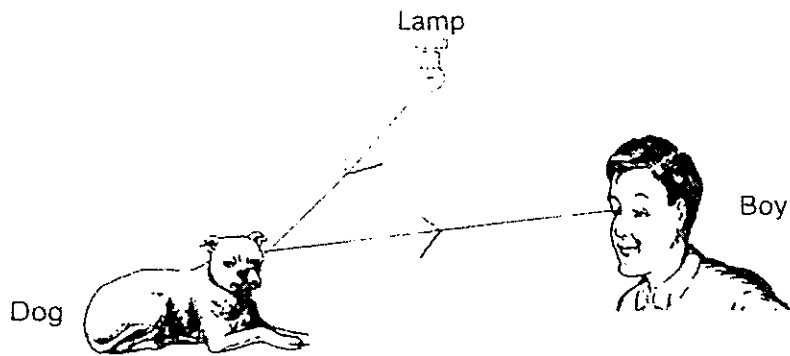


Fifteen minutes later, it was observed that container A remains floating on the water but container B sank to the bottom of the container. Explain why. [4]

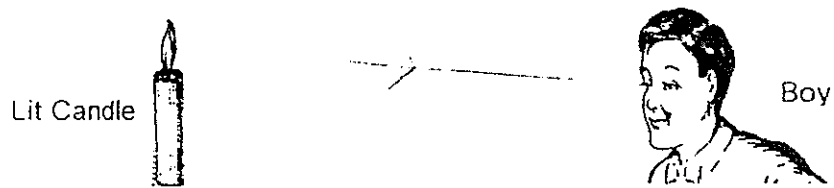
Observation	Explanation
a) Container A continues to float.	<hr/> <hr/> <hr/> <hr/>
b) Container B sank to the bottom.	<hr/> <hr/> <hr/> <hr/>



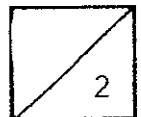
41. Study the diagram below.



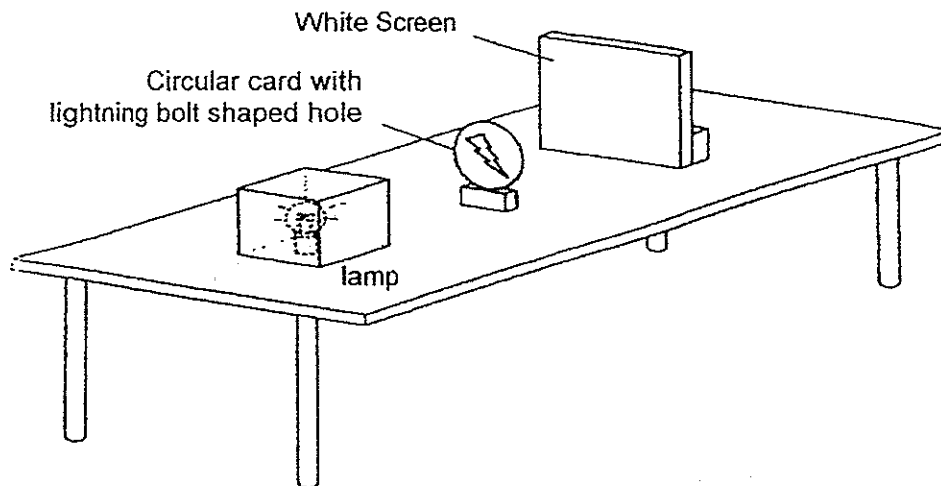
(a) Draw the path of light that makes it possible for the boy to see the dog. [1]



(b) Draw the path of light that makes it possible for the boy to see the candle flame. [1]



42. Jack performed an experiment using the set-up below.



A shadow was formed on the screen.

(a) Give two reasons why the shadow was formed. [2]

---

---

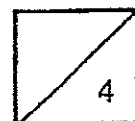
---

(b) Shade the diagram below to show the shadow formed on the screen. [1]

(c) As the circular card is moved towards the lamp, what changes to the shadow would Jack see on the screen? [1]

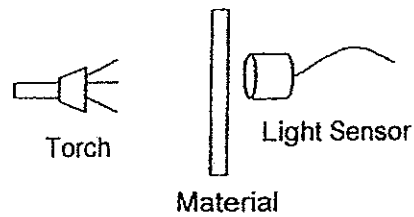
---

---

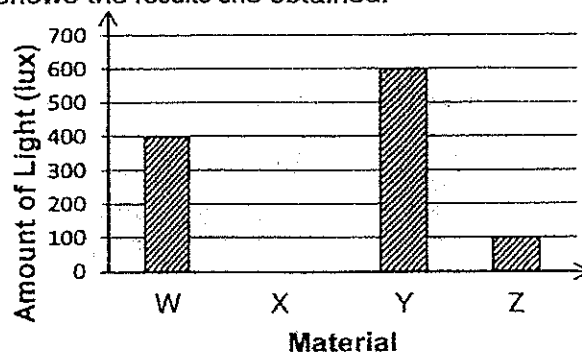




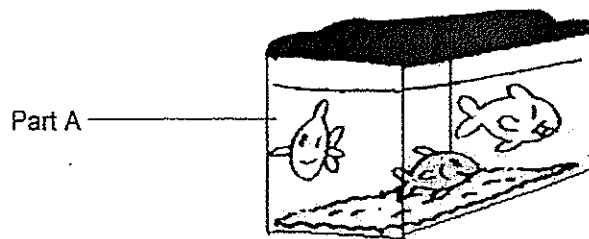
43. Nadia wanted to find out how much light passes through materials W, X, Y and Z. She set up the experiment as shown below.



The graph below shows the results she obtained.



Nadia wants to make an aquarium.



Which material would be the most suitable to make part A? Explain your answer. [2]

---

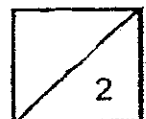


---



---

- End of Paper -

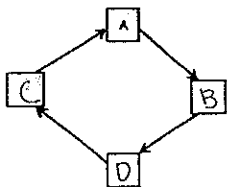


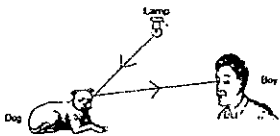
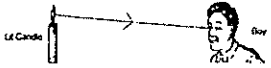
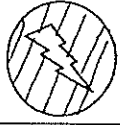


**EXAM PAPER 2014**

**LEVEL : PRIMARY 4**  
**SCHOOL : AITONG**  
**SUBJECT : SCIENCE**  
**TERM : SA1**

Q1	1	Q7	2	Q13	3	Q19	3	Q25	2
Q2	4	Q8	3	Q14	3	Q20	2	Q26	4
Q3	2	Q9	3	Q15	4	Q21	1	Q27	2
Q4	1	Q10	3	Q16	1	Q22	2	Q28	3
Q5	4	Q11	2	Q17	2	Q23	1	Q29	1
Q6	1	Q12	1	Q18	3	Q24	2	Q30	3

Q31	(a)	(i) D (ii) B
	(b)	Animal A gives birth to live young but animal C lays eggs.
	(c)	It does not give birth to live young and it can fly.
Q32	(a)	(i) Living things can reproduce. (ii) Living things can grow.
	(b)	The young and the adult will not need to compete with one another for food.
Q33	(a)	
	(b)	If part X is removed from the seedlings, it would not have any food and will die.
Q34	(a)	It absorbs water.
	(b)	It would cause the amount of moisture in the box to decrease keeps leather dry and prevent mould from growing as mould cannot grow without water.
Q35	(a)	(i) Set-up P (ii) Set-up R
	(b)	(i) More small roots result in more water being absorbed. (ii) More small roots result in more soil held more firmly.
Q36	(a)	It will allow the digestive juice to act on the food to be digested.
	(b)	Food K. The entire solution remain yellow-brown. This shows that starch is no longer present.
Q37	(a)	(i) The biscuit is crushed or uncrushed (ii) Time taken for the biscuit to get digested.
	(b)	The biscuit in Set-up B was digested faster as the biscuit was in small pieces. This increases the exposed surface area of the biscuit for the digestive juices to act on.

Q38	(a)	The aim of the experiment is to find out which material is the hardest.
	(b)	Material P. Material P can scratch material R and Material R cannot scratch Material P.
Q39	(a)	$B \rightarrow A \rightarrow D \rightarrow C$
	(b)	Material B. The length of the material stained blue is the most which shows that it absorbed the most water thus Material B would be most suitable to clean up a water spill most effectively.
Q40	(a)	Air in container A cannot escape. It takes up space and water cannot enter the container so container A is light thus it will float.
	(b)	Air in container B can escape through the hole at the top of the container B so water can enter through the hole at the bottom to take up the space previously occupied by the air so container B is heavy thus it will sink to the bottom.
Q41	(a)	
	(b)	
Q42	(a)	Light travels in a straight line and it was blocked by the circular card.
	(b)	
	(c)	The shadow will be bigger.
Q43		Y. The amount of light recorded passes through material Y was the most. Material Y is transparent thus the fish can be seen.