



PRIMARY 4 END-OF-YEAR EXAMINATION 2012

Name : _____ () Date: 30 October 2012

Class : Primary 4 ()

Time: 8.00 a.m. - 9.30 a.m.

Parent's Signature : _____ Total Marks: _____ / 80

SCIENCE BOOKLET A

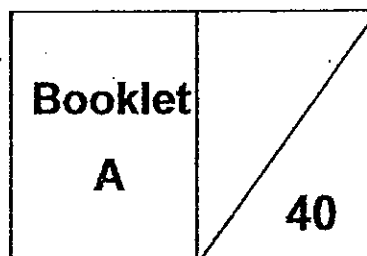
INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.



Section A (20 x 2 marks)

For each question, choose the most suitable answer and shade its corresponding oval (1, 2, 3 or 4) in the optical answer sheet.

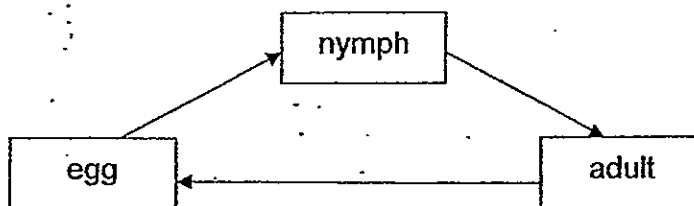
1. A millipede curls up when touched as shown in the picture below.



This shows that the millipede is a living thing because it can _____.

- (1) grow
- (2) breathe
- (3) respond
- (4) reproduce

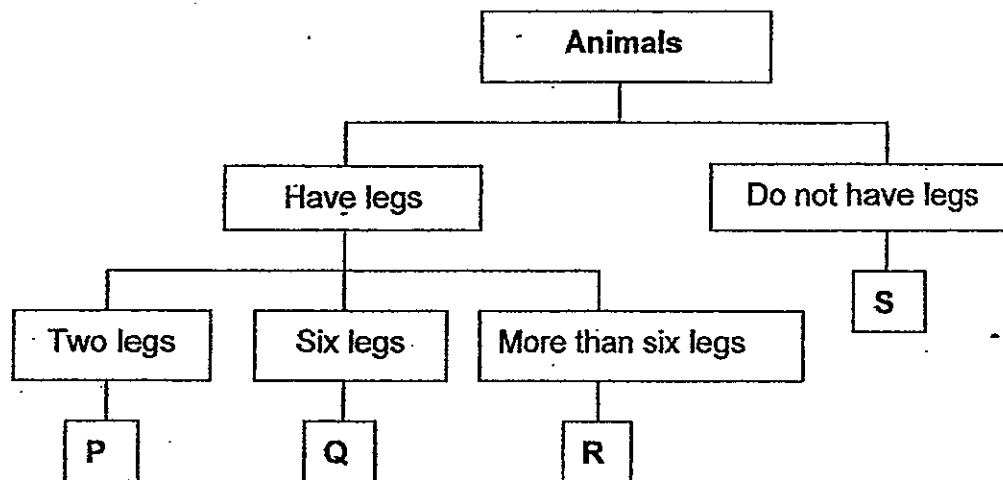
2. The diagram below shows the life cycle of an animal.



Which one of the following animals goes through the life cycle as shown above?

- (1) frog
- (2) mosquito
- (3) mealworm
- (4) grasshopper

3. Study the classification chart below carefully.



Which letter, P, Q, R or S, represents the animal shown below?

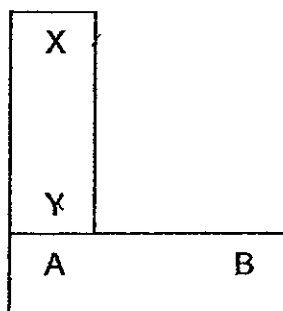


- (1) P
- (2) Q
- (3) R
- (4) S

4. Which one of the following is definitely a property of both water and an eraser?

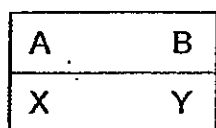
- (1) They take up space.
- (2) They have fixed shapes.
- (3) They have the same weight.
- (4) They have no fixed volumes.

5. The diagram below shows two magnets attracted to each other at ends A and Y.

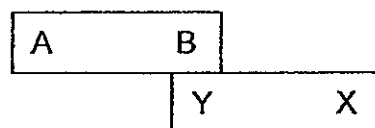


Which arrangement shows the attraction between these two magnets?

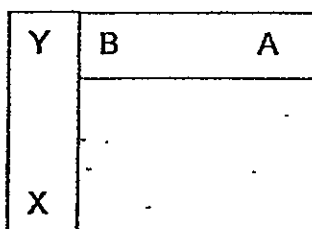
(1)



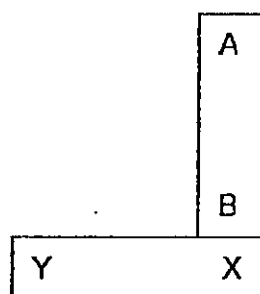
(2)



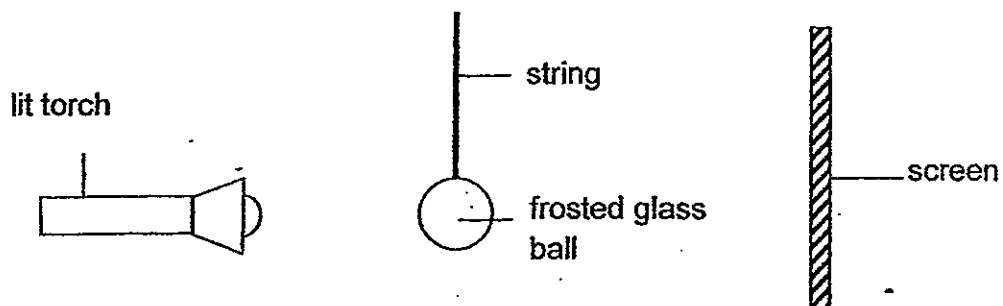
(3)



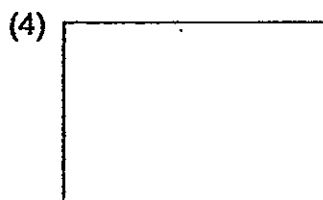
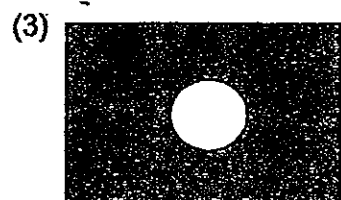
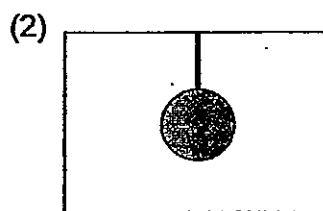
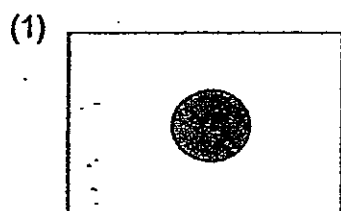
(4)



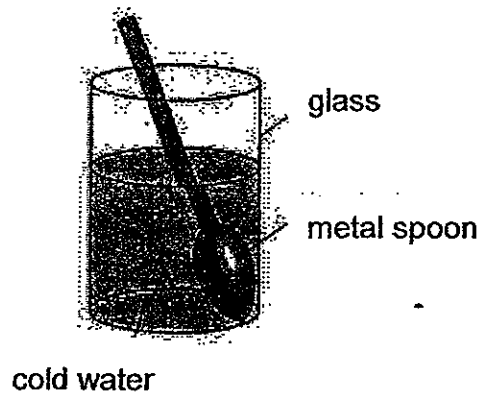
6. The set-up below shows a lit torch shining on a frosted glass ball.



Which one of the following would most likely be seen on the screen?



7. Xiao Ming placed a metal spoon in a glass of cold water in a room at room temperature as shown below.



The spoon became colder after some time. Which one of the following best explains this?

- (1) The glass lost heat to the metal spoon.
 - (2) The metal spoon lost heat to the cold water.
 - (3) The cold water lost heat to the surroundings.
 - (4) The metal spoon gained coldness from the cold water.
8. The diagram below shows two lever balances. The lever balance in diagram B is balanced whereas the one in diagram A is not.

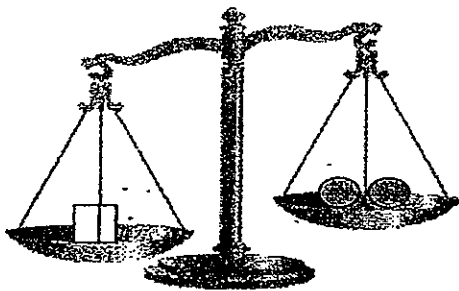


Diagram A

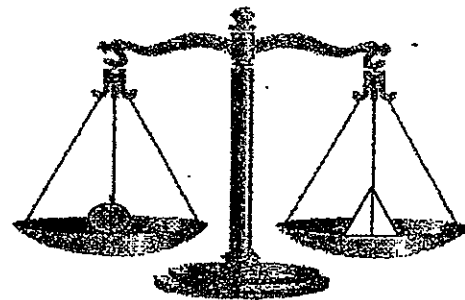
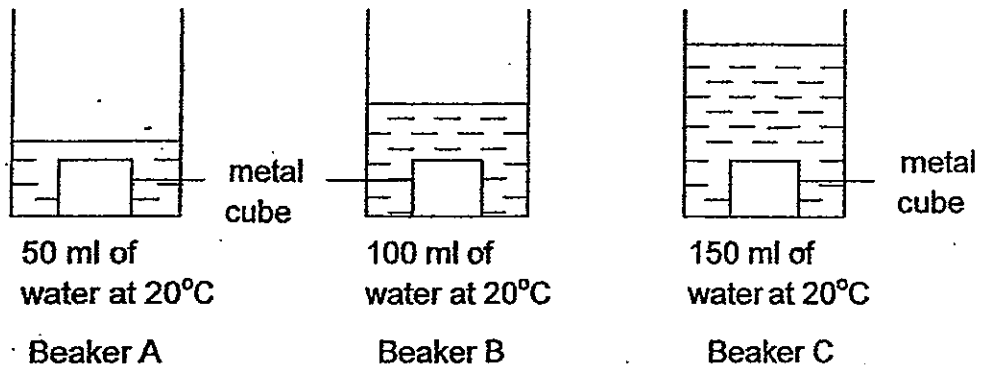


Diagram B

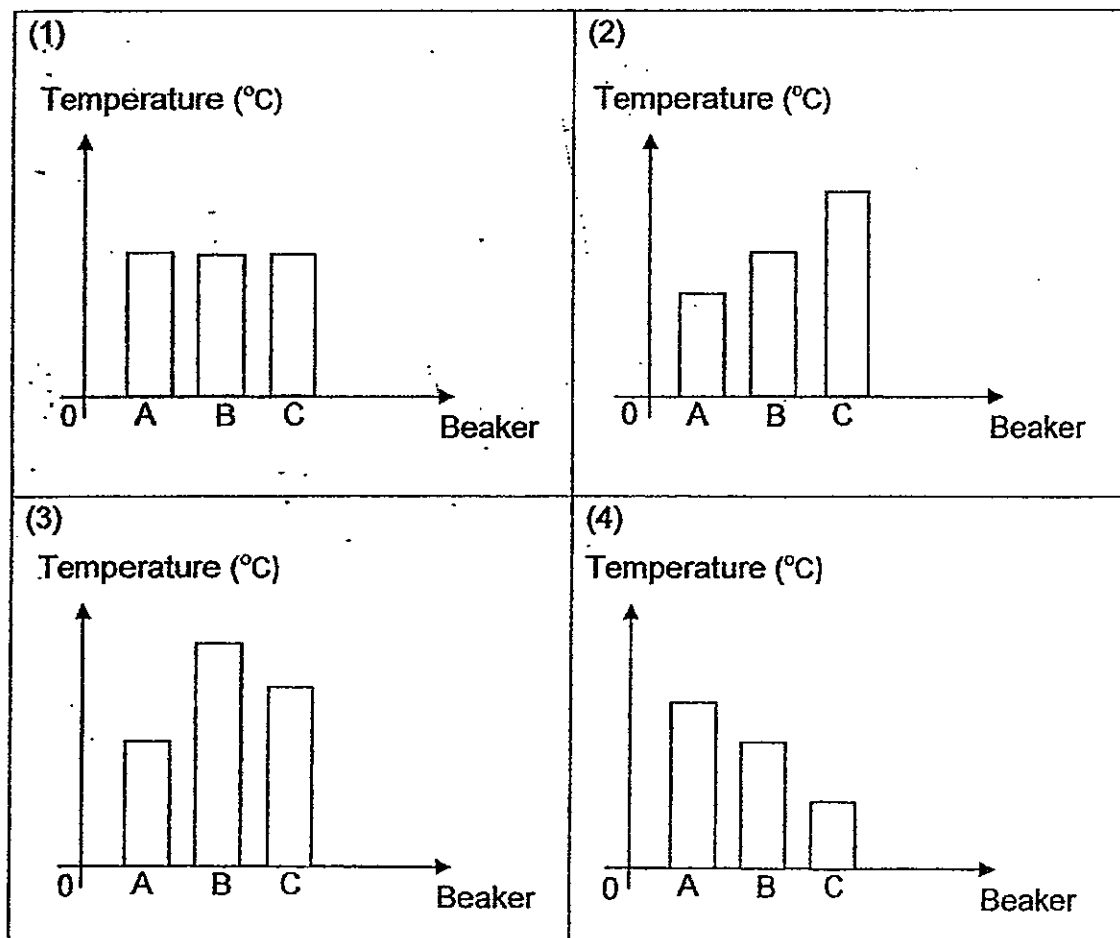
Based on the diagrams above, which one of the following is true?

- (1) ☐ is lighter than ☒.
- (2) ☐ is heavier than ☐.
- (3) ☐ ☐ is lighter than ☐.
- (4) ☐ ☐ has the same mass as ☒.

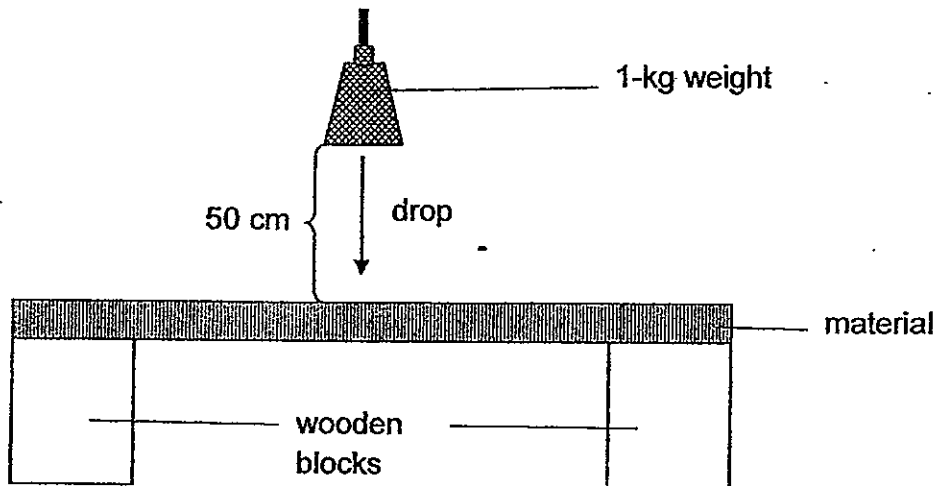
3. Three pieces of identical metal cubes were heated to a temperature of 100°C and then put into three beakers of water, A, B and C, as shown below.



Which one of the following best represents the temperature of the water in Beakers A, B and C after five minutes?



10. Isabella tested the strength of four materials, A, B, C and D, of the same thickness. She dropped a 1-kg weight from a height of 50 cm onto each of them until they broke.



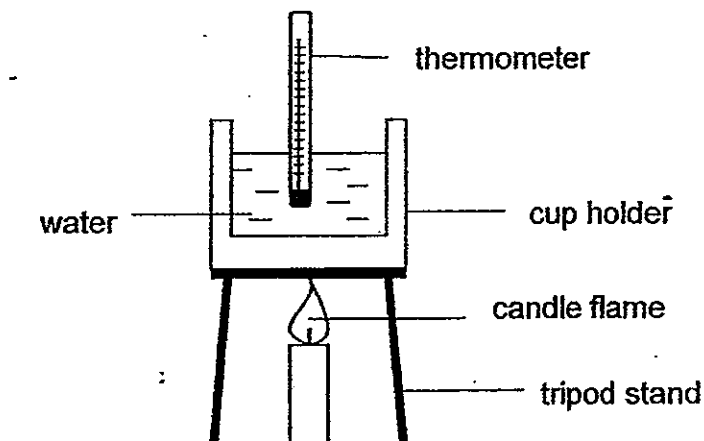
The number of times the 1-kg weight was dropped before each material broke was recorded in the table below.

Material	Number of times the weight was dropped
A	15
B	25
C	18
D	31

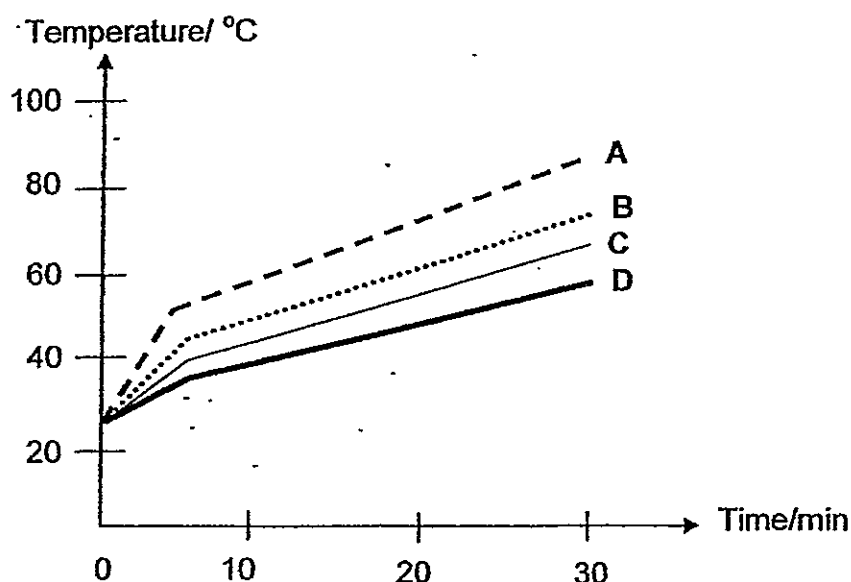
From the results above, which material is the strongest?

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

11. Simon set up an experiment to find out how the material of a cup holder affects the temperature of water. Simon heated the water in the cup holder made of material A for over 30 minutes. He recorded the temperature change of the water. Then he repeated the experiment with three other cup holders made of materials B, C and D respectively.



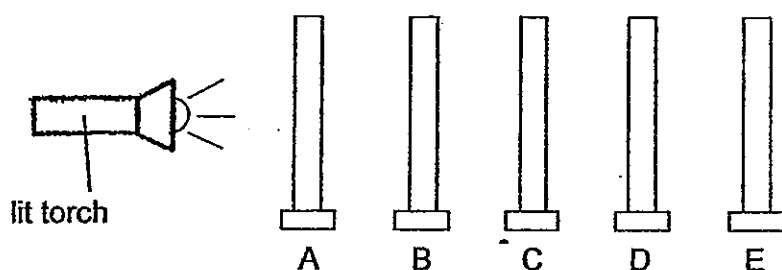
The graph below shows how the temperature changed over 30 minutes.



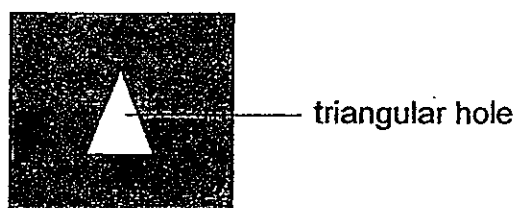
Which material, A, B, C or D, is most suitable for making an ice cooler box that will help to slow down the melting of ice?

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

12. The experiment below was carried out in a dark room. Sheets of materials, A, B, C, D and E, were arranged in a straight line.



A triangular hole was observed on Sheet A as shown below.



Sheet A

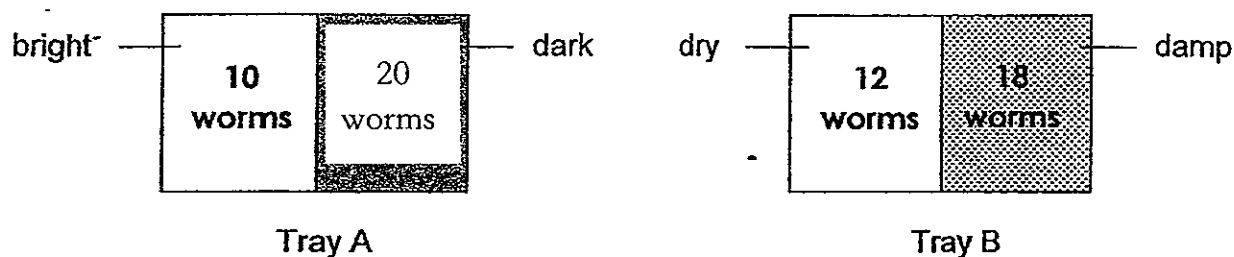
The degree of transparency of the materials is given in the table below.

Allows most light to pass through	Does not allow any light to pass through
B	A
E	C
	D

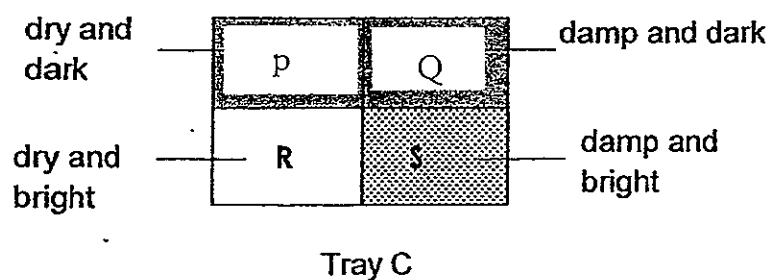
When the torch was switched on, on which sheet of material, B, C, D or E, would a triangular patch of light be seen?

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

13. Sam carried out an experiment to find out the type of environment worms prefer. Thirty worms were put in the middle of Tray A ^{and tray B}. After ten minutes, the number of worms in each part of trays A and B were counted and as shown below.



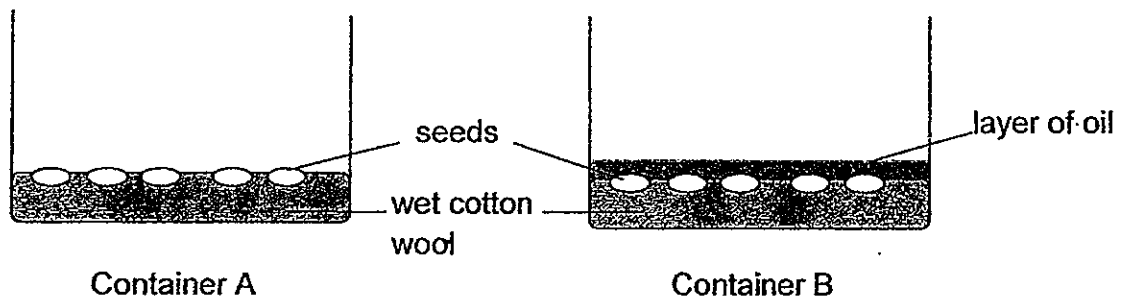
The experiment was repeated with Tray C using the same number of similar worms.



In which part of Tray C, P, Q, R or S, would the number of worms most likely be the greatest?

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

14. Peter carried out an experiment to find out the conditions needed for seeds to germinate using two containers, A and B, as shown below.

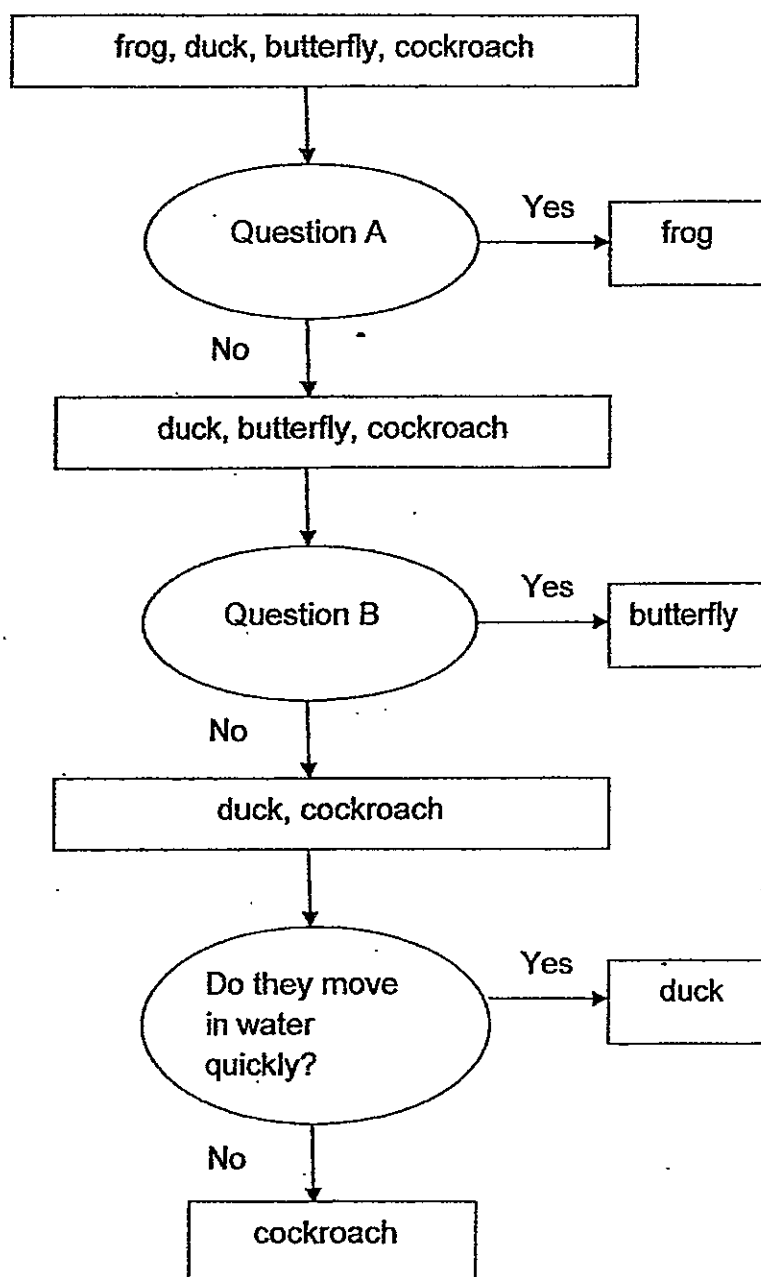


After two days, the seeds in both the set-ups did not germinate.

Which of the following could he have done such that the seeds in both set-ups did not germinate?

- (1) Placed Container A in a freezer.
- (2) Placed Container A in a dark room.
- (3) Removed the layer of oil in Container B.
- (4) Replace the wet cotton wool with dry cotton wool in Container B.

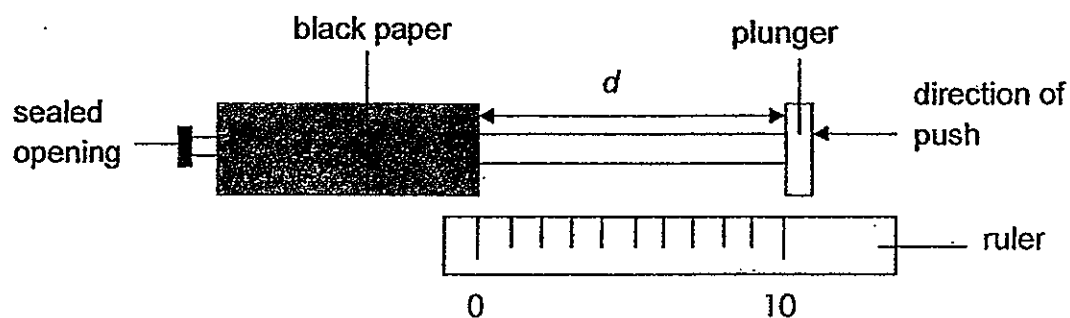
15. Ali classified four animals with the help of a chart below.



What were the two questions, A and B?

	Question A	Question B
(1)	Do they have feathers?	Do the young resemble the adults?
(2)	Do they swim in water?	Do the young and adults feed on the same type of food?
(3)	Do they have 3-stage life cycles?	Do their young fly?
(4)	Do they lay eggs in water?	Do they have 4-stage life cycles?

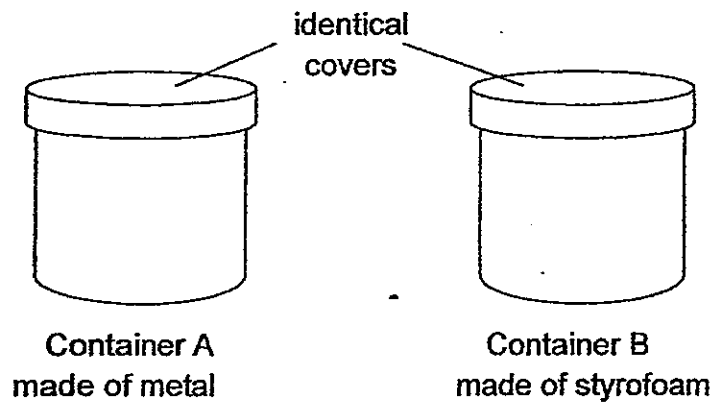
16. Mrs Raja used two identical syringes, covered with a black piece of paper, for a test. One syringe was completely filled with oil and the other filled with air. The diagram below shows the original position of the plunger.



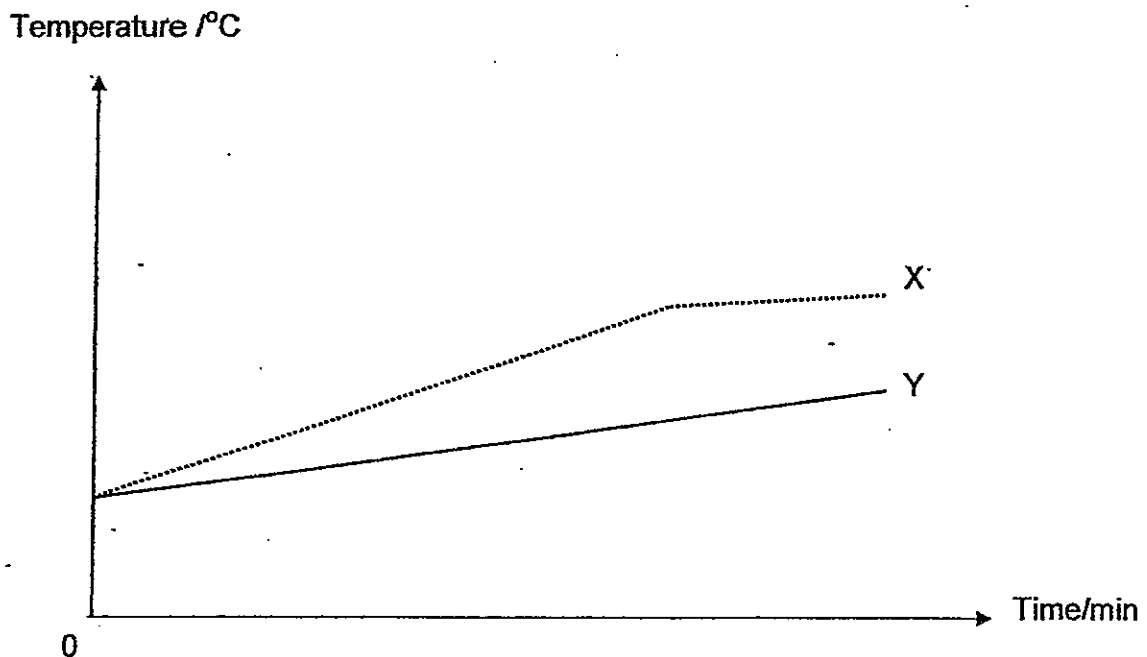
She pushed each plunger as hard as she could. She then measured distance d . Which of the following shows the correct values of d ?

	Distance d (cm)	
	Syringe with oil	Syringe with air
(1)	0	10
(2)	10	0
(3)	5	10
(4)	10	5

17. The diagram below shows two covered containers, A and B, of the same size left in the sun for 30 minutes.



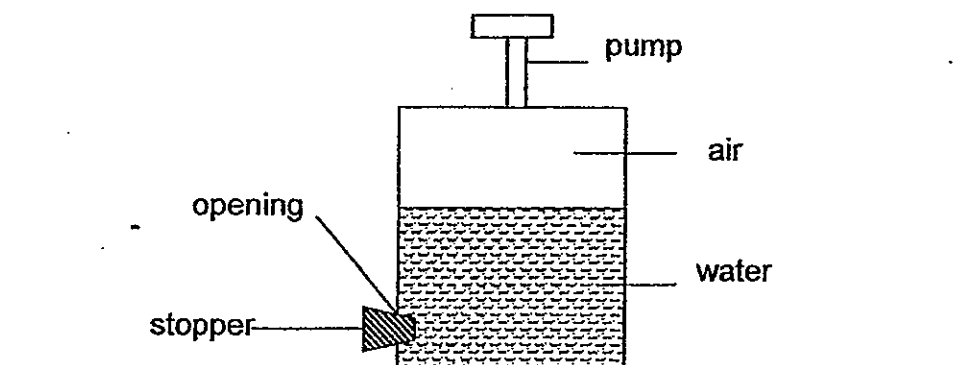
- The temperatures in both the containers were recorded as shown in graphs X and Y below.



Which of the following shows correctly the graph and the explanation for the results for container B?

	Graph	Explanation of results for Container B
(1)	X	Styrofoam conducted heat more quickly.
(2)	Y	Styrofoam conducted heat more slowly.
(3)	X	Air in container lost heat slowly.
(4)	Y	Air in container gained heat quickly.

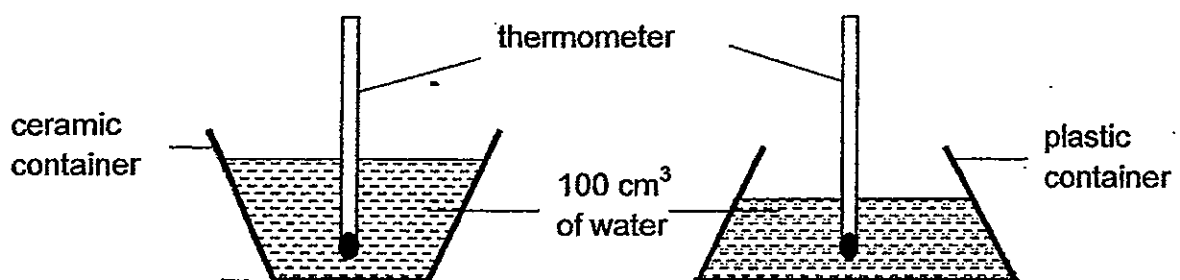
18. Mr Tan set up an experiment using a sealed container with a capacity of 100 cm^3 which holds 70 cm^3 of water. 10 cm^3 of water was removed from the container through the opening at the bottom of the container and some air was pumped into the container using the pump.



Which one of the following shows the volume of air that was pumped in and the final volume of air in the container?

	Volume of air pumped into the container (cm^3)	Final volume of air in the container (cm^3)
(1)	10	10
(2)	20	40
(3)	40	20
(4)	40	60

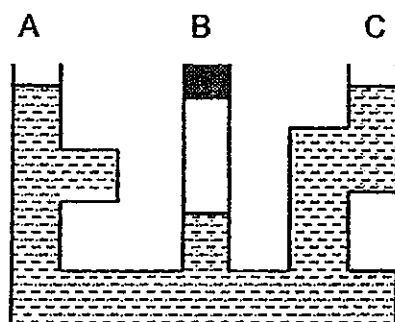
19. Ken wanted to find out if ceramic or plastic is a better conductor of heat. He set up the experiment using a ceramic container and a plastic container as shown below. He filled the containers with water at 90°C and measured the temperature of the water every minute. However, Ken's teacher said that he had not conducted a fair test.



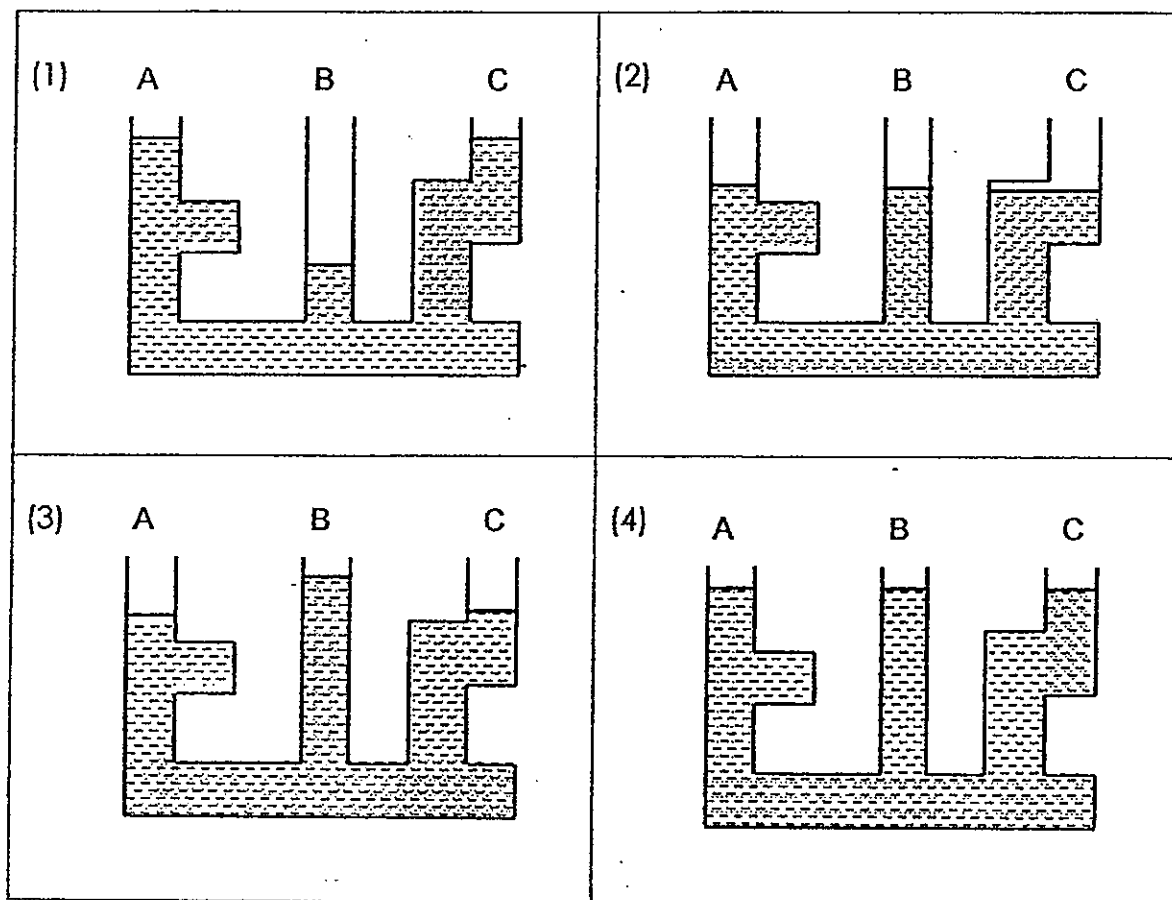
What should Ken have done to ensure that it was a fair test?

- (1) Use containers of the same material.
- (2) Add a layer of oil to both the containers.
- (3) Use containers of the same shape and size.
- (4) Pour the water to the same level in both the containers

20. The diagram below shows a communicating vessel with openings, A, B and C. Opening B is covered with a stopper. Some water is poured into opening A until it reaches the water levels as shown in the diagram below. The levels of water at A, B and C, are drawn as seen below.



Which diagram shows the correct water levels when the stopper at opening B is removed?



End of Booklet A



PRIMARY 4 END-OF-YEAR EXAMINATION 2012

Name : _____ () Date: 30 October 2012

Class : Primary 4 ()

Time: 8.00 a.m. - 9.30 a.m.

Parent's Signature : _____

SCIENCE BOOKLET B

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

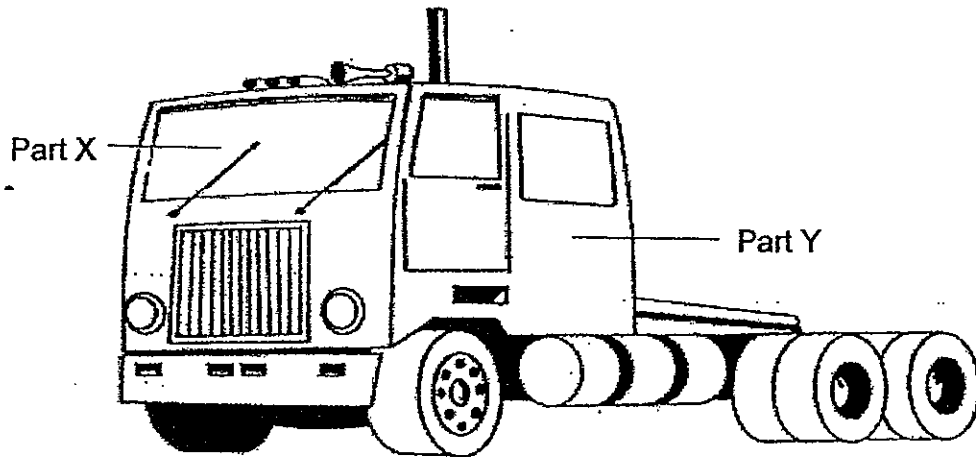
Answer all questions.

Booklet B	40
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Section B (40 marks)

Write your answers in the space provided.

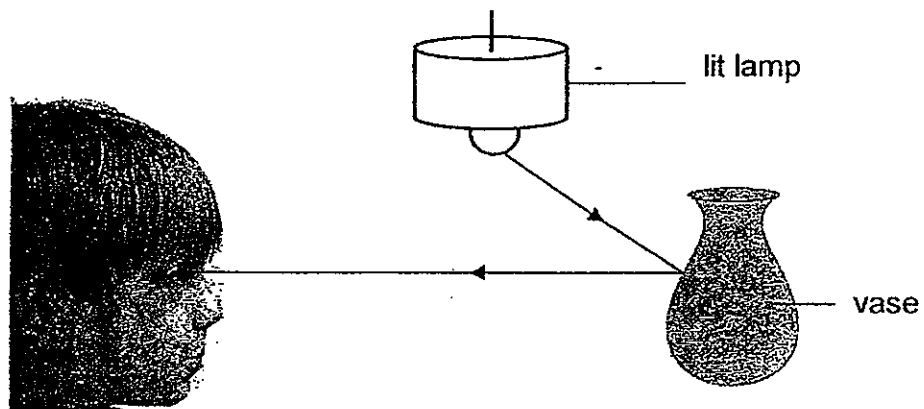
21. The picture below shows a truck.



Part X is made of clear glass because it allows _____ to pass through it so that the driver can see the road. [1]

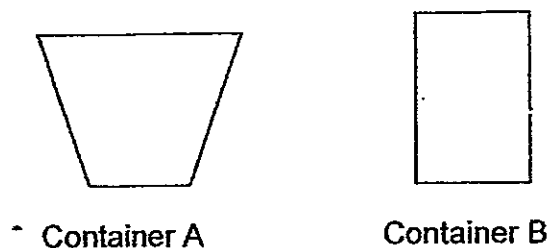
Part Y is made of _____ because it has to be strong. [1]

22. The diagram below shows how Michael sees the vase.



The _____ from the lit lamp is _____ by the vase into Michael's eye. [2]

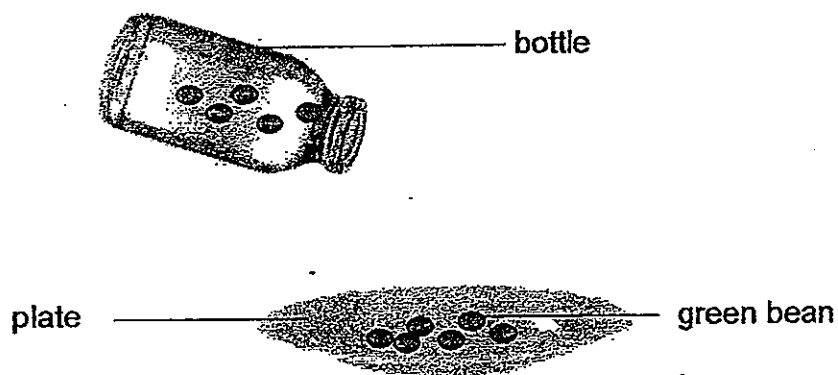
23(a) Mrs Tan transfers a substance from Container A to Container B shown below.



The volume of the substance remains the same but its shape changes.

This shows that the substance is in the _____

23(b) Mrs Tan pours some green beans from a bottle onto a plate as shown below.



The volume and shape of the green beans remain the same.

This shows that a green bean is in the _____ state. [1]

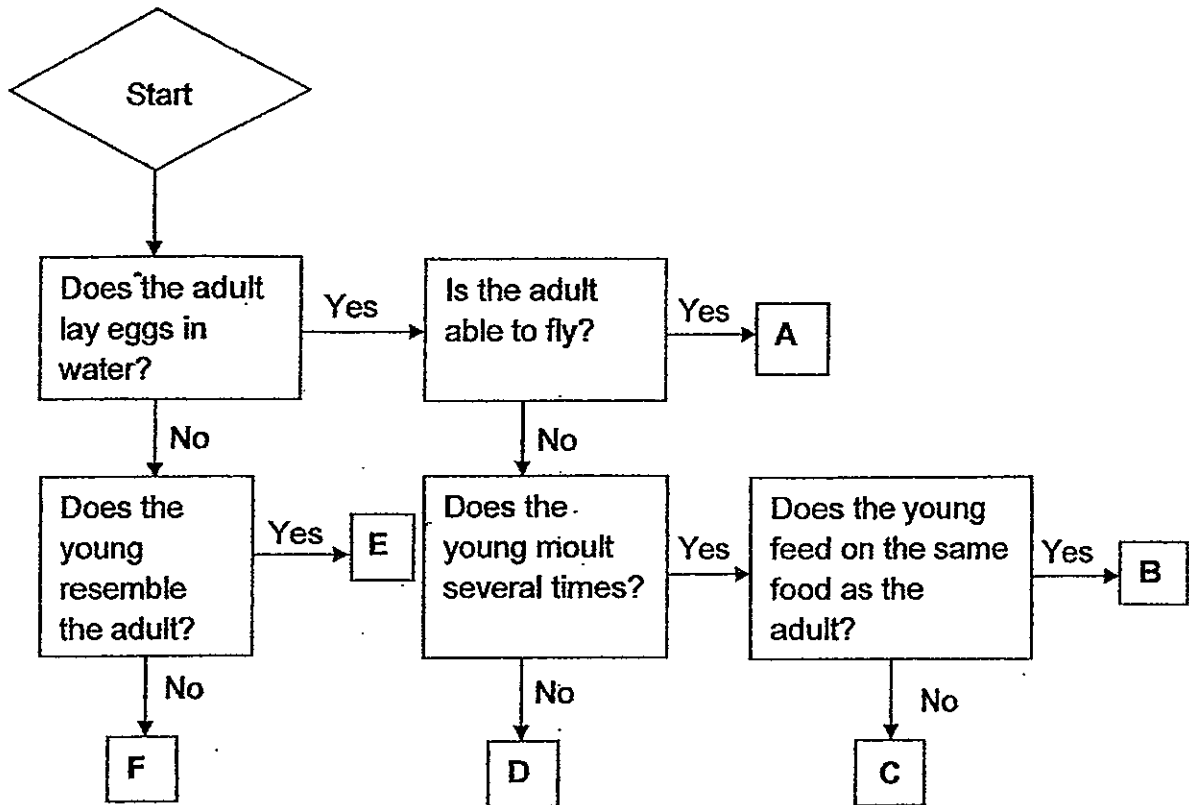
24. Classify the following into matter and non-matter.

[2]

heat	shadow	salt	light
air	feather	music	paper

Matter	Non-matter

25. Study the characteristics of six organisms, A, B, C, D, E and F, found in a park in the flowchart below.

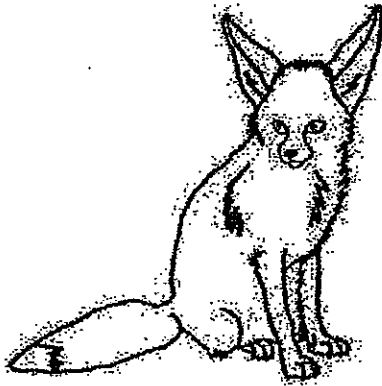


- (a) Based on the flowchart, describe organism E. [2]

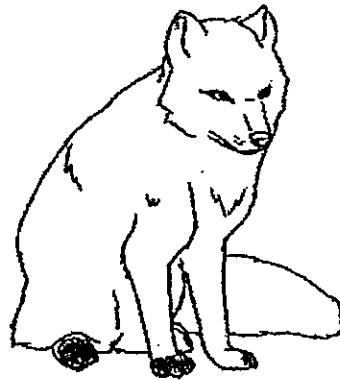
- (b) Based on the flowchart, which two organisms have three similar characteristics? [1]

- (c) Based on the flowchart, write down the difference between organisms C and D. [1]

2 b) Study the pictures below carefully.



Fennec fox

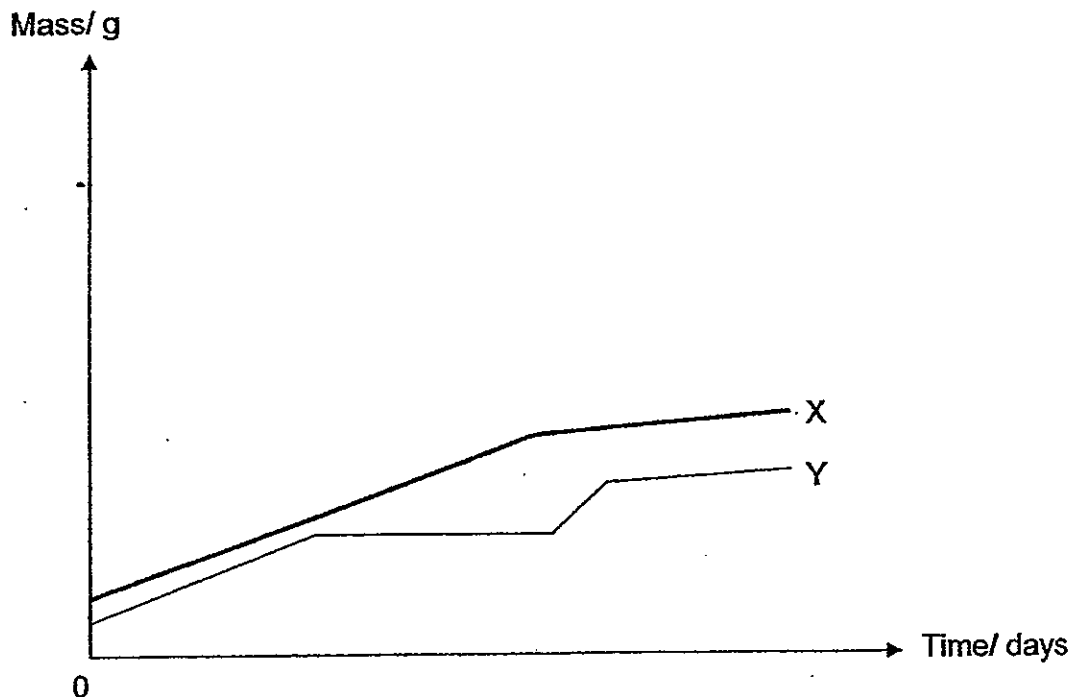


Arctic fox

- (a) Based on the pictures above, state a similarity between the fennec fox and the arctic fox. [1]

- (b) Based on the pictures above, state a difference between the fennec fox and arctic fox. [1]

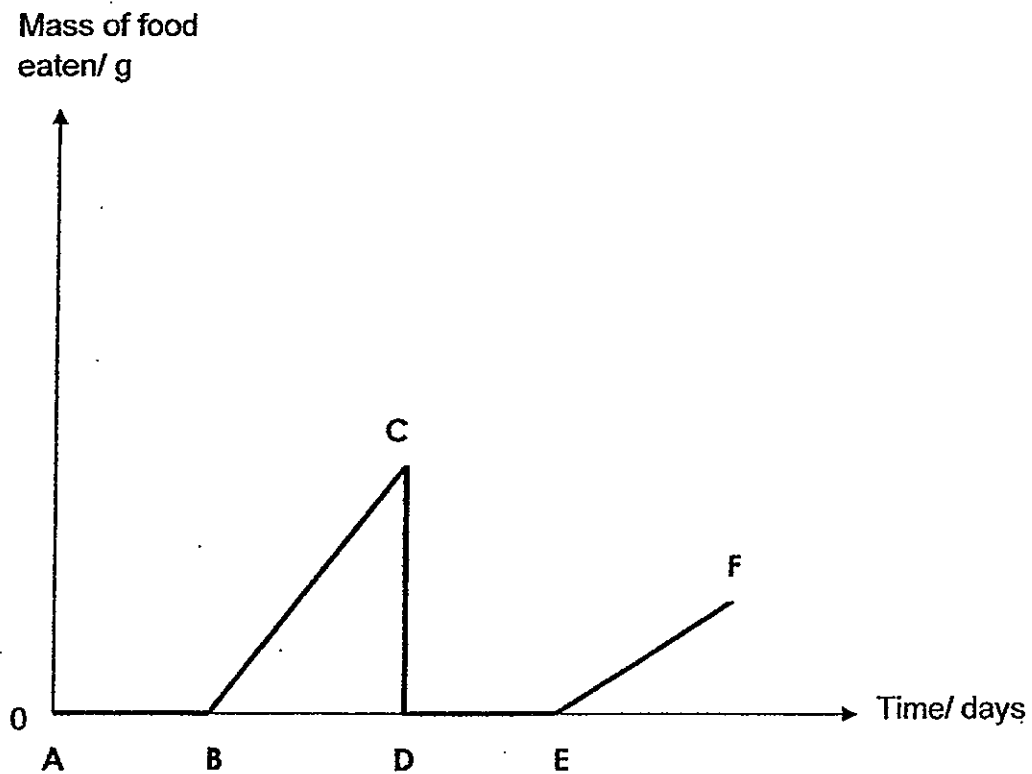
27. The graph below shows the changes in the mass of two organisms from the time they were young till the time they became adults and died. One of the organisms has a 3-stage life cycle whereas the other has a 4-stage life cycle.



- (a) Which line, X or Y, best represents the organism which has a 3-stage life cycle? [1]

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

28. The graph below shows the mass of food eaten by a butterfly throughout the stages of its life cycle.

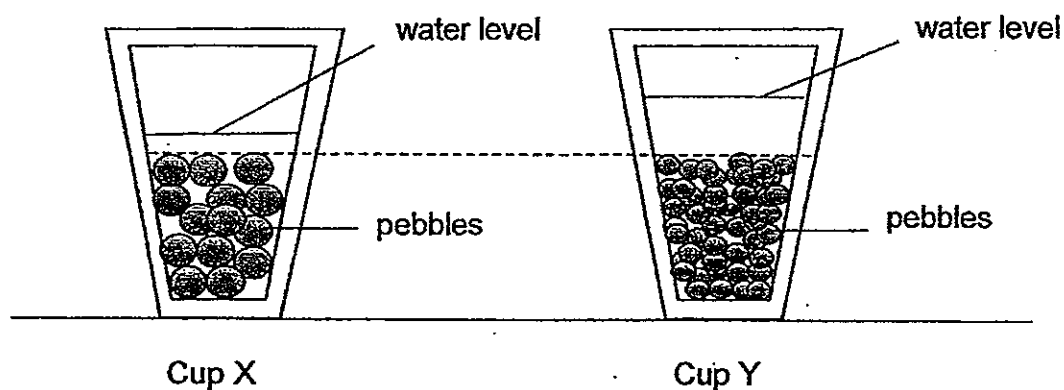


- (a) State the stage of the life cycle of the butterfly that is represented by BC. [1]

- (b) Explain why the mass of food eaten by the butterfly at DE is as shown in the graph. [1]

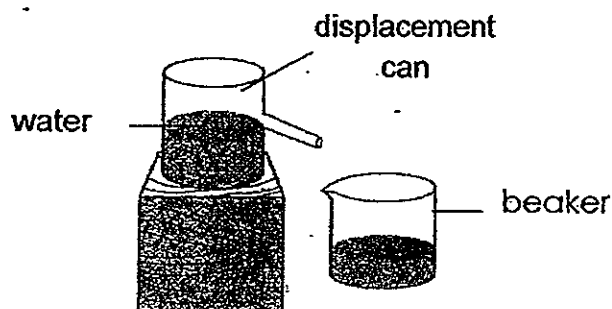
- (c) Name another organism where the amount of food eaten throughout the stages of its life cycle may be represented by the same graph. [1]

29. Mr Lee filled two similar cups, X and Y, with pebbles of different sizes to the same level. He then poured 50ml of water into each of the cups as shown in the diagram.



- (a) Explain the difference in height of the water levels in cups X and Y. [1]

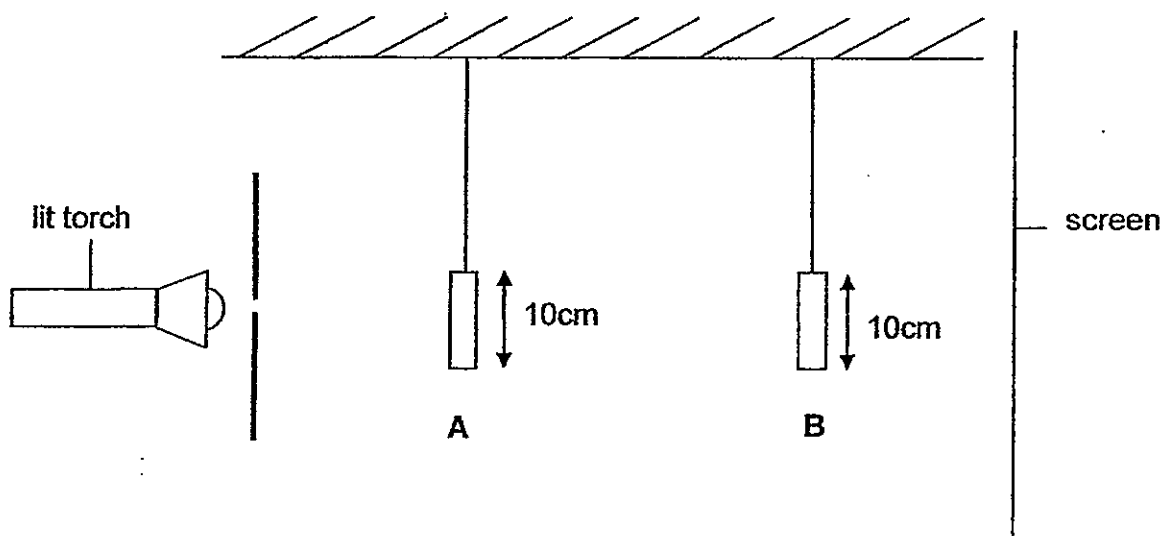
Mr Lee then poured ten pebbles from Cup X into the displacement can below and recorded the amount of water that was collected in the beaker. He repeated the process for ten pebbles from Cup Y.



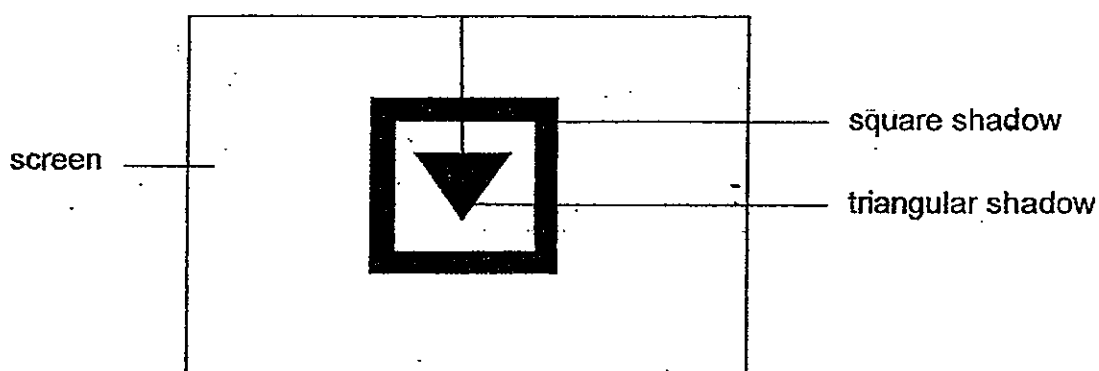
- (b) What would Mr Lee observe about the amount of water collected in the two beakers? [1]

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

30. The set-up below shows light from a torch shining on two shapes, A and B, made from thick cardboard. The shapes are placed at different distances from the torch.



The diagram below shows the shadow that was formed on the screen.



- (a) Which shape, A or B, is a triangle?

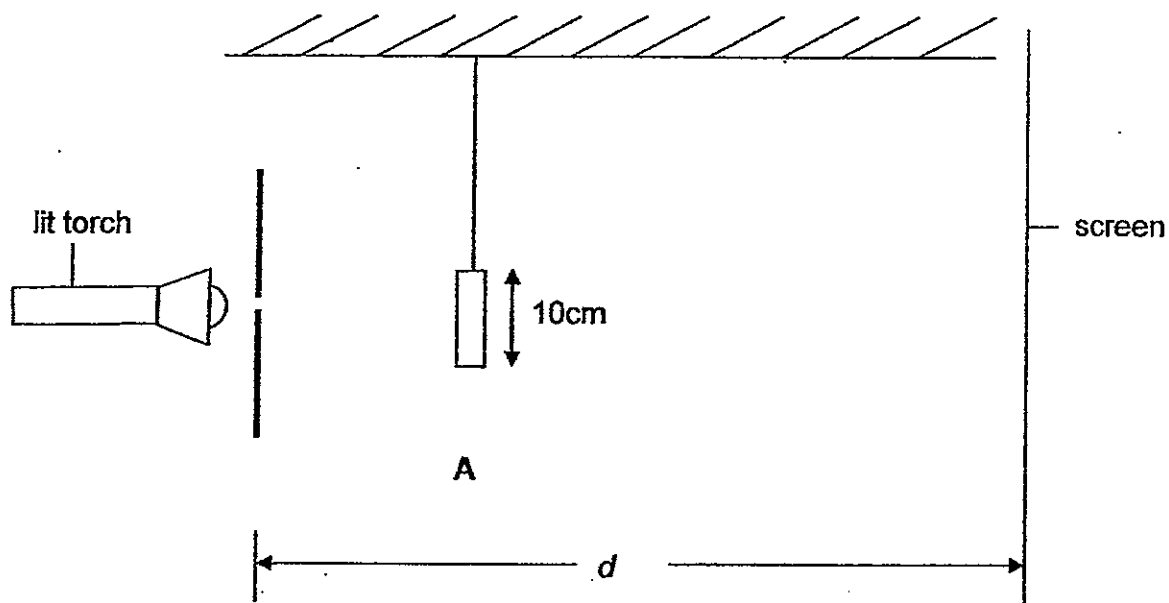
[1]

- (b) Suggest one way to increase the size of the triangular shadow without changing the size of the square shadow.

(You cannot add, take away or replace any of the equipment and materials.)

[1]

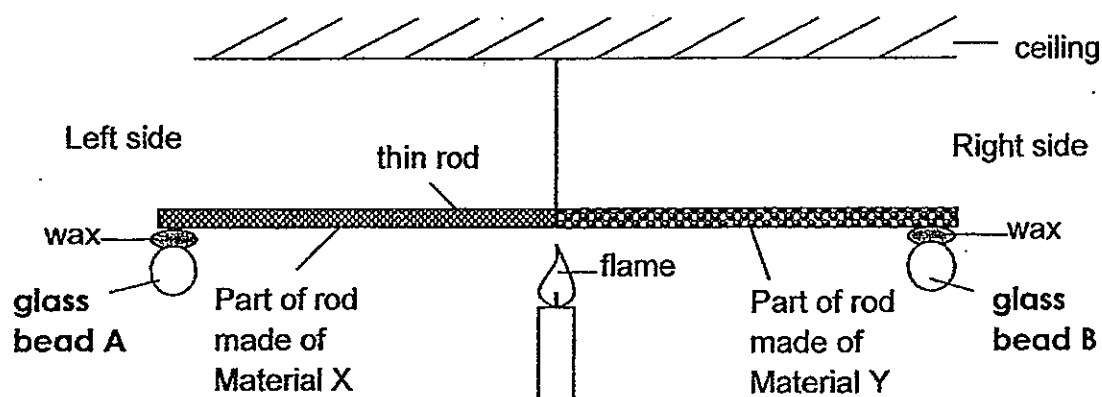
The distance between the torch and the screen is represented by d as shown in the diagram below.



Distance between the lit torch and screen, d (cm)	Height of shadow (cm)
60	40
55	42
50	44
45	46

- (c) Based on the table, what is the relationship between the distance between the lit torch and the screen and the height of the shadow? [1]

31. Joe hung a thin rod made of materials, X and Y, from the ceiling. Two identical glass beads were attached to the ends of the rod by the same amount of wax as shown in the diagram below. The rod was balanced at first.



- (a) After heating the centre of the rod with a flame for some time, the rod suddenly tilted downwards at the left side. Suggest what could have happened. [1]

- (b) Give a reason explaining how your answer in (a) happened. [2]

32. Mary wants to find out if light is needed for green bean seeds to grow. She is given five set-ups and they are left in a well-lit room at room temperature.

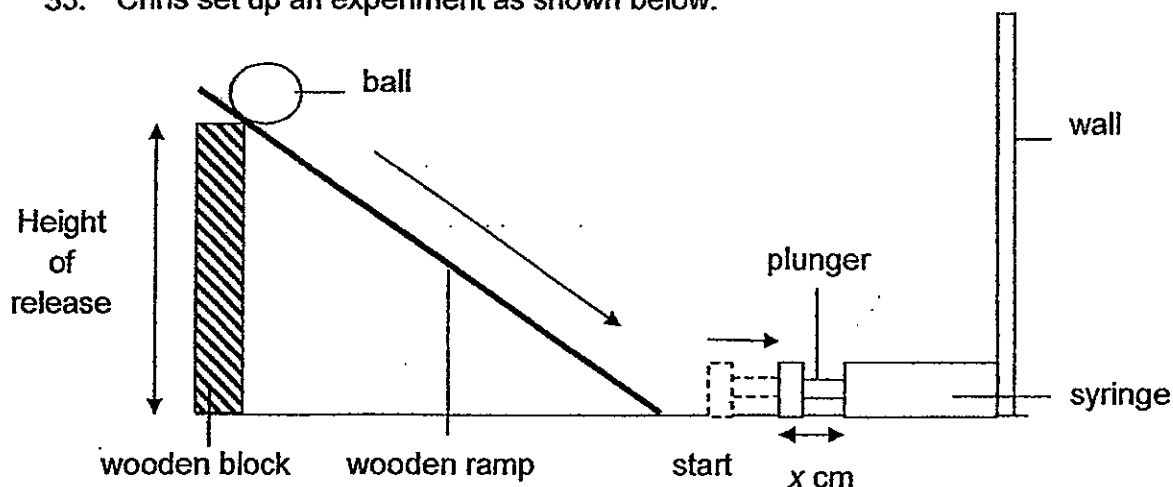
Set-up A	Set-up B	Set-up C	Set-up D	Set-up E
No green bean seeds	5 green bean seeds	3 green bean seeds	3 green bean seeds	5 green bean seeds
Container covered with black paper	Container covered with tracing paper	Container not covered with paper	Container covered with black paper	Container not covered with paper

- (a) Which two set-ups should she use in this experiment to ensure a fair test? [1]

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

- (c) What are the conditions that are necessary for seeds to grow?

33. Chris set up an experiment as shown below.



He released the ball down the ramp. When the ball rolled down the ramp to the ground, it stopped only after hitting the plunger of the syringe, pushing the plunger in.

The table below shows the length, x cm, of the plunger that was not pushed in by the ball when the ball was released from a height of 110 cm, 80 cm and 50 cm respectively.

Reading	Length, x , of the plunger that was not pushed in (cm)		
	Ball released from 110 cm	Ball released from 80 cm	Ball released from 50 cm
1 st	2	3	5
2 nd	1	3	6
3 rd	2	4	6




(a) Based on the table, what is the property of the matter found in the syringe?

(b) Based on the results, what is the relationship between the height the ball was released and the length of the plunger that was not pushed in? [2]

(c) Why were three readings taken for the experiment?

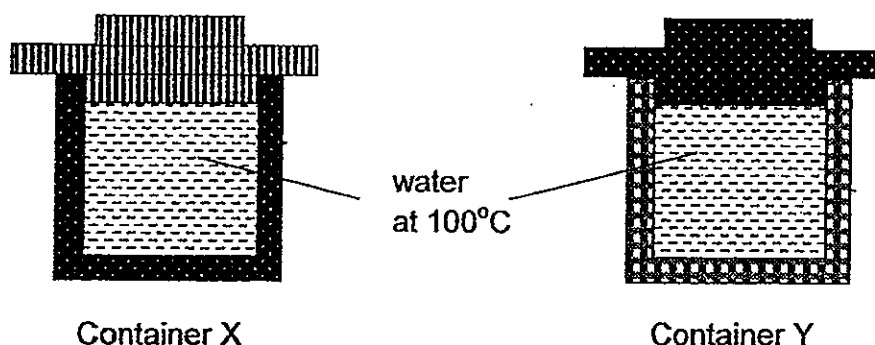
[1]

34. Metals expand when heated. The table below shows the amount of expansion of metals, A, B and C, when heated from room temperature to 100°C . These metals were used to make two containers, X and Y.

Key	Metal	Amount of expansion at 100°C
	A	5 units
	B	3 units
	C	10 units

The two covered containers, X and Y, were of the same size. Each container was made with two of the metals, A, B and C.

Water at 100°C was poured into each container before they were covered and left to stand in a room for 10 minutes. Neither of the covers was observed to have bent at the end of the 10 minutes.



- (a) In which container, X or Y, was it more difficult to remove the cover after 10 minutes? Explain your answer in (a). [2]

- (b) Fill in the blanks with the metal that should be used for the cover and container respectively such that it is easiest to remove the cover. [1]

(i) Cover : _____

(ii) Container : _____

End of Booklet B

Answer Ke

EXAM PAPER 2012

SCHOOL : TAO NAN
SUBJECT : PRIMARY 4 SCIENCE

TERM : SA2

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

Q18	Q19	Q20
2	3	2

21)light / Iron

22)light / reflected

23)a)liquid b)solid

24) <u>Matter</u>	<u>Non-matter</u>
salt	shadow
air	light
feather	music
paper	heat

25)a)The adult of organism E does not lay eggs in water and the young resembles the adult.

b)Organism B and C.

c)Organism D young do not moult several times while organism C young moult several times.

26)a)Both of them have hair.

b)The fennec fox has larger ears than the artic fox.

27)a)X.

b)The mass of the organism with a 3-stage life cycle increase over time as shown by line X. However, as shown in line Y shown that it has gone through mass a pupa does not increase which stage where it does not feed.

28)a)Larva.

b)It was a pupa and it cannot move to eat.

c)Mosquito.

29)a)The pebbles in Cup Y are smaller therefore they fill up more gaps in which the pebbles in Cup X cannot so the height of the water will be different.

b)They will be different.

c)The volume of the pebbles in Cup X is bigger than the volume of pebbles in Cup Y therefore the amount of water displaced by the pebbles in Cup X will be more than the amount of water displaced by Cup Y's pebbles.

30)a)B.

b)Move the triangular shadow nearer to the light source.

c)As the distance between the lit torch and screen decreases, the height of the shadow increases.

31)a)The wax on the right side melted first and the glass bead B dropped.

b)Material Y is a better conductor of heat than Material X as heat travelled faster through it to the wax of glass bead B causing the wax on Y to melt first.

32)a)She should use Set-up C and D.

b)Set up C and D only have one changed variable which is the presence of light.

c)They are warmth, air, water.

33)a)Air can be compressed.

b)As the height of the ball increases, Length X decreases.

c)It is to ensure that his results are reliable.

34)a)Container Y. The cover is made of metal C and the container is made of B metal B will expand the least while metal C expands the most therefore it will be very light.

b)i)B.

ii)C.