HENRY PARK PRIMARY SCHOOL
2009 SEMESTRAL EXAMINATION 1
SCIENCE
PRIMARY 4

Duration of Paper: 1 h 45 min

100

Name:_____ ( )

Parent's Signature

Class: Pr 4 _____

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PART 1 (60 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.

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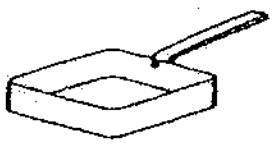
1. Sam observed a substance and concluded that it is a gas. Which of the following statement(s) below support(s) his conclusion?

A: It can be compressed.
B. It has a definite shape.
C: It does not have mass.
D: It has a definite volume.

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

( )

2. Which of the following item(s) will take the shape of the pan below?

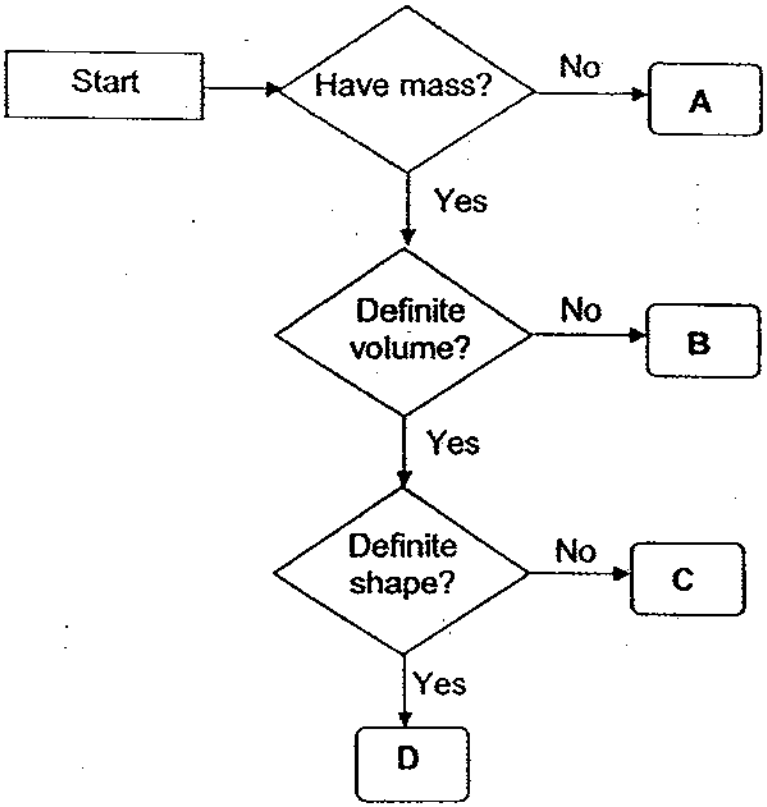


A: Soup
B: Marbles
C: Orange juice
D: Water vapour

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

( )

3. Study the flow chart below carefully. The flowchart is used to identify 4 items, A, B, C and D.

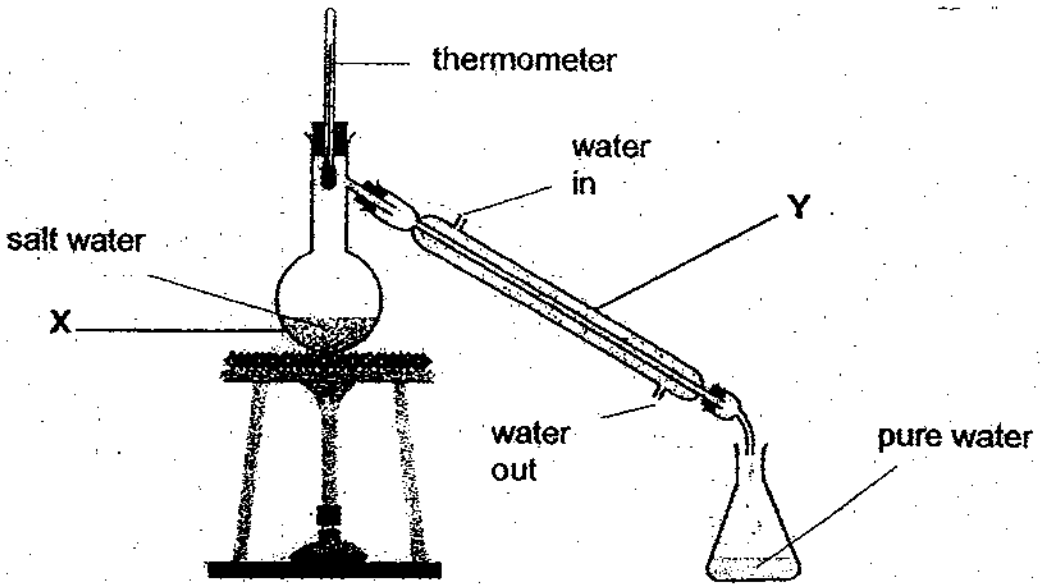


Which one of the following **correctly** identifies items A, B, C and D?

	A	B	C	D
(1)	radio	ice	water droplet	candle
(2)	fire	juice	water	chair
(3)	music	water vapour	petrol	bread
(4)	sand	sun light	juice	computer

( )

4. An experiment was set up as shown below to collect pure water. Water evaporated in X and condensed in Y.

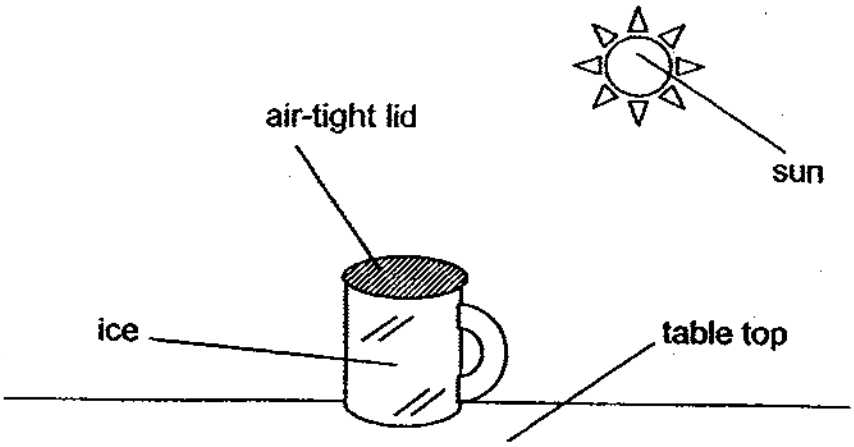


Which of the following describes what happens in X and Y?

A: Liquid in X gained heat and changed to gas.
B: Liquid in X lost heat and changed to gas.
C: Gas in Y gained heat and changed to liquid.
D: Gas in Y lost heat and changed to liquid.

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

5. Tim placed a cup of water, filled to its brim, in the freezer over night. The next day, he sealed the cup's opening with an air-tight lid and left it on a table top under the sun.



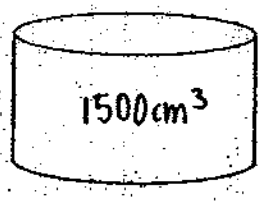
At the end of the day, which of the following change(s) in the water will he observe?

A: state
B: mass
C: shape

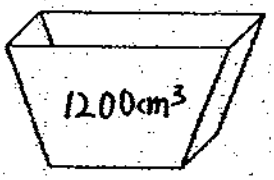
(1) A only
(2) C only
(3) B and C only
(4) A, B and C

( )

6 The capacity of container A is 1500 cm^3 and the capacity of container B is 1200 cm^3.



container A



container B

When both containers are empty, which one of the following amounts of substances below can be stored inside container A but **not** inside container B when their lids are closed?

(1) 1200 cm^3 of gas
(2) 1200 ml of liquid
(3) 1500 cm^3 of gas
(4) 1500 ml of liquid

( )

7. Susan made some observations on the states of water and recorded them in the table below.

States of water	Definite shape	Definite volume	Can be compressed
A	No	No	Yes
B	Yes	Yes	No
C	No	Yes	No

Which one of the following below **correctly** identifies the states of water as described in A, B and C?

	A	B	C
(1)	water vapour	water droplet	ice
(2)	rain	ice	water vapour
(3)	water vapour	snow	water droplet
(4)	steam	ice	snow

( )

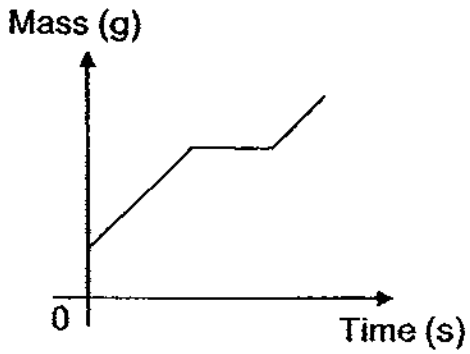
8. Lynn conducted an experiment following the steps below using a deflated balloon.

She measured the mass of the balloon (and air inside the balloon) after each step.

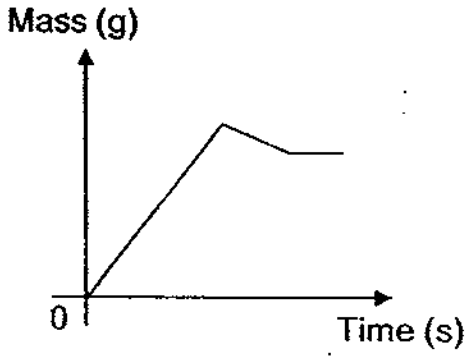
1. Measured the mass of the deflated balloon
2. Pumped some air in the balloon
3. Allowed some air in the balloon to escape (mass decreased because air has mass)
4. Pumped in more air in the balloon

Which one of the following graphs **correctly** shows the mass of the balloon and air inside the balloon from the start until the end of her experiment?

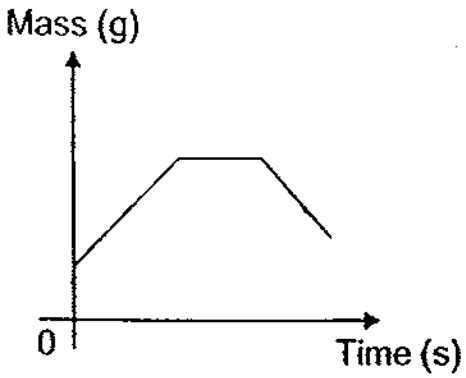
(1)



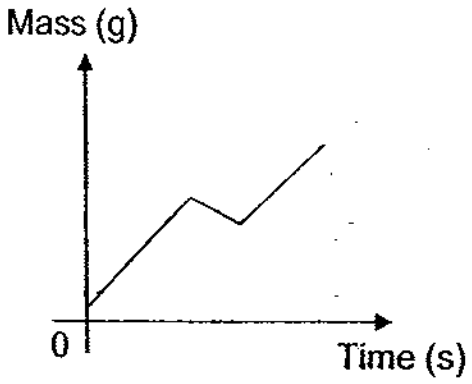
(3)



(2)



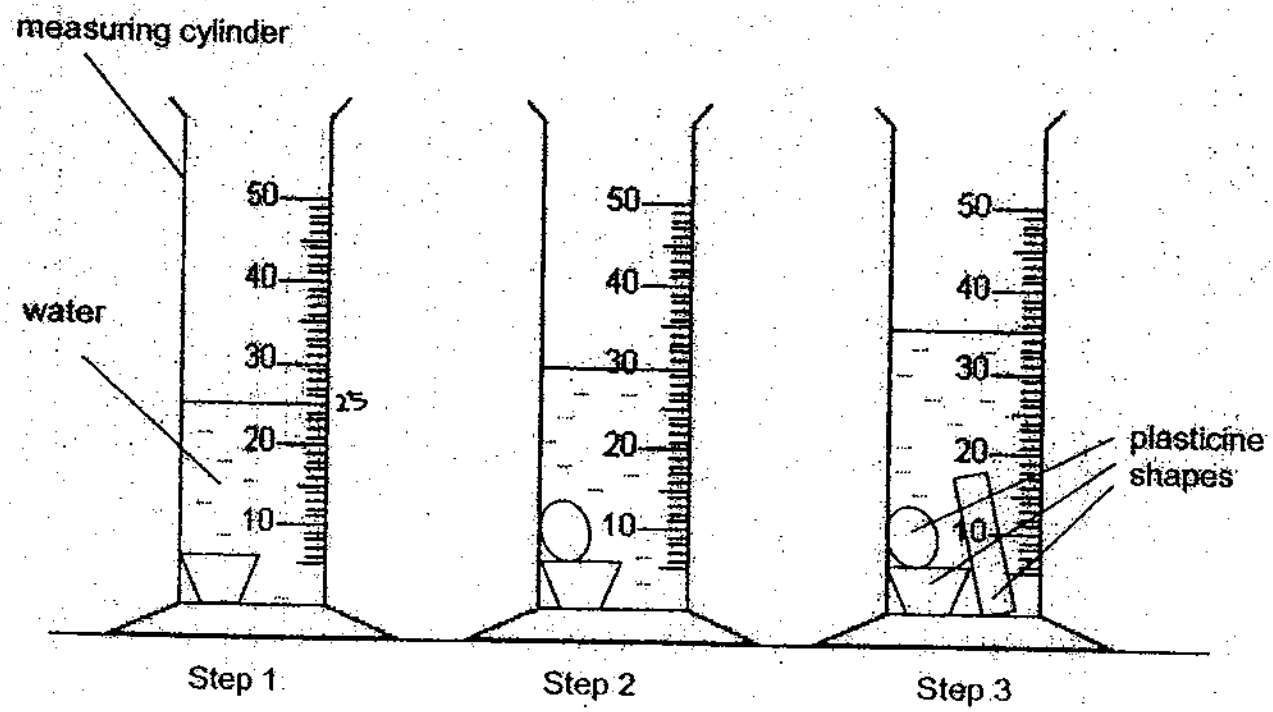
(4)



( )

9. Tim wanted to find out how the volume of objects is affected by their shape.

He shaped three pieces of plasticine each with a mass of 20g and placed them, one at a time, into a measuring cylinder with some water.



He recorded the volume of water after each object was added in the table below.

Number of objects	Volume (ml)
0	20
1	25
2	30
3	35

Based on the data in the table above, what can Tim correctly infer about the volume of the plasticine and their shapes?

(1) The mass of the objects is affected by their shapes
(2) Objects of different shapes can have the same volume
(3) Objects with the same mass can have different volumes
(4) Objects of different shapes can have the different volumes ( )

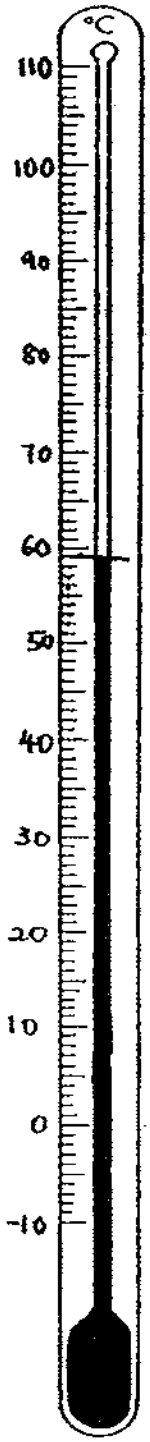
10. Which of the following activities will produce heat?

A: Burning a heap of dried leaves
B: Knocking a piece of iron with a hammer
C: Drying a piece of damp towel under the sun

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

( )

11. What is the temperature of the laboratory thermometer shown in the picture below?

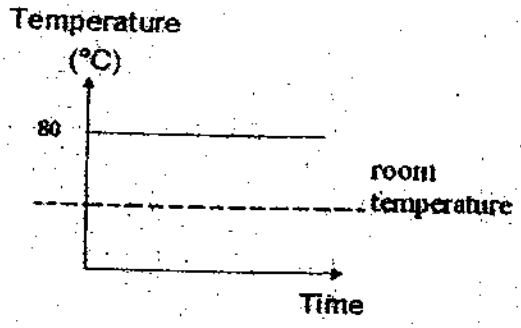


(1) 58°C
(2) 59°C
(3) 60°C
(4) 61°C

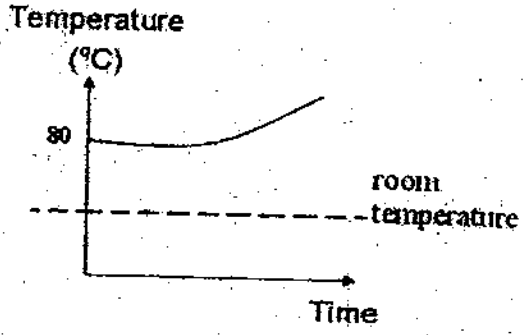
( )

12. A bowl of hot soup at 80°C is placed in a room.
Which one of the following graphs **correctly** shows the change in the temperature of the soup after a long period of time?

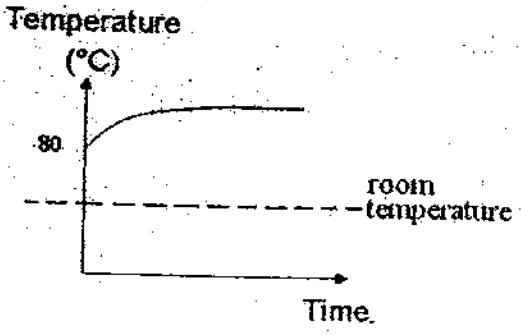
(1)



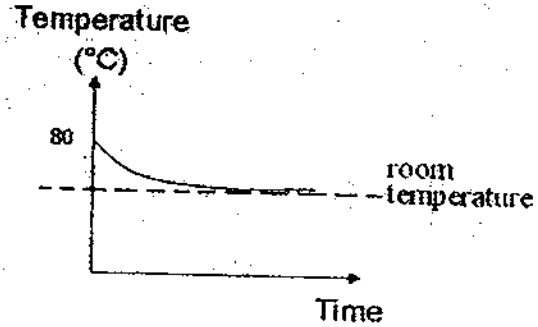
(3)



(2)

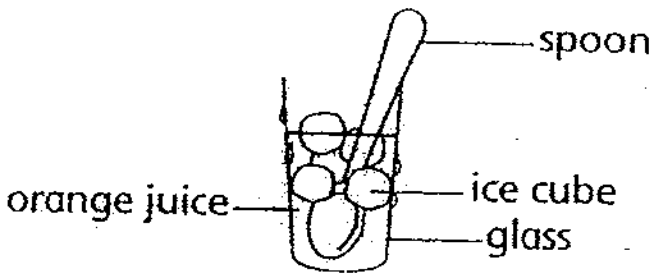


(4)



( )

13. Study the set-up below.



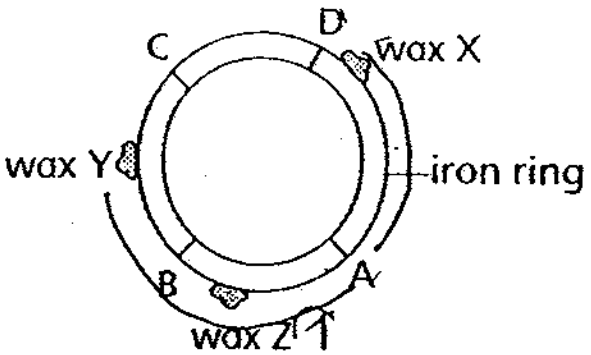
The ice cubes in the glass are gaining heat from the _____.

A: glass
B: spoon
C: orange juice
D: air surrounding the glass

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

( )

14. Three pieces of wax, X, Y and Z, were attached to a circular steel iron ring as shown below.

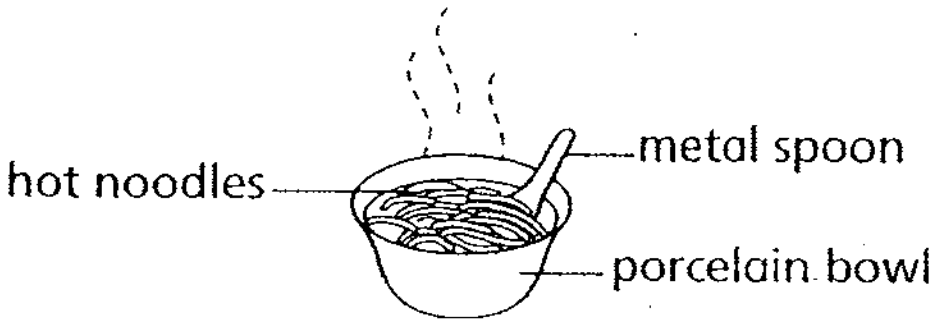


When the ring was heated, wax Z melted first, followed by Y and then X. At which point, A, B, C or D, was the ring heated?

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

( )

15. The diagram below shows a bowl of hot noodles.



Which of the following **correctly** shows the heat gain and heat loss taking place?

	Hot noodles	Metal spoon	Porcelain bowl
(1)	Heat loss	Heat gain	Heat gain
(2)	Heat gain	Heat gain	Heat loss
(3)	Heat loss	Heat loss	Heat gain
(4)	Heat gain	Heat loss	Heat loss

( )

16. Peter left a cup of hot chocolate drink in an air-conditioned room. He recorded the temperature of the drink over a period of time. Unfortunately, he mixed up his set of data with those from the other experiment.

Which one of the following sets of data shown below belongs to the experiment done by Peter?

(1)

Time (min)	Temperature (°C)
0	80
5	40
10	25
15	20
20	20

(3)

Time (min)	Temperature (°C)
0	80
5	55
10	30
15	10
20	0

(2) X

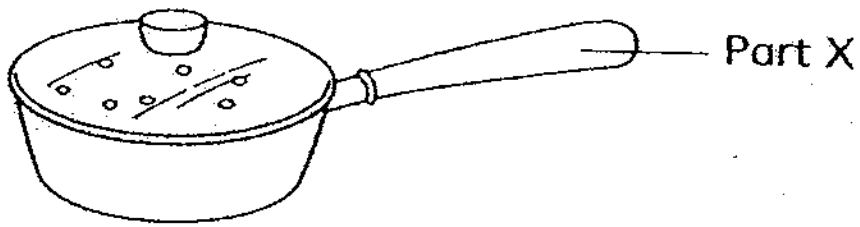
Time (min)	Temperature (°C)
0	80
5	40
10	30
15	45
20	85

(4) X

Time (min)	Temperature (°C)
0	20
5	29
10	45
15	65
20	80

( )

17. Study the pot below. Sammi is to choose between rubber and metal for part X. She decided to choose rubber.



Which one of the following statements **best** explains her choice of material for part X?

(1) Metal is a stronger material as compare to rubber.
(2) Rubber is a stronger material as compare to metal.
(3) Metal is a better conductor of heat as compared to rubber.
(4) Rubber is a better conductor of heat as compared to metal. X

( )

18. Which of the following activities correctly explain the **uses** of expansion of matter due to heat in our daily lives?

A: Inflate a balloon by blowing air into it.

B: Loosen a tightly-screwed metal lid of a jar by pouring hot water over it.

C: Alcohol level rises in a thermometer when placed into a beaker of hot Water.

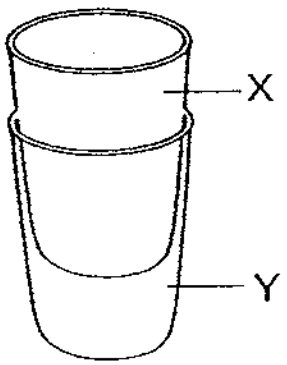
(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C ( )

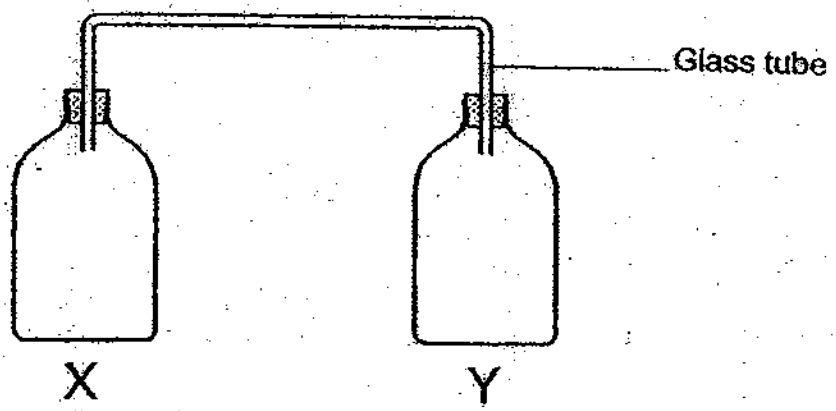
19. The two glasses, X and Y, are stuck together as shown below.



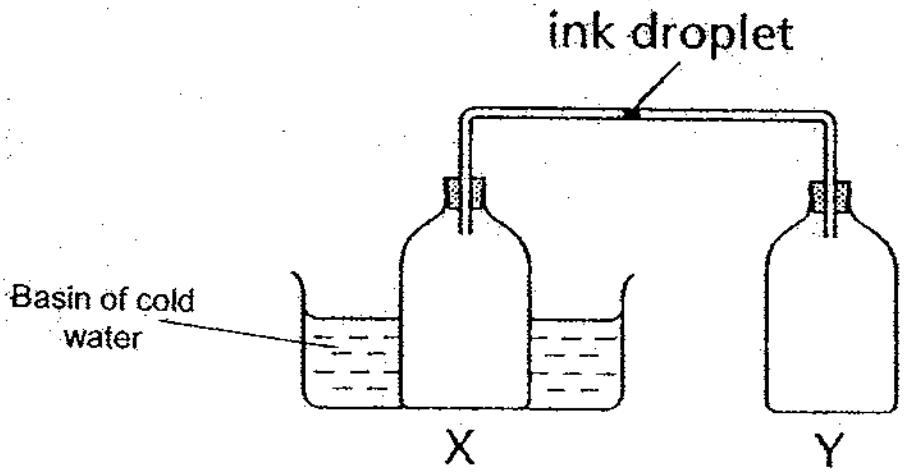
Which one of the following methods will enable us to separate the glasses?

(1) Put ice cubes over X and Y.
(2) Pour hot water over X and Y.
(3) Put ice cubes in X and dip Y in a basin of hot water.
(4) Pour hot water in X and dip Y in a basin of ice cubes. ( )

20. The diagram below shows two identical bottles, X and Y that are connected by a glass tube.



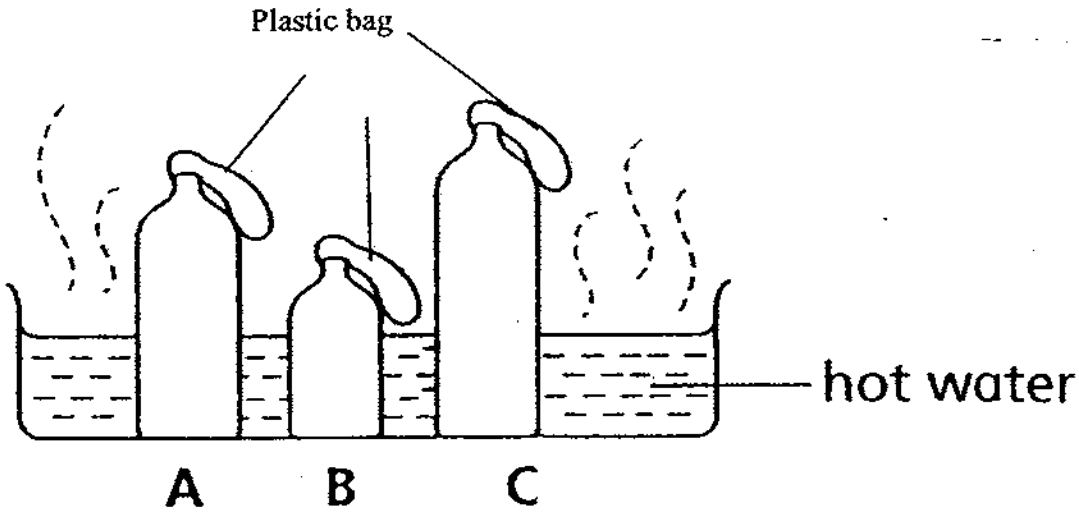
Bottle X is placed into a basin of cold water as shown in the diagram below.



What will happen to the ink droplet in the tube?

(1) It will move to and fro.
(2) It will move towards bottle X.
(3) It will move towards bottle Y.
(4) It will remain in its original position. ( )

21. Study the diagram below.

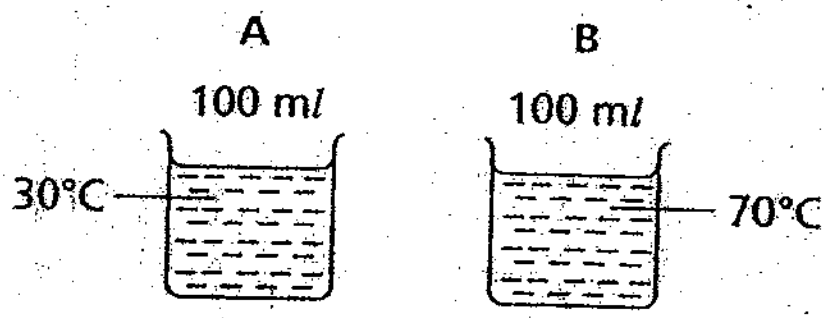


Samy noticed that the plastic bags started to inflate one by one. He observed the order in which the plastic bags inflate.

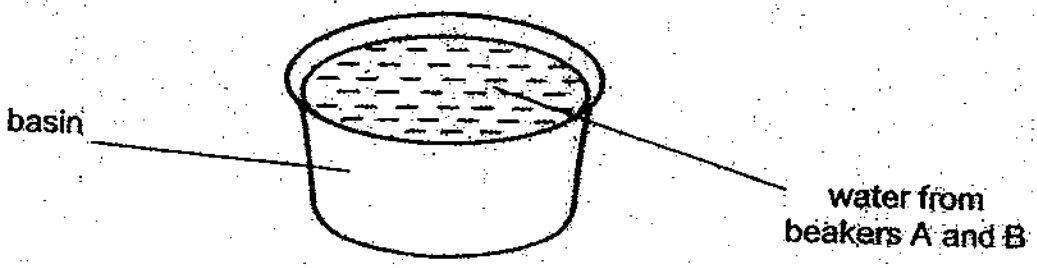
Which one of the following **correctly** shows the order (from the fastest to the slowest) of inflation?

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

22. Look at the two beakers, A and B, containing an equal amount of water.

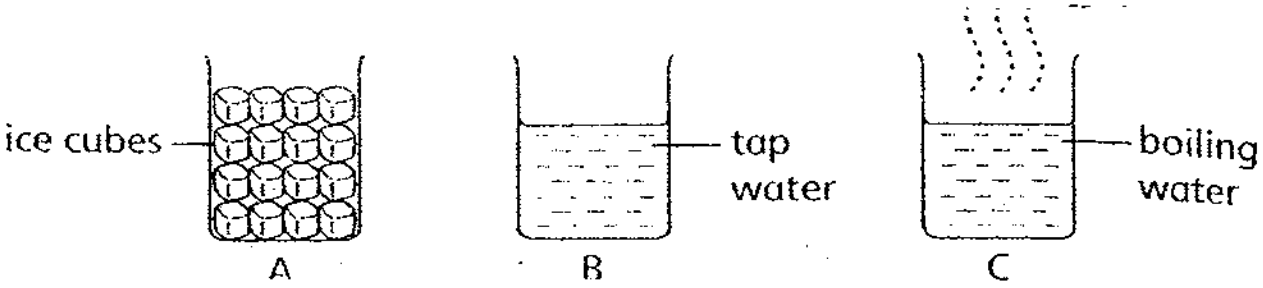


What will happen to the temperature of water from Beaker A and Beaker B when poured into an empty basin as shown below?



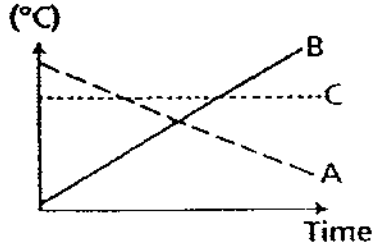
(1) The temperature of the water is less than 30°C.
(2) The temperature of the water is more than 70°C.
(3) The temperature of the water is less than 70°C but more than 30°C.
(4) The temperature of the water is more than 70°C but less than 30°C. ( )

23. Beakers A, B and C contained different contents as shown in the diagram below. They were left on a table for 3 hours.

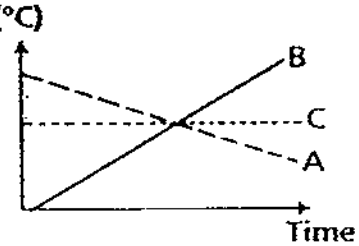


Which one of the following sets of graphs **correctly** shows the change in temperature of the ice cubes, tap water and boiling water after 3 hours?

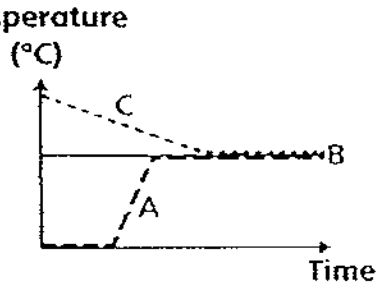
(1)



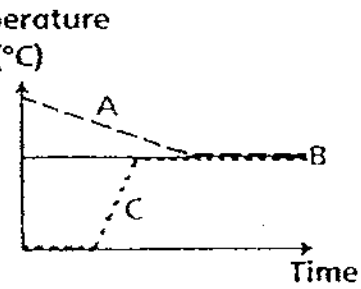
(3)



(2)

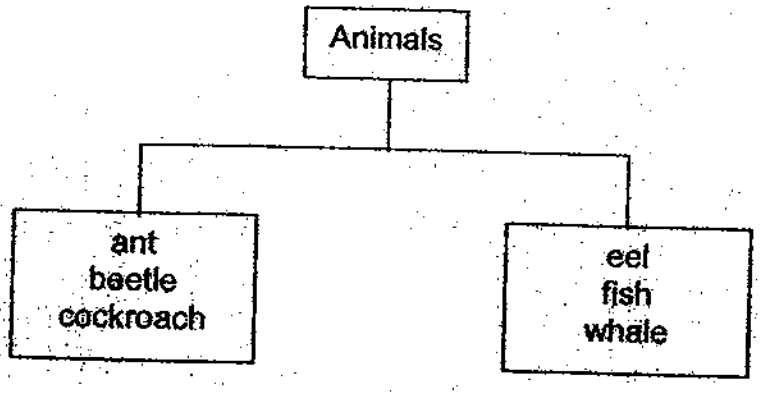


(4)



( )

24. Study the classification chart below.



The animals in the two groups above are classified according to:

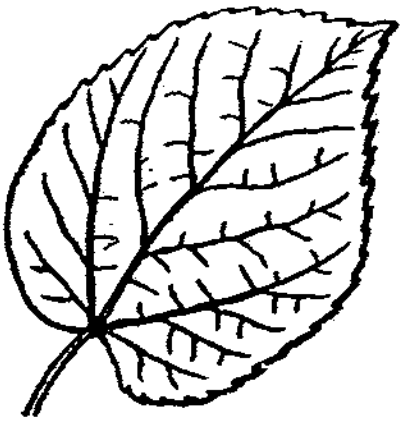
A: Where they live
B: Presence of legs
C: How they move about
D: Type of outer body covering

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

( )

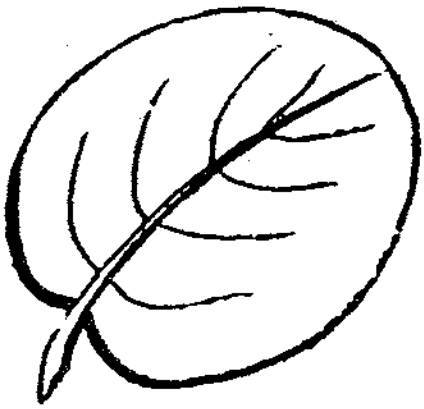
25. Observe the drawings of some leaves below.

Leaf A



Leaf C

Leaf B



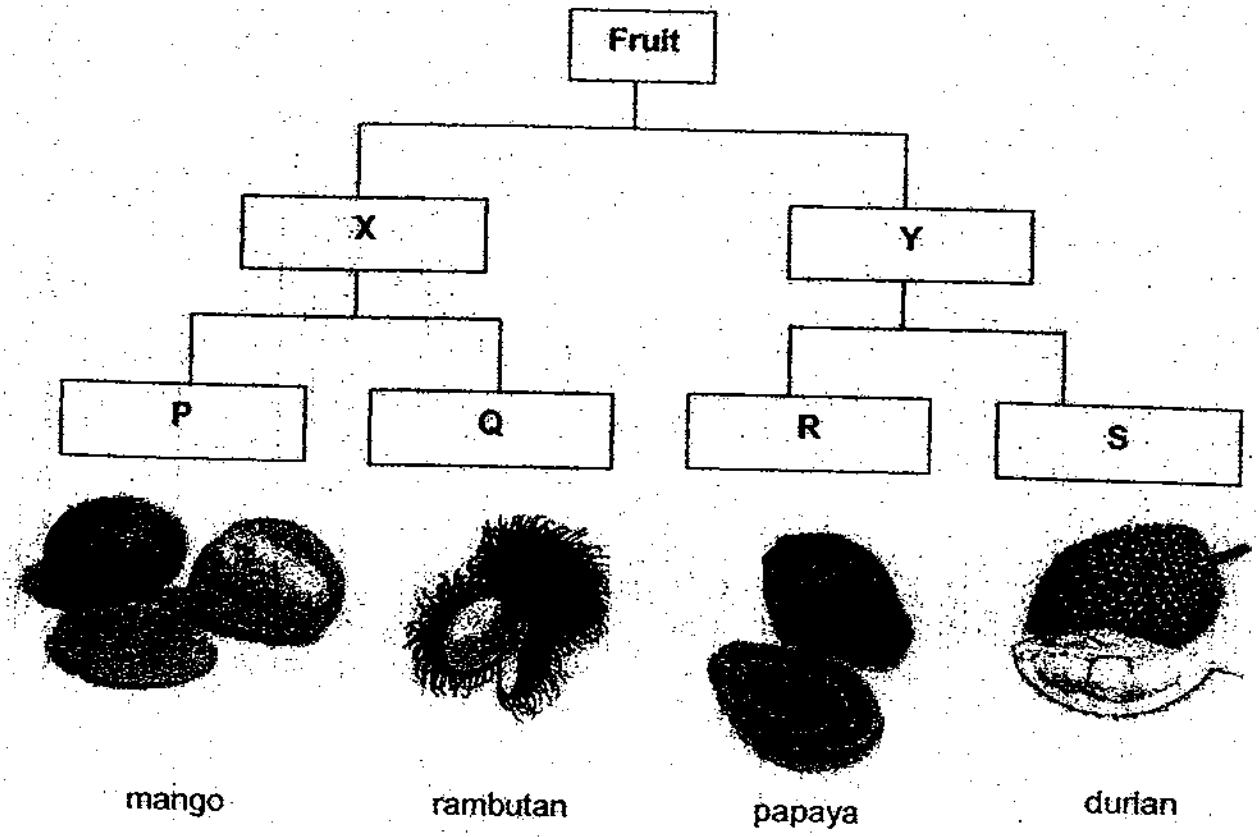
Leaf D

Which sets of leaves are **correctly** classified?

	Leaf edge	
	Jagged	**Entire**
(1)	A, B	C, D
(2)	A, C, D	B
(3)	B, C, D	A
(4)	A, D	B, C

( )

26. Study the classification chart below.



Which one of the following **correctly** shows the headings Y and Q?

	Y	Q
(1)	one seed	smooth skin
(2)	many seeds	rough skin
(3)	smooth skin	one seed
(4)	rough skin	many seeds

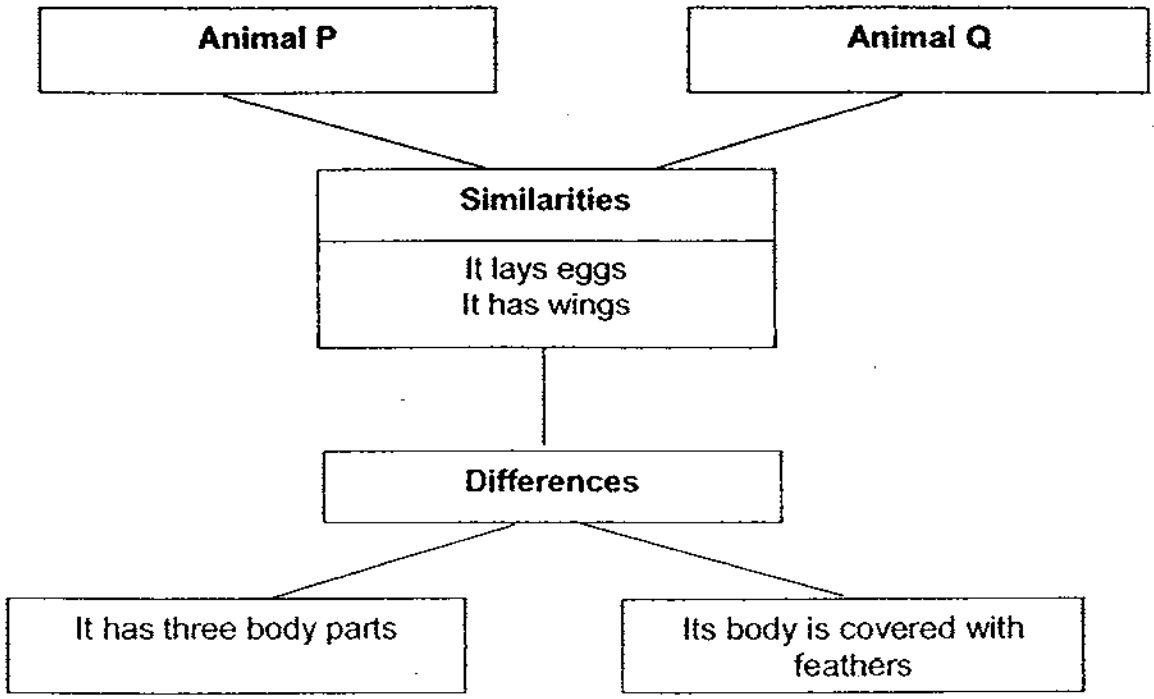
( )

27. Jenny observed a living thing and concluded that it is a plant and **not** an animal.

Which one of the following characteristics **best** supports her conclusion?

(1) It can grow.
(2) It can reproduce.
(3) It makes its own food.
(4) It can move on its own. ( )

28. Study the chart below carefully.

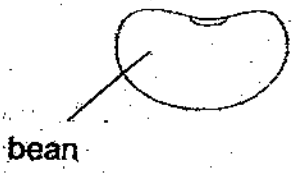


Which one of the following **correctly** identifies the group of animals that Animals P and Q belong to?

	Animal P	Animal Q
(1)	Fish	Mammal
(2)	Insect	Bird
(3)	Amphibian	Fish
(4)	Bird	Insect

( )

29. Jim thinks that the size of a bean will affect how fast it will germinate.

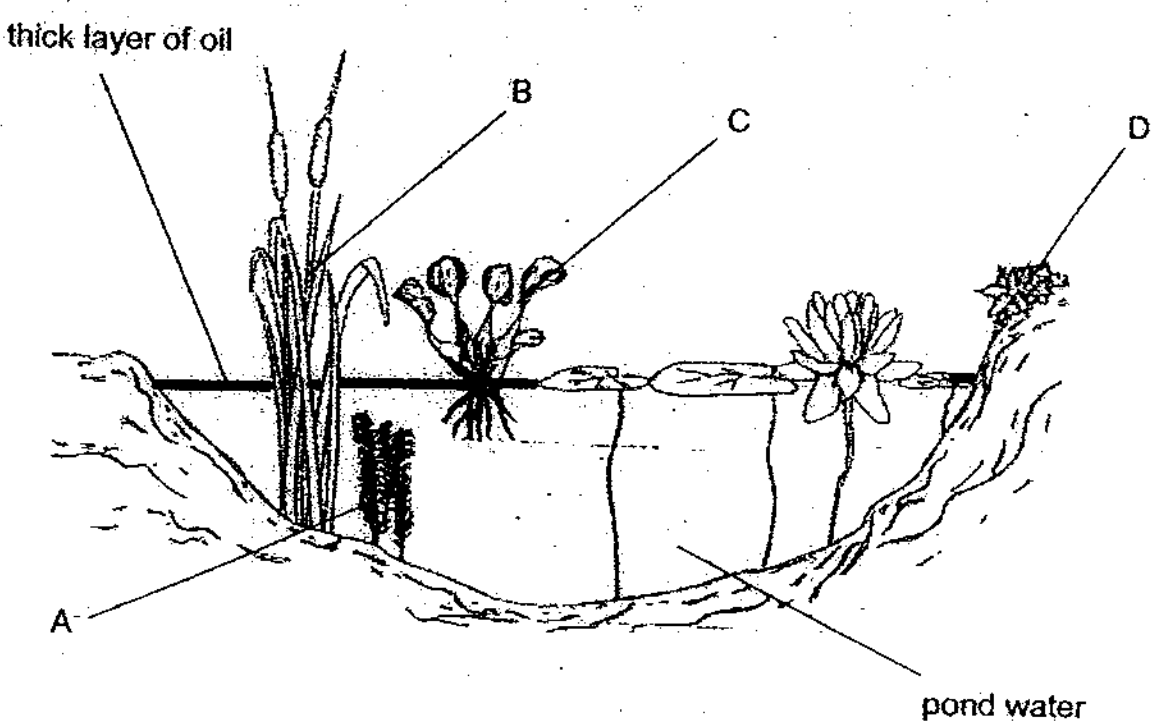


Which one of the following variables below should he change in order to test his hypothesis?

(1) The type of soil
(2) The size of bean
(3) The amount of light
(4) The number of beans

( )

30. Lynn observed a thick layer of oil floating on the surface of the pond water.



Which organism(s) A, B, C and D is/are likely to be **most** affected by the thick layer of oil on the water?

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

( )

End of Part 1

HENRY PARK PRIMARY SCHOOL
2009 SEMESTRAL EXAMINATION I
SCIENCE
PRIMARY 4

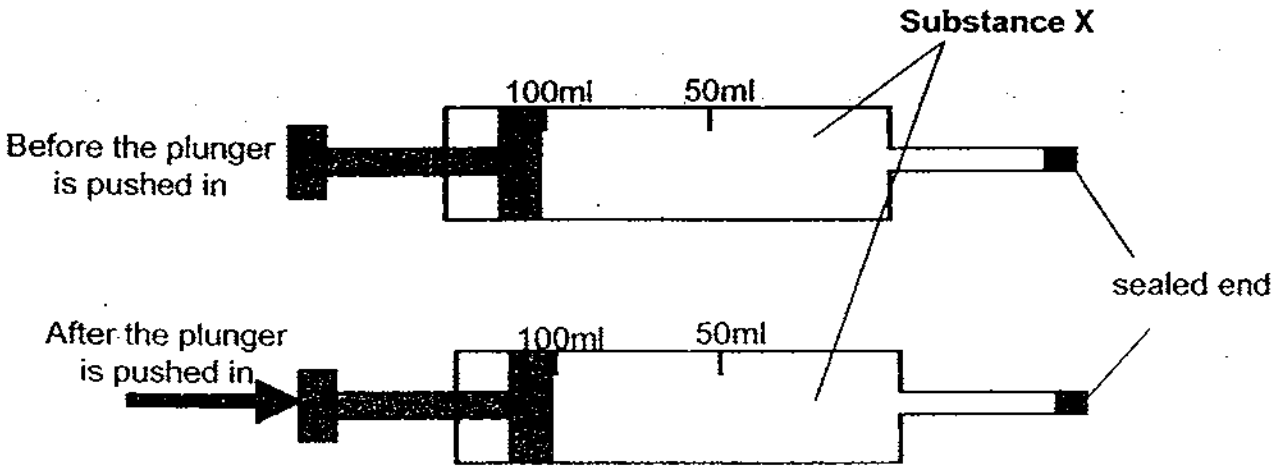
40

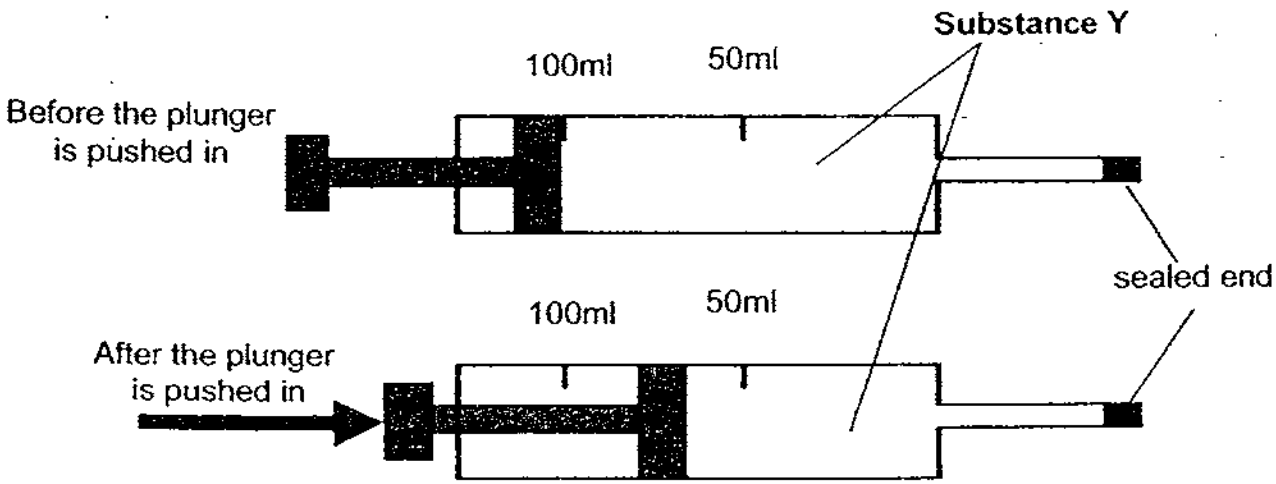
Name:_____( )

Class: Pr 4 _____

PART 2 (40 marks)
Write your answers to questions 31 to 44 in the spaces given.

31. 100 ml each of substances X and Y are placed inside two syringes. The ends of both syringes are sealed shut.





a) State one **difference** between the properties of the substances X and Y? *(1m)*

Substance X:

_____

Substance Y:

_____

b) State one **similarity** in the properties of both substances X and Y. *(1m)*

_____

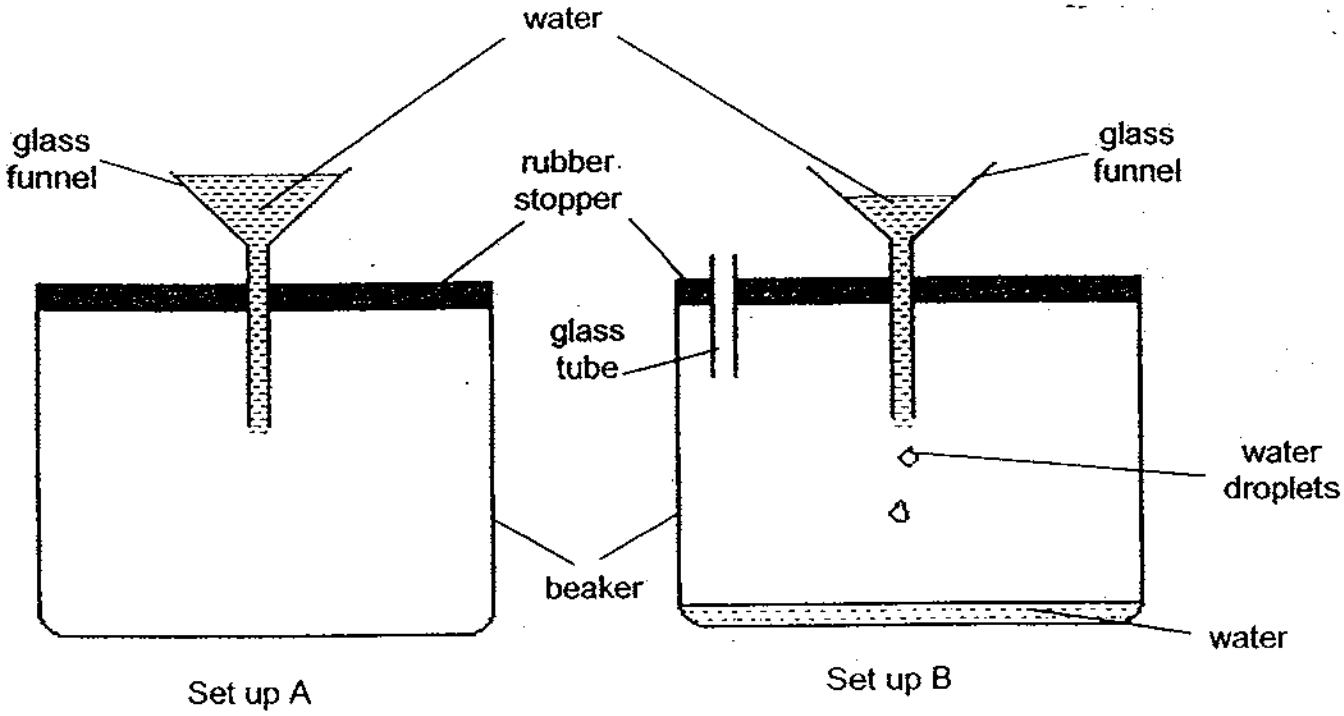
_____

c) Predict the new volume of the substance X , after the plunger is pushed in, if 50ml of substance X is placed in the syringe at first. *(1m)*

_____

_____

32. When water was poured into the glass funnel of Set up A, it did not flow into the beaker. However, when water was poured into the glass funnel of Set up B, it started to drip into the beaker.



a) What is inside the beaker in Set up A? *(1m)*

_____

b) Explain the purpose of the glass tube in Set up B. *(1m)*

_____

_____

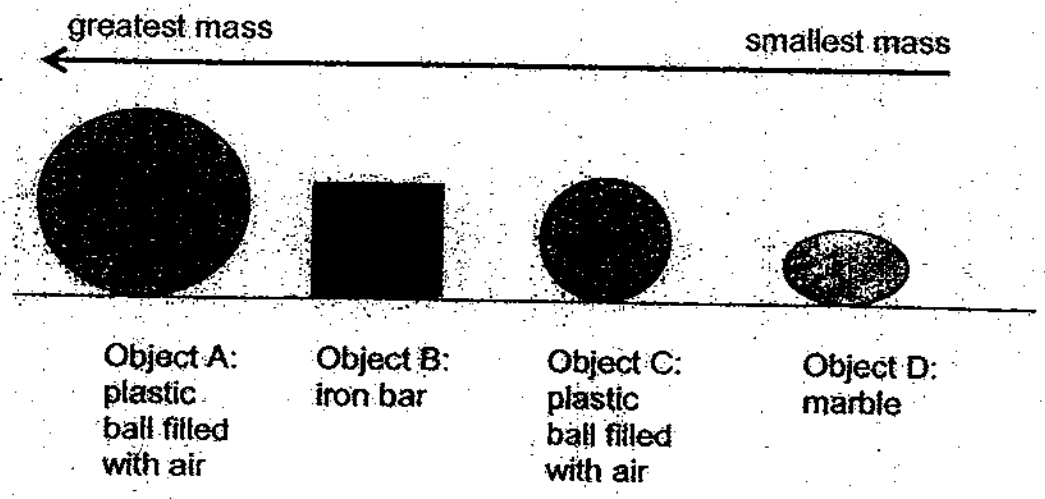
c) **<u>Without removing the glass funnel, glass tube or the rubber stopper</u>**, suggest one possible way to stop the water in the glass funnel from entering the beaker in Set up B. *(1m)*

_____

_____

33. Harro thinks that the greater the volume of an object, the greater its mass.

He arranged the objects in the diagram below, according to their mass with A having the greatest mass, and D, the smallest mass. He wanted to test his hypothesis.

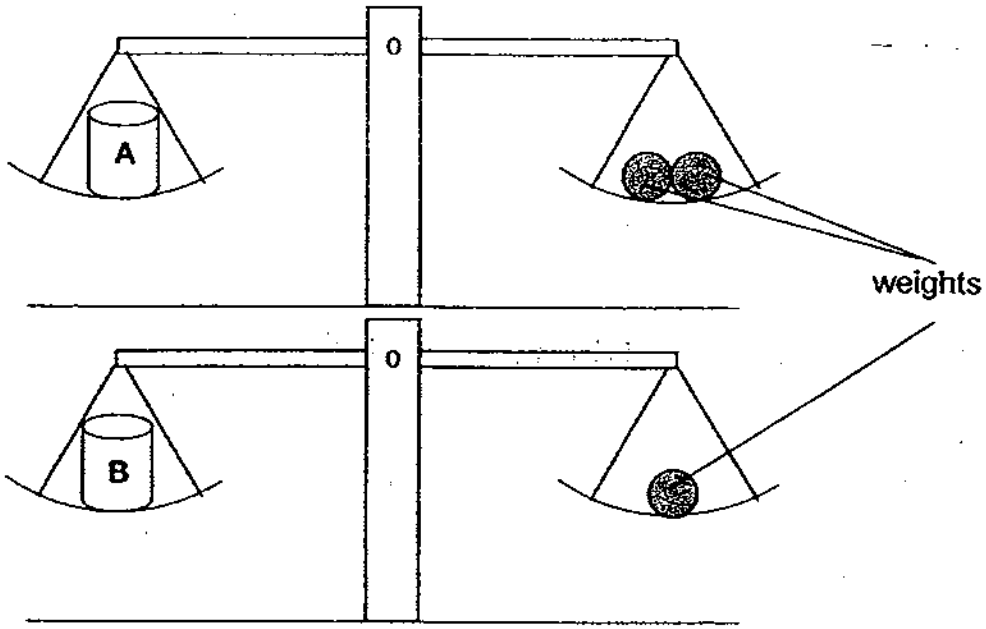


a) What is Harro's hypothesis? *(1m)*

b) What instrument can be used to measure the dependent variable? *(1m)*

c) Harro's test was not a fair one. State one variable that he must change to make it a fair test. *(1m)*

34. Tim placed two empty containers A and B, each with a volume of 400 cm^3 on the balance scales as shown below.



a) Which container A or B has a greater mass? *(1m)*

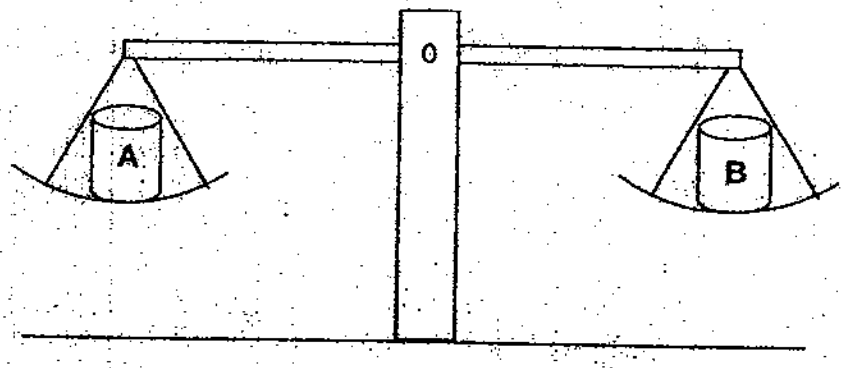
_____

b) State one reason why the masses of containers A and B are different? *(1m)*

_____

_____

Tim pumped 100 cm^3 more air into container B and placed both containers on a balance scale. He observed that the scale is balanced.



c) What property of air can Tim infer from his observation? *(1m)*

35. Four pupils made the following statements about temperature.

Adam: Temperature is a form of energy.

Eve: Temperature can be measured using a thermometer.

Romeo: Temperature is a measure of how hot or cold something is.

Juliet: Temperature is high when the weather is hot while temperature is low when the weather is cold.

a) Who has made an **incorrect** statement? *(1m)*

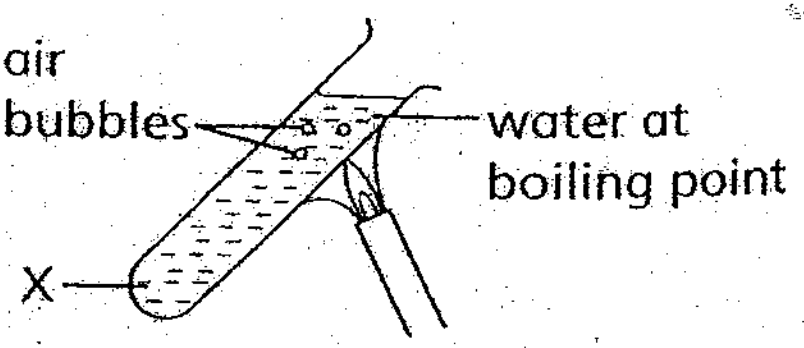
_____

b) Rewrite the statement made by the pupil mentioned in (a) to a correct statement. *(1m)*
Hint: You may only need to **change or add a word** to get the correct statement.

_____

_____

36. In the experiment below, water in the test tube was heated at a point as shown in the diagram below for 5 minutes.



a) What is the likely temperature of X? **Put a tick in the correct box.** *(1m)*

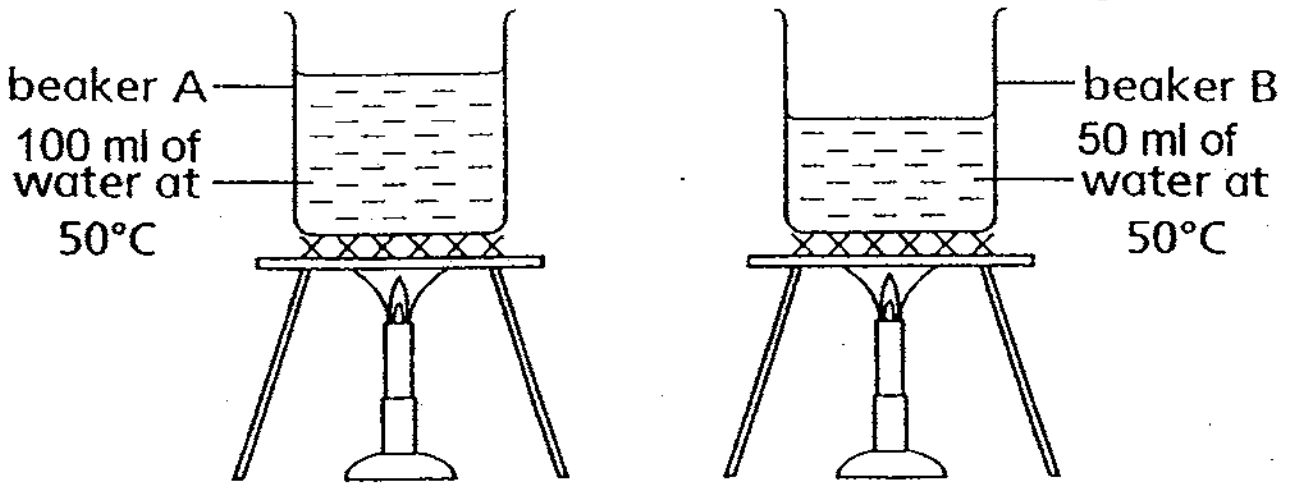
	Temperature of X
More than 100°C	
Less than 100°C	
Exactly 100°C	

b) Name one measuring equipment that can prove your answer in (a). *(1m)*

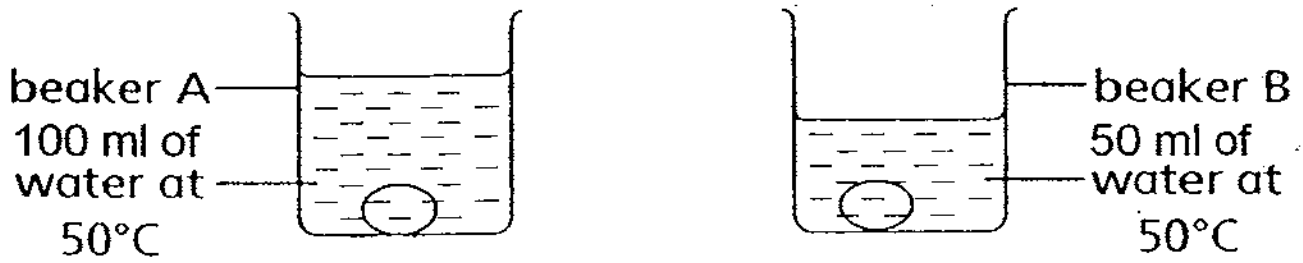
_____

_____

37. In the experiment below, two identical beakers of water containing different amount of water are heated to 50°C.



An egg is put into each of the beaker as shown below.



Each of the eggs is taken out of the beakers and cracked into a bowl to observe the amount of uncooked potion as shown in the table below.

Egg in beaker A	Egg in beaker B
No uncooked portion	Some uncooked portion

a) Explain why the observation of eggs in A and B are different? *(2m)*

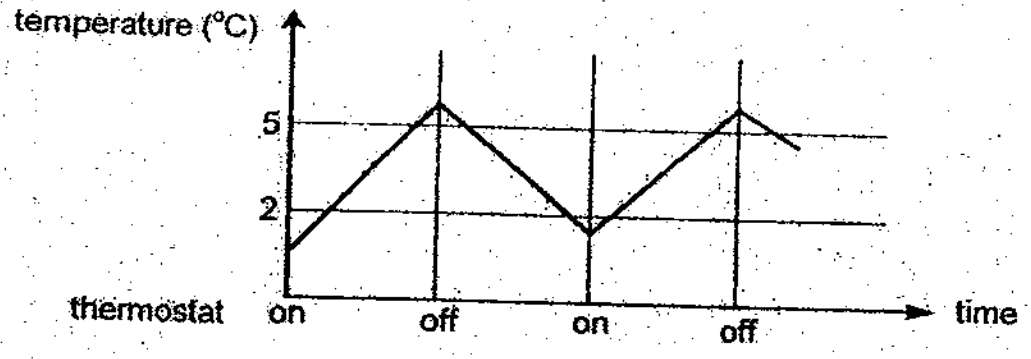
_____

_____

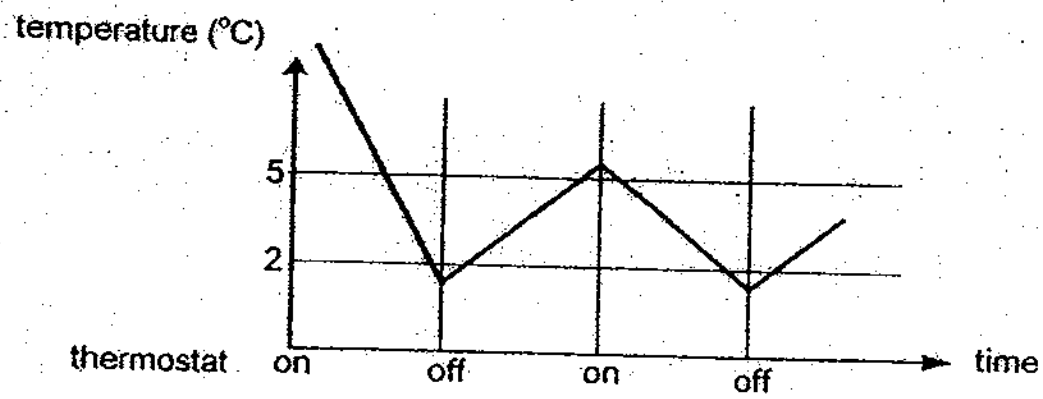
b) Using the same kind of beaker, how much water at 50°C will be needed to cook 2 eggs completely? *(1m)*

_____

38. A special switch called a thermostat is used in a refrigerator to control its temperature. The thermostat switches on the refrigerator system when the temperature rises to above 5°C and switches it off when the temperature falls below 2°C.



Graph A



Graph B

a) Which graph, A or B, correctly shows how the temperature inside the refrigerator changes over time? *(1m)*

_____

The thermostat switch expands when temperature rises to above 5°C and it contracts when the temperature falls below 2°C.

An experiment is conducted to find out which types of Metal A, B or C is suitable for making the thermostat switch.

The table below shows the result of the experiment.

Metal	Time taken to reach 5°C (seconds)
A	19
B	15
C	25

b) Which Metal, A, B or C is most suitable for making a thermostat switch? *(1m)*

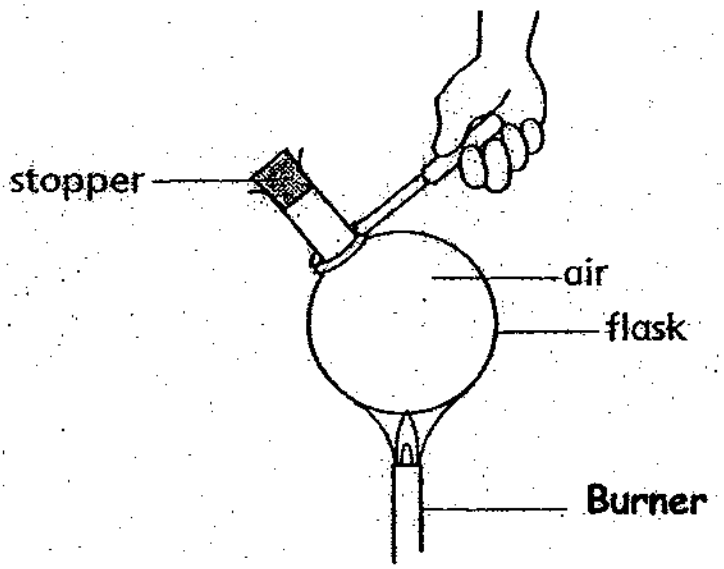
_____

c) Explain your answer in (b). *(1m)*

_____

_____

39. Ethan heated an empty flask over the flame of a burner as shown in the diagram below. ~~(3m)~~



a) What would happen to the stopper after some time? *(1m)*

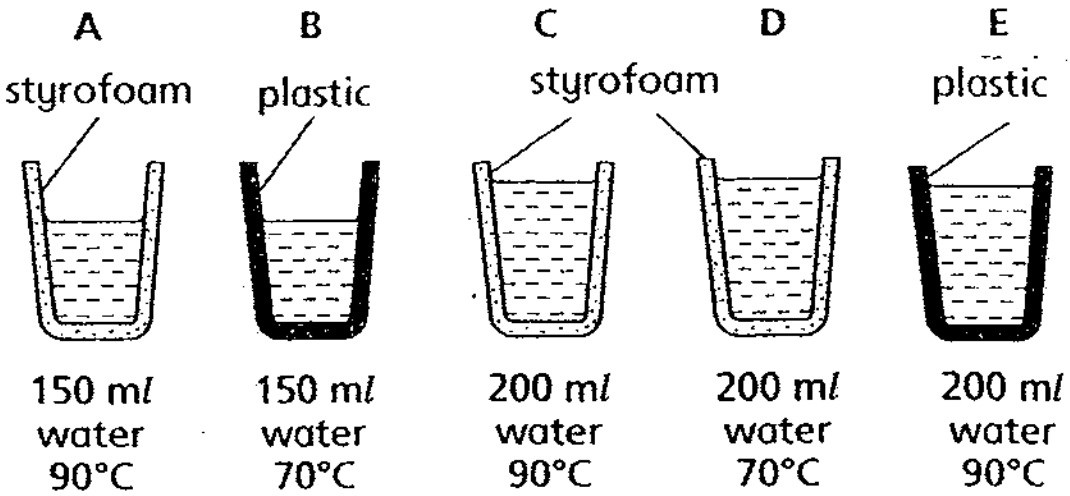
_____

b) Explain your answer in (a). *(2m)*

_____

_____

40. The diagram below show 5 set-ups, A, B, C, D and E.



Selena wants to find out whether plastic or styrofoam is a better conductor of heat.

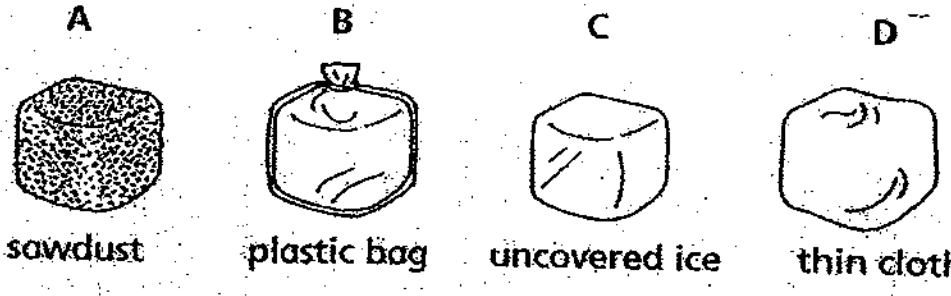
a) To ensure a fair test, which 2 set-ups does Selena need to choose to conduct her experiment? *(1m)*

_____

b) What is the ~~dependent~~ independent variable in the experiment mentioned in (a)? *(1m)*

_____

41. Look at the four ice cubes each of similar sizes below. The picture below shows the different material Ice cube A, B and D are being covered with, while Ice cube C is uncovered. (4m)



Noel recorded the time the ice cubes took to melt completely as shown in the table below.

Ice cube	Time taken for the ice cube to melt completely
A	68 minutes
B	50 minutes
C	22 minutes
D	42 minutes

a) What can you infer from this experiment? *(1m)*

_____

_____

b) An ice vendor needs to deliver some ice blocks to a cold drink vendor. *(2m)*

Which one of the materials shown in the above experiment would you recommend the ice vendor to use to prevent his ice block from melting quickly during the delivery?
State a reason for your choice.

_____

_____

42. Krysten planted some plants in three pots using soil from different locations in her garden.

She recorded her data in the table below.

Week	Number of leaves		
	Soil A	Soil B	Soil C
1	4	4	4
2	7	6	2
3	9	5	2
4	12	5	0

a) Which soil seemed to be **most suitable** for the plants? *(1m)*

_____

_____

b) Using data from the table above, explain your answer in a). *(1m)*

_____

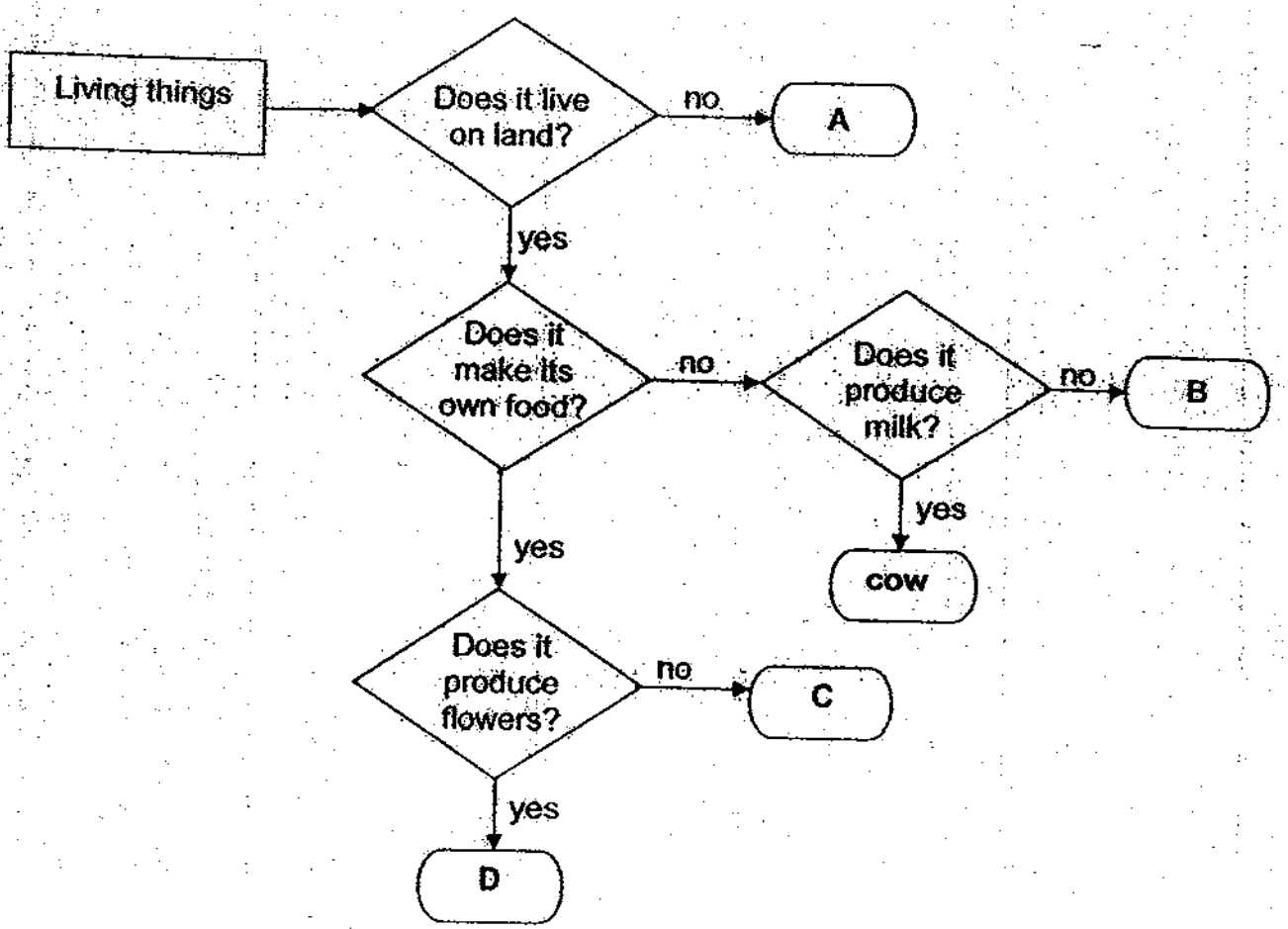
_____

c) What must she do to ensure that the result of her test is reliable? *(1m)*

_____

_____

43. Study the flow chart below.



a) Which one of the organisms A, B, C or D could be an octopus? *(1m)*

_____

b) State one reason why organism B **cannot** possibly be a mammal. *(1m)*

_____

_____

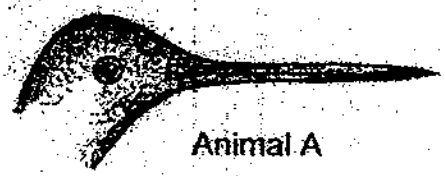
c) State one **similarity** between organisms C and D. *(1m)*

_____

_____

d) Jim wrongly classified water hyacinth as organism D. Explain why he is **not** correct. *(1m)*

44. Study the pictures of Animal A and Animal B below.



Animal A

Animal B

Flowers

The animal that feeds on the nectar is likely to have a beak which can reach deep into the base of a flower to get to the nectar.

a) Based on your observation above, which Animal A or B, feeds on the nectar inside the flowers? *(1m)*

_____

b) Explain your answer in a). *(2m)*

_____

_____

_____

End of Part 2

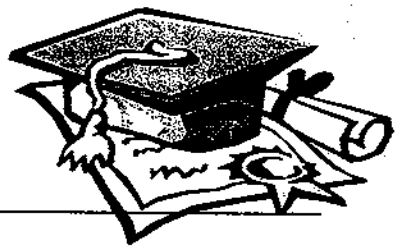
Setters: Rebecca Lo & Wong Kui Fong

ANSWER SHEET

EXAM PAPER 2009

SCHOOL : HENRY PARK PRIMARY
SUBJECT : PRIMARY 4 SCIENCE

TERM : SA1



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

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

31)a)X: Cannot be compressed. Y: Can be compressed.
b)Substances X and Y do not have a definite shape and takes the shape of the syringe.
c)50ml

32)a)Air was inside the beaker in set-up A.
b)The purpose of the glass tube in Set-up B to allow air to escape as air occupies space so that water can than go in.
c)Cover the glass tube with a rubber stopper.

33)a)Harro's hypothesis was that he thinks that the greater the volume of an object, the greater its mass.
b)Weighing scale.
c)He must use the same material.

34)a)Container A.
b)Containers A and B are made of different types of material.
c)Air has mass.

35)a)Adam.
b)Temperature is nota a form of energy.

36)a)Less than 100℃
b)A Laboratory thermometer.

37)a)There is more heat energy when there is more amount of water in beaker A hence the egg from beaker A has no uncooked portion.
b)200ml of water.

38)a)Graph B.
b)Metal B.
c)Metal B took the shortest time to reach 5℃ and 2℃.

39)a)The stopper will pop out.
b)The air in the flask gains heat from the burner and expands pushing the stopper out.

40)a)Set-up C and E.
b)The type of material.

41)a)I can infer that sawdust is the poorest conductor of heat.
b)I would recommend the ice vendor to use sawdust to use to prevent his ice block from melting quickly during the delivery. Sawdust took the longest time to melt the ice so when he is delivery ice, the ice will not melt so quickly.

42)a)Soil A.
b)The plant in soil A had the most number of leaves at the end of week 4.
c)Repeat the test several times.

43)a)A.
b)Organism B does not produce milk but mammals do produce milk.
c)C and D makes their own food.
d)Water hyacinth does not live on land and organism D lives on land.

44)a)Animal A.
b)Animal A has as a very long and thin beak which can reach deep into the base of a flower to get to the nectar.