Pei Chun Public School
Continual Assessment – 2009
Science
Primary 6

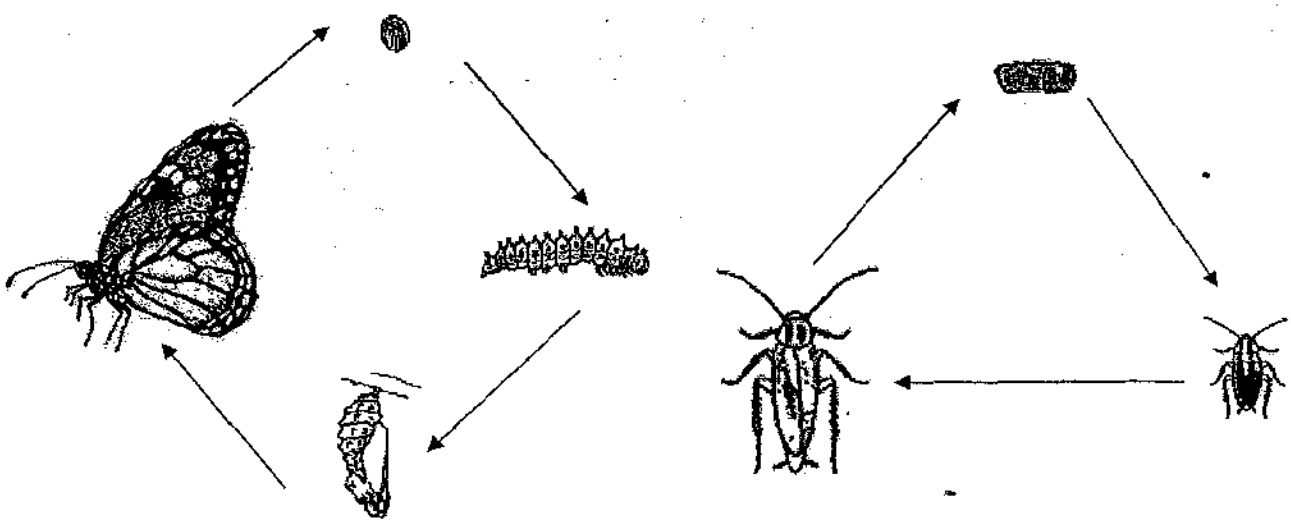
Name : _____ ( ) Date : 6 March 2009

Class : Pri. 6 ( )

Science Teacher : _____ Time : 1h 45 min

Section A (25 × 2 marks)
For questions 1 to 25, choose the most suitable answer and shade its number (1, 2, 3 or 4) on the Optical Answer Sheet (OAS) provided.

1. The diagrams below show the life cycles of two animals.



Based on what you can observe from the above diagrams, which of the following best describes their similarities?

(1) Both their young resemble their parents.
(2) Both of them go through the pupa stage.
(3) Both of them have a four-stage life cycle.
(4) Both the adults have six legs and a pair of feelers. ( )

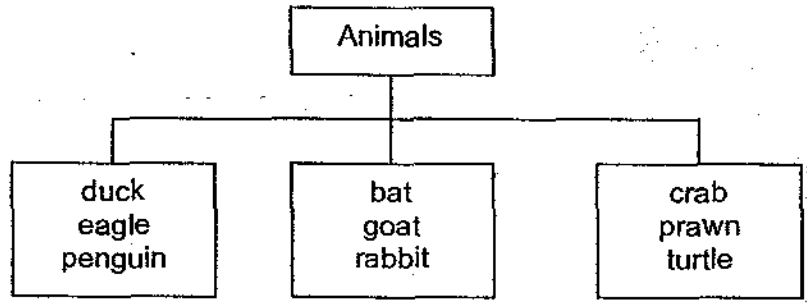
2. The plants in the table below are grouped according to the plant parts where starch is stored.

Plants			
Group W	**Group X**	**Group Y**	**Group Z**
turnip	banana	maize	yam
carrot	papaya	barley	ginger
radish	cucumber	red beans	sweet potato
potato	strawberry	groundnut	water chestnut

Which of the groups have ~~plant parts~~ plants which are grouped wrongly?

(1) X and Y only
(2) X and Z only
(3) W and Y only
(4) W and Z only ( )

3. The classification chart below shows three groups of animals.



These animals are classified according to _____.

(1) their diets
(2) the way they move
(3) their body coverings
(4) their breathing parts ( )

4. The table below shows how some living things are grouped according to their characteristics.

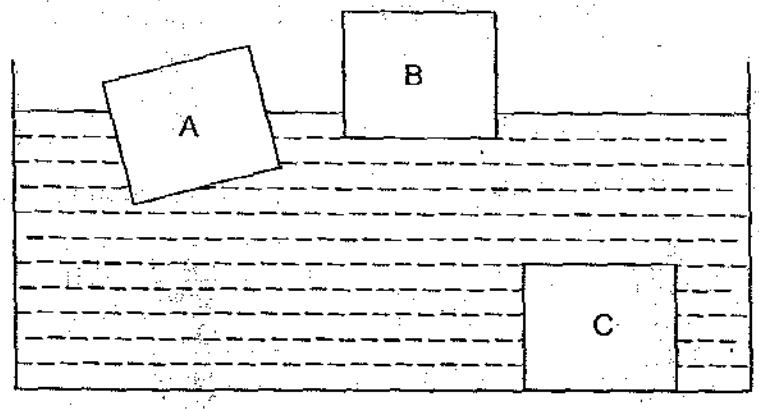
Living things			
Group A	**Group B**	**Group C**	**Group D**
amoeba paramecium P	hibiscus ladder fern Q	mould mushroom R	chicken crocodile S

Which of the following are represented by P, Q, R and S respectively?

	P	Q	R	S
(1)	bacteria	cactus	moss	dog
(2)	euglena	angsana	puff ball	cobra
(3)	yeast	duckweed	kingfisher	butterfly
(4)	earthworm	toadstool	bird's nest fern	elephant

( )

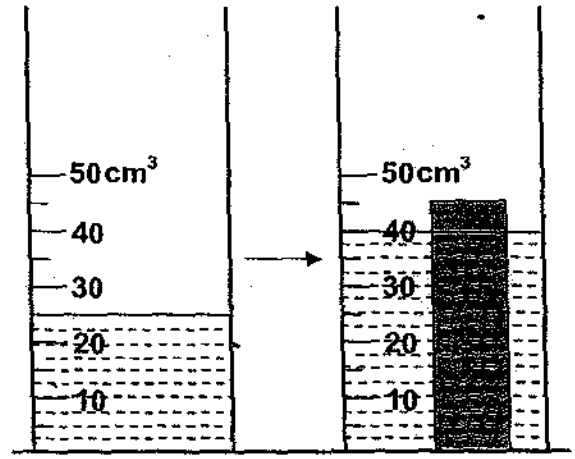
5. Three objects of different materials have the same shape ~~and volume~~. The diagram below shows what happens when they are placed in water.



Based on what you can observe from the diagram, which of the following statements is definitely true?

(1) Object B must be hollow.
(2) Object C is made of metal.
(3) Objects A and B float in water.
(4) Objects A and B are lighter than object C. ( )

6. An object is placed in a beaker as shown below.



The volume of the object is _____ cm^3.

(1) 15
(2) 40
(3) between 15 and 20
(4) between 25 and 40 ( )

7. The table below shows the melting and boiling points of substances, X, Y and Z.

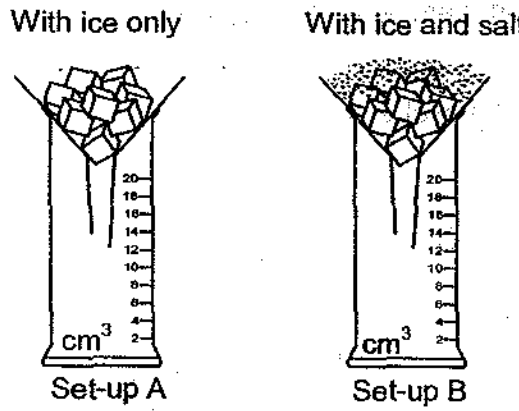
Substance	Melting point (°C)	Boiling point (°C)
X	56	93
Y	29	62
Z	85	205

Which states of matter are the substances, X, Y and Z, in at 80°C?

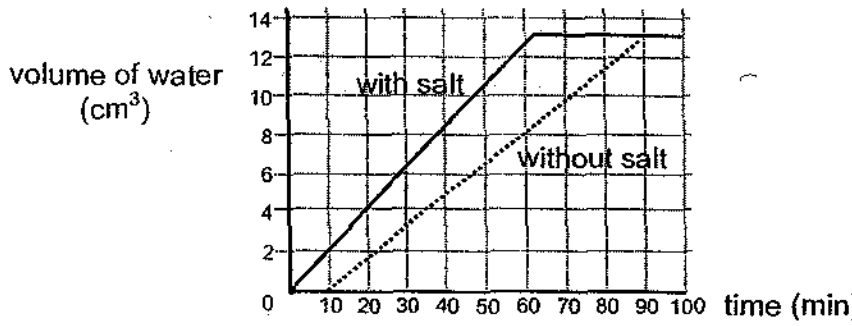
	X	Y	Z
(1)	Liquid	Liquid	Solid
(2)	Gas	Liquid	Gas
(3)	Solid	Gas	Liquid
(4)	Liquid	Gas	Solid

( )

8. Josh wanted to find out the effect of salt on melting ice. He put the same amount of ice in each funnel. He added salt to the ice in Set-up B.



The ice started to melt. Every ten minutes, Josh measured the volume of water in each cylinder. The graph below shows Josh's results.



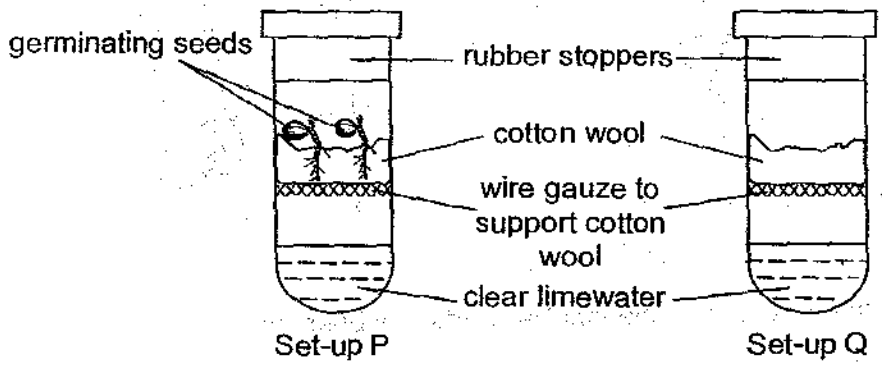
Josh concluded, "The more salt I add, the faster the ice will melt."

Which of the following best explains whether his results support his conclusion?

(1) No, he did not have a control set-up.
(2) No, he did not use different amounts of salt.
(3) Yes, he used the same amount of ice for each set-up.
(4) Yes, the line graph is steeper for the set-up with salt than the set-up without salt.

( )

9. Melody set up the apparatus as shown below. She left both set-ups in a warm and dark place for 24 hours. The limewater in Set-up P turned chalky but the limewater in Set-up Q remained clear.

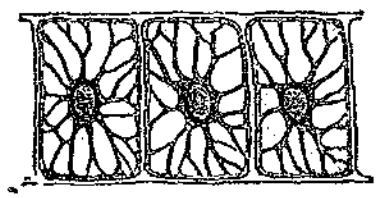


She was trying to find out if _____.

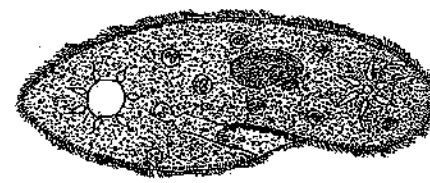
(1) the germinating seeds respire
(2) the germinating seeds photosynthesise
(3) limewater is needed for seeds to germinate
(4) the germinating seeds grow into young plants ( )

10. Which of the following cells is able to capture light to make food?

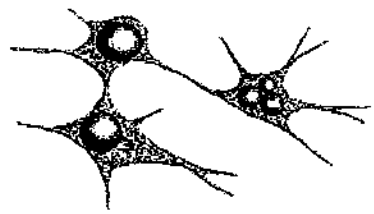
(1)



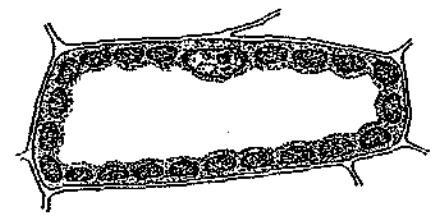
(2)



(3)

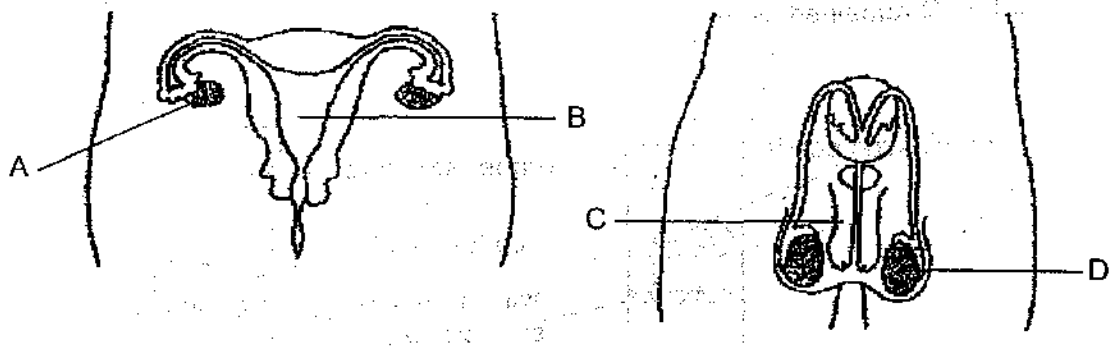


(4)



( )

11. The diagrams below show the male and female reproductive systems.

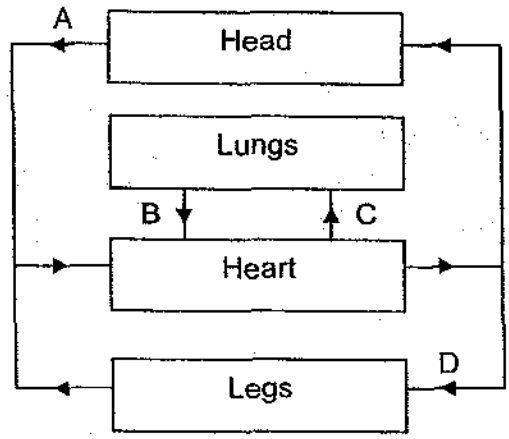


Which of the functions of the labelled parts has been stated wrongly?

	Part	Function
(1)	A	helps to move egg down towards the womb
(2)	B	accepts a fertilised egg
(3)	C	contains sperm duct to provide a passage for sperm
(4)	D	produces sperm

( )

12. The diagram below shows how blood is circulated in our body.



Which of the following correctly shows the amount of oxygen in our blood at A, B, C and D?

	More oxygen at	Less oxygen at
(1)	A and C	B and D
(2)	A and B	C and D
(3)	B and D	A and C
(4)	C and D	A and B

( )

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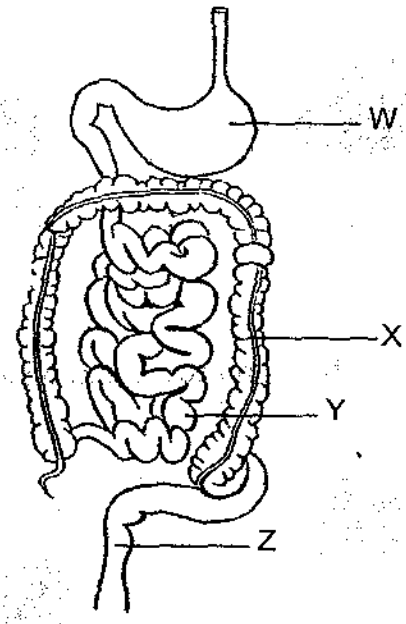
13. The diagram shows part of the human digestive system.



Study statements A to D carefully.

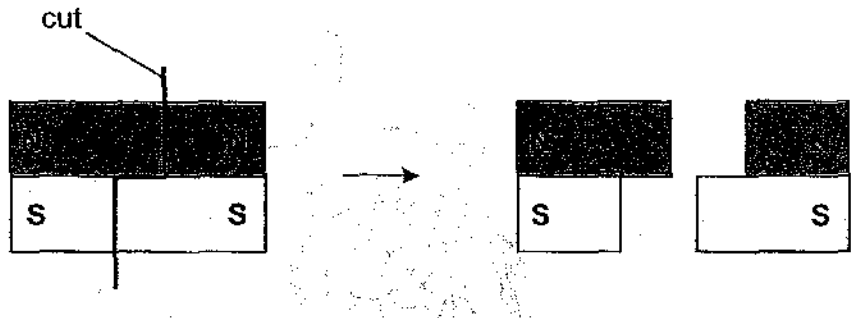
A: Water is absorbed from the undigested food.
B: Digested food is absorbed into the blood stream.
C: Digestive juices are added to further break down food.
D: Faeces is stored before being excreted out of the body.

Which of the following matches the statements (A, B, C and D) to the labelled parts, W, X, Y and Z?

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

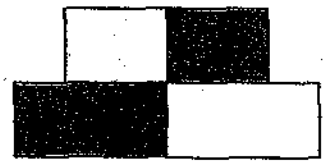
( )

14. The diagram below shows a magnet that is cut into two identical pieces.



Which of the following shows the possible arrangement of the two smaller magnets?

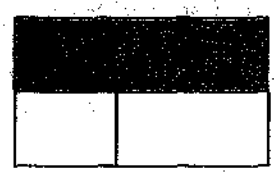
(1)



(2)

(3)

(4)



( )

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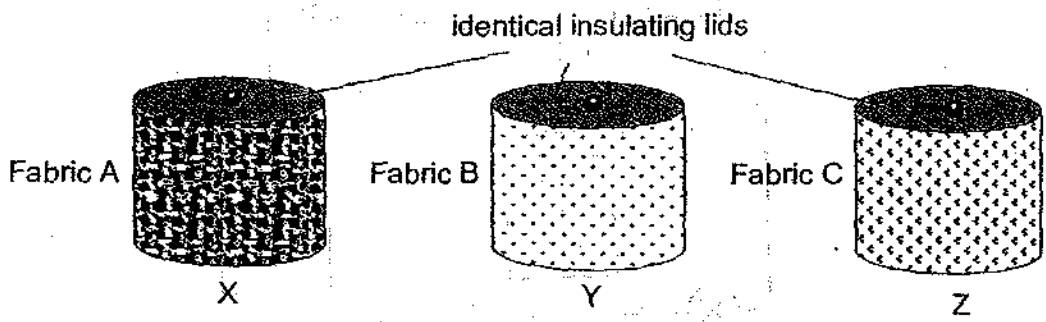
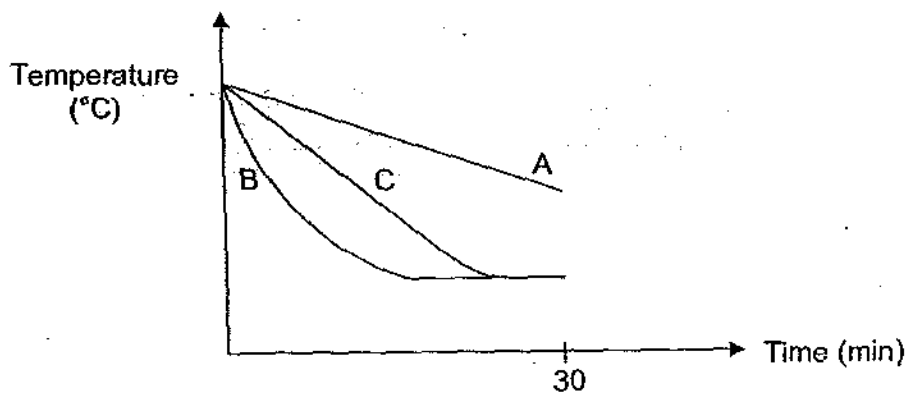
15. Ivan was given three types of fabric, A, B and C. He took three identical tin cans, X, Y and Z and wrapped them with a layer of A, B and C respectively. He filled each can with equal amount of hot water before covering the cans with identical insulating lids.



He measured and recorded the temperature of the water in each can for thirty minutes and drew the graphs as shown below.

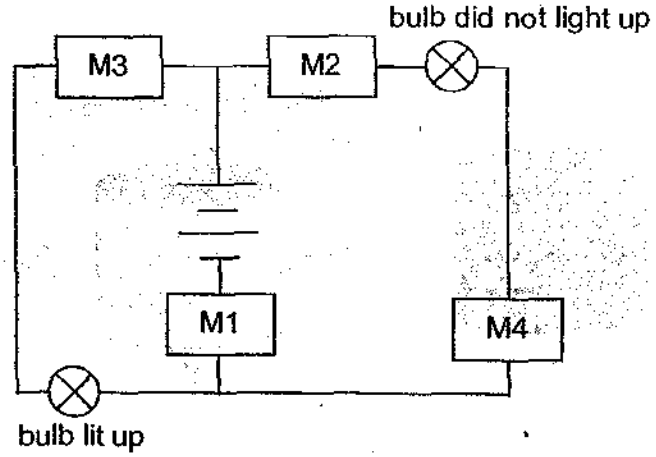


Using the results, which fabric should Ivan use to make a shirt to wear in summer and a blanket to keep warm in winter?

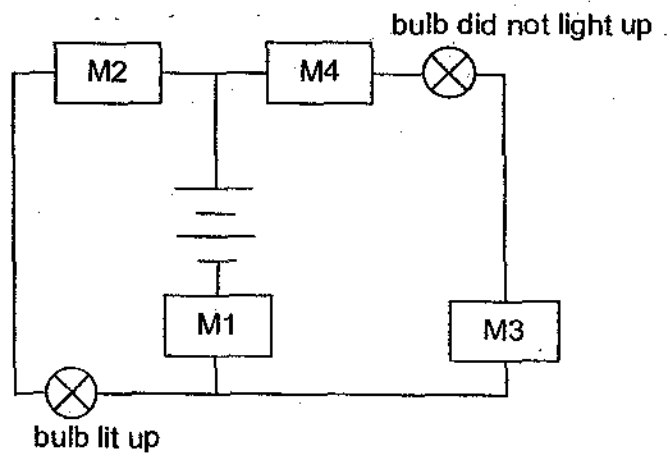
	shirt	blanket
(1)	A	B
(2)	B	A
(3)	C	A
(4)	C	B

( )

16. Vinesh had four objects made from different materials, M1, M2, M3 and M4. He connected the objects in a circuit and made the observations as shown below.



Next, he rearranged the objects in the same circuit and made the observations as shown below.

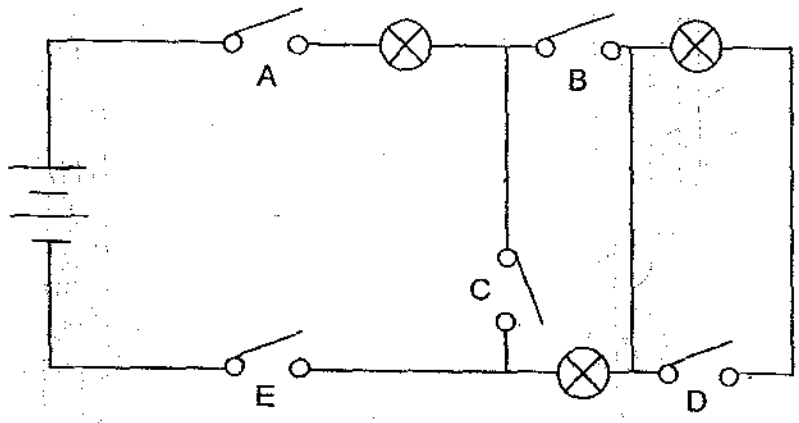


Which of the following objects could represent M1, M2, M3 and M4?

	M1	M2	M3	M4
(1)	10-cent coin	ceramic cup	steel spoon	handkerchief
(2)	ceramic cup	handkerchief	glass bead	steel spoon
(3)	gold ring	10-cent coin	copper wire	ceramic cup
(4)	steel spoon	pen	ceramic cup	10-cent coin

( )

17. The diagram below shows a circuit.

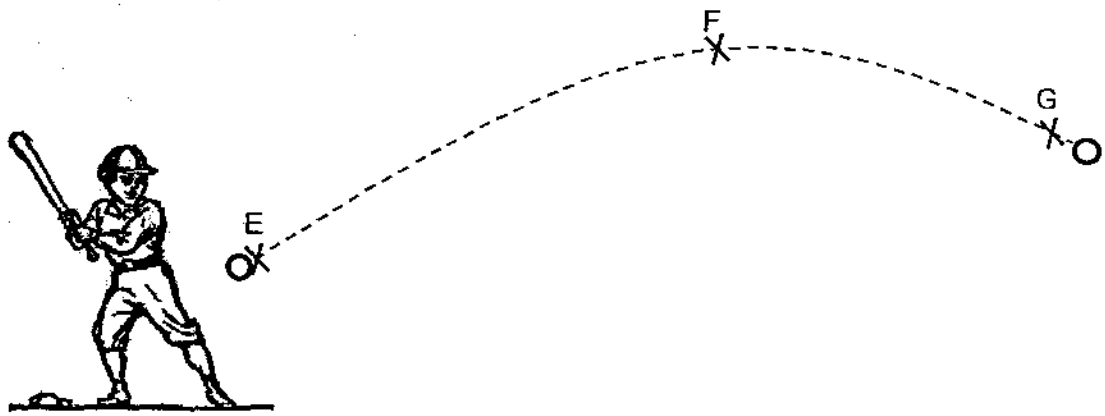


In order to light up only two bulbs, which switches need to be closed?
(A tick means the switch is closed.)

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

( )

18. The diagram below shows the path of a ball after a baseball player hit the ball with his bat. Points E, F and G are different positions along the path of the moving ball.



Which of the following are true about the forces acting on the ball and the energy possessed by the ball from the start to point G?

A: Hitting the ball is a push.
B: The ball has less kinetic energy at point E than point F.
C: The ball has more gravitational potential energy at point F than point E.
D: The forces acting on the ball cause it to change directions along the path.

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

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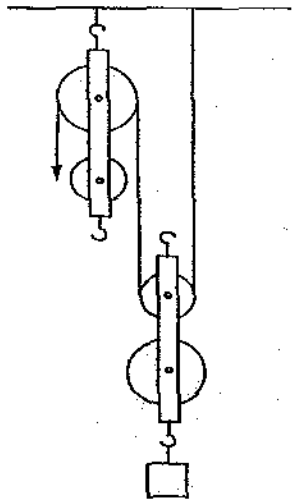
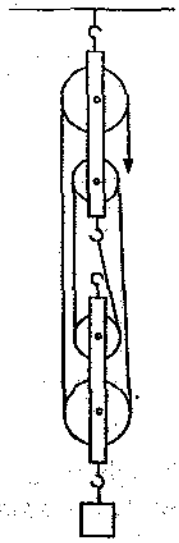
19. The diagrams below show two pulley systems.



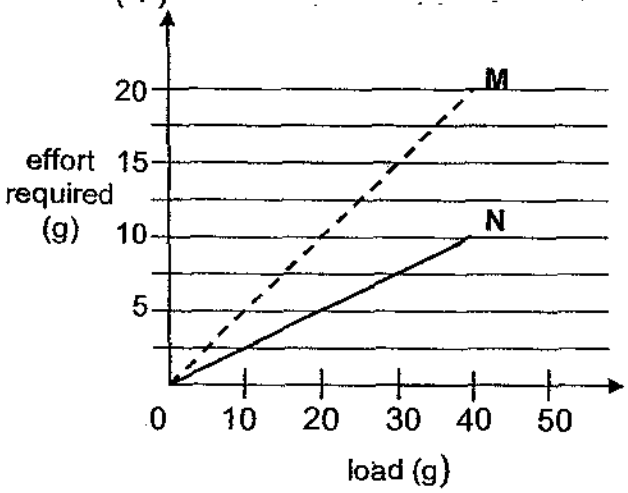
Pulley system M



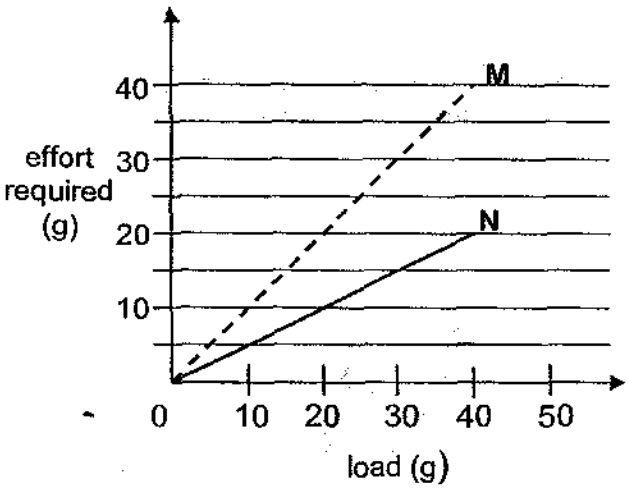
Pulley system N

Which of the following shows the relationships between the effort and load of the two pulley systems?

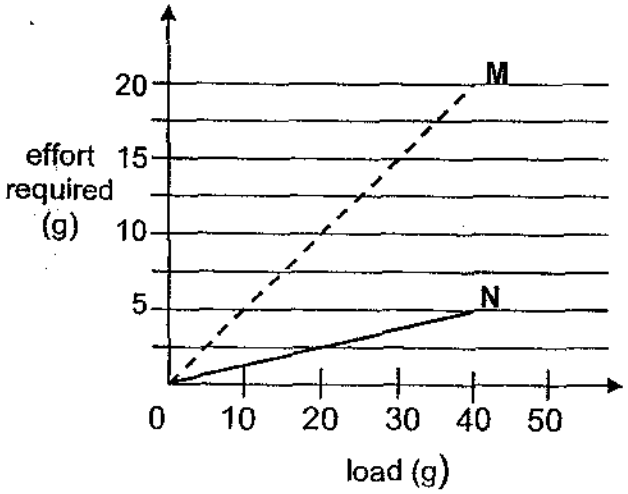
(1)



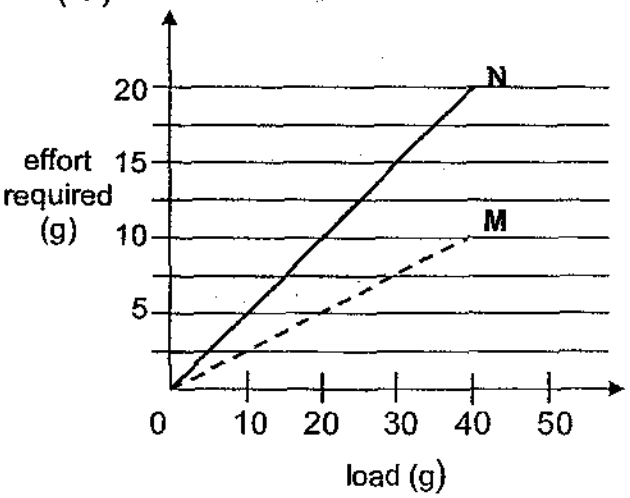
(2)



(3)



(4)



( )

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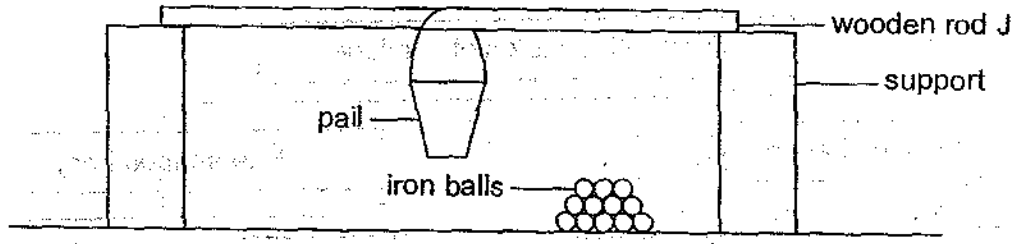
20. Anitha used three types of wooden rods J, K and L of the same thickness and length to set up an experiment as shown below.



She put iron balls as weights, one at a time, into the pail until wooden rod J broke. She repeated the experiment with wooden rods, K and L. She recorded the results as shown in the table below.

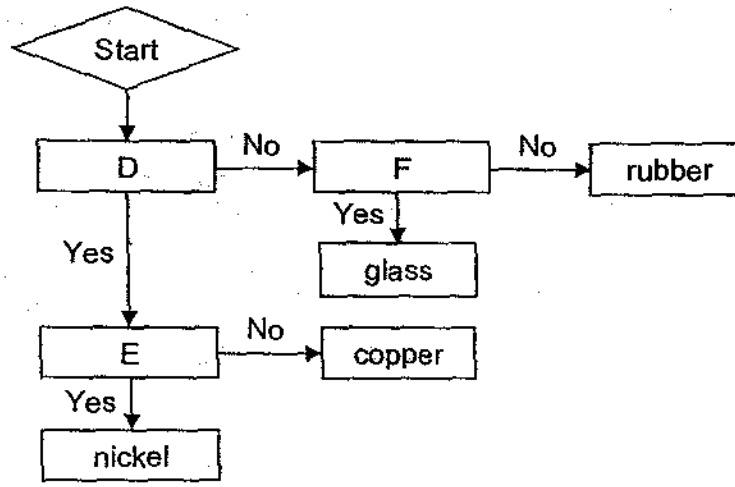
Wooden rod	Number of iron balls put into pail before the rod breaks
J	4
K	9
L	12

Which of the following best describes the aim of Anitha's experiment?

(1) To find out which type of wood is the strongest.
(2) To find out which pail holds the most number of iron balls.
(3) To find out how the length of wood affects the strength of the wood.
(4) To find out how the type of wood affects the number of iron balls the pail can hold.

( )

21. The flow chart below shows the properties of some materials.

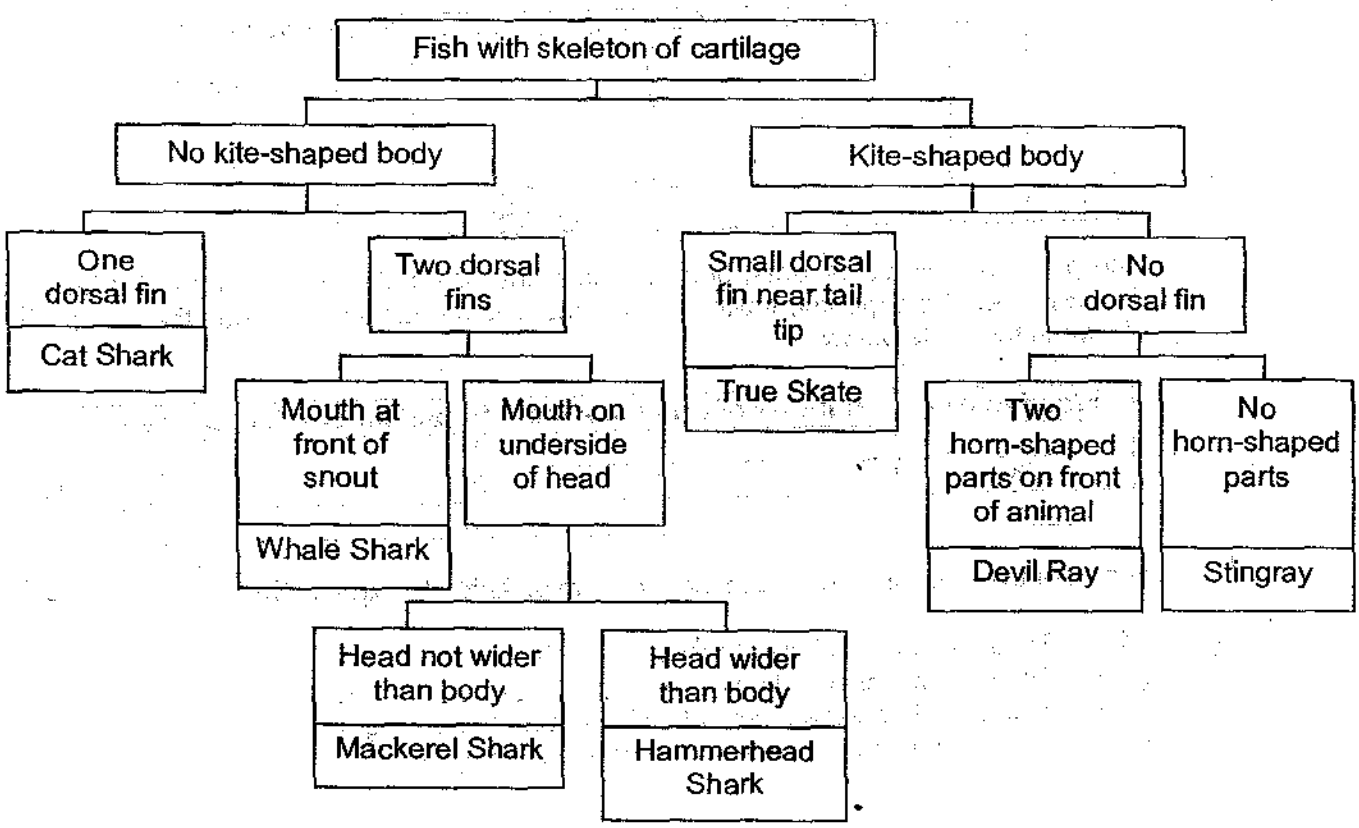


Which of the following describes D, E and F in the chart above?

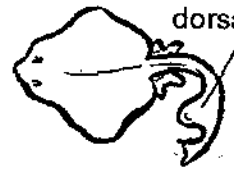
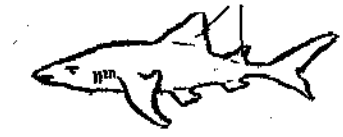
	D	E	F
(1)	Does it allow light to pass through?	Is it a magnetic material?	Is it a poor conductor of heat?
(2)	Is it flexible?	Is it a good conductor of heat?	Is it a non-magnetic material?
(3)	Is it a conductor of electricity?	Is it a magnetic material?	Does it allow light to pass through?
(4)	Is it a good conductor of heat?	Does it allow light to pass through?	Is it a poor conductor of heat?

( )

22. The classification chart below shows how fish with skeleton of cartilage are grouped according to their characteristics.



Using the classification chart above, identify the fish as shown below.

	 dorsal fin	 dorsal fins	 dorsal fins
(1)	True Skate	Cat Shark	Hammerhead Shark
(2)	Stingray	Hammerhead Shark	Mackerel Shark
(3)	Devil Ray	Mackerel Shark	Cat Shark
(4)	True Skate	Hammerhead Shark	Whale Shark

( )

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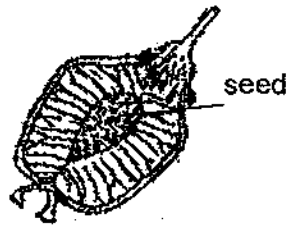
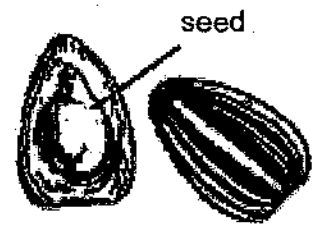
23. The key below is used to classify a fruit. The fruit is identified starting from (1).

(1)	Fruit with more than one seed	Go to 2
	Fruit with only one seed	Go to 6
(2)	Fruit with seeds on outside	J
	Fruit with seeds on inside	Go to 3
(3)	Fruit with spine-like structures on skin	K
	Fruit with relatively smooth skin	Go to 4
(4)	Fruit soft with seeds inside central core	L
	Seeds not in core	Go to 5
(5)	Seeds in a pod	M
	Seeds not in a pod	N
(6)	Fruit with wing-like structures	P
	Fruit with no wing-like structures	Go to 7
(7)	Soft fruit with single seed in centre	Q
	Dry fruit	Go to 8
(8)	Thick hard shell around seed	R
	Very thin outer covering so fruit looks like seed	S

Using the key, the elm fruit is identified as P and the sunflower fruit is identified as R.



elm fruit



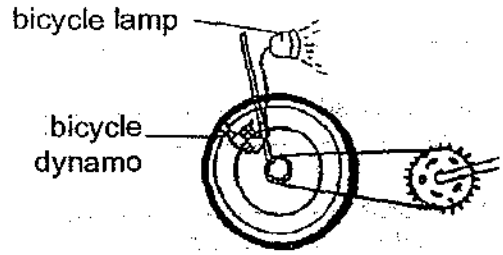
sunflower fruit

Based on the key, which of the following characteristics helps to tell the difference between an elm fruit and a sunflower fruit?

(1) Whether the fruit has one seed or more than one seed.
(2) Whether the fruit has thick hard shell or very thin outer covering.
(3) Whether the fruit has wing-like structures or no wing-like structures.
(4) Whether the fruit has spine-like structures on skin or relatively smooth skin.

( )

24. The diagram below shows a moving bicycle wheel with a dynamo attached to a lamp.

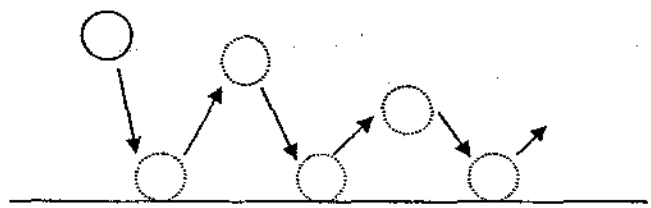


Which of the following best shows the energy conversion of the moving bicycle wheel with the dynamo attached to the lamp?

(1) kinetic energy ⟶ light energy
(2) potential energy ⟶ heat energy + light energy
(3) potential energy ⟶ heat energy + light energy + sound energy
(4) kinetic energy ⟶ electrical energy ⟶ heat energy + light energy

( )

25. Vijay dropped a rubber ball from a height of 0.5 m onto the ground and let it bounce a number of times. He measured the height reached by the ball after the first, second and third bounce. He repeated the experiment twice for heights of 1 m and 1.5 m.



The results were recorded in the table as shown.

Height from where the ball was dropped (m)	Height of bounce (m)			
	1st bounce	2nd bounce	3rd bounce	Average
0.5	0.3	0.2	0.1	0.2
1	0.5	0.4	0.3	0.4
1.5	1.3	0.9	0.5	0.9

What conclusions could Vijay make from his experiment?

A: The ball had the greatest kinetic energy at the first bounce.
B: The greater the height from where the ball was dropped, the higher the first bounce.
C: For each drop, the height of the second and third bounces decreases respectively.
D: The ball had the greatest gravitational potential energy when it completed the third bounce.

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

For Questions 26 to 30, please refer to Booklet K.
End of Section A

Pei Chun Public School
Continual Assessment – 2009
Science
Primary 6

Name: _____ ( )

Class: Pri. 6 ( )

Date: 6 March 2009

Time: 1 h 45 min

Science Teacher: _____

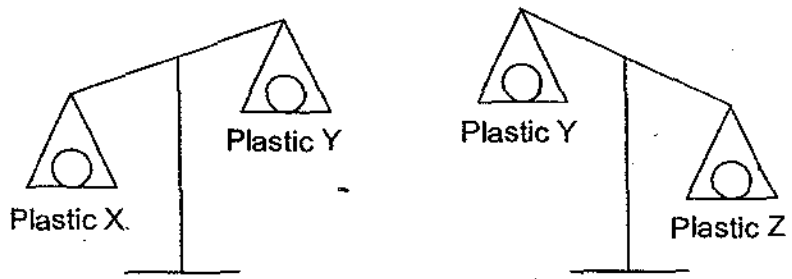
Parent's Signature: _____

Section A	60
Section B	30
Booklet K (excludes MCQs)	10
Total	100

Section B (30 marks)

For questions 31 to 42, write your answers in the spaces provided.

31. Randy conducted an experiment with three balls made of different types of plastic, X, Y and Z. He used two balls at a time and placed them on the lever balance as shown in the diagrams below.



(a) Based only on Randy's observation above, which type of plastic, X, Y or Z, is the best choice to make the spectacles lenses? Give a reason for your answer. (1 m)

_____

_____

(b) Plastic is used more often than glass to make spectacles lenses. Give a reason. (1 m)

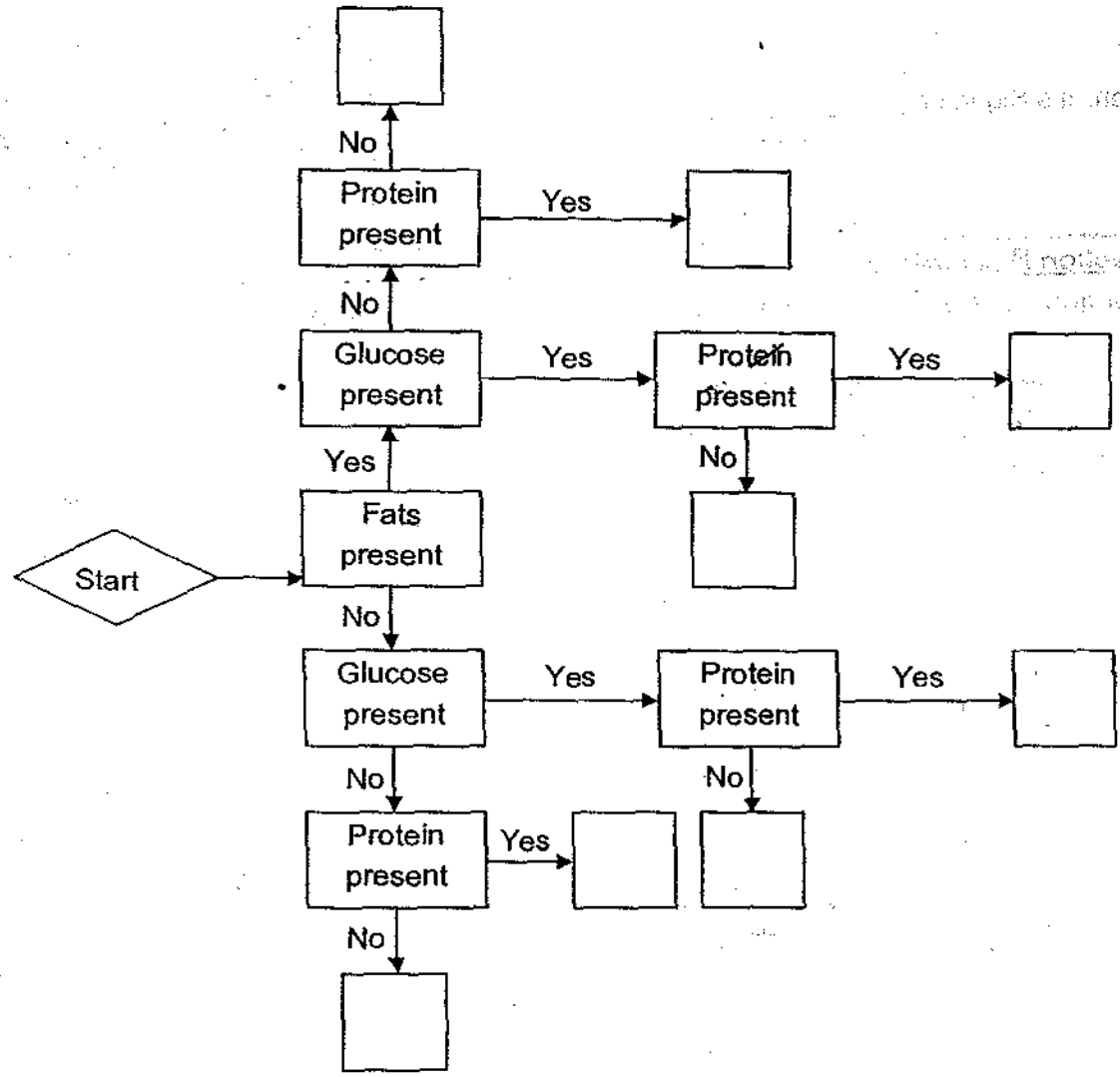
_____

_____

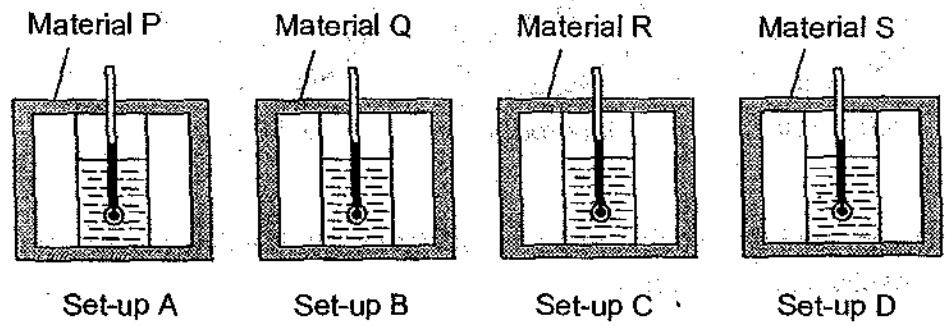
32. Greg wanted to find out if fats, glucose and protein were found in some foods. He tested the presence of such substances in four different types of food, P, Q, R and S. He then recorded his results as shown in the table below.

Food	Fats present	Glucose present	Protein present
P		✓	
Q	✓		✓
R		✓	✓
S	✓	✓	✓

In the flow chart below, write the letters P, Q, R and S in the correct boxes. (2 m)



33. A hawker wanted to choose a material to keep takeaway food warm for the longest period. He conducted the following experiment using four identical beakers containing an equal amount of water at 100°C. Each beaker of water was fixed with a thermometer and placed into boxes made of different materials. The boxes were of the same size and thickness.



The table below shows the temperature of water recorded in each set-up at regular intervals.

Time (min)	Temperature of water (°C)			
	Set-up A	**Set-up B**	**Set-up C**	**Set-up D**
0	100	100	100	100
10	82	56	70	92
20	64	27	43	83
30	42	26	26	70

(a) Based on the table, tick the box to indicate what the hawker wanted to find out about the four materials. (1 m)

Statements	✓
To find out which material conducts heat easily	
To find out which material is the best conductor of heat	
To find out which material is the poorest conductor of heat	

(b) Based on the table, which material, P, Q, R or S, would he choose? Give a reason for your answer. (1m)

_____

_____

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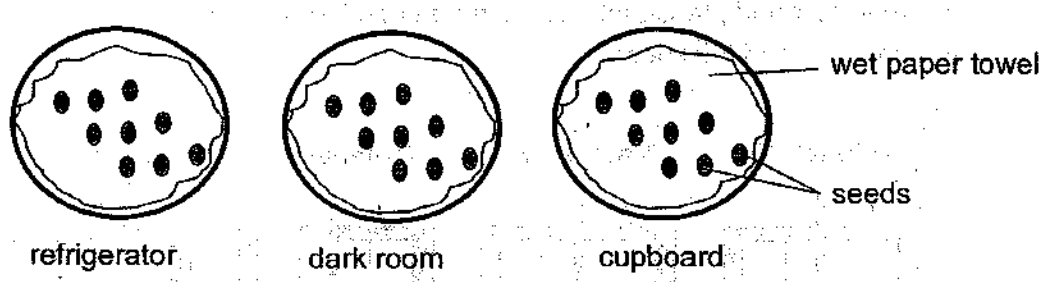
34. Evan investigated how temperature would affect the germination of seeds. He placed three dishes containing the same number of seeds in three different places. He watered the seeds daily.



Evan counted the number of germinated seeds in the dishes each day and recorded his results as shown below.

Place	Temperature of place	Number of germinated seeds		
		Day 1	Day 2	Day 3
refrigerator	cold	0	0	0
dark room	cool	0	3	7
cupboard	warm	0	5	9

(a) Evan concluded, "My results show that the cupboard was the best place for seeds to germinate."

Based on the results in the table above, give a reason to support his conclusion. (1 m)

_____

_____

(b) However, after two weeks, he found that the seedlings were withering.
Explain why this was so. (1 m)

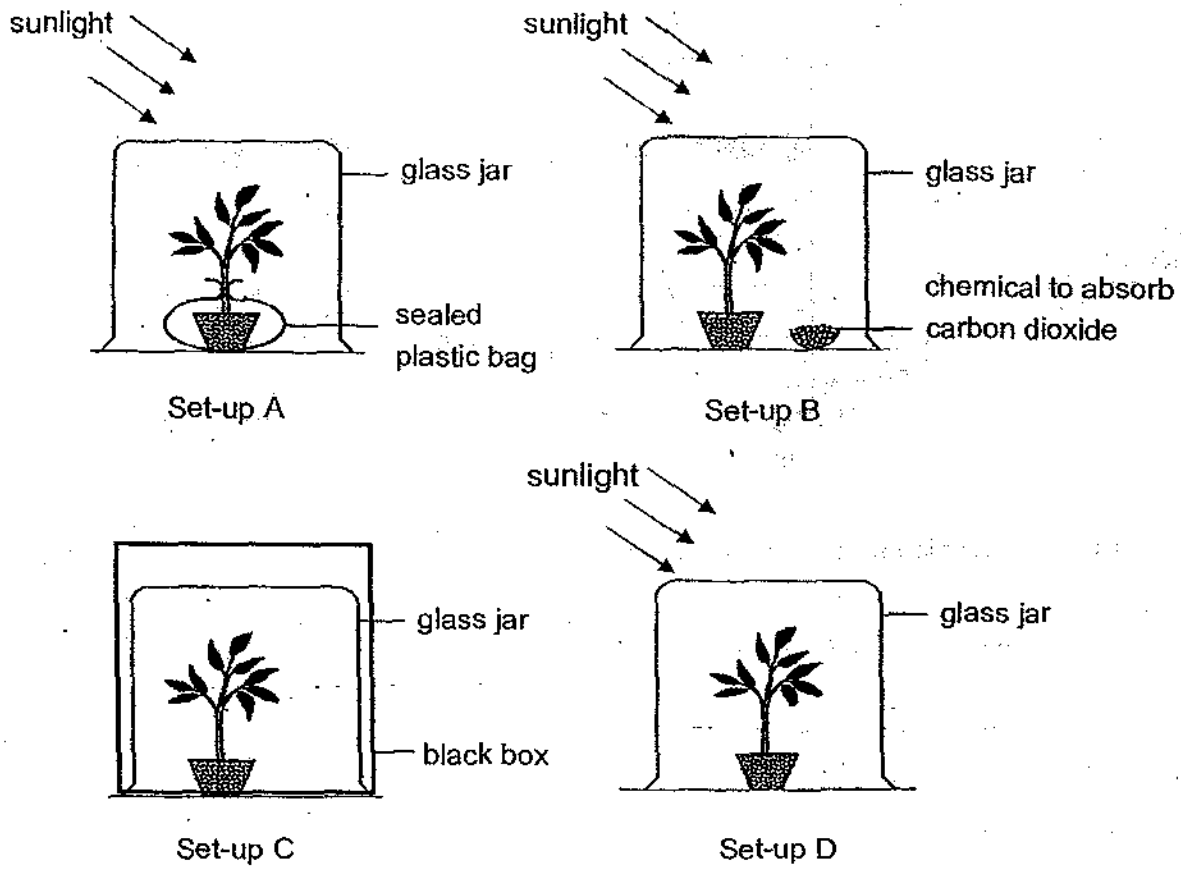
_____

_____

_____

64

35. The diagrams below show four set-ups with four similar plants as shown below. The plant in each set-up is given the same amount of water daily.



(a) Which set-ups would you use to show that carbon dioxide is needed for plants to photosynthesise? (1 m)

_____

(b) Based on (a), what would you observe after a week? Explain your answer. (1 m)

_____

_____

_____

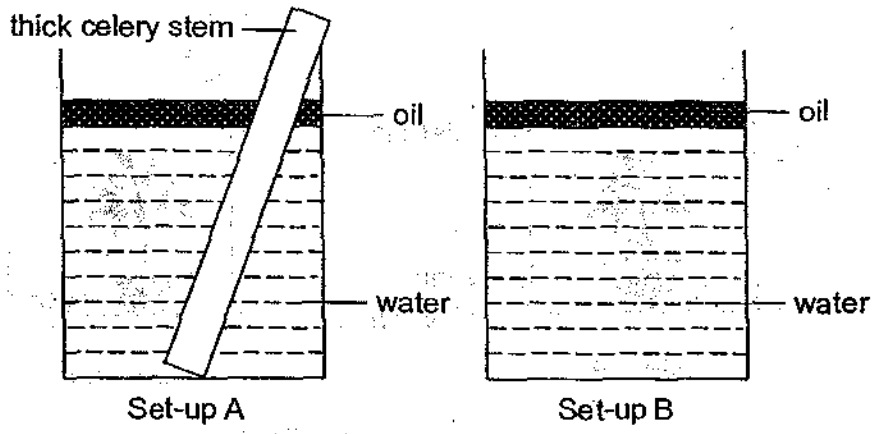
(c) What is the aim of the experiment if set-ups B, C and D were used? (1 m)

_____

_____

65

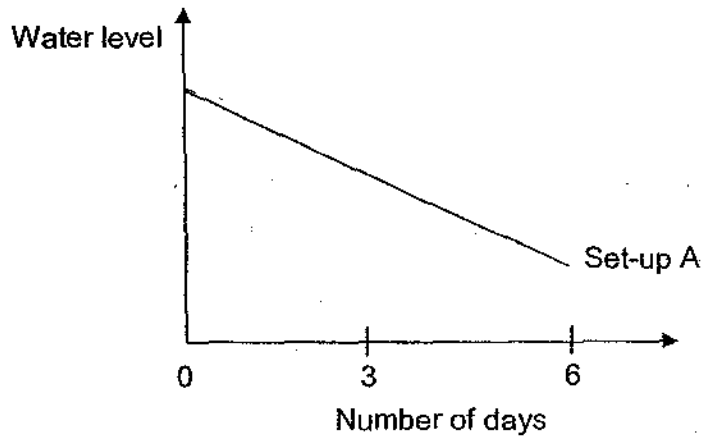
36. Tom set up an experiment as shown below. He placed a thick celery stem in Set-up A. He then poured equal amounts of water and oil in set-ups A and B. Tom prepared Set-up B to act as a control. He then placed the set-ups near a window.



(a) How did set-up B act as a control? (1 m)

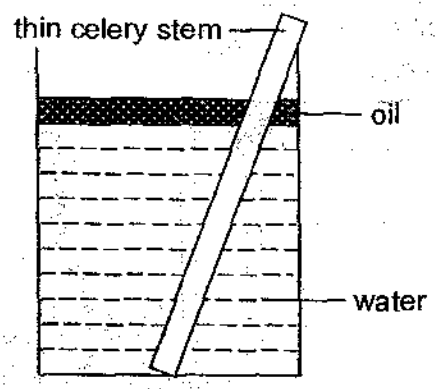
(b) Why did Tom add a layer of oil to set-ups A and B? (1 m)

He checked the water level daily over six days and recorded the observations of set-up A in the graph as shown below.



66

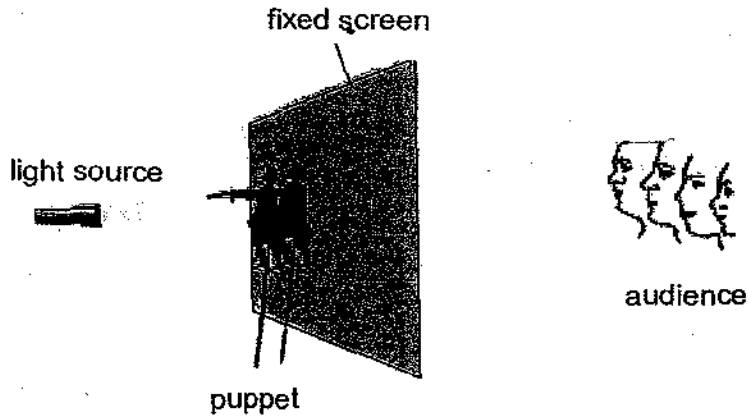
At the same time, Tom prepared another similar set-up using a thin celery stem as shown in Set-up C below.



Set-up C

(c) Using the graph ~~in~~ on page 6, draw and label a graph to indicate the change in the water level in Set-up C over the same period of time. (1 m)

37. Lucy was performing shadow puppetry to a group of audience. She made a shadow of a puppet on a fixed screen using a fixed light source.



(a) What characteristic should the screen have for the audience to watch the shadow puppetry? Explain your answer. (1 m)

_____

_____

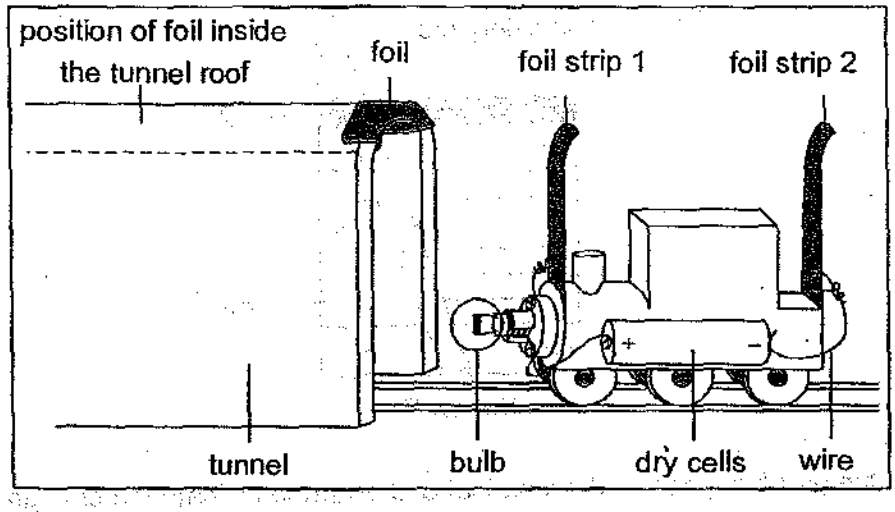
_____

(b) Lucy moved the puppet away from the screen towards the light source.

How would the shadow of the puppet appear to change to the audience? (1 m)

_____ 67

38. Andrea wanted a light bulb to light up when her toy train was pushed through a tunnel. She made an electric circuit for her toy train. She made a tunnel and put a foil inside the tunnel roof. The diagram below shows Andrea's tunnel and the wiring on her train.



The foil strips on the train acted like a switch. When both foil strips on the train touched the foil inside the tunnel roof, the bulb lighted up.

(a) Give one property of the foil strips which made it a suitable material for Andrea to use as a switch. (1 m)

_____

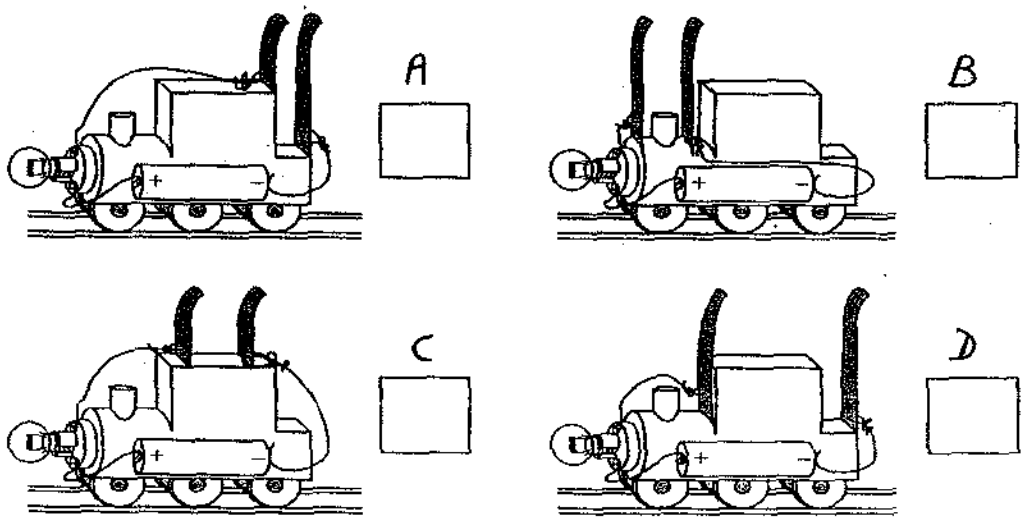
(b) Would the bulb light up when only foil strip 1 touched the foil in the tunnel? Explain your answer. (1 m)

_____

_____

(c) Andrea wanted to improve her circuit so that the bulb lighted up when the train had only just entered the tunnel.

Which of the following trains would allow the bulb to light up first when the train enters the tunnel? Tick the correct box. (1 m)



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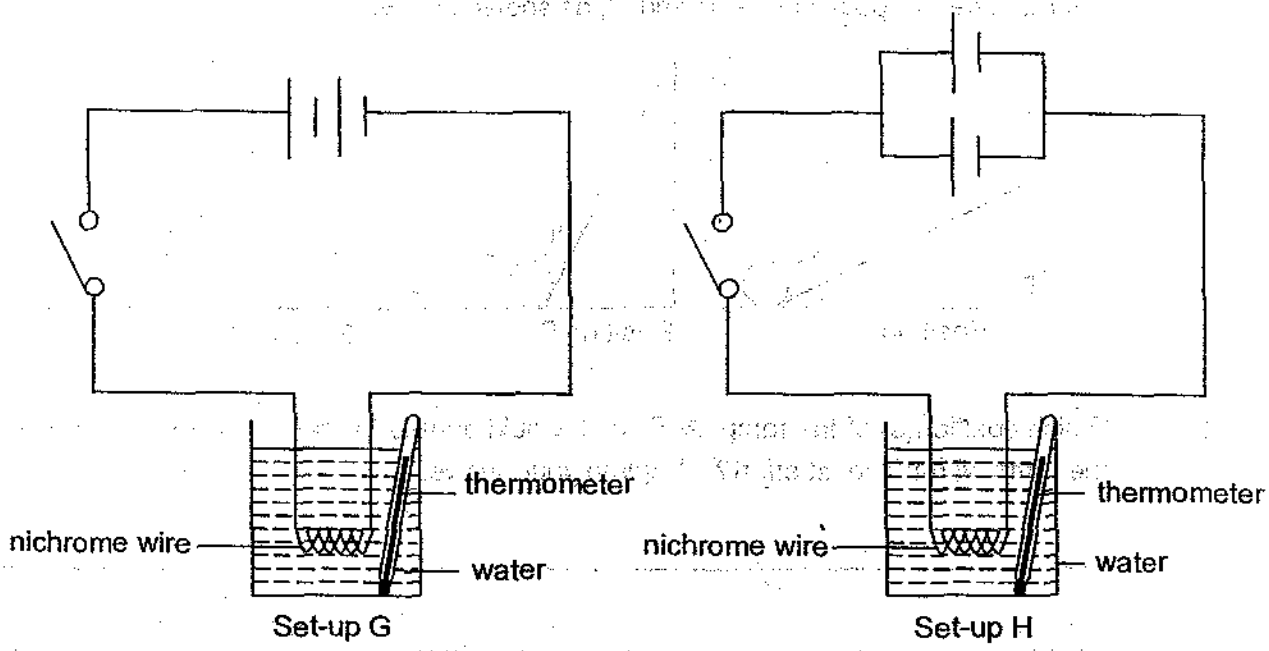
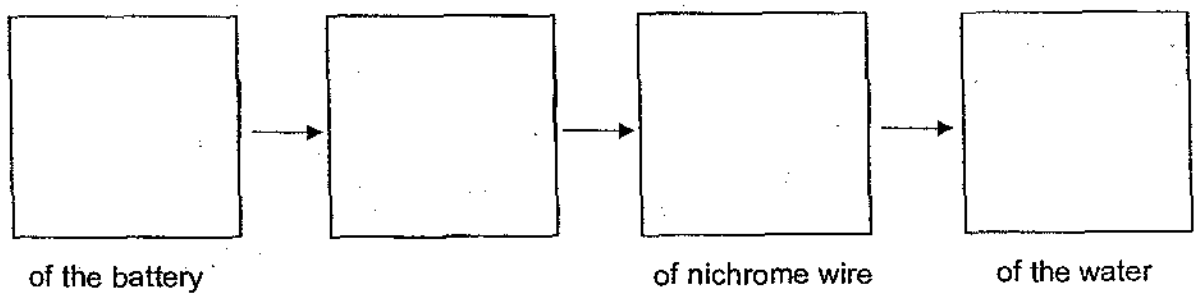
39. The diagram below shows two set-ups, G and H.

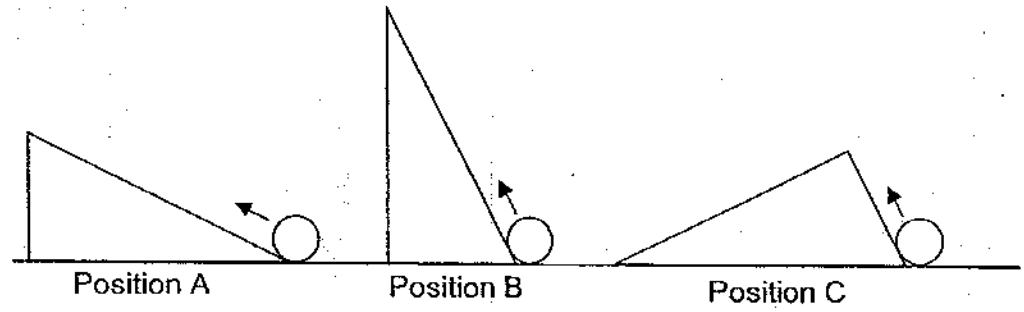


(a) In which set-up will the water warm up faster? Explain your answer. (2 m)

(b) Write down the main energy conversion that takes place in the set-ups above. (1 m)

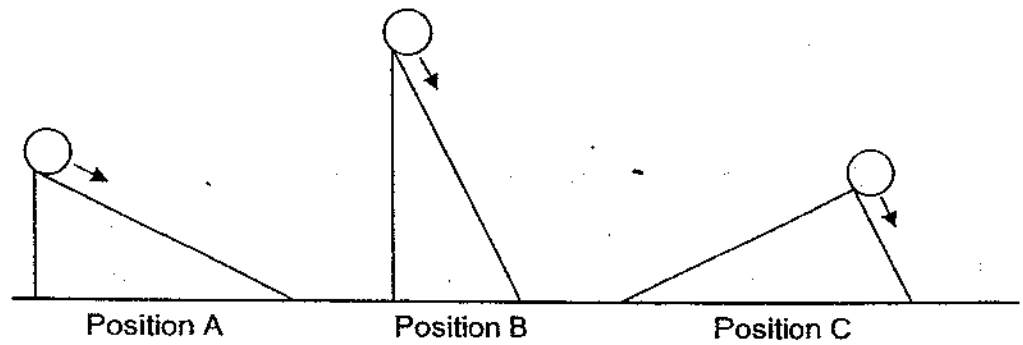


40. Mohan wanted to roll a metal ball up a ramp with the least effort. He placed the ramp in three different positions, A, B and C, as shown below.



(a) Which position(s) of the ramp, A, B or C, would enable Mohan to roll the metal ball up the ramp with the least effort? Explain your answer. (1 m)

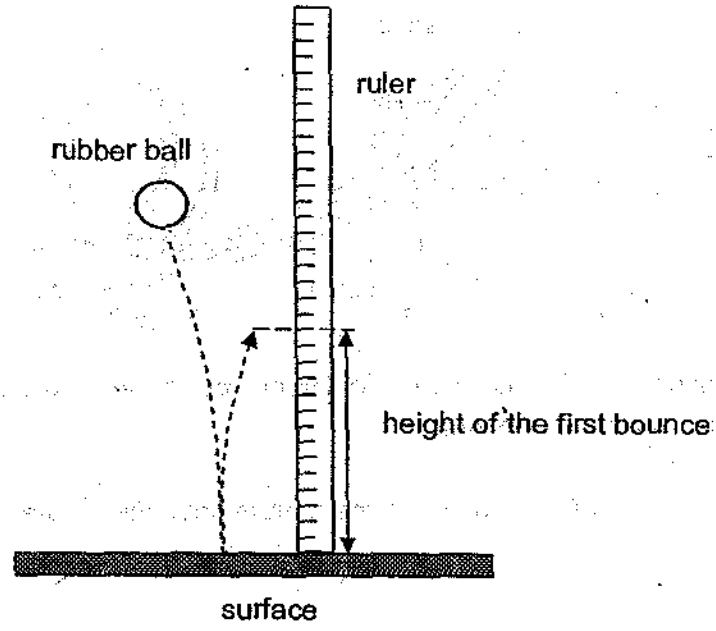
(b) Give one disadvantage of using the position of the ramp you have chosen in (a), as compared to the other two positions when moving up the same height. (1 m)



Next, Mohan placed the metal ball at the highest point of each position. Then he released the ball. It moved along the ramps and travelled a distance away from the ramps.

(c) Which position of the ramp, A, B or C, would enable the ball to travel the fastest just before hitting the ground? Explain your answer. (1 m)

41. Xueqi wanted to find out how the type of surfaces that a ball dropped on affected the height it bounced. She released a rubber ball onto a surface from a height of one metre. She measured the height of the first bounce of the rubber ball after it hit the surface as shown in the diagram below.



She repeated the experiment with other types of surfaces.

(a) Tick the box(es) for the correct variable(s) she needed to keep the same to ensure a fair experiment. (1 m)

Variables	✓
the type of ball used	
the height at which the rubber ball is released	
the height of the first bounce of the rubber ball	
the time taken for the rubber ball to reach the height of its first bounce	

(b) What should Xueqi do to ensure that her results are more accurate and reliable? (1 m)

_____

_____

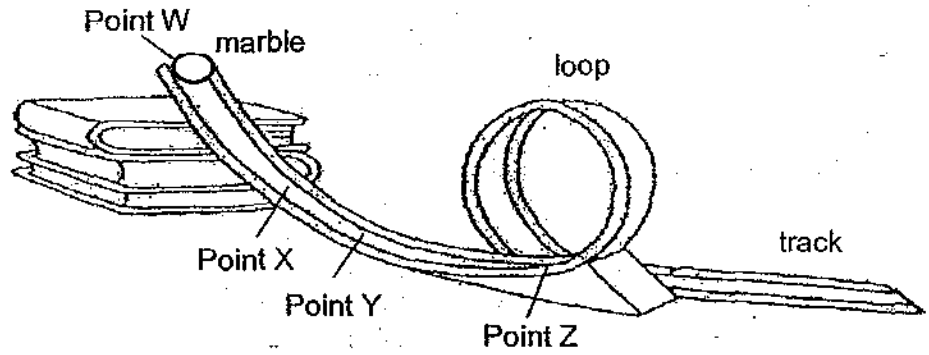
(c) Explain why the rubber ball bounced to a height which is less than the height at which the ball was released. (1 m)

7

_____

_____

42. Jeremy connected a track as shown. He placed one end of the track against a stack of books to make the ramp. Then, he released a marble from the top of the ramp at point W.



He noticed that the marble could not go round the loop but instead dropped before reaching the top of the loop.

(a) At which point, W, X, Y or Z, did the marble have the greatest amount of kinetic energy? (1 m)

_____

(b) Without replacing any part of the set-up, describe two changes that Jeremy could make to enable the same marble to reach the end of the track. (1 m)

(i) _____

_____

(ii) _____

_____

For Questions 43 to 46, please refer to Booklet K.
End of Section B

Set by : Mr David Koh
Vetted by: P6 Science Committee teachers

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ANSWER SHEET

EXAM PAPER 2009

SCHOOL : PEI CHUN PRIMARY
SUBJECT : PRIMARY 6 SCIENCE

TERM : CA1

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

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25
3	**1**	**1**	**3**	**4**	**3**	**4**	**2**

26)to 30 No ques

31)a)Plastic Y. It is the lightest among the three.
b)Plastic does not break easily while glass breaks easily.

32)Q, S, R, P

33)a)To find out which material is the poorest conductor of heat.
b)Material S. The drop in temperature was the least.

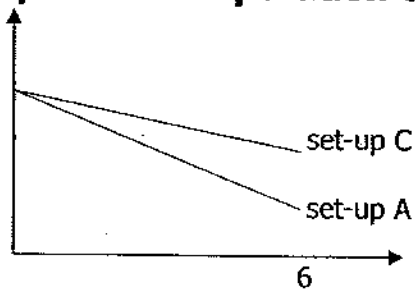
34)a)The number of seeds that germinated in the dish in the cupboard was the most.
b)The seedling have used up the food in their seed leaves. There was also no light for the seedlings to photosynthesis.

35)a)Set-up B and D.
b)The plant in set-up B would wither but the plant in set-up D would grow. The plant in set-up B does not have carbon dioxide to make food but the plant in set-up D does.
c)To find out if carbon dioxide and sunlight is needed for photosynthesis.

36)a)To compare the drop in water level./To confirm that the change in water level was only due to the celery stem.

36)b)To prevent evaporation of water from the beaker.

c)



37)a)The screen should be translucent. It enabled the shadow of the puppet to be formed on one side of the screen.

b)The shadow would become bigger and blurrer.

38)a)They are conductors of electricity.

b)No, the circuit willbe open, thus no electric current can flow through the circuit.

c)B

39)a)Set-up G. In Set-up G, the batteries are arranger in serves, so the voltage travelling through the circuit and heating up the water would be higher. In Set-up H, however, the batteries are arranged in parallel, so the voltage would be less.

b)Chemical potential energy→Electrical energy→Heat energy→Heat energy.

40)a)Position A. The angle of inclination is the smallest, so the metal ball can be rolled up the ramp with the least effort.

b)The metal ball will travel over the longest distance.

c)Position B. The ball at Position B was at the greatest amount of potential energy which would converted into the greatest amount of kinetic energy.

41)a)the type of ball used.

b)Repeat the experiment a few times to get an average reading.

c)Some of the kinetic energy of the rubber ball was converted into heat and sound energy when it bounced on the surface.

42a)Point Y.

b)b)i)He could increase the height of the ramp by stacking more books.

ii)He can use more force on releasing the marble.