HENRY PARK PRIMARY SCHOOL

2009 SEMESTRAL EXAMINATION 1

PRIMARY 6 SCIENCE

PART 1

Name: _____( )

Class: Primary _____

-
100

30 Questions
60 Marks

Total Time for Part 1 and 2: 1 h 45 min

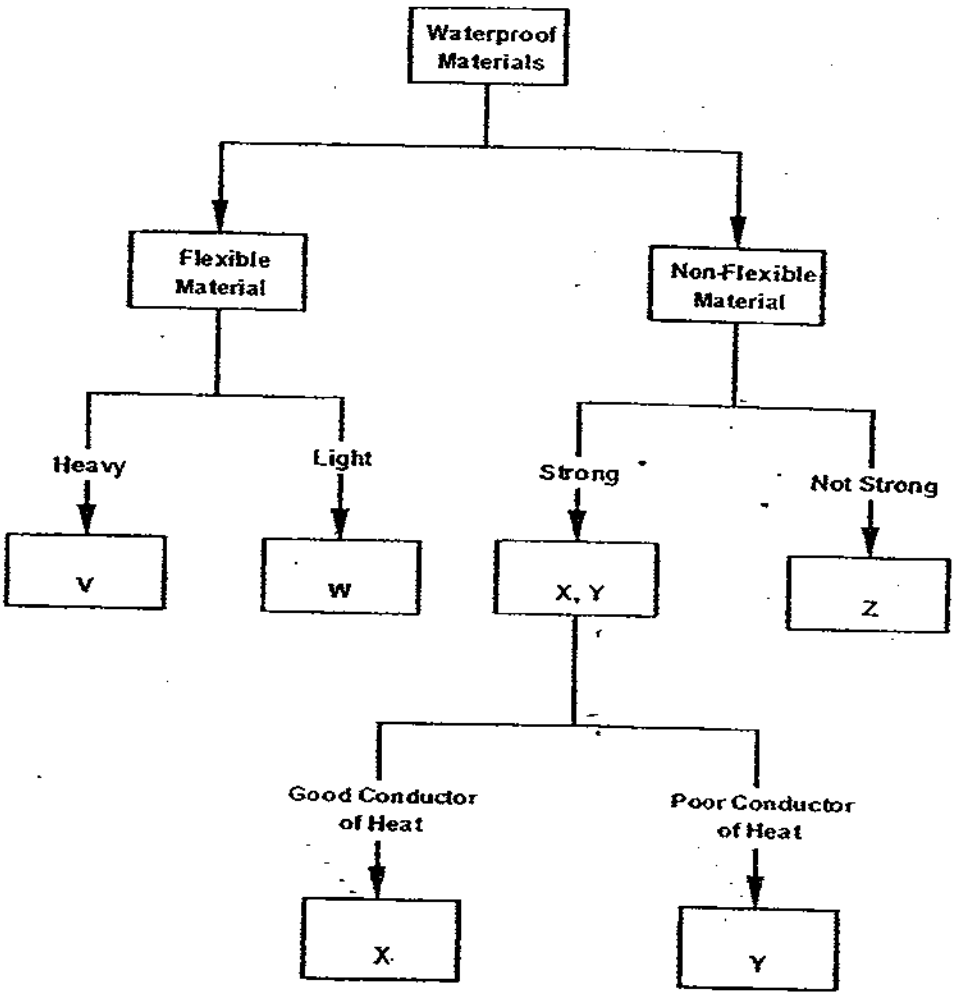
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

READ AND FOLLOW INSTRUCTIONS CAREFULLY.

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**.

1. Carmen was told to select the materials most suitable for making raincoats and helmets. She was also told not to select the same materials for making the items. The chart below shows how materials V, W, X and Y are classified.



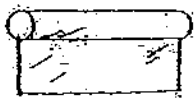
Based on the classification chart above, which of the following shows the best choice of materials for making the raincoats and helmets?

	Raincoats	Helmets
(1)	V	Z
(2)	W	Y
(3)	W	X
(4)	V	Y

( )

2. The pictures show 3 objects that are made from aluminium.

drink can



foil

food container

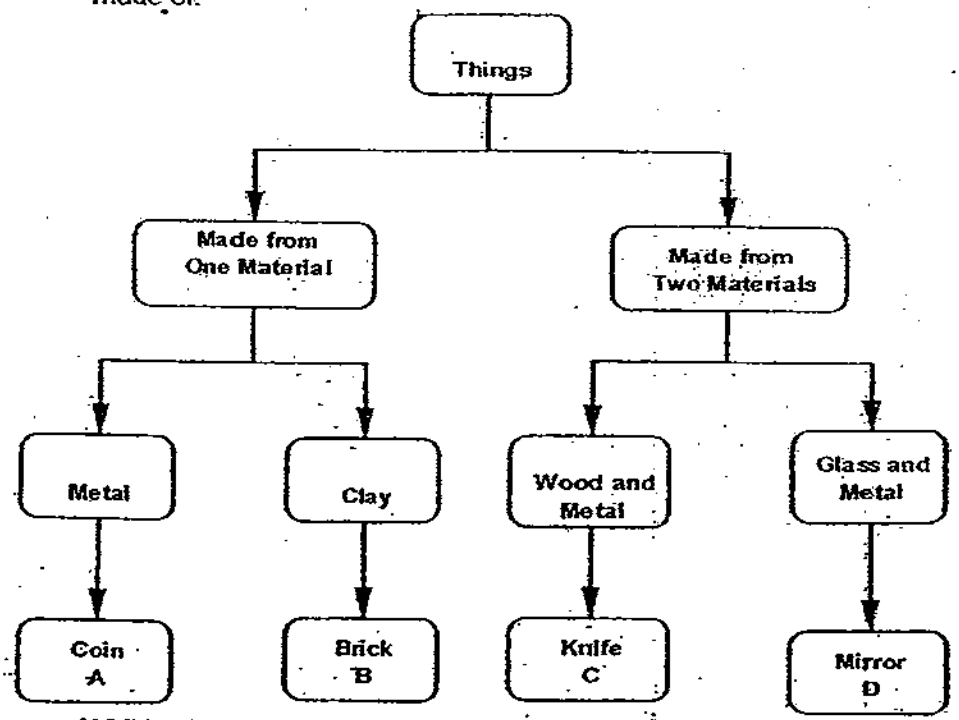
Why is aluminium used to make the above objects?

A: It is a light metal
B: It is waterproof.
C: It is a good conductor of heat

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

( )

3. The table below shows some things grouped according to the materials they are made of.



Which of the following best represents a nail and a clock?

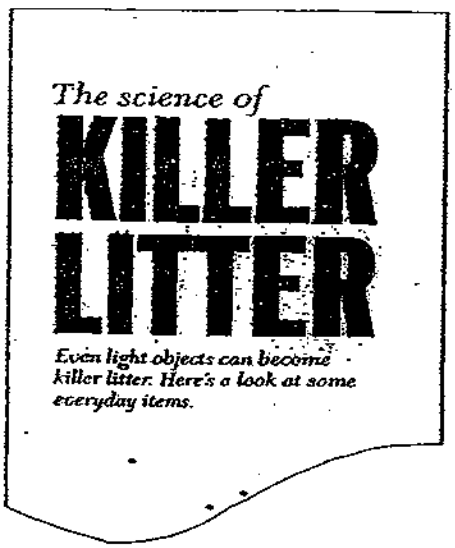
	Nail	Clock
(1)	A	C
(2)	A	D
(3)	B	C
(4)	B	D

( )

4. Fossil fuels are energy sources. Which of the following about fossil fuels is true?

(1) They are always available and will not run out.
(2) They are easily replaced once they are used up.
(3) They are not easily replaced once they are used up.
(4) They cannot be converted to other forms of energy. ( )

5. Below is part of a newspaper article taken from The Straits Time.


The science of
KILLER LITTER
Even light objects can become killer litter. Here's a look at some everyday items.

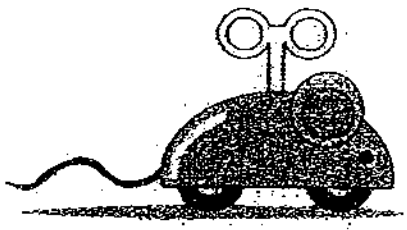
According to the above article, the damage done from a 10-kg block of cement falling on your head from the 2nd storey of a flat is the same as that caused by a plastic bag filled with a litre of water thrown from the 15th storey of a flat.

Which of the following could contribute to the cause of the damage?

A: Mass of the falling object
B: Shape of the falling object
C: Hardness of the falling object
D: Height at which the object falls from

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

6. Mekai wanted to conduct an experiment on how the distance travelled by a toy mouse is affected by the number of turns its key has been wound up.



What would likely be the **hypothesis** he should write for this experiment?

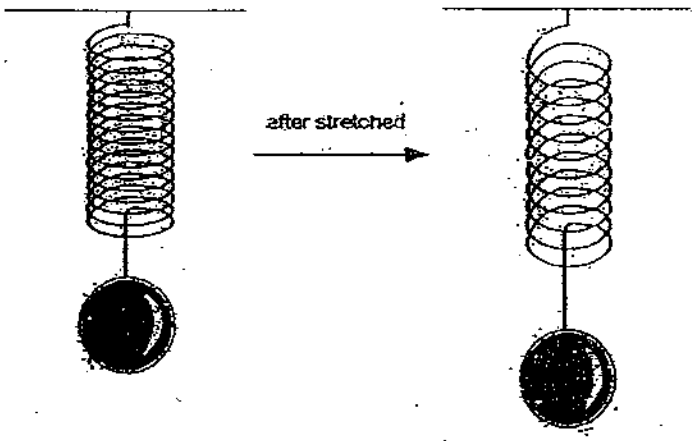
(1) The tighter the spring of the toy mouse, the more the number of turns the toy mouse was wound up.

(2) The more the number of turns the toy mouse was wound up, the more stored energy the toy mouse has.

(3) The longer the time taken to wound up the toy mouse, the further the distance the toy mouse will travel.

(4) The more the number of turns the toy mouse was wound up, the further the distance the toy mouse will travel. ( )

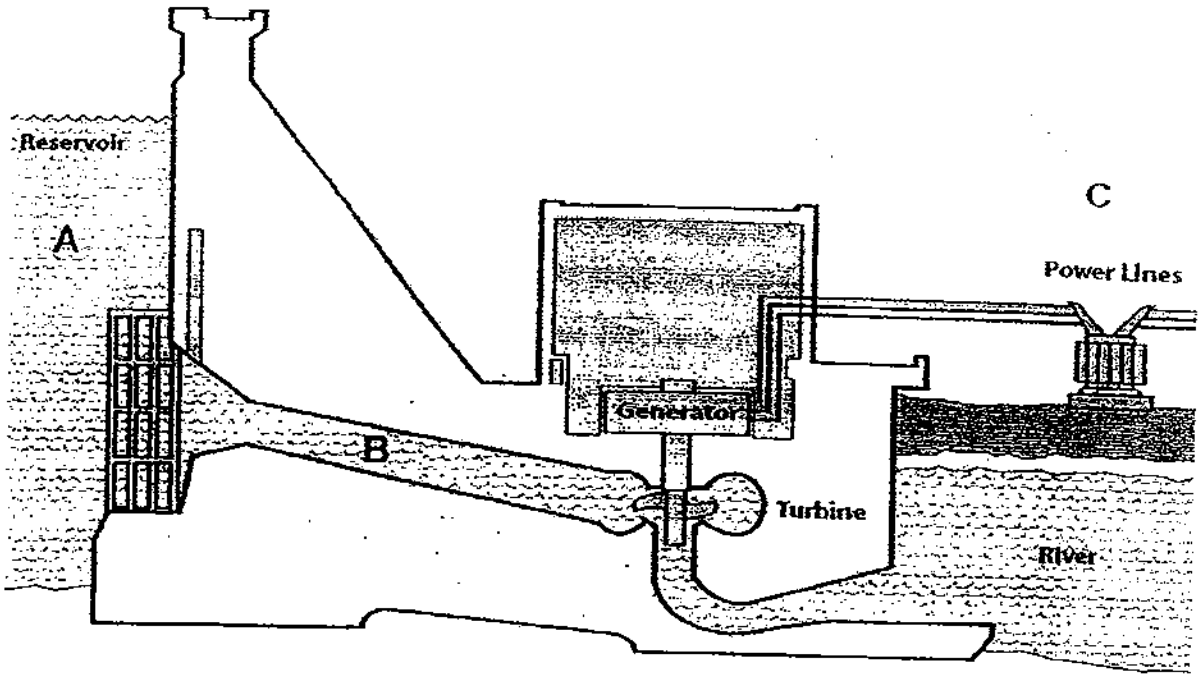
7. Sheila hooked a ball onto the lower end of a spring. She observed that the spring stretched as shown in the diagram below.



Based on her observation, what can she infer from this activity?

(1) The ball stores more energy when the spring is stretched.
(2) The spring stores more energy when it is stretched longer.
(3) The energy from the spring is transferred to the ball when it is stretched.
(4) The ball has more gravitational potential energy after the spring is stretched. ( )

8. Study the diagram of the hydro-electric dam below.



Which of the following shows the correct energy changes at A, B and C in the above diagram?

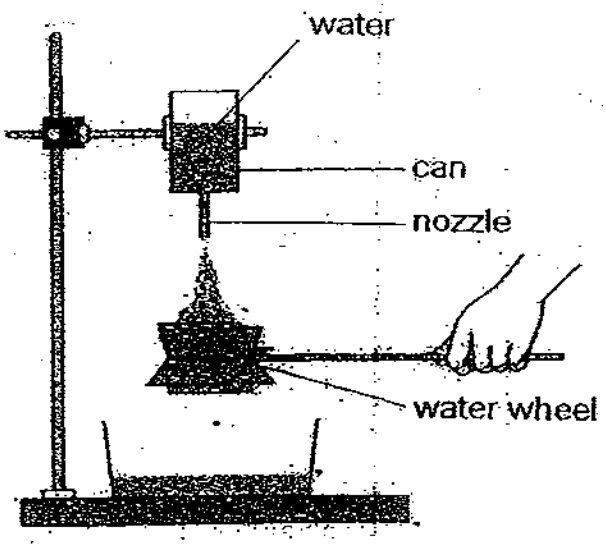
	A		B		C
(1)	Chemical potential energy	→	kinetic energy	→	electrical energy
(2)	Kinetic energy	→	kinetic energy	→	electrical energy
(3)	Gravitational potential energy	→	kinetic energy	→	electrical energy
(4)	Gravitational potential energy	→	electrical energy	→	kinetic energy

( )

9. Jeremy made a hypothesis as shown below.

> **The water wheel moves faster as the distance between the can and the water wheel increases.**

He then set up his experiment as shown below.

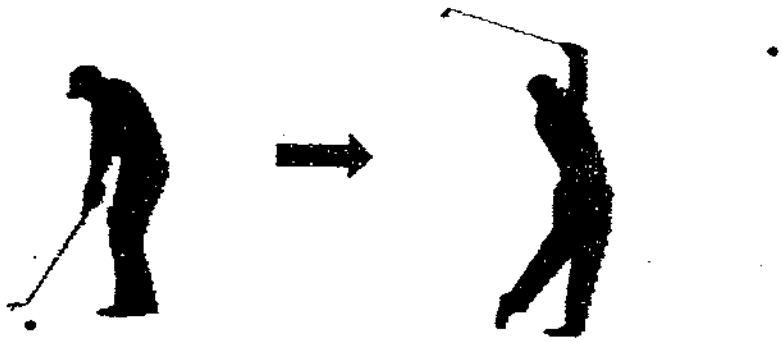


Which of the following variable(s) should be measured to check if the hypothesis is true?

A: Amount of water in the can for each trial
B: Number of turns water wheel makes per minute
C: Distance between the can and the water wheel

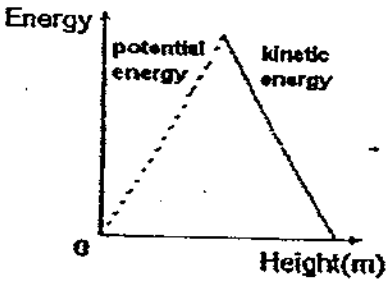
(1) B only
(2) C only
(3) A and B only
(4) A and C only ( )

10. A golfer swings his golf club causing the ball to fly in the air as shown below.

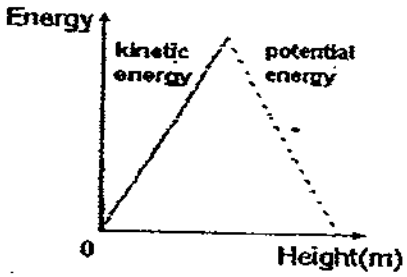


Which one of the following graphs below shows correctly the potential energy and kinetic energy in the ball, from the time the ball was on the ground to the time the ball reached its maximum height?

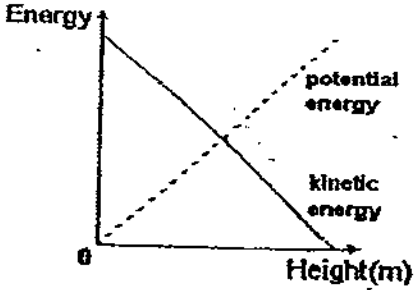
(1)



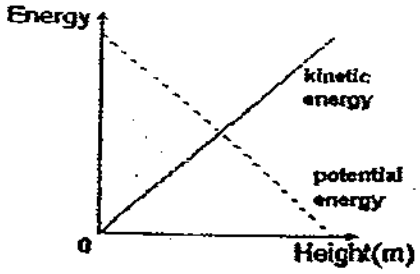
(3)



(2)

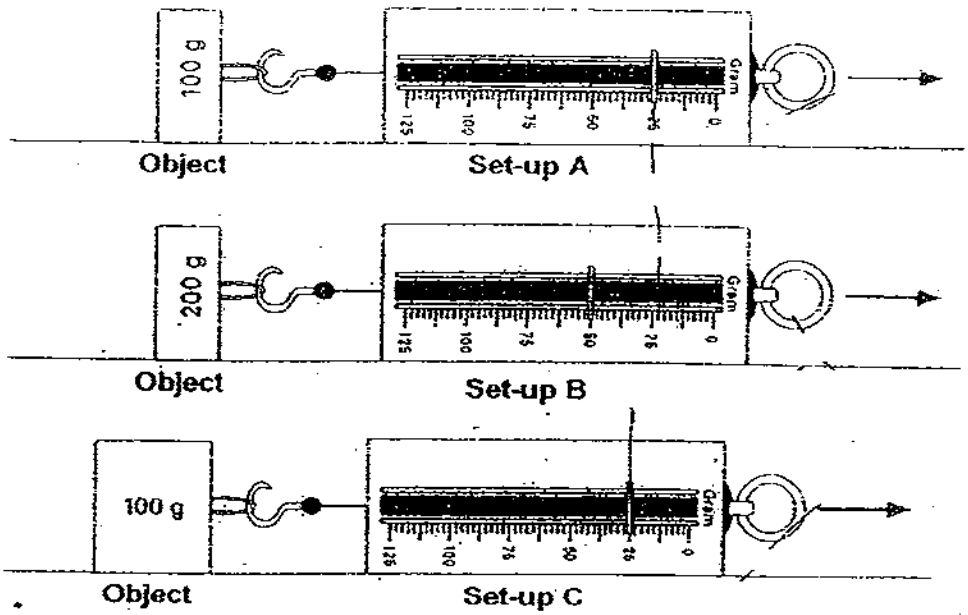


(4)



( )

11. Kyle wanted to find out if frictional force is affected by the surface area of an object in contact with another surface.

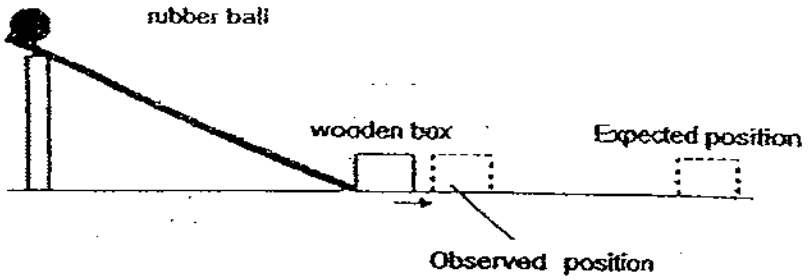


Which of the above set-ups should he use to conduct a fair experiment?

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

( )

12. Carol carried out the experiment shown below.

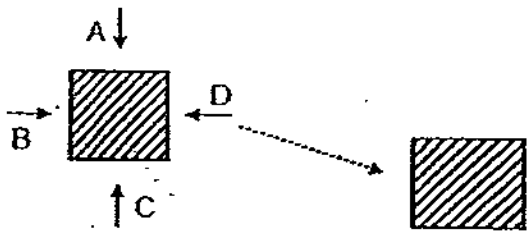


When she released the rubber ball, it hit the box. However, the box did not move as far as she had expected.
What could she do to the set-up to ensure that the box would reach the expected position or beyond?

A: Use a heavier ball
B: Smoothen the ramp
C: Let the box stand on its smallest face
D: Lower the starting position of the ball

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

13. The diagram below shows that some **amount of force (N)** was exerted on a wooden block on its sides, A, B, C and D at **Position X** before it was pushed to **Position Y**. Force was exerted on the 4 sides of the wooden block at the same time.



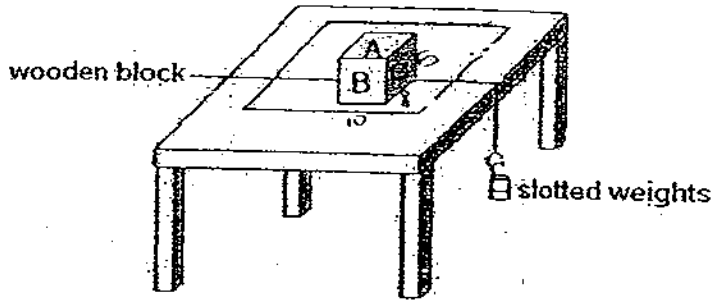
Position X Position Y

Which of the following shows the likely amount of force that was exerted on the wooden block that pushed it to Position Y?

	Amount of force exerted on wooden block (N)			
	At A	At B	At C	At D
(1)	5	6	6	7
(2)	7	8	7	8
(3)	5	3	4	5
(4)	8	8	7	7

( )

14. Jack placed a wooden block, 10cm by 8 cm by 5cm on a table as shown below. He measured the force needed to move the wooden block, using slotted weights.



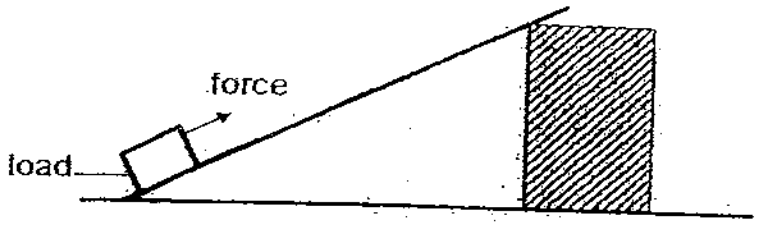
The results are tabulated in the table below.

Surface area of face of block	Force needed to move it		
	1st try	2nd try	3rd try
A (80 cm^2)	110	108	109
B (50 cm^2)	109	110	109
C (40 cm^2)	110	109	110

What do the results from the experiment show?

(1) The surface area affects the force needed.
(2) The larger the surface area, the greater the force needed.
(3) The smaller the surface area, the greater the force needed.
(4) The size of the surface area does not affect the force needed. ( )

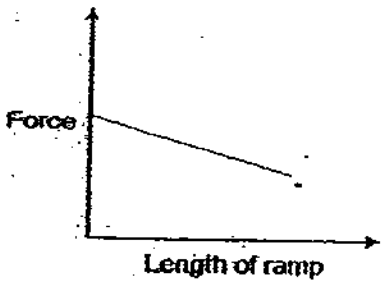
15. The diagram below shows a ramp being used to lift a load.



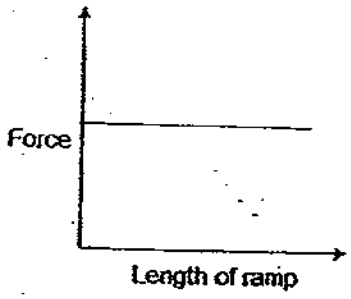
An experiment was carried out to find out how the force applied to pull the load up the ramp varies with the length of the ramp.

Which one of the following graphs below shows the correct results?

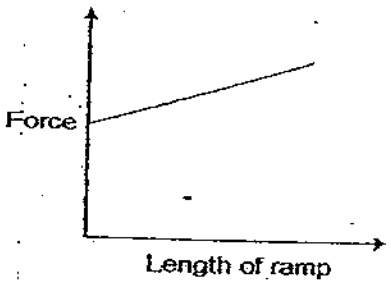
(1)



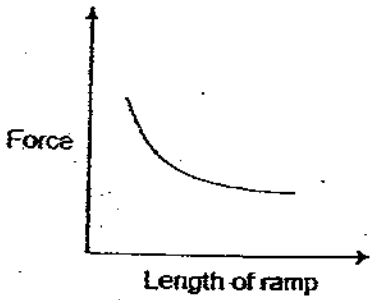
(2)



(3)

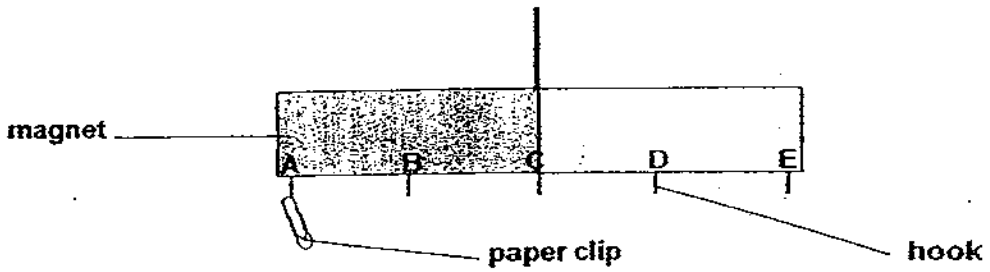


(4)



( )

16. 5 hooks are taped to a magnet at positions A, B, C, D and E. A paper clip is hung on Hook A as shown in the diagram. Then it is used to attract one paper clip at a time. The number of paper clips that can be attracted by the first paper clip was recorded. The experiment was repeated with the hooks at Positions B, C, D and E.



Which one of the following sets would most likely be the results of the above test?

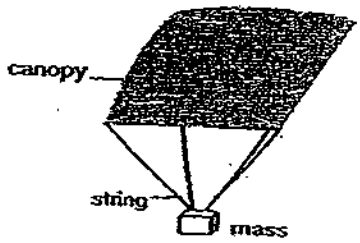
	Number of paper clips attracted at				
	Position A	Position B	Position C	Position D	Position E
(1)	12	10	2	3	4
(2)	9	6	0	8	10
(3)	10	2	1	8	7
(4)	6	7	0	2	10

( )

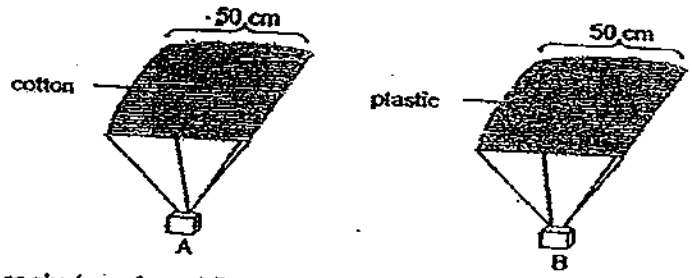
For questions 17 and 18, refer to the diagram below.

17. A group of students wanted to investigate the effectiveness of various parachute designs.
They tested how the materials and area of the canopy affect the time taken to fall 3 metres. The table below shows their experimental results.

Material used in square canopy	Length of one side of the canopy (cm)	Time to fall 3 m (s)
cotton	20	25
cotton	40	30
plastic	20	25
plastic	40	30



The diagram above shows the basic parts of the parachute design.



Two parachutes, A and B, were set up to confirm the results in the table above.

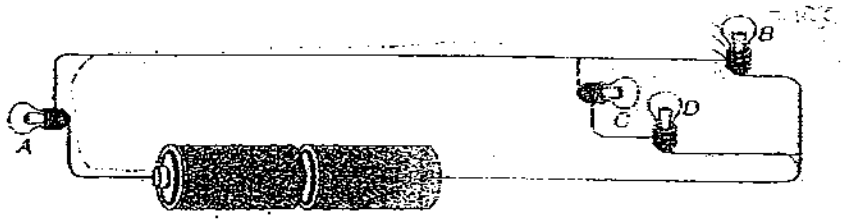
Based on the information given, what do you predict will happen when both parachutes are dropped at the same time from the same height?

(1) Parachute A will reach the ground in less than 25s.
(2) Parachute A will reach the ground faster than Parachute B.
(3) Parachute B will reach the ground faster than Parachute A.
(4) Both parachutes will reach the ground at the same time. ( )

18. Which one of the following conclusions is the most accurate for the above experiment involving parachutes A and B?

(1) Plastic is a more suitable canopy material than the cotton.
(2) The cotton canopy is heavier than the plastic canopy.
(3) Both materials affect time taken by parachutes to fall to the ground.
(4) Both materials do not affect the time the parachutes take to fall. ( )

19. Study the circuit shown below carefully. When one of the bulbs is fused, three other bulbs remain unaffected and continue to light up.

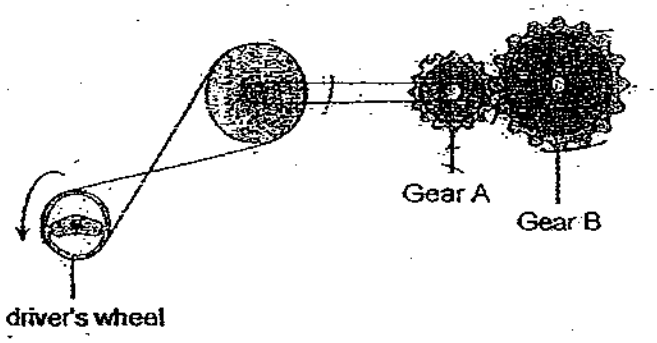


Which one of the following is the fused bulb?

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

( )

20. In the gear system shown below, the driver's wheel is turned anti-clockwise.



Which one of the following identifies the correct direction of rotation for **Gear A** and **Gear B**?

	Gear A	Gear B
(1)	clockwise	clockwise
(2)	clockwise	anti-clockwise
(3)	anti-clockwise	anti-clockwise
(4)	anti-clockwise	clockwise

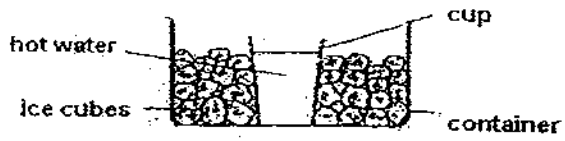
( )

21. Shane observed that sometimes the Moon appears as a bright full circle while at other times it appears as a bright crescent.

Which one of the following statements explains why the shape of the Moon changes?

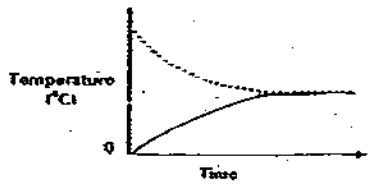
(1) The rotation of the Earth around the Moon causes the lighted part of the Moon to vary.
(2) The rotation of the Earth about its own axis causes the lighted part of the moon to vary.
(3) The movement of the Moon around the Sun causes the lighted part of the Moon to vary.
(4) The movement of the Moon around the Earth causes the lighted part of the Moon to vary. ( )

22. A cup of hot water was placed in a container of ice cubes as shown in the diagram below.



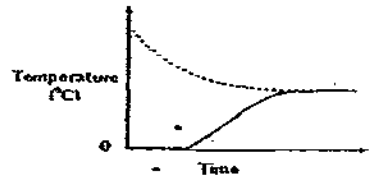
Which one of the following graphs most accurately shows the temperature of the hot water and ice cubes over a period of five hours?

(1)

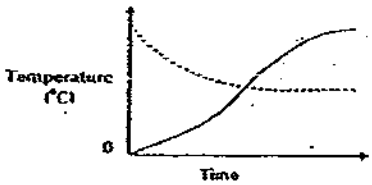


key: ——— hot water
_ _ _ _ ice cubes

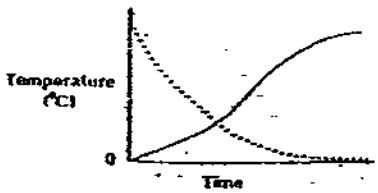
(2)



(3)

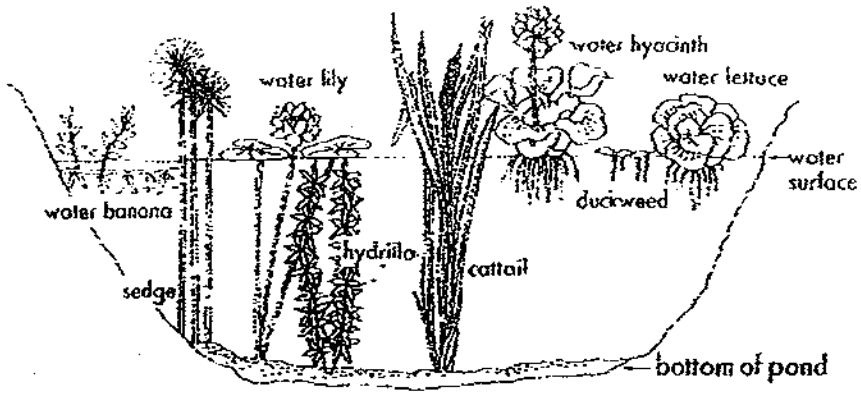


(4)

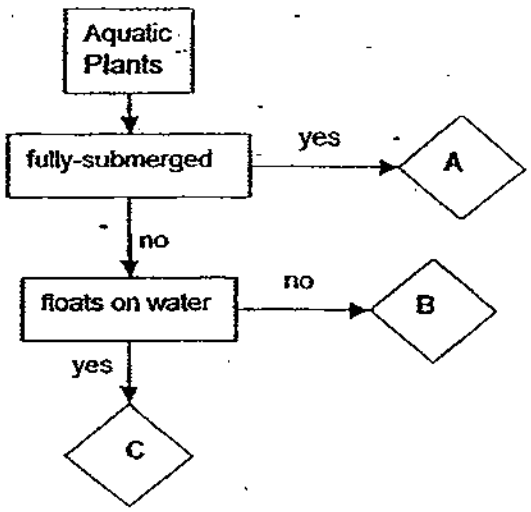


( )

23. The diagram below shows the cross section of a pond.



The flow chart below is used to distinguish between the plants that grow in the pond. Which plants do A, B and C represent?



	A	B	C
(1)	hydrilla	sedge	duckweed
(2)	water banana	hydrilla	water hyacinth
(3)	hydrilla	water lettuce	water banana
(4)	water banana	cattail	water lily

( )

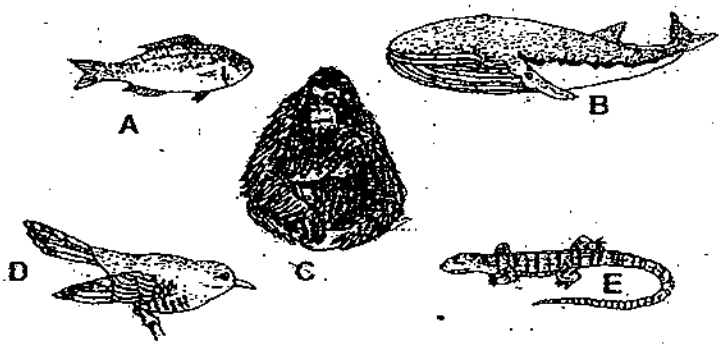
24. Which of the following statements about living things is/are **true**?

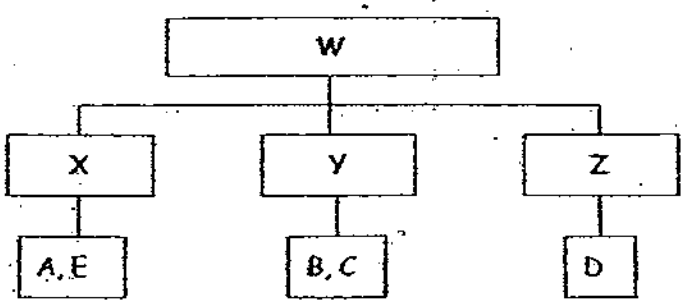
A: Microorganisms are single-celled organisms.
B: Moulds and mushrooms are classified as fungi.
C: Non-flowering plants cannot make their own food.

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

( )

25. The following animals are classified according to certain characteristics.





Which of the following correctly represents W and Y?

	W	Y
(1)	Method of reproduction	give birth
(2)	Body temperature	warm-blooded
(3)	Outer body covering	hair
(4)	Food they eat	plants and animals

( )

26. Which of the following changes to conditions of a habitat is not correctly matched to how the organisms in that habitat will be affected?

	Changes in Habitat	How organism(s) is/are affected
(1)	Rapid increase in temperature	Animals will lose much water but plants will remain unaffected
(2)	Long periods of dry weather	Decrease in aquatic animal population
(3)	Decrease in plant population	Plant eaters compete fiercely for food
(4)	Rapid increase in population of animal eaters	Less food is available for an animal eater

( )

27. The following table shows the number of animals in a particular community.

Animal	Number of organisms
Spider	10
Snail	12
Butterfly	8
Earthworm	5
Caterpillar	5

What is the population size of the butterfly?

(1) 8
(2) 13
(3) 23
(4) 40

( )

28. Andrew fed 100 grams of maize and 100 grams of meat to 4 different animals. After one hour, he measured the amount of food left and recorded the results of his investigation in the table below.

Animals	Maize left (g)	Meat left (g)
A	100	0
B	80	50
C	100	50
D	0	100

Which animal(s) in Andrew's investigation is likely to be both a plant and animal eater?

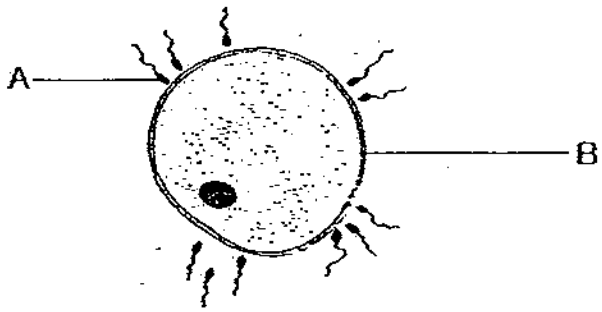
(1) A only
(2) B only
(3) B and C only
(4) A and D only

( )

29. Which of the following states a similarity between the processes of photosynthesis and respiration?

(1) Both photosynthesis and respiration release energy.
(2) Both photosynthesis and respiration involves absorption of carbon dioxide.
(3) Both photosynthesis and respiration take place in living cells.
(4) Both photosynthesis and respiration take place when there is light. ( )

30. The diagram below shows a process of fertilisation in humans. During this process, A fuses with B.



Which of the following correctly identifies the type of fertilisation and where parts A and B are produced in the human reproductive system?

	Type of Fertilisation	A	B
(1)	External Fertilisation	Ovaries	Testes
(2)	External Fertilisation	Testes	Ovaries
(3)	Internal Fertilisation	Testes	Ovaries
(4)	Internal Fertilisation	Ovaries	Testes

( )

End of Part 1

HENRY PARK PRIMARY SCHOOL

2009 SEMESTRAL EXAMINATION 1

PRIMARY 6 SCIENCE

PART 2

Name: _____ ( )

Class: Primary 6 _____

40

16 Questions
40 Marks

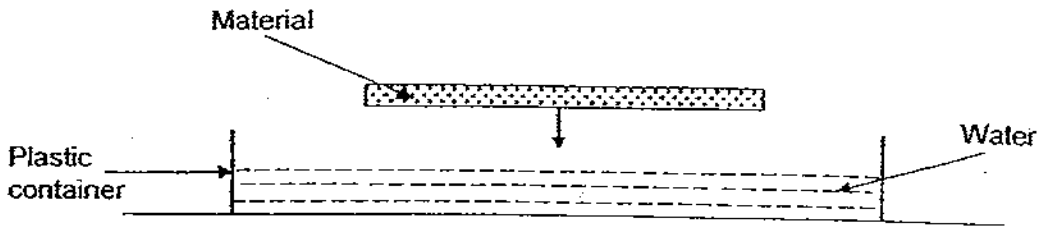
Total Time for Part 1 and 2: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

READ AND FOLLOW INSTRUCTIONS CAREFULLY.

PART 2 (40 marks)
Write your answers to questions 31 to 46 in the spaces given.

31. Linda uses 3 materials, E, F and G, to set up 3 similar setups like the one shown below. The materials are of the same size, shape and thickness.



Linda places each material gently on the water surface and observes the following.

Material	Observation made
E	Sinks immediately to the bottom of the container
F	Floats at first but sinks to the bottom of the container after 10 minutes
G	Remains afloat after 10 minutes

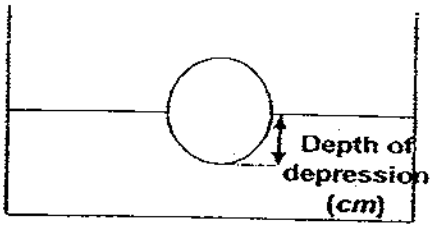
a) Based on the observations made by Lydia, draw lines to match the materials to their letters. *(1m)*

Material E ★	★ Paper
Material F ★	★ Porcelain
Material G ★	★ Styrofoam

b) Give a reason for your choice of material E, F or G for <u>paper</u>. *(2m)*

32. Three similar iron balls, X, Y and Z were released from three different heights (in centimetres) onto a tray of sand.

Diagram A shows depth of depression made by a ball.



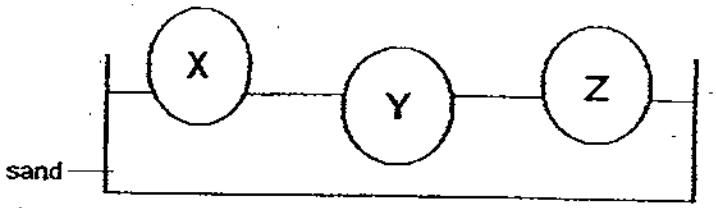
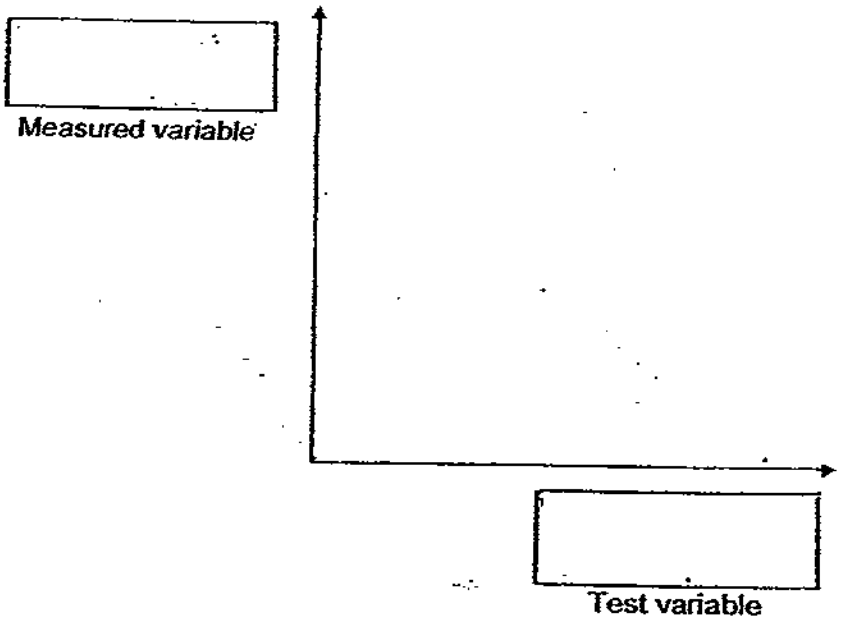


Diagram B shows the depressions made by the three iron balls after they were released.

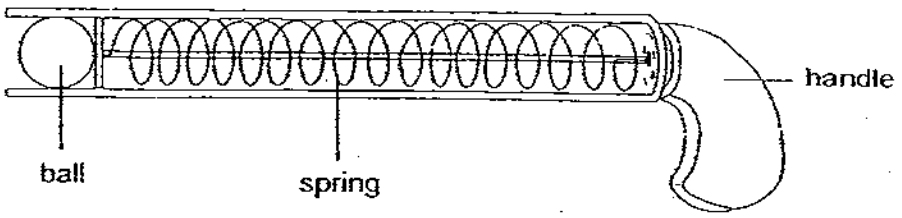
a) Plot a line graph and label the axes provided below correctly to show the relationship between the **heights of the balls released** and the measured **depth of depressions.** *(2m)*



b) Arrange the balls, X, Y and Z in order of the amount of gravitational potential energy (GPE) each ball has before being released, starting from the least gravitational potential energy to the most gravitational energy. *(1m)*

Least GPE , , Most GPE

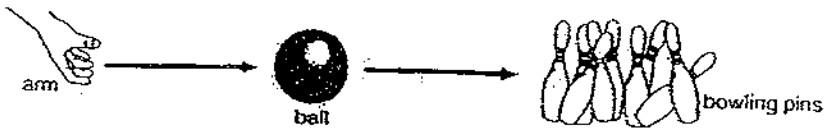
33. The diagram below shows a popgun that works using a spring. When the handle is pulled back and then released, the ball will shoot out of the popgun.



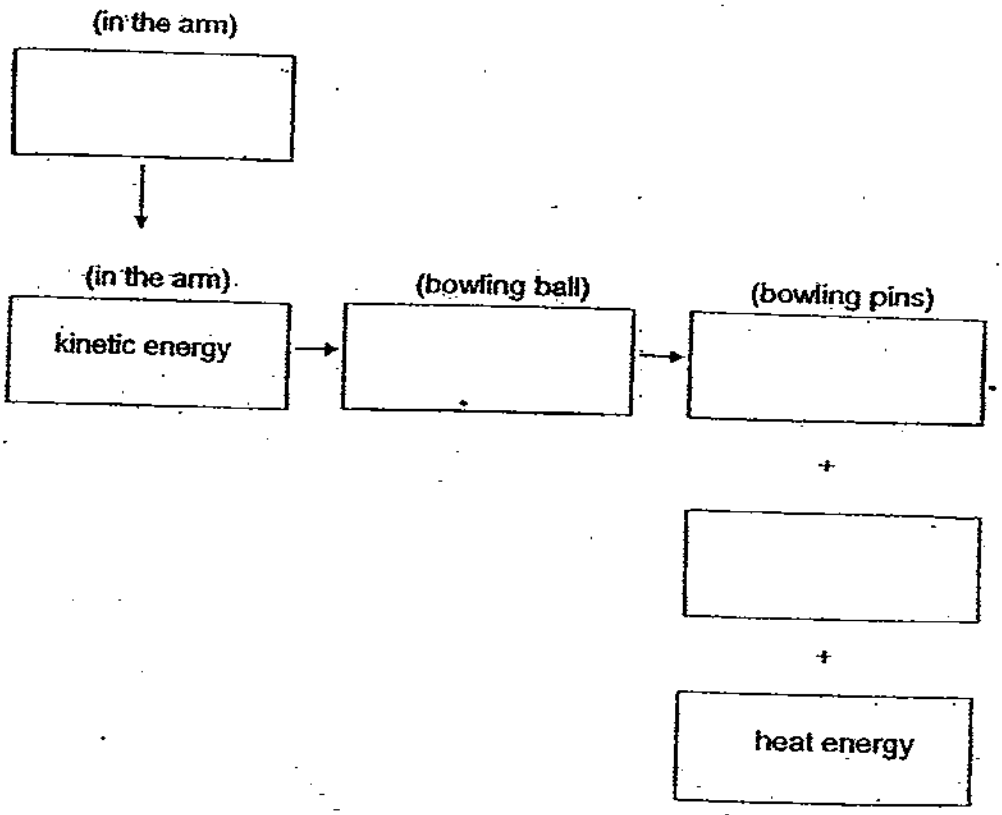
a) Describe what could make the ball go further when it is shot out of the popgun. *(1m)*

b) Give a reason for your answer in (a). *(2m)*

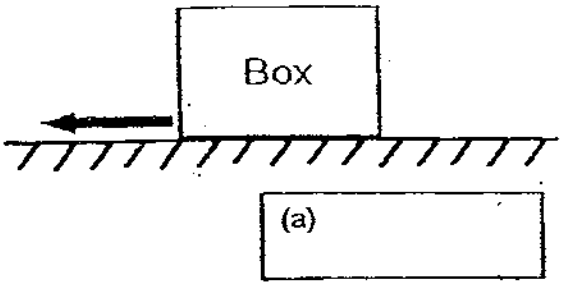
34. Study the diagram below.



State in the boxes below the energy changes for the above activity. *(2m)*



35. The diagram shows the movement of a box from right to left.
The arrow shows the direction of the movement.



a) Draw an arrow in the box above to show the direction of friction. *(1m)*

b) Kim Chu is writing on a piece of paper with a pencil. Explain clearly how friction is useful to him in this activity. *(1m)*

_____

_____

36. Weights were hung progressively to two springs P and Q to determine their degree of elasticity. The table below shows the result of the experiment.

Weights attached (g)	Length of spring P (cm)	Length of spring Q(cm)
0	?	8
20	9	10
40	12	12
60	15	14

a) What is the original length of spring P? *(1m)*

_____

b) Which spring is more elastic? Give a reason for your answer. *(1m)*

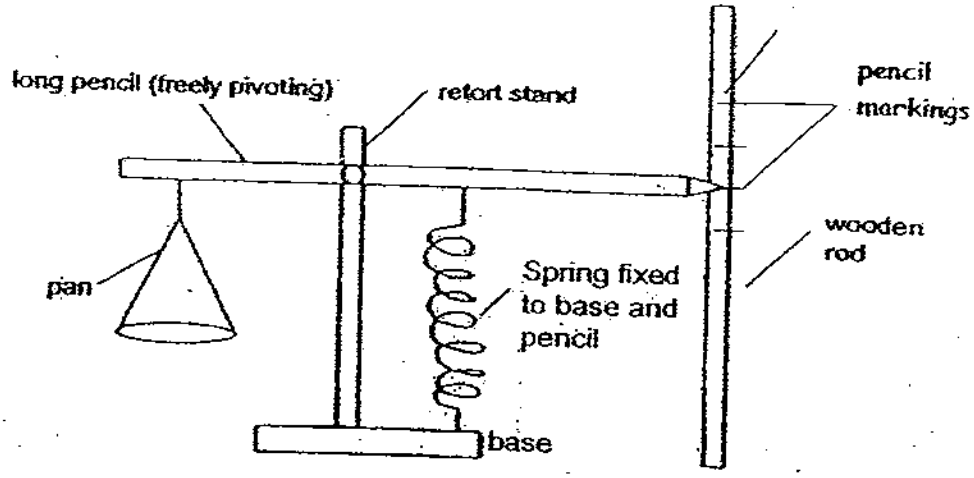
_____

_____

c) What is the length of spring Q when a 50g weight is hung on it? *(1m)*

_____

37. During a Science experiment, Jack was given the set-up below

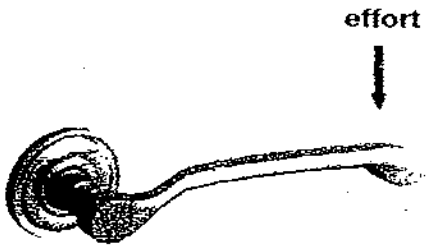


He was provided with ten 5-gram masses and a rock. The mass of the rock is between 20 grams to 50 grams.

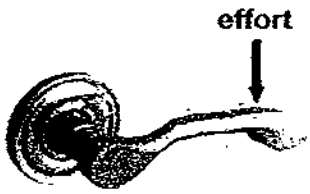
Describe in the table below, the steps he should take to find the estimated mass of the given rock. He should number the steps and draw a line after each step. *(3m)*

Steps	Descriptions
1	

38. The diagram below shows two similar door handles, A and B, of different lengths.



Door handle A



Door handle B

a) Which door handle, A or B, would require smaller effort to open the door? Give a reason for your answer. *(1m)*

_____

_____

_____

b) Explain the advantage of using the door handles A and B. *(1m)*
(Do not mention reason given in part (a))

_____

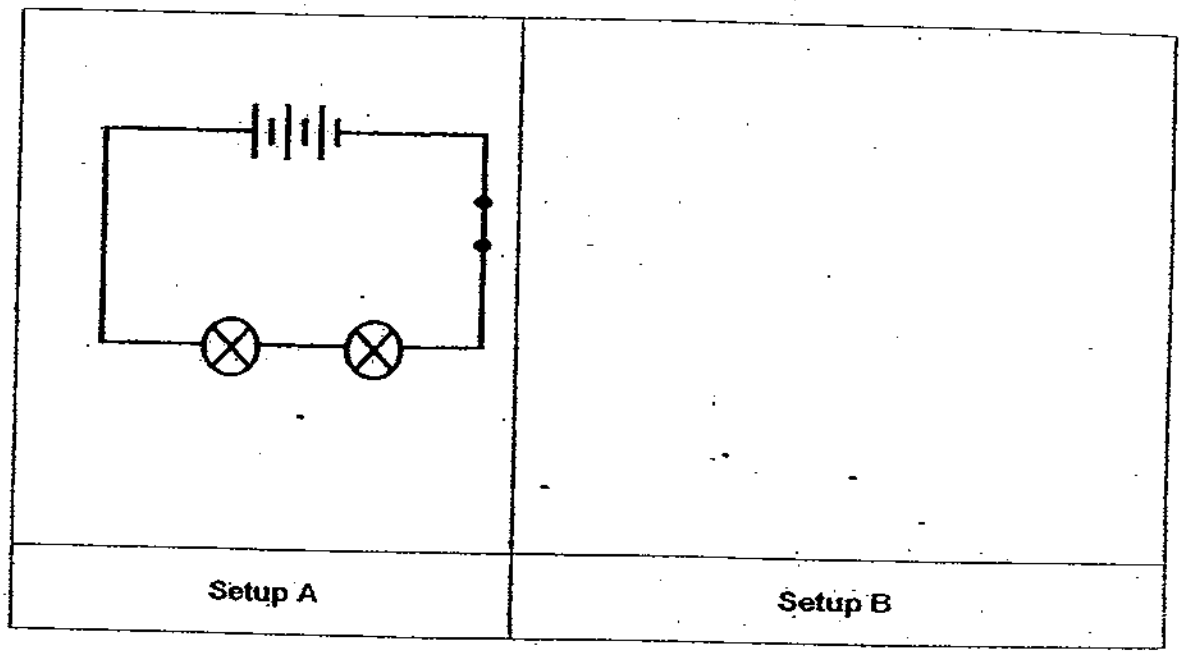
_____

_____

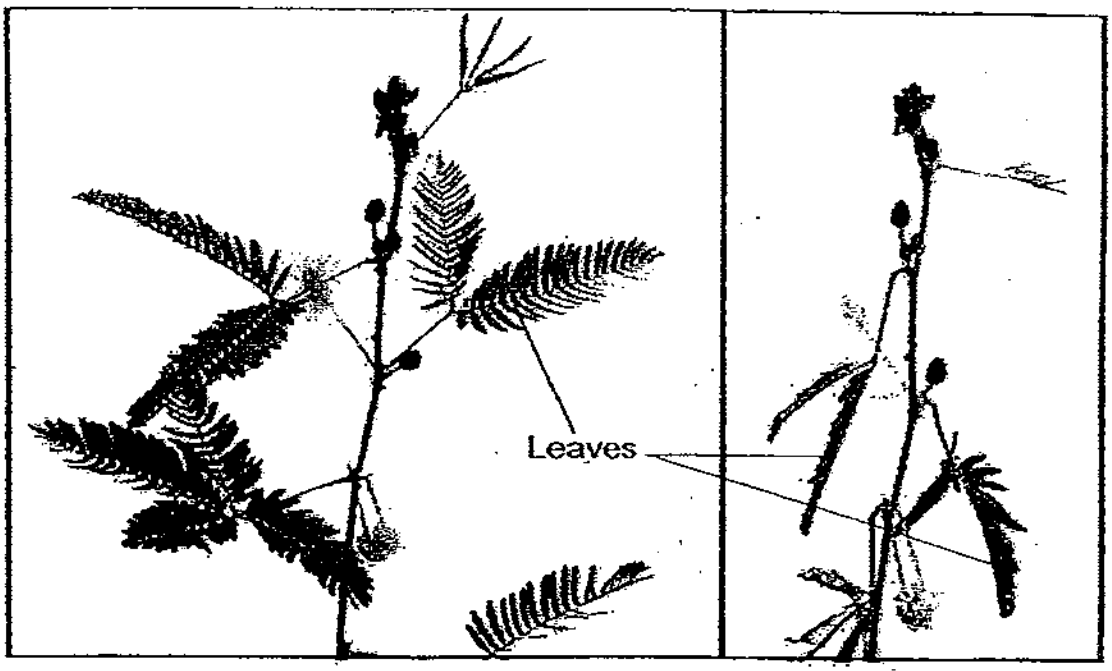
39. Lisa made the following hypothesis for her laboratory investigation.

The brightness of a bulb in a circuit depends on its arrangement of batteries.

Draw a circuit diagram using symbols for experimental setup B in the space provided to show how Lisa can prove her hypothesis correct with both Setups A and B. *(2m)*



40. a) Below is a diagram of a mimosa plant before and after Kim Seng has touched its leaves.



Mimosa leaves before touching **Mimosa leaves after touching**

Kim Seng says that the mimosa plant is a unique plant which can demonstrate that a plant is a living thing. *(1m)*
Which 2 characteristics of a living thing is Kim Seng able to demonstrate clearly with a mimosa plant that is not possible with most other plants?

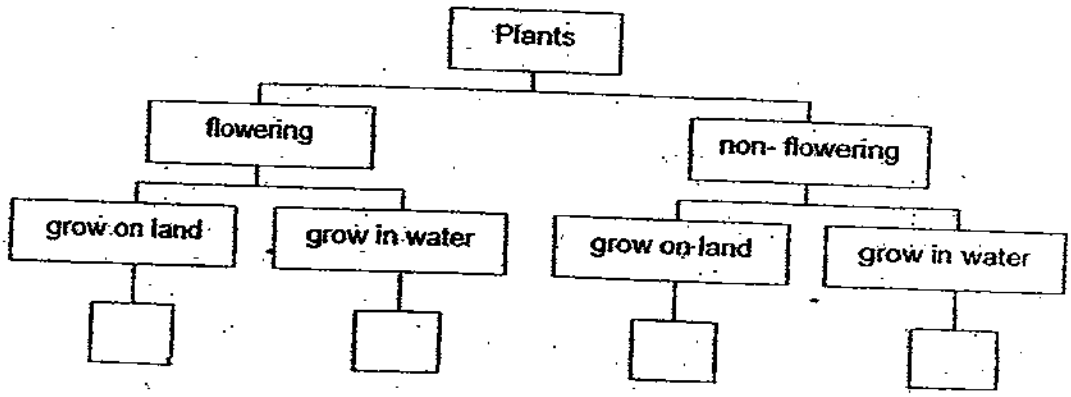
(i) _____

(ii) _____

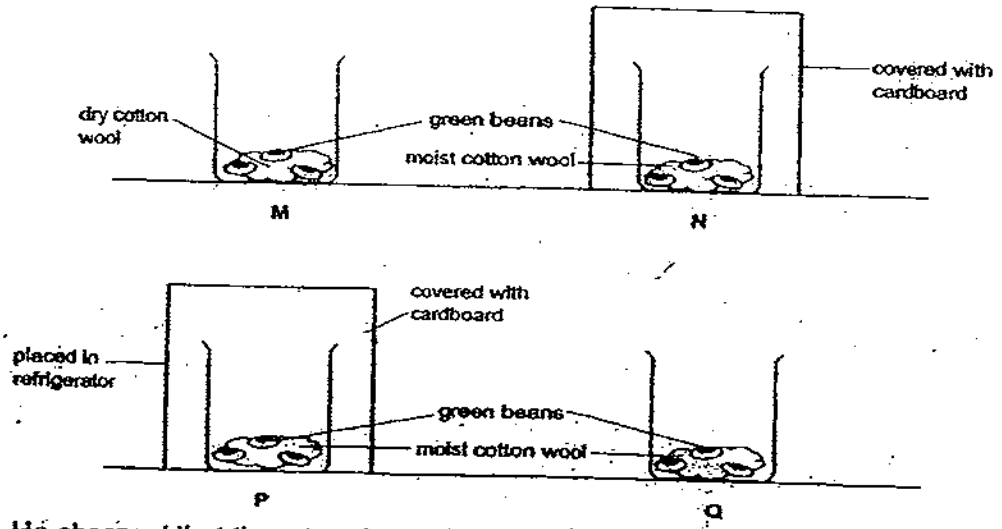
b) The table below shows the information on 4 plants P, Q, R and S. The ticks show the characteristics of the plants.

Characteristic / Plants	Flowering	Grow on land	Grow in water
P	✓		✓
Q		✓	
R	✓	✓	
S			✓

Based on the information, fill in the classification chart below with letters P, Q, R and S. *(1m)*



41. Sanjeet set up four beakers M, N, P and Q as shown below. He placed three green beans in each of the beakers. Beakers M, N and Q were kept at room temperature while beaker P was kept in the refrigerator.



He observed that the green beans in Beakers N and Q grew into young seedlings while those in Beakers M and P did not.

(a) What conclusions can Sanjeet draw based on his observations?

(2m)

_____

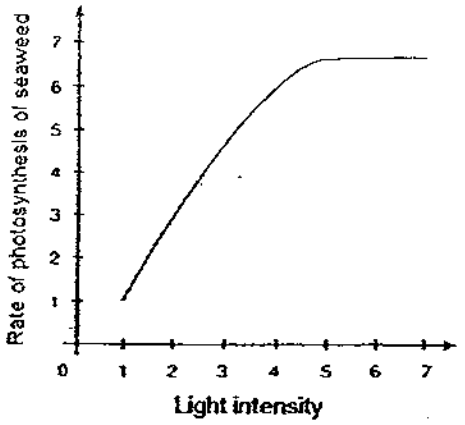
_____

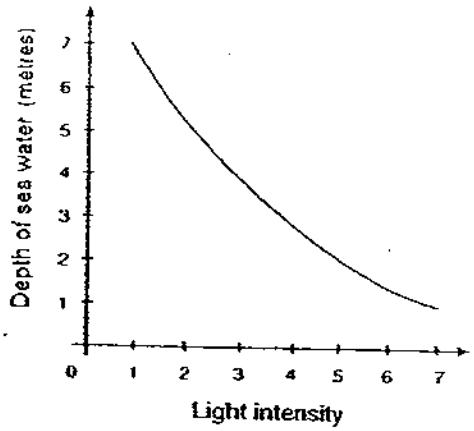
(b) Which variable is changed for beakers P and Q?

(1m)

_____

42. Photosynthesis is a process whereby plants convert light energy from the Sun into chemical energy. Study the two graphs below carefully.





Explain the effect the depth of sea water has on the rate of photosynthesis of seaweed. *(2m)*

43. a) State 2 reasons why the young of some animals survive well when they live with their parents. *(2m)*

(i) _____

_____

(ii) _____

_____

b) Explain why it is better for young plants to grow far away from their parent plant. *(1m)*

_____

_____

44. Study the diagram of the leaf below carefully.

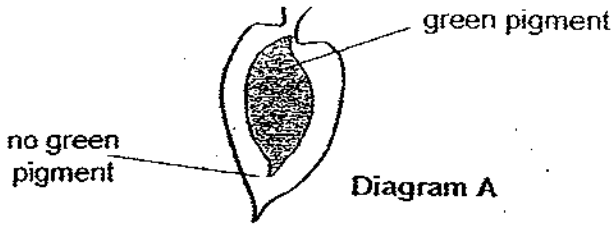


Diagram A

The plant was previously placed under bright light for the past 72 hours. The leaf above was treated and then tested for the presence of starch using iodine solution. Diagram B below shows the results of the starch test.

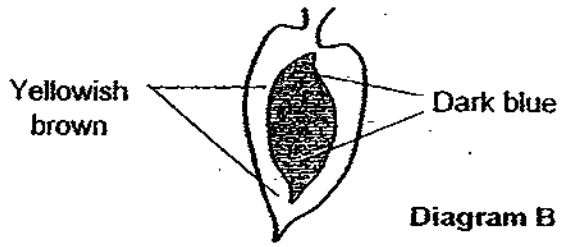
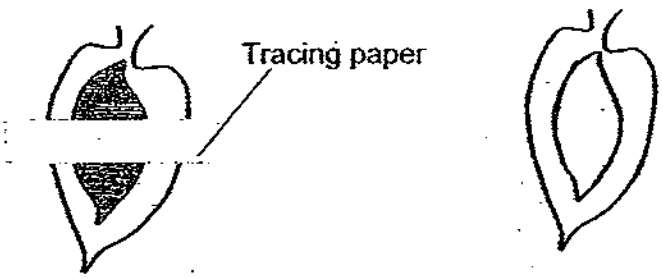


Diagram B

(a) What is the aim of this experiment? (1m)

_____

A tracing paper was then place in another leaf from the same plant as shown below. The plant was previously placed under bright light for the past 72 hours. The leaf was treated and a starch test was then conducted.



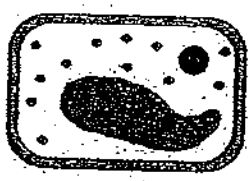
(b) **Draw and complete the leaf diagram on the right to show the results of the starch test. Label the drawing correctly. (1m)**

(c) What can be inferred from the second experiment? (1m)

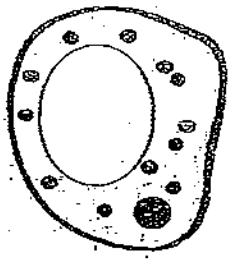
_____

_____

45. Study Cell X and Cell Y shown below.



Cell X



Cell Y

(a) From the diagrams above, identify where each cell is likely to come from. *(1m)*

Cell X : _____

Cell Y : _____

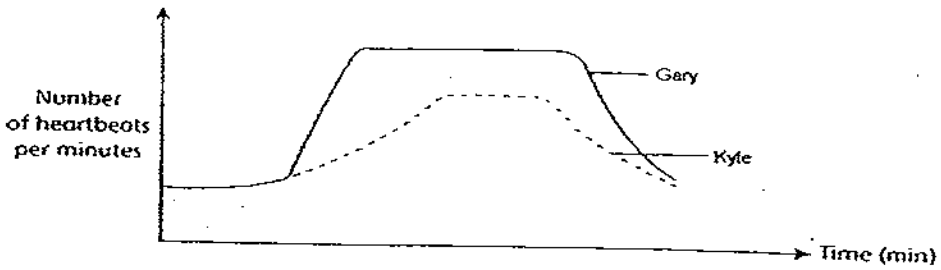
(b) Explain how you justify your answer in (a). *(1m)*

_____

_____

_____

46. The graph below shows the measured heartbeats of Gary and Kyle as they started to walk on a treadmill at the same time.



Based on the above graph, identify who breathes faster and then state one observation which makes you deduce your answer. *(2m)*
(Assume both boys were walking at the same rate.)

End of Part 2

Setters: Mrs JF Siregar
Mdm Zuraidah

ANSWER SHEET

EXAM PAPER 2009

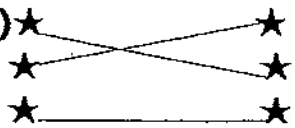
SCHOOL : HENRY PARK PRIMARY SCHOOL
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA 1

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

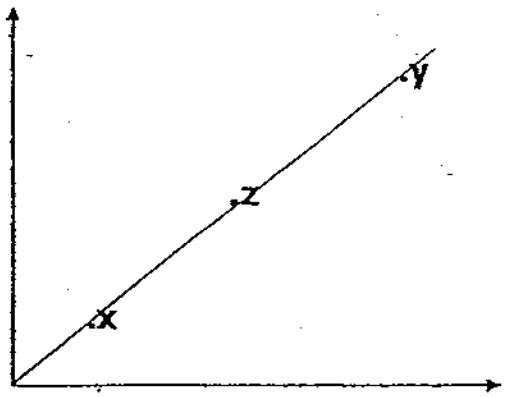
Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	2	2	4	2	1	1	3	1	2	2	3	3

31)a)



b)I choose material for paper as paper is light so it can float on the water but it absorb water, so after some time, it will be heavy and sink into the water.

32)a)depth of depressions



Heights of balls released

b)X, Z, Y

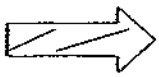
33)a)We could pull the handle end, and then let it go.

b)The more the spring is compressed, the more elastic potential energy is stored in the spring hence it will be converted to kinetic energy which will make the ball go further.

34)Chemical potential energy

↓

Kinetic energy→Kinetic energy→kinetic energy +sound energy + heat energy

35)a) 

b)The friction between the pencil tip and paper helps him to write.

36)a)6cm

b)Spring P. The length of the spring was higher than spring Q when a 60g weight was hang on it.

c)13cm.

37)1)Put the rock on the pan.

2)Make a pencil marking on the wooden rod.

3)Take out the rock from the pan.

4)Put 15-gram mass onto the pan.

5)Compare the pencil marking to the one make by the rock.

6)If it does not match, place more 5-aram masses until the pencil marking made is the same as the rock.

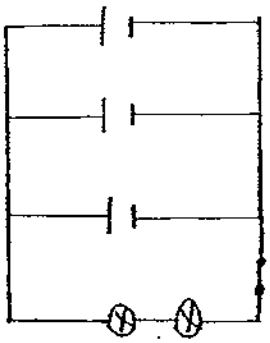
7)Record the number of 5-grams masses used to find the estimated mass of the given rock.

38)a)Door handle A. Effort needed in A is less then the effort needed in B because the distance moves back.

The handle of A is longer and to the distance moved by the effort is less.

b)There is a change in direction of force so it makes it more convenient.

39)



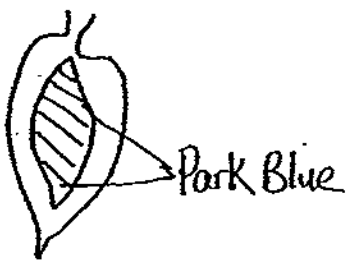
40)a)i)A living thing can move by itself.
ii)Living thing respond to changes.
b)R, P, Q, S

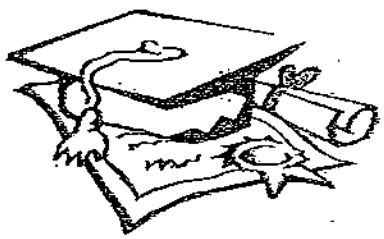
41)a)Seeds need warmth and moisture to germinate.
b)Temperature of the surroundings.

42)Amount of light received by aquatic plants to carry out photosynthesis is affected by the depth of sea water.
The lower the depth of sea water, the faster the rate of photosynthesis of seaweed, because the depth of water affects the light intensity.

43)a)i)The parents will look for food to feed their young. Young animals will be protected by their parents against predators.
ii)If the young is in danger, the parents will be save it.
b)The way young plants will not have to compete with their parent for water, light space and nutrients.

44)a)Chlorophyll or green pigment is necessary for photosynthesis.
b)





c) Tracing paper allows some light to pass through for the leat to carry photosynthesis.

45)a)X: Plant
Y: Fern
b)Plants have cell walls like cell X to support its shape while the cell wall of cell Y is for ferns as ferns support on other things.

46)Gary's heartbeat rate per minute is faster.