Anglo-Chinese School (Junior)

NON-WEIGHTED BITE-SIZED 1 (2023)

PRIMARY 6

SCIENCE

BOOKLET A

Friday **3 March 2023** **50 minutes**

Name: _____ ( ) Class: 6.( )

INSTRUCTIONS TO PUPILS

1 Do not turn over the pages until you are told to do so.

2 Follow all instructions carefully.

3 There are 10 questions in this booklet.

4 Answer ALL questions.

5 Shade your answers in the Optical Answer Sheet (OAS) provided.

This question paper consists of 8 printed pages (inclusive of cover page).

For each question from 1 to 10, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade your answer on the Optical Answer Sheet.

(20 marks)

1. Which of the following is/are not example(s) of the effect(s) of a force?

A A metal ball blocks sunlight.

B A balloon falls to the ground.

C A magnet repels another magnet.

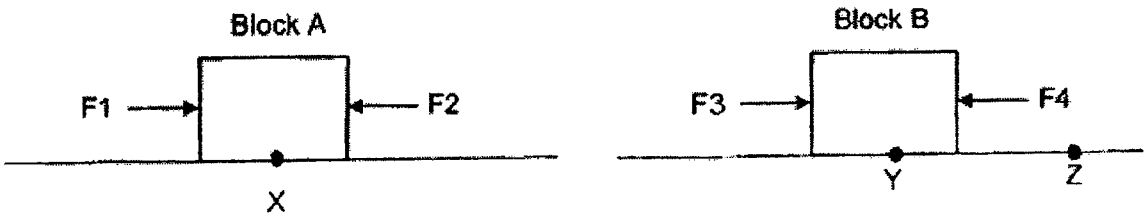
(1) A only

(2) A and B only

(3) B and C only

(4) A and C only

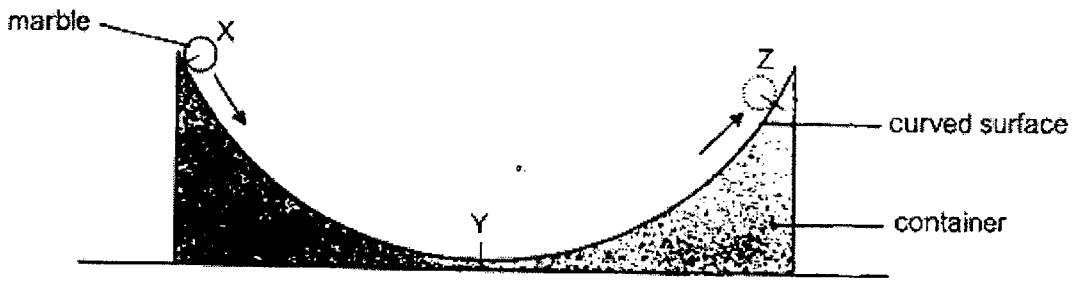
2. Two identical blocks are placed on a table. Forces F1 and F2 are exerted on Block A, while forces F3 and F4 are exerted on Block B.



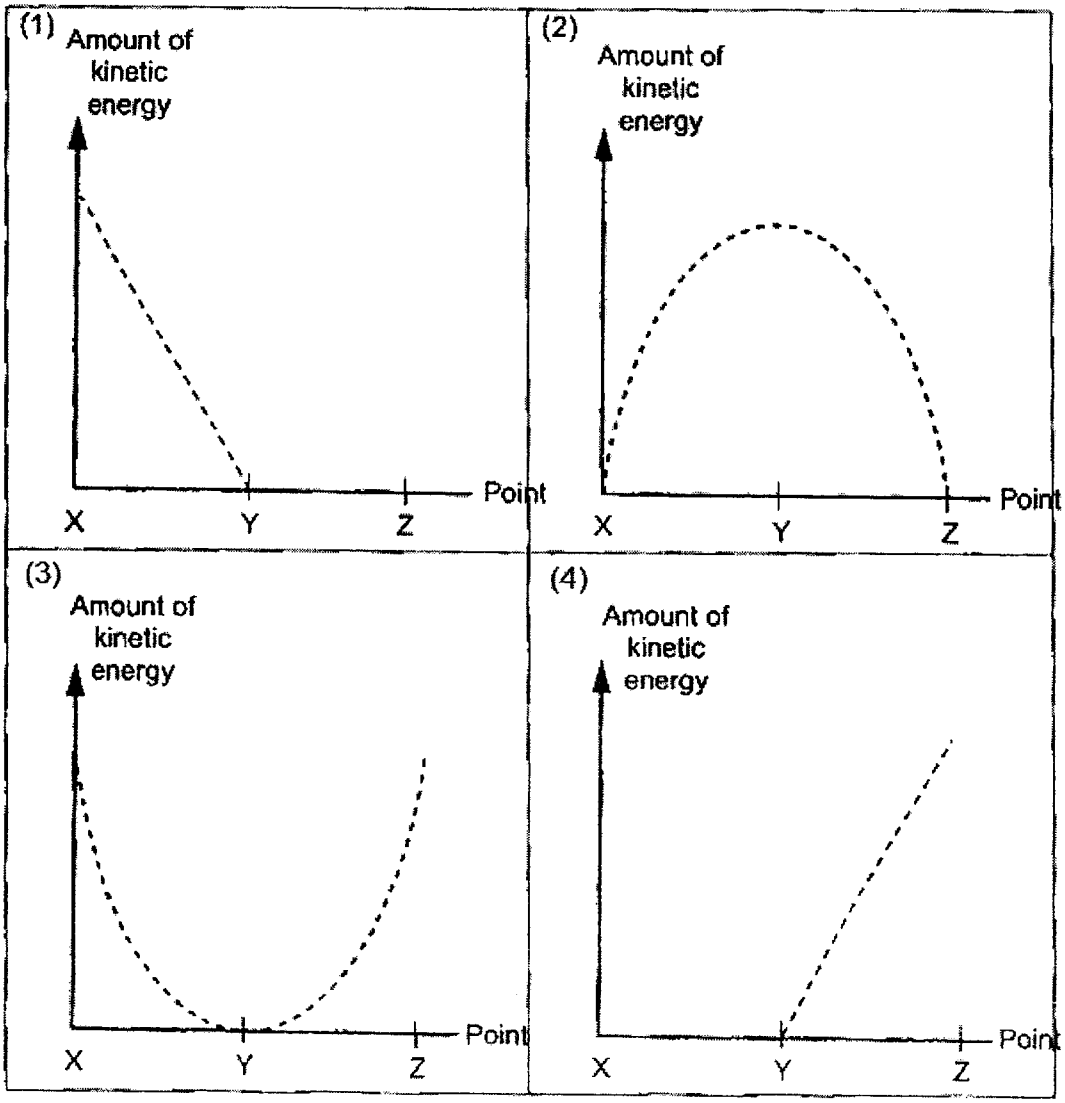
Which of the following would result in Block A remaining at point X and Block B moving from position Y to position Z?

	Block A remaining at point X	Block B moving to point Z
(1)	F1 is less than F2	F3 is the same as F4
(2)	F1 is more than F2	F3 is more than F4
(3)	F1 is the same as F2	F3 is less than F4
(4)	F1 is the same as F2	F3 is more than F4

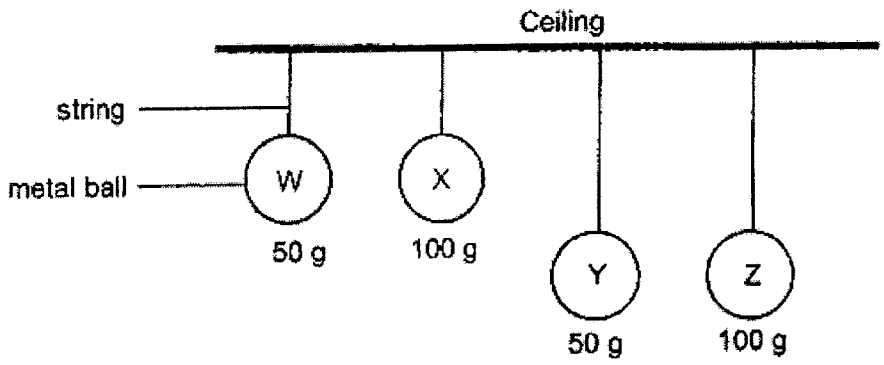
3. A marble is released at Point X on the curved surface. It rolled to Point Z before rolling back down.



Which graph shows the changes in the amount of kinetic energy of the marble as it rolls from Point X to Z?



4. Four similar metal balls, W, X, Y and Z are hung by strings from the ceiling as shown.



Which ball, W, X, Y or Z has the greatest amount of potential energy?

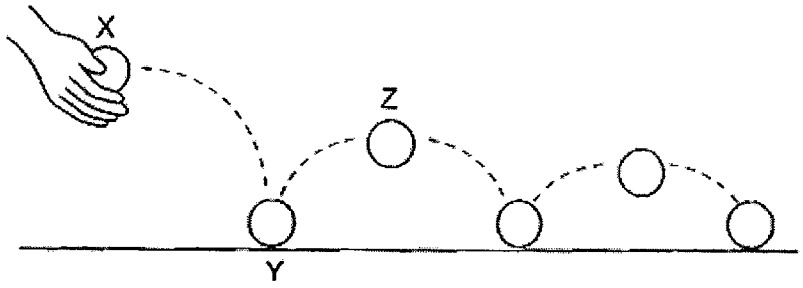
(1) W
(2) X
(3) Y
(4) Z

5. Which of the following are examples of renewable sources of energy?

A Wind
B Sunlight
C Natural gas

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

6. A ball is dropped from X.



Which of the following statements are true about the ball?

A It has the greatest amount of gravitational potential energy at X.

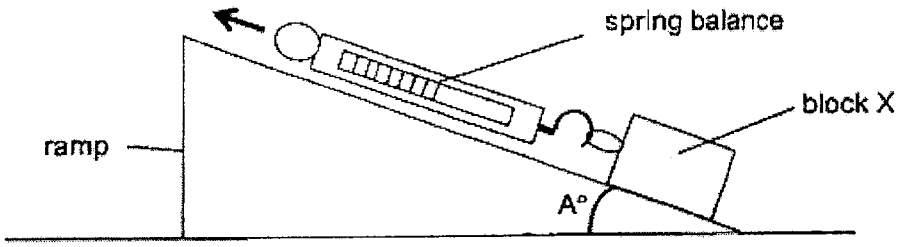
B It bounces to a lower height after Y as some of its kinetic energy is destroyed.

C Its kinetic energy is converted to gravitational potential energy when it bounces from Y to Z.

D It stopped bouncing because all its energy had been converted to sound energy and heat energy.

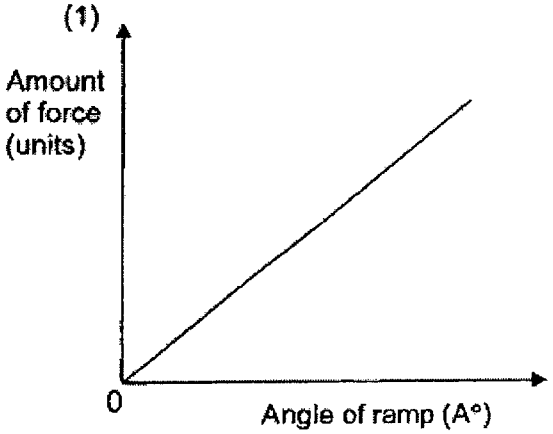
(1) A and C only
(2) B and D only
(3) A, C and D only
(4) B, C and D only

7. Sava recorded the amount of force needed to pull block X up a ramp using a spring balance. She repeated the experiment with ramps of different angle (A°) each time.

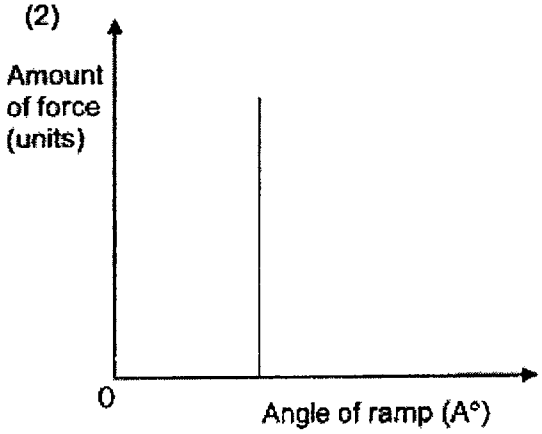


Which of the following graphs correctly shows the results of the experiment?

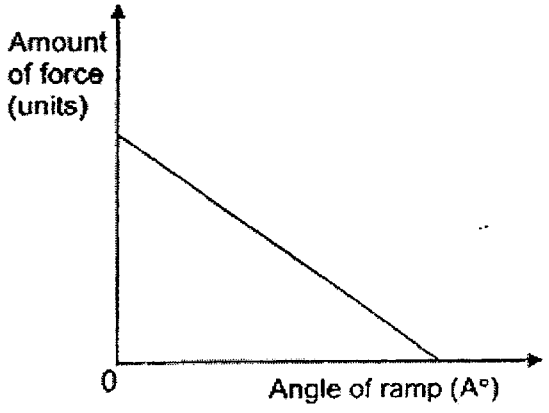
(1)



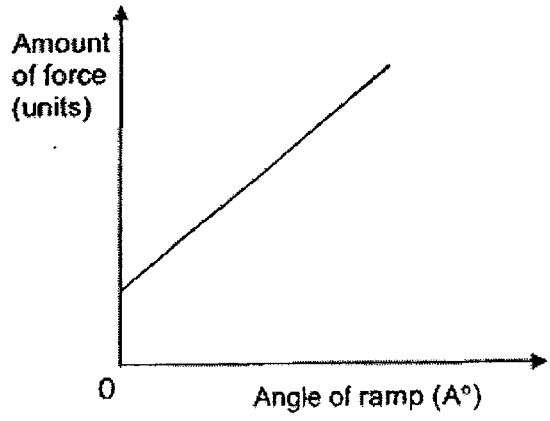
(2)



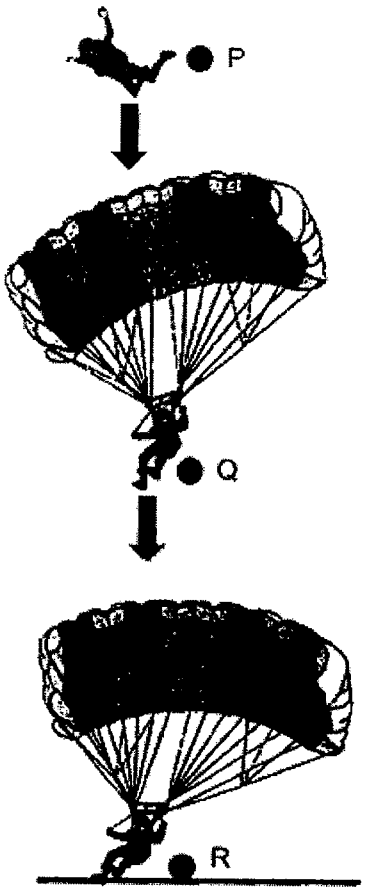
(3)



(4)



8. The diagram shows a parachutist falling from point P to R. He opened his parachute after point P.



Which of the following statement(s) is / are correct?

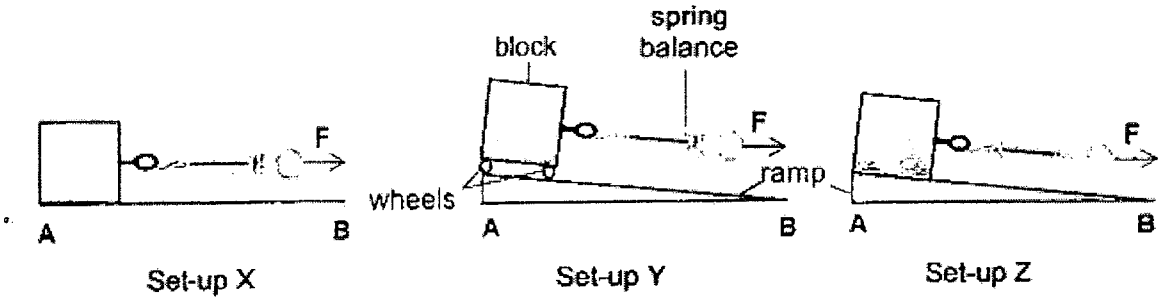
A He falls at a greater speed at P than at Q.

B There is no gravitational force acting on him at Q.

C There is more friction between the unopened parachute at P than the parachute at Q and the air.

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

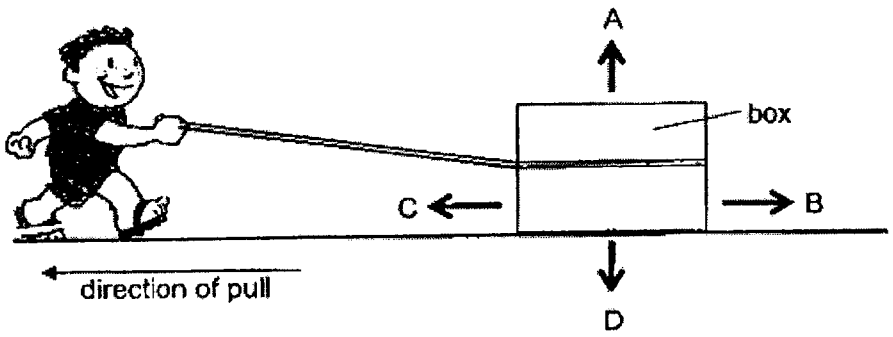
9 Peter prepared set-ups X, Y and Z, using similar blocks and surfaces as shown.



Which of the following shows the order of the amount of force (F) needed to move the block from point A to B in Set-ups X, Y and Z?

	Least amount of force (F) ⟶ Most amount of force (F)		
(1)	X	Z	Y
(2)	Y	X	Z
(3)	Y	Z	X
(4)	Z	X	Y

10. John pulled the box towards him using the rope.



Which arrows, A, B, C and D show the direction of frictional force and gravitational force acting on the box?

	Frictional Force	Gravitational Force
(1)	B	D
(2)	C	D
(3)	A	C
(4)	B	A

End of Booklet A

Anglo-Chinese School (Junior)

NON-WEIGHTED BITE-SIZED 1 (2023)

PRIMARY 6

SCIENCE

BOOKLET B

Friday **3 March 2023** **50 minutes**

Name: _____ ( ) Class: 6.( ) Parent's Signature:_____

INSTRUCTIONS TO PUPILS

1 Do not turn over the pages until you are told to do so.

2 Follow all instructions carefully.

3 Answer ALL questions.

4 Use a dark blue or black ballpoint pen to write your answers in the space provided for each question.

5 Do not use correction fluid/tape or highlighters.

6 The marks are given in the brackets [ ] at the end of each question or part question.

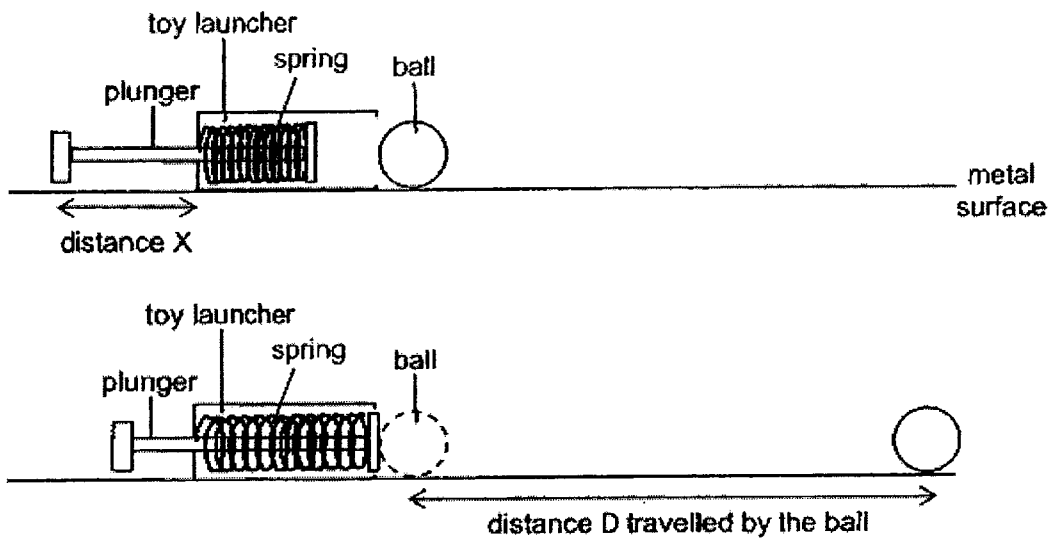
Booklet	Possible Marks	Marks Obtained
A	20	
B	30	
Total	50	

This question paper consists of 11 printed pages (inclusive of cover page).

For questions 11 to 18, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

(30 marks)

11. Jack pulled and released the plunger which hit the ball as shown. He measured the distance travelled by the ball (distance D).



He repeated the experiment by pulling the plunger to different distances each time. He measured and recorded the results in the table.

Distance the plunger was pulled (Distance X) (cm)	**Distance travelled by the ball (Distance D) (cm)**
4	6
5	12
6	18
7	24

(a) State the relationship between the distance the plunger was pulled and the distance travelled by the ball. [1]

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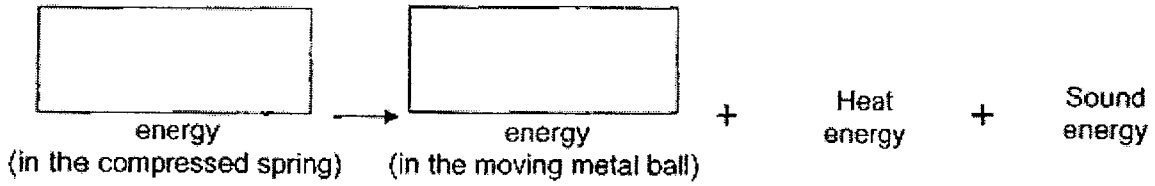
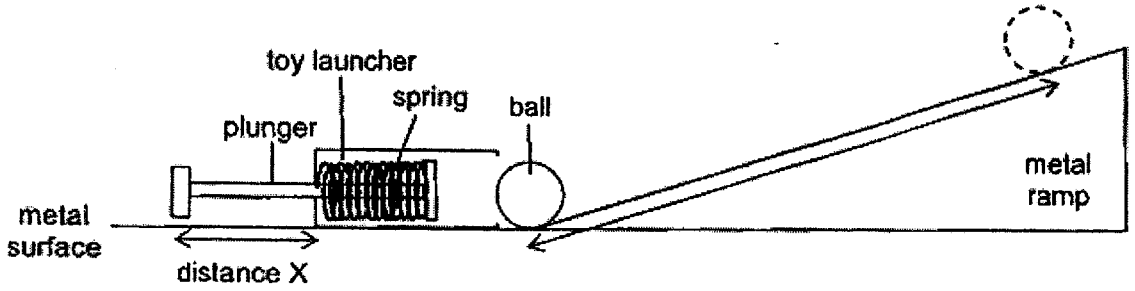
SCORE	/ 1

(b) Fill in the boxes to show the energy conversion when Jack pulls the plunger and releases it. [1]



(c) Jack conducted his experiment using the same metal surface. Explain why this ensures a fair test. [1]

Jack then put a metal ramp in front of the ball.



(d) If Jack pulls the plunger by 4 cm and releases it, will the distance travelled by the ball up the ramp be greater or less than 6 cm? Explain why. [1]

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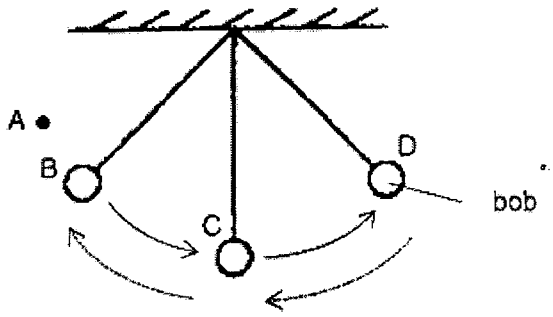
SCORE	
	3

12. Jeffri used the set-up shown to find out the time taken for a bob to make one complete swing, from B to D and back to B.



(a) Fill in the boxes to show the energy conversions as the bob swings from B to D. [1]

energy of the bob at B | energy of the bob at C | energy of the bob at D

(b) When the bob was released from position A, it reached a position higher than D. Explain why. [1]

Jeffri conducted four experiments with different bobs and recorded his results in the table.

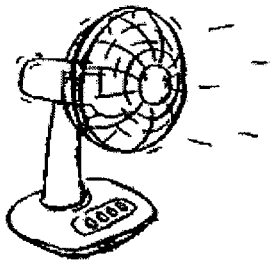
Experiment	Mass of bob (units)	Time taken for one complete swing (units)
W	3	9
X	4	12
Y	5	9
Z	5	14

(c) Based on the results of experiments W and Y, what can Jeffri conclude? [1]

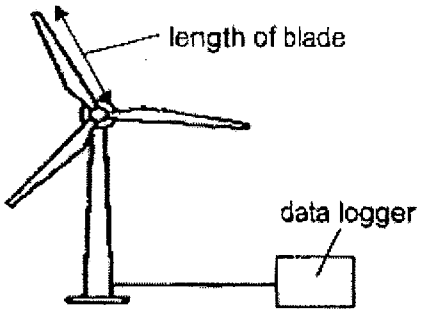
(Go on to the next page)

SCORE 3

13. Sally set up the experiment shown to find out how the length of the blade of a model wind turbine affects the amount of electricity it can generate. She used an electric fan to blow wind at the wind turbine, which generated an amount of electricity recorded by a data logger.



fan



model wind turbine

(a) What is the source of energy for the model wind turbine? [1]

Sally repeated her experiment using wind turbines with blades of different lengths and recorded her findings in the table.

Length of blade (cm)	Amount of electricity generated (units)
5	200
10	400
15	600
20	800

(b) What happened to the amount of electricity generated when she used blades of longer lengths? [1]

(c) State two other ways that can increase the amount of electricity generated by the same wind turbine. [2]

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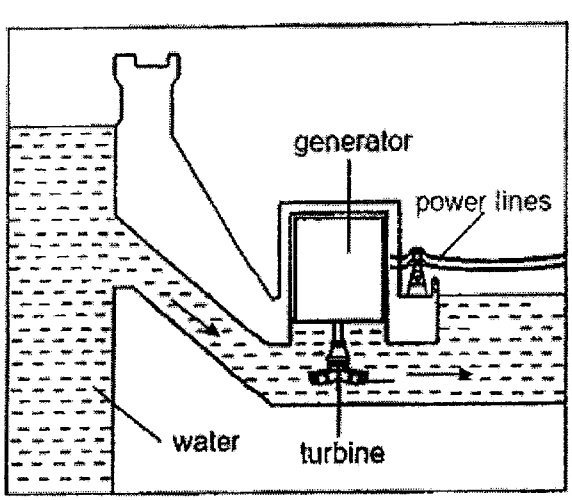
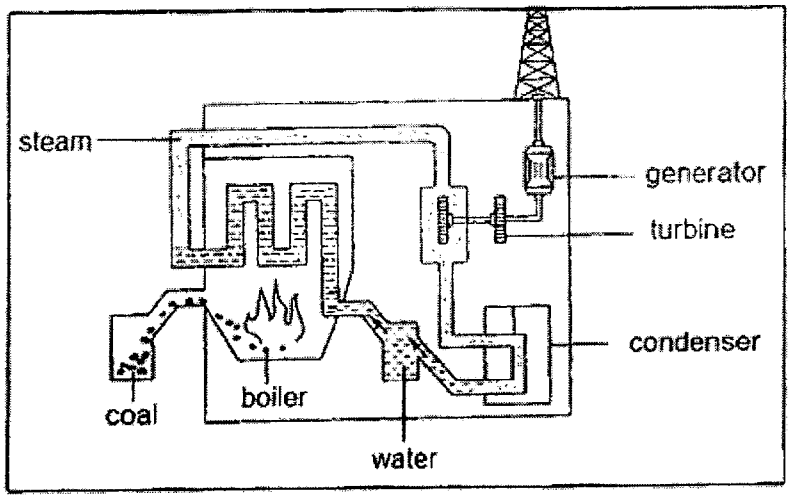
SCORE / 4

14. The diagrams show two power stations, X and Y.



Power Station X



Power Station Y

(a) What is the source of energy for Power Station X and Y? [2]

Power Station X : _____

Power Station Y : _____

(b) State two advantages of using Power Station X, as compared to Power Station Y, to generate electricity. [2]

Advantage 1 :

_____

_____

Advantage 2 :

_____

_____

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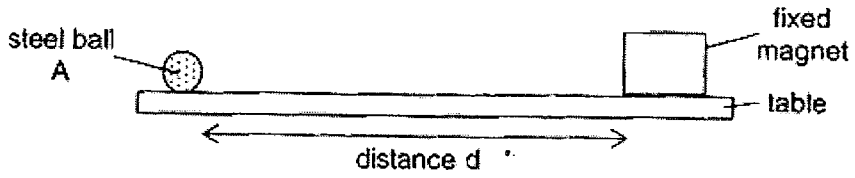
SCORE / 4

15. Ryan conducted an experiment as shown. When he released the steel ball A, it moved and hit the magnet. He recorded the time taken for steel ball A to hit the magnet.



He then repeated the experiment with steel balls B and C of different masses and recorded his results in the table.

Steel ball	Time taken to hit the magnet (s)
A	1.2
B	1.7
C	1.5

(a) What force caused the steel balls to move towards the magnet? [1]

(b) Give a reason why steel ball B took the longest time to hit the magnet? [1]

(c) What will happen to the time taken for steel ball B to hit the magnet, when a lubricant is applied on the table? [1]

(d) What is the effect of force on steel ball C if a stronger magnet is used? [1]

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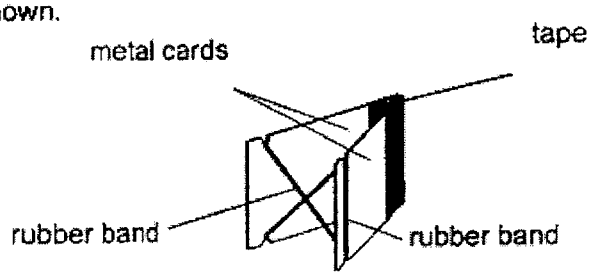
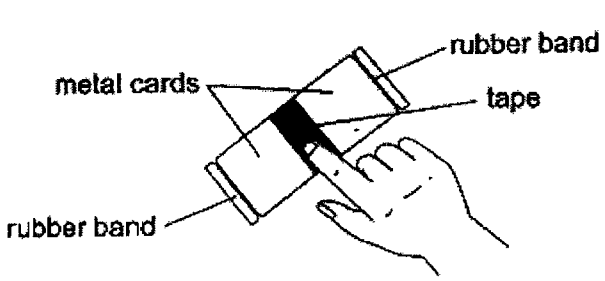
SCORE ___/4

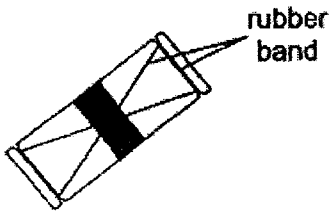
16. Calvin made a jumping toy using two pieces of metal cards, some tape and a rubber band as shown.



To make the toy jump, he stretched the rubber band and pressed the toy down as shown.



front view



back view

When Calvin removed his finger, the toy jumped. He used a different number of rubber bands each time and measured and recorded the maximum height the toy jumped to in the table.

Number of rubber bands used	1	2	3	4	5	6
Maximum height the toy jumped to (cm)	6	11	15	18	18	18

(a) State the relationship between the number of rubber bands used and the maximum height the toy jumped to. [2]

_____

_____

_____

(b) State a change Calvin must make to the toy, so that it jumps higher than 18 cm when four rubber bands are used. [1]

_____

_____

(Go on to the next page)

SCORE / 3

17. Susie used the same amount of force to push a marble across three different types of surfaces, Q, R and S, and recorded the distance it travelled in the table as shown.

Surface	Distance travelled by the marble (cm)
Q	70
R	20
S	50

(a) In the diagram, draw an arrow (→) to show the direction that gravitational force is acting on the marble. [1]

(b) State the aim of Susie's experiment. [1]

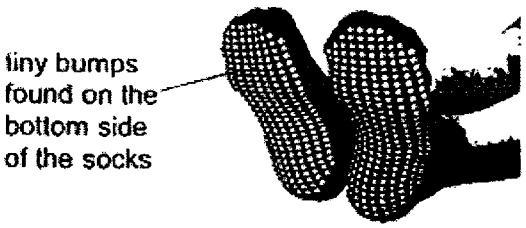
_____

_____

(c) Order Q, R and S from the smoothest to roughest surface. [1]

_____

Susie recently visited her grandmother in the hospital and saw that her she was wearing a pair of special socks, with tiny bumps to reduce the risk of falling, as shown.



(d) Explain how wearing these special socks reduce the risk of falling? [1]

_____

_____

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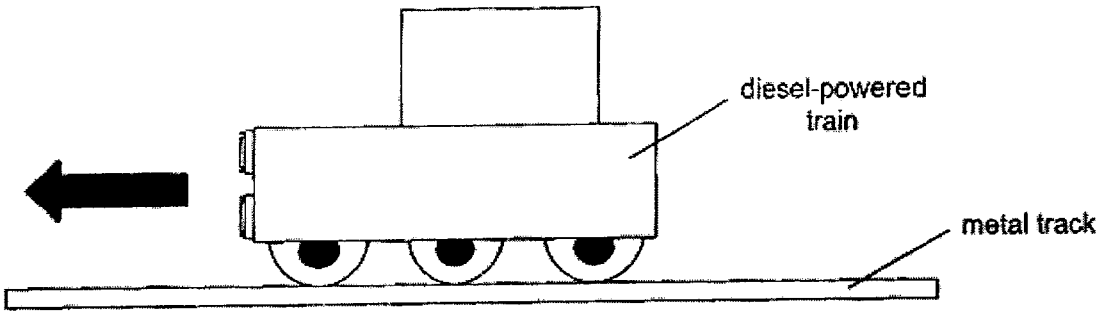
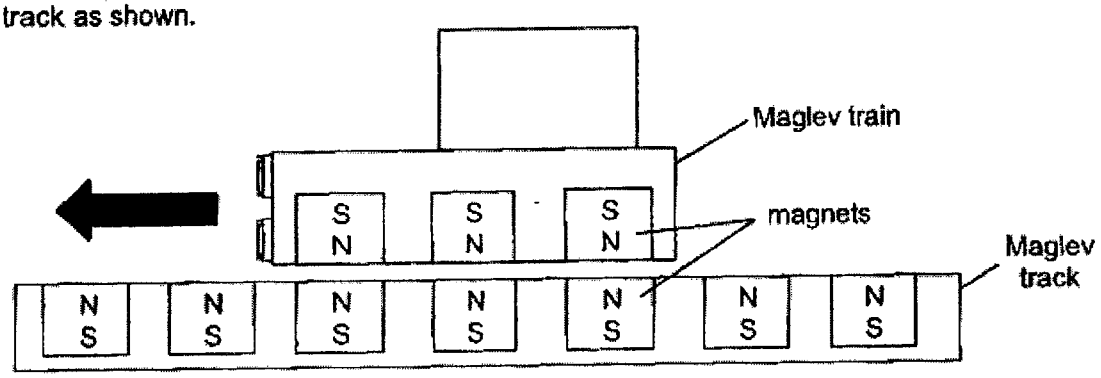
SCORE	/ 4

18. The diagrams show a diesel-powered train and a Maglev train. Diesel is a type of fuel made from crude oil.

The diesel-powered train has wheels which travel on a metal track as shown.



The Maglev train does not have wheels. It has magnets which allow it to float over the track as shown.



(a) Based on the diagram, explain why the Maglev train is able to float over the track. [2]

Answer parts (b) and (c) based on concepts of forces.

(b) The Maglev train can travel much faster than the diesel train. Explain why. [1]

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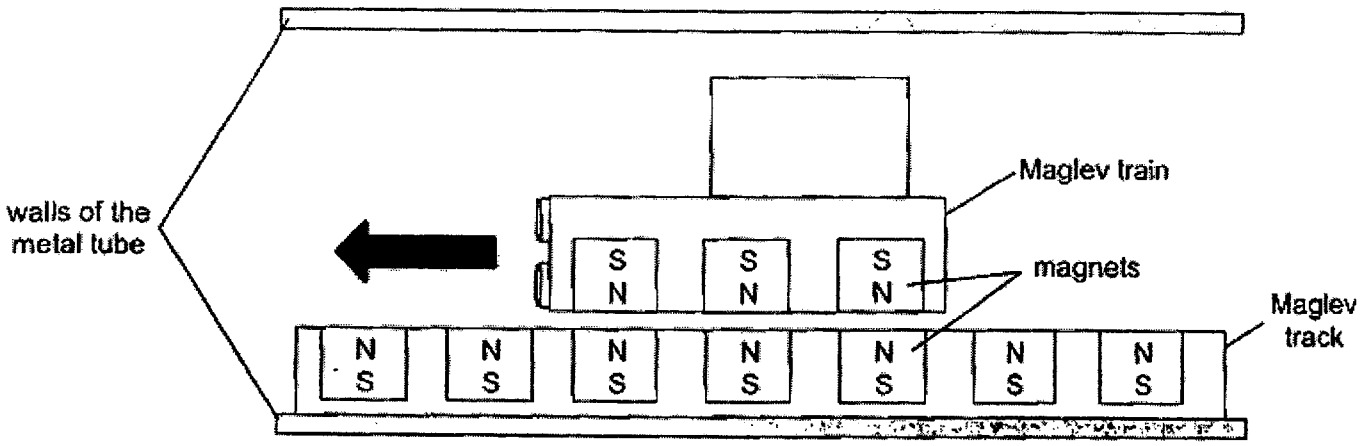
SCORE / 3

There is friction between a moving object and the surrounding air.

Engineers are currently working to put the Maglev train in a metal tube, where most of the air has been removed, to allow the Maglev train to travel even faster.



(c) Explain why the Maglev train is able to travel even faster in the metal tube where most air has been removed. [1]

End of Paper

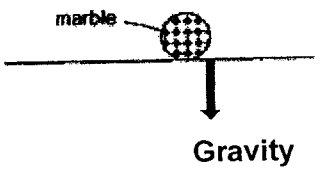
SCORE	/ 1

SCHOOL : ACS (J) PRIMARY SCHOOL

LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : WA1 2023

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	4	2	2	2	3	4	1	3	1

Q11)	a) As the distance the plunger was pulled in increases, the distance travelled by the ball increases. b) Elastic potential energy → Kinetic energy c) The ensures, that only the distance the plunger is pulled back affects the distance travelled by the ball. d) Less than 6cm some of the kinetic energy was converted to potential energy.
Q12)	a) kinetic →gravitational potential b) At A the bob has more potential energy which is converted to more kinetic energy and then to more potential energy. c) The mass of the bob does hot affect the time taken for one complete spin.
Q13)	a) Moving air b) The amount of electricity increased in units. c) Increase the speed of the fan. Add more fans and blow it at the model wind turbine.
Q14)	a) X: running water Y: coal b) Advantage 1:Running water does not pollute the air. Advantage 2: Running water is a renewable source of energy.

Q15)	a) Magnetic force acting on the steel ball. b) The steel ball was heavier than steel balls A and C. c) The time taken for steel ball B to hit the magnet when a lubricant is present would decrease in time. d) Increasement of the speed.
Q16)	a) As the number rubber bands used increases from 1 to 4, the maximum height the toy jumped to increased. When the number of rubber bands used increases from 4 to 6 the maximum height the toy jumped remained the same. b) Use lighter cards.
Q17)	a)  Gravity b)To find out how the different surface affects the distance travelled by the marble. c) Q , S , R d) The tiny bumps found on the bottom side of the socks increase the frictional force between the tiny bumps and the floor. This would reduce the risk of falling.
Q18)	a) The magnet in the train and the maglev are like poles facing each other. Thus, it repels each other enabling the train to float. b) There is no friction between the train and the track. c) Less frictional force would oppose the motion of the Maglev train.