Anglo-Chinese School (Junior)

NON-WEIGHTED BITE-SIZED ASSESSMENT ONE (2025)
PRIMARY 6

SCIENCE

Tuesday 4 March 2025 50 min

INSTRUCTIONS TO PUPILS

DO NOT TURN OVER THE PAGES UNTIL YOU ARE TOLD TO DO SO

Follow all instructions carefully.

There are 18 questions in this booklet.

Answer ALL questions.

Name: _____ ( )

Class: 6. ( )

Parent's Signature: _____

Booklet	Possible Marks	Marks Obtained
A	20	
B	30	
TOTAL	50	

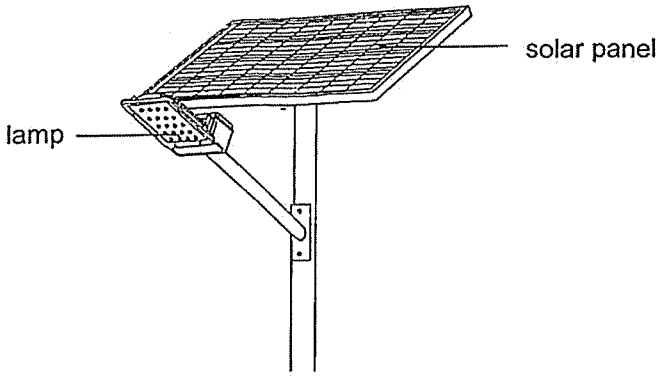
This question paper consists of 18 printed pages. (Inclusive of cover page)

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)

Optical Answer Sheet

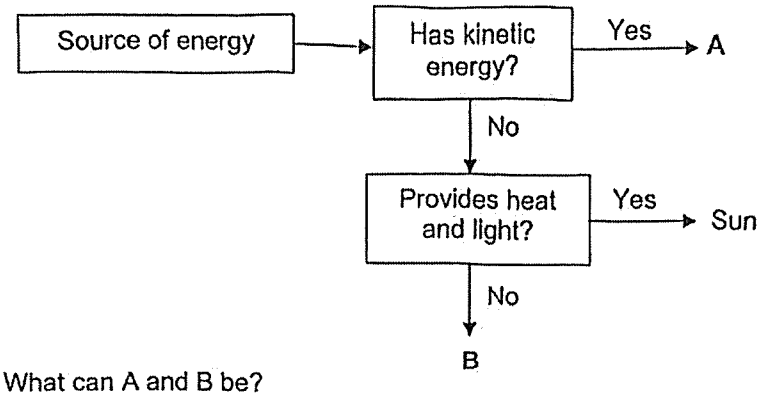
1. A solar panel is used to produce electricity for a lamp that is used at night.



Which form of energy received by the solar panel is converted to electricity?

(1) light energy
(2) sound energy
(3) kinetic energy
(4) potential energy

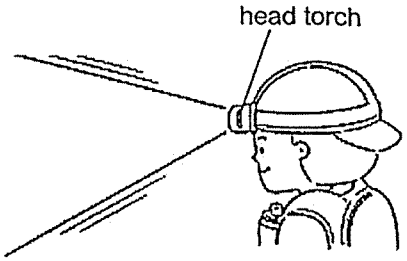
2. Study the flowchart. A and B are sources of energy.



What can A and B be?

	A	B
(1)	wind	running water
(2)	running water	stretched rubber band
(3)	stretched rubber band	fossil fuels
(4)	fossil fuels	wind

3. The diagram shows a man wearing a head torch, powered by batteries, around his head to help him see in the dark during outdoor activities.



Which of the following correctly shows the energy changes in the head torch when it is turned on?

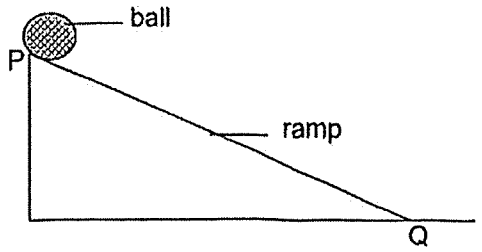
(1) electrical energy ⟶ light energy + heat energy

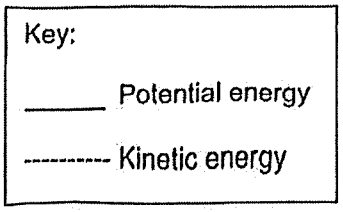
(2) potential energy ⟶ heat energy ⟶ light energy

(3) potential energy ⟶ electrical energy ⟶ light energy + heat energy

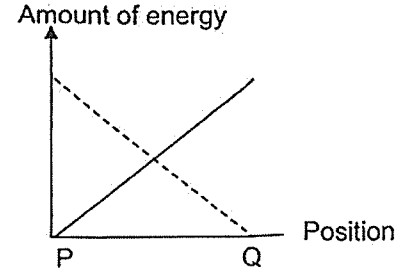
(4) electrical energy ⟶ potential energy ⟶ light energy + heat energy

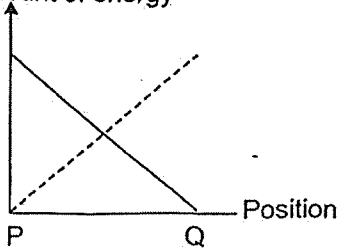
4. A ball is released from position P of the ramp as shown.

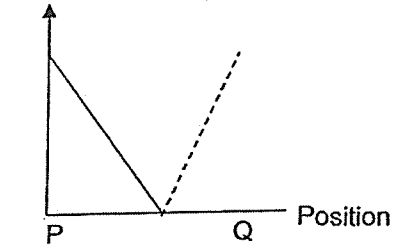


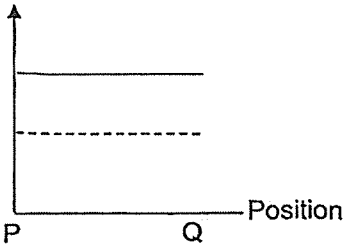


Which graph shows the change in potential energy and kinetic energy of the ball from position P to Q?

(1) 

(2) 

(3) 

(4) 

5. Zalina wanted to find out how different wind speeds affect the amount of electricity generated.

The table shows the results of four experiments that she conducted.

Experiment	Wind Speed (km/h)	Electricity Generated (units)
W	40	8
X	30	15
Y	40	13
Z	20	10

Which two experiments support the hypothesis, "When wind speed increases, more electricity is generated?"

(1) X and Y

(2) X and Z

(3) W and Y

(4) W and Z

6. Which two are examples of the effects of forces?

A The umbrella blocking the sunlight.

B A boy bouncing a ball against a wall.

C Mother sweeping the floor with a broom.

D A metal spoon gaining heat when placed in a bowl of hot soup.

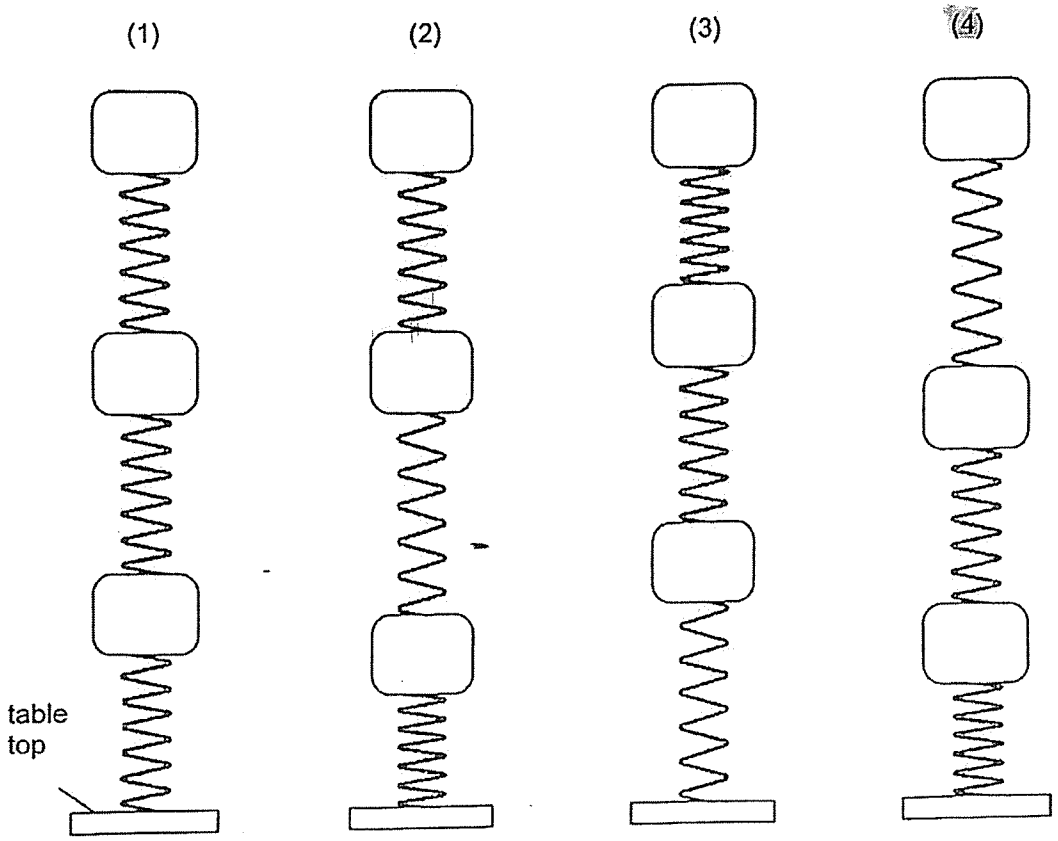
(1) A and B

(2) A and D

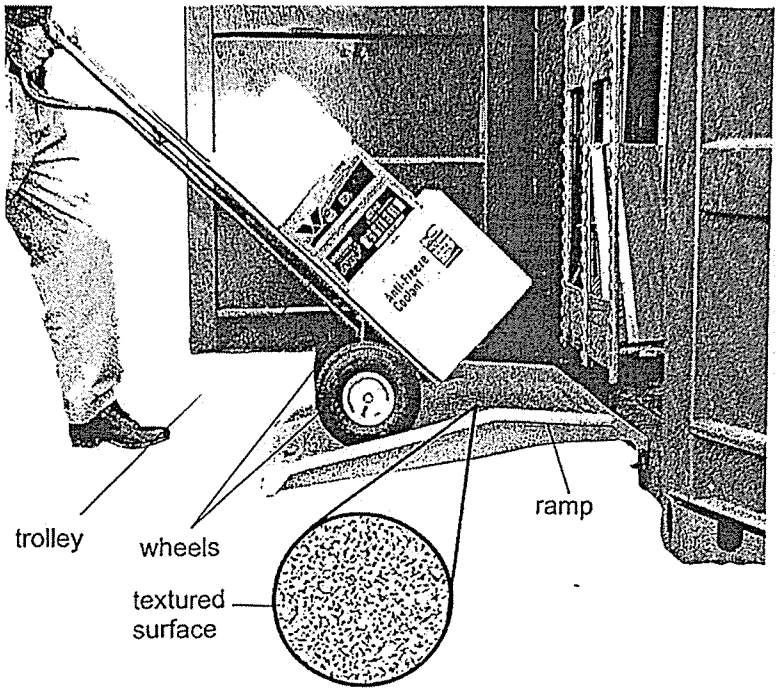
(3) B and C

(4) C and D

7. When three identical blocks were attached to a table top using three identical springs, the springs were compressed. Which of the following would be observed?



8. Ramps are often used when transporting goods on a trolley to a container truck. The surface of the ramp is often textured like the one shown in the image.



Which statement explains the reason for the textured surface of the ramp?

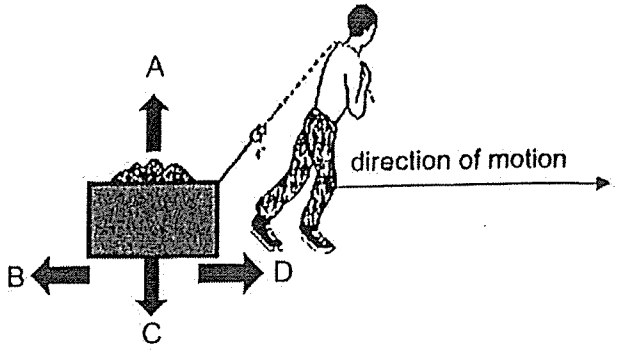
(1) It strengthens the ramp and prevents breakage.

(2) It reduces wear and tear to the wheels so that the trolley can last longer.

(3) It increases friction between the goods and the trolley to prevent the goods from dropping.

(4) It increases friction between the wheels and the surface of the ramp to prevent the trolley from slipping.

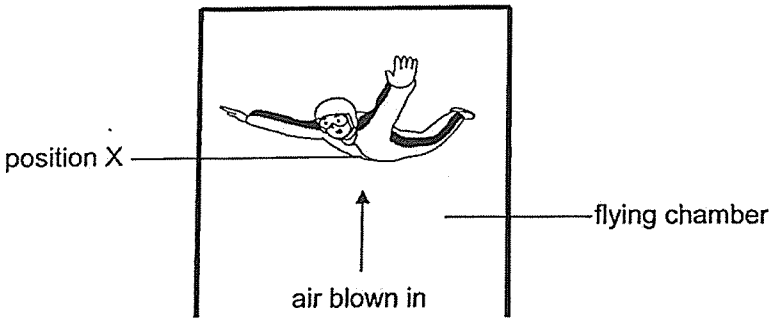
9. A man is pulling a box using a rope as shown.



Which arrows, A, B, C or D, correctly show the direction that gravitational force and frictional force are acting on box?

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

10. Jin went for an indoor skydiving activity. Air was continuously blown from the bottom of the flying chamber to keep him afloat at position X.



Which of the following explains why Jin was able to stay afloat at position X?

(1) Gravitational potential energy of Jin is converted to kinetic energy.

(2) Kinetic energy of the moving air is transferred to Jin, keeping him afloat.

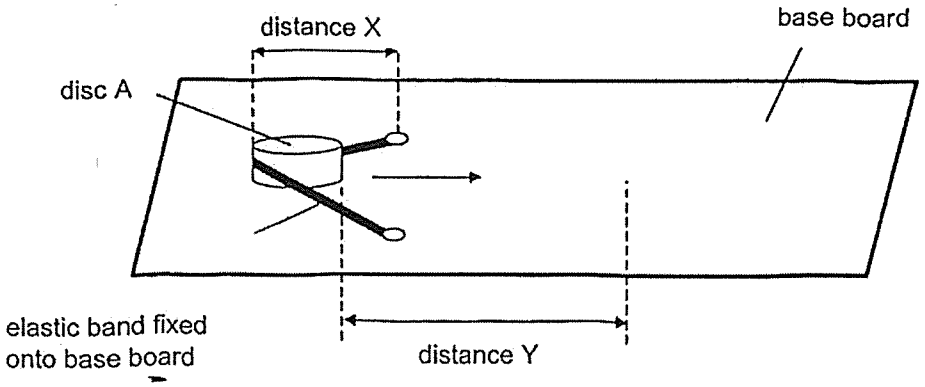
(3) The upward force exerted by the moving air on Jin is greater than his weight.

(4) Gravitational force acting on Jin was equal to the upward force exerted by the moving air on him.

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. Kate conducted an experiment with the set-up as shown.



She pulled back the elastic band with disc A by different distances, distance X. She repeated the experiment for different distance X and measured and recorded how far disc A travelled, distance Y, in the table shown.

Distance X (cm)	Distance Y (cm)
2	4.5
4	8
6	12.5
8	16

(a) How is distance Y affected by distance X? Explain your answer in terms of energy. [2]

(b) Kate was unable to get results of distance Y beyond 12 cm of distance X. Suggest a reason why. [1]

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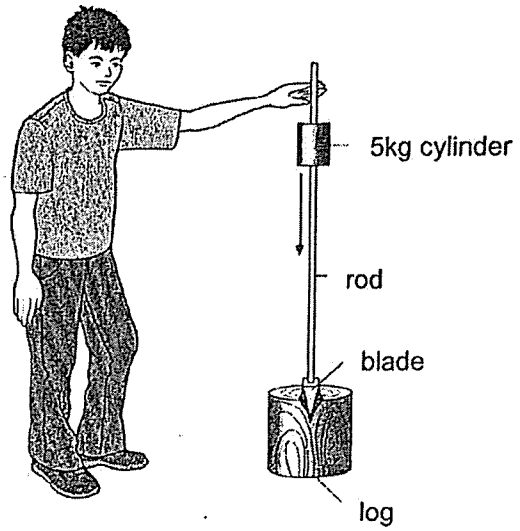
SCORE	3

12. Jim uses a falling cylinder to split wooden logs. The 5 kg cylinder is lifted to a height, and when released, it slides down the rod and strikes the blade, which then splits the log.



(a) Where does Jim's energy come from? [1]

_____

(b) Jim lifts the cylinder and releases it. As it falls, not all its potential energy is converted to kinetic energy. Explain why. [1]

_____

_____

(c) State two ways Jim can increase the kinetic energy of the cylinder just before it strikes the blade. [1]

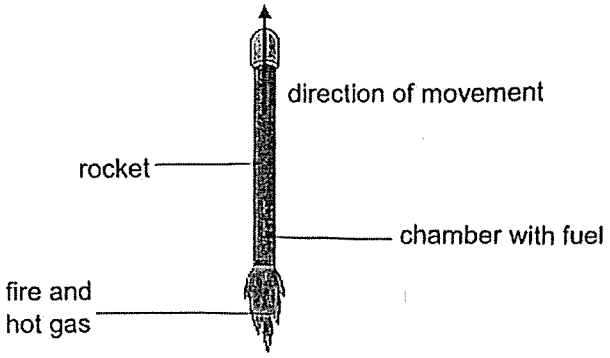
(i) _____

(ii) _____

(Go on to the next page)

SCORE	/ 3

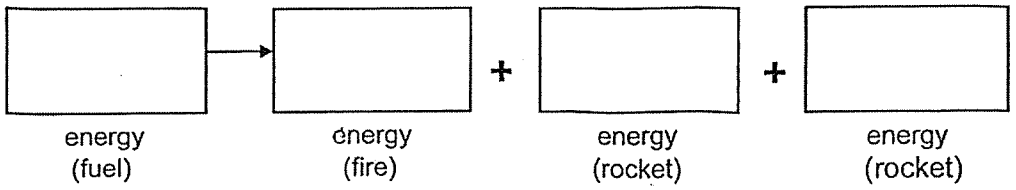
13. A rocket carries fuel which burns inside a chamber. As the fuel burns, fire and hot gases are released from an opening at the back of the chamber as shown. A loud sound can be heard as the rocket travels upward.



(a) State the source of energy for the rocket. [1]

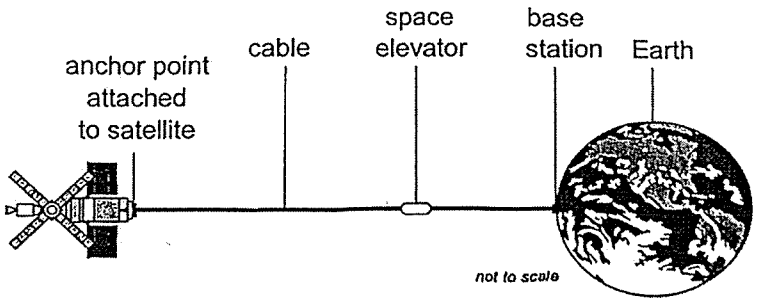
_____

(b) Fill in the boxes to show the main energy conversion of the moving rocket. [2]



Scientists currently use fuel-burning rockets to reach space, but are exploring space elevator technology by having a lift system running along a cable from Earth to a satellite that could transport objects into space.

The diagram shows what a space elevator could look like.



(c) Suggest one possible advantage of using a space elevator rather than a rocket to transport objects into space. [1]

_____

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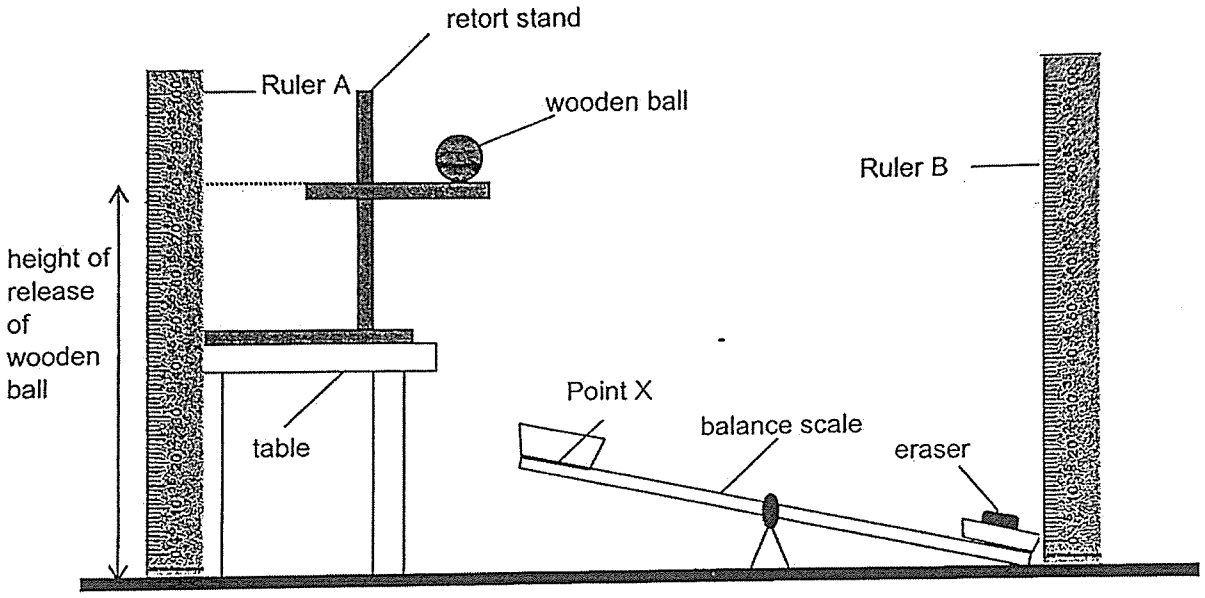
SCORE	
	4

14. Darius set up an experiment to investigate the relationship between the height from which the wooden ball is released and the height the eraser reaches. The heights are measured by Ruler A and Ruler B, respectively. When the wooden ball was released, it hit the balance scale at Point X, causing it to tilt and launch the eraser upwards.



(a) Identify the main form of energy that the wooden ball had [1]

(i) just before it was released: _____

(ii) just before it hits Point X: _____

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SCORE	/ 1

Darius recorded the results in table.

Height of release of wooden ball	60	70	80	90	100
Height reached by eraser	39	48	56	65	74

(b) State the relationship between the height of release of the wooden ball and the height reached by the eraser. [1]

_____

_____

(c) Darius wants to investigate how the mass of the wooden ball affects the height reached by the eraser. State two changes he should make to his experimental set-up to conduct this investigation. [2]

_____

_____

_____

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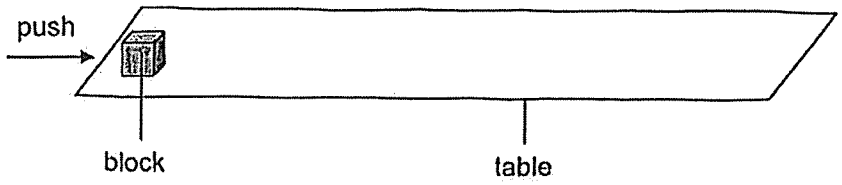
SCORE / 3

15. Mingzhe conducted an experiment where he applied liquid X on the table before pushing a wooden block in the direction indicated by the arrow as shown.



He repeated the experiment using liquids Y and Z and recorded the average distances the block moved in the table shown.

Type of liquid	Average distance moved by the block (cm)
X	30
Y	40
Z	20

(a) State the aim of Mingzhe's experiment. [1]

(b) Mingzhe used the same block throughout the experiment. How does using the same block ensure a fair test? [1]

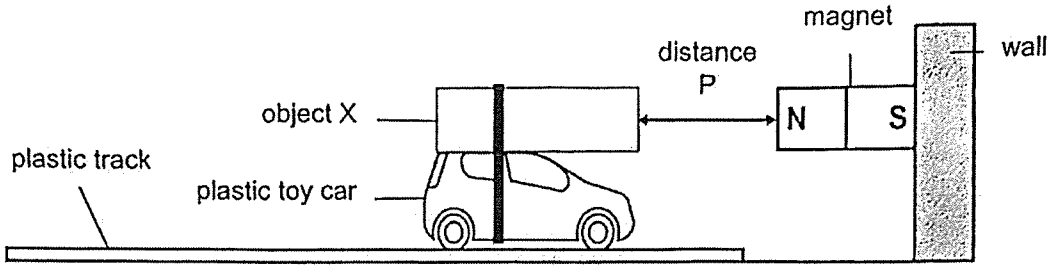
(c) State one other variable that Mingzhe must keep the same to ensure a fair test. [1]

(d) Which liquid, X, Y or Z is the best lubricant for oiling the hinges of a door? Explain your answer based on the results in the table. [1]

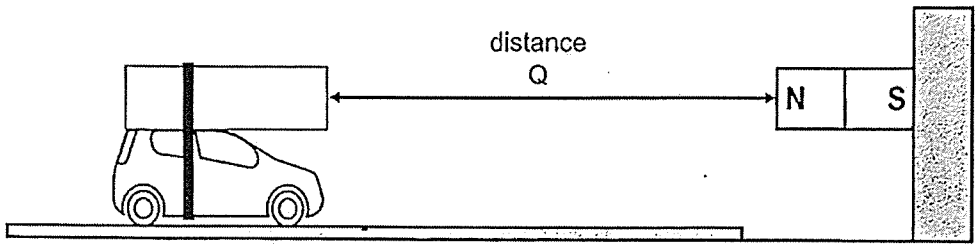
(Go on to the next page)

SCORE	/ 4

16. Elliott tied object X to the top of his plastic toy car and placed it on a track that only allowed the car to travel in a straight line. At the end of the track, he attached a strong magnet to the wall as shown.



position of car before release



position of car after release

Elliott pushed the car with object X towards the end of the track and gently released it at distance P. The car moved backwards and travelled a distance Q before stopping. He repeated the process with decreasing distances P and measured the new distance Q each time.

(a) Name the force that caused the car to move backwards. [1]

_____

(b) Explain why the car moved backwards with object X. [2]

_____

_____

_____

Elliott repeated the experiment using the same setup, but this time he increased distance P. He observed that at a certain distance P, the car with object X did not move at all.

(c) Explain Elliott's observation. [1]

_____

_____

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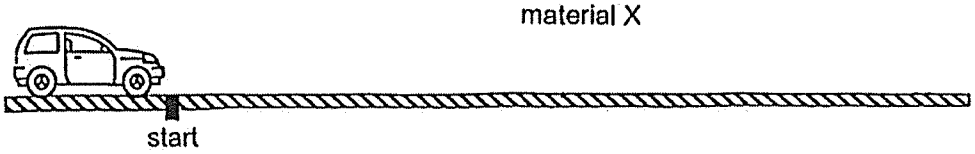
SCORE	
	4

17. An experiment was set up as shown.



A car was pushed forward on material X, and the distance travelled in ten seconds was measured. The experiment was then repeated using materials Y and Z. The size of each material, the force applied to push the car, and the starting point remained the same. The results are as shown in the table.

Material	Distance travelled by the car in ten seconds (cm)
X	32
Y	40
Z	28

(a) State the forces acting on the car as it was moving on the materials. [1]

_____

(b) Which material is the safest to use for building the road just outside a school? Explain your answer. [2]

_____

_____

(c) How will the results be affected if an equal volume of water was poured on each material before the car was pushed? [1]

_____

_____

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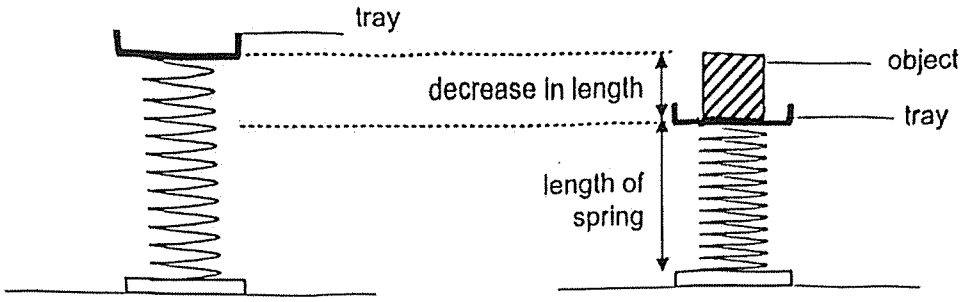
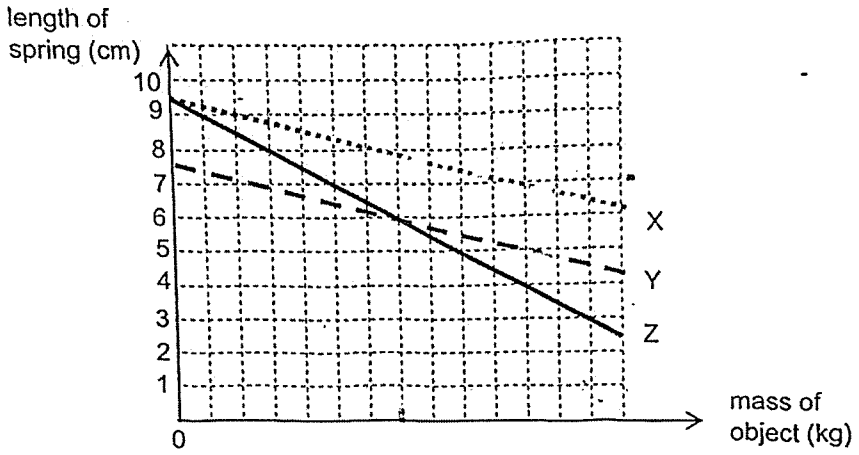
SCORE	/ 4

18. Siti used the following setup to study three types of springs X, Y, and Z. She placed objects of different masses on the tray attached to each spring and measured the length of the spring.



The results are shown in the graph.



(a) What is the length of spring Y when a 7 kg object was placed on it? [1]

_____

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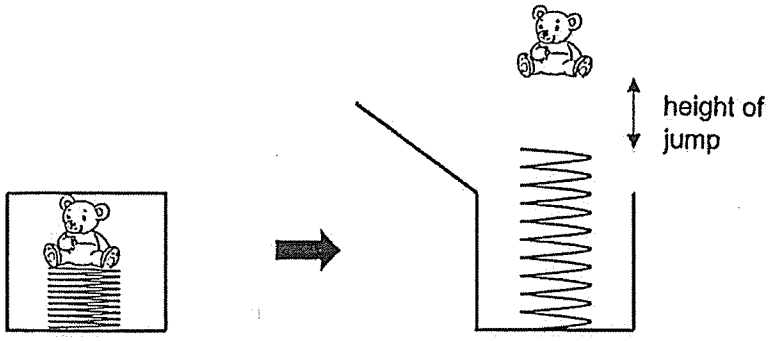
SCORE	
	1

Siti attached one end of a spring to the bottom of the box, placed a toy on the spring, and closed the lid. When she opened the lid, the toy jumped as shown in the diagrams.



(b) Which spring, X, Y, or Z, should Siti use to close the lid with the least force? Explain your answer. [1]

(c) Siti used the same spring in part (b) but changed to a taller box. Would the same toy jump to a greater, lower, or the same height? Explain your answer in terms of force. [2]

End of Paper

SCORE	/ 3

SCHOOL : ANGLO-CHINESE SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : NON-WEIGHTED BITE-SIZED ASSESSMENT ONE (2025)

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

Q11a) Distance Y is directly affected by distance X due to the conversion of elastic potential energy into kinetic energy. As X increases, Y also increases because more elastic potential energy is stored and then converted into kinetic energy

Q11b) The elastic band was either stretched beyond its elastic limit or snapped, thus failing to propel disc A further.

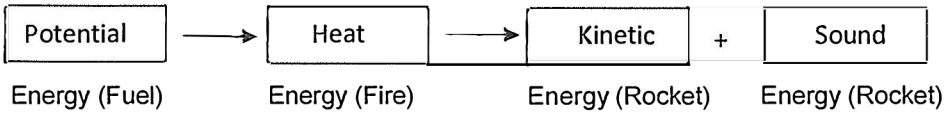
Q12a) The food he eats.

Q12b) Some kinetic energy was converted to heat energy.

Q12c) (i) Apply grease on the rod.
(ii) Replace the rod with a longer one and drop the cylinder at the highest point of the rod.

Q13a) Fuel

Q13b)



Q13c) One possible advantage is that a space elevator is more environmentally friendly as it does not require burning fuel, reducing air pollution.

Q14a) (i) Potential energy
(ii) Kinetic energy

Q14b) As the height of release of the wooden ball increases, the height reached by the eraser increases.

Q14c) (i) Use wooden balls of different mass
(ii) Keep the release height constant

Q15a) The aim of the experiment is to find out how the type of liquid affects the average distance moved by the block.

Q15b) Using the same block ensures that the mass and surface area of the block remains constant, allowing for a fair comparison of the effect of different liquids on the distance moved by the block.

Q15c) The amount of liquid applied to the surface.

Q15d) Liquid Y. The distance moved by the block is the furthest.

Q16a) Magnetic force

Q16b) The plastic toy car with Object X, which is a magnet, gets repelled by the magnet on the wall, causing it to move backward.

Q16c) As the object like poles face the magnet, the magnetic field was not close to each other for repulsion, hence repulsion did not take place.

Q17a) Frictional force and gravitational force

Q17b) Material Z is the safest choice for building road outside a school due to its high friction, which can help reduce the risk of accidents by slowing down cars more effectively.

Q17c) Pouring an equal volume of water on each material before pushing the car will decrease the friction, causing the car to travel a greater distance on each material. The results will be affected as the distance travelled will increase.

Q18a) 6cm

Q18b) Spring Z, it requires the least force to compress.

Q18c) The toy will jump to a lower height when using a taller box with the same spring. This is because the spring is compressed less, resulting in less elastic potential energy being stored and subsequently transferred to the toy upon release.