

Pei Chun Public School
Continual Assessment – 2012
Science
Primary 6

Name : _____ ()

Date : 1 March 2012

Class : Pri. 6 ()

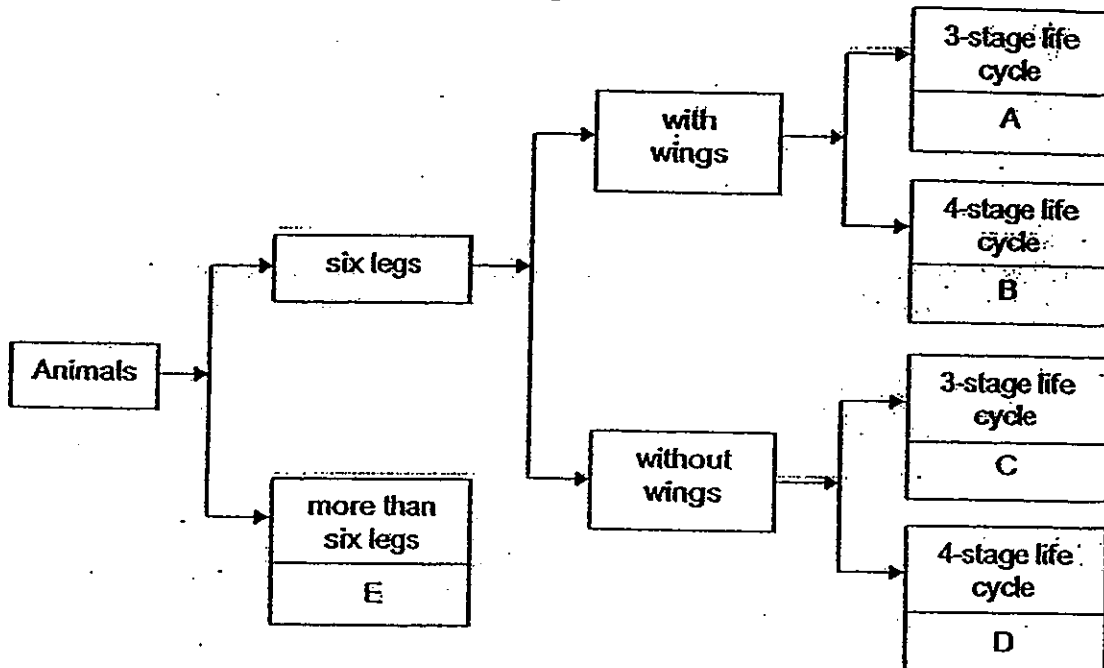
Science Teacher : _____






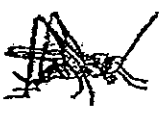


Time : 1 h 45 min

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: Study the classification chart and the diagrams below.



animal W		animal X		animal Y		animal Z	
							
young	adult	young	adult	young	adult	young	adult

Match animals W, X, Y and Z, to the letters, A, B, C, D or E, in the classification chart.

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

2. The table below shows how animals can be grouped.

	Gives birth	Lays eggs
Can fly	E	G
Cannot fly	F	H

The diagram below shows a bat.

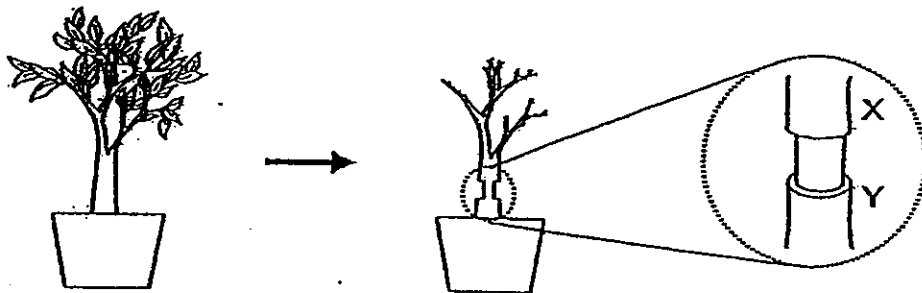


Which group, E, F, G or H, does the bat belong to?

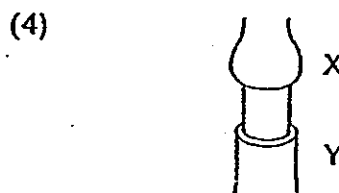
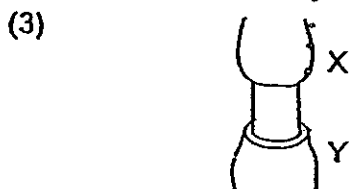
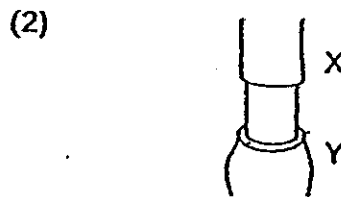
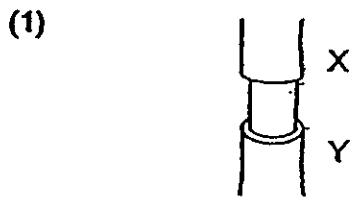
- (1) E
- (2) F
- (3) G
- (4) H

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3. Nurul removed an outer ring of the stem from a plant. As a result, the food-carrying tubes between positions X and Y were removed while the water-carrying tubes remained in the stem. She also removed all the leaves from the plant.

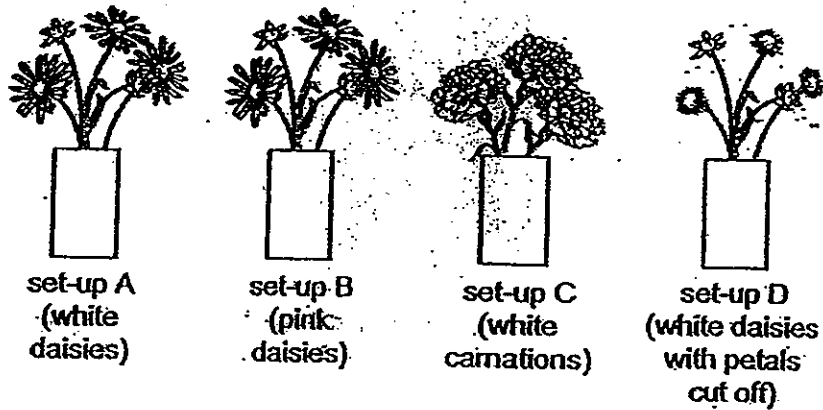


After one week, which of the following diagrams represents the appearance of the stem?



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4. Siti wanted to find out if the presence of petals helps a flower to attract bees. She prepared four set-ups as shown.



Which two set-ups should she use for her experiment?

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

5. Respiration takes place in all living things. Which of the following occurs during respiration?

	Energy	Carbon dioxide	Oxygen
(1)	is stored	is used	is produced
(2)	is stored	is produced	is used
(3)	is released	is used	is produced
(4)	is released	is produced	is used

6. Which structures are present in the human egg cell?

	Cell membrane	Nucleus	Cytoplasm
(1)	x	✓	x
(2)	✓	x	✓
(3)	✓	✓	x
(4)	✓	✓	✓

7. The diagram below shows one of the body systems.

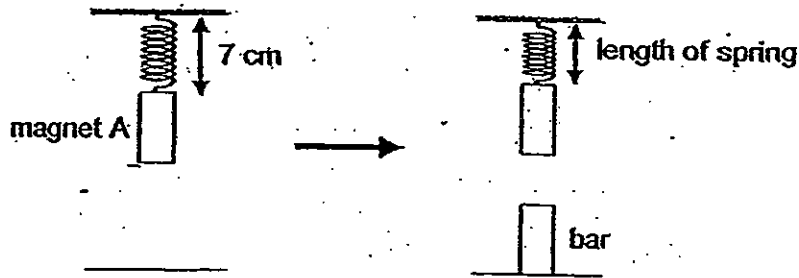


Which of the following correctly describes the main function of this body system?

- (1) It removes unwanted water from the body.
- (2) It breaks down food to give the body energy.
- (3) It absorbs digested food to be used by the body.
- (4) It transports digested food to the rest of the body.

11. Marcus hung magnet A from a spring as shown below.

He placed three bars, one at a time, directly below magnet A and measured the length of the spring.



The table below shows his results.

Bar	P	Q	R
Length of spring (cm)	5.5	7.0	8.5

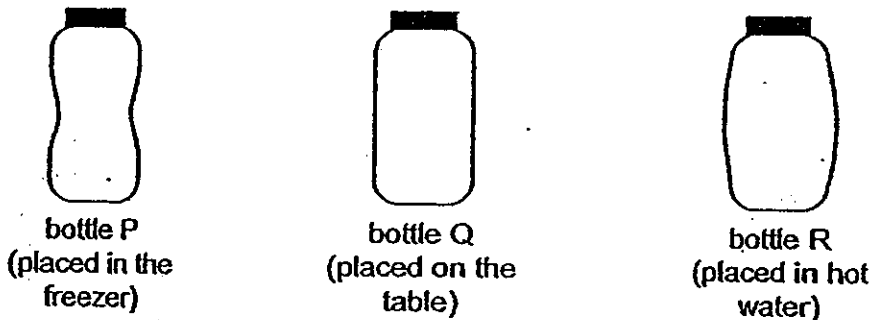
Which of the following could bars P, Q and R be?

	bar P	bar Q	bar R
(1)	glass	steel	magnet
(2)	magnet	glass	steel
(3)	steel	magnet	glass
(4)	steel	glass	magnet

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12. Bala conducted an experiment with three identical plastic bottles of air. He measured the mass of each of the bottles before placing them under different conditions for 15 minutes.

The diagram below shows the appearance of the bottles after the experiment.



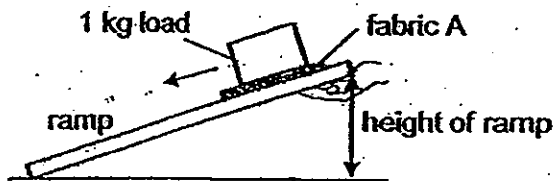
He measured the mass of each of the bottles after the experiment.

Which of the following correctly shows how the mass of the air in the three bottles changed after the experiment?

	bottle P	bottle Q	bottle R
(1)	decreased	no change	increased
(2)	increased	no change	decreased
(3)	decreased	decreased	increased
(4)	no change	no change	no change

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13. Aini conducted two experiments with four types of fabric, A, B, C and D. She set up the first experiment as shown below.



She slowly lifted up the ramp until fabric A started to slide. She measured the height of the ramp when the fabric started to slide. She repeated the experiment with fabrics B, C and D of the same size.

For the second experiment, she poured the same amount of water on the four pieces of fabric and held up the fabric to let the water drip off.

The table below shows her results.

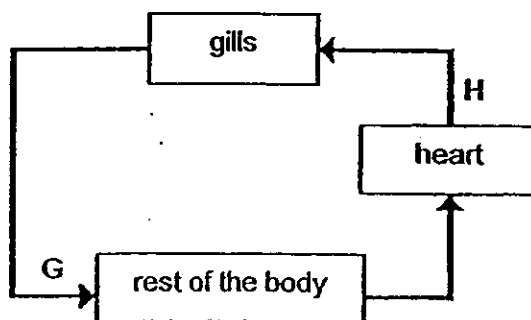
Fabric	Experiment 1	Experiment 2
	Height of ramp when fabric starts to slide (cm)	Observations
A	4	Some of the water dripped off
B	5	No water dripped off
C	12	No water dripped off
D	12	Most of the water dripped off

Based on her results, which fabric, A, B, C or D, is most suitable for making an anti-slip floor mat to be placed outside her bathroom?

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

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14. The diagram below shows how blood flows in the circulatory system of a fish.



Which of the following about the blood in blood vessels G and H is correct?

	G	H
(1)	low in oxygen	high in oxygen
(2)	low in oxygen	low in oxygen
(3)	high in oxygen	high in oxygen
(4)	high in oxygen	low in oxygen

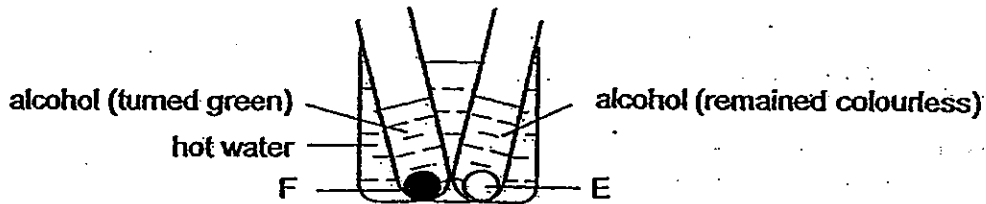
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15. Alex conducted an experiment using the leaf shown below.



He plucked the leaf from a plant in the garden and he cut off two circular parts, E and F, from the leaf to conduct the starch test.

He boiled parts E and F in water. Then, he placed the two parts in two test-tubes of warm alcohol. Only the alcohol in the test-tube with part F turned green.



He dipped the parts E and F into hot water before adding two drops of iodine solution to each part. He observed if the iodine solution on both parts turned dark-blue.

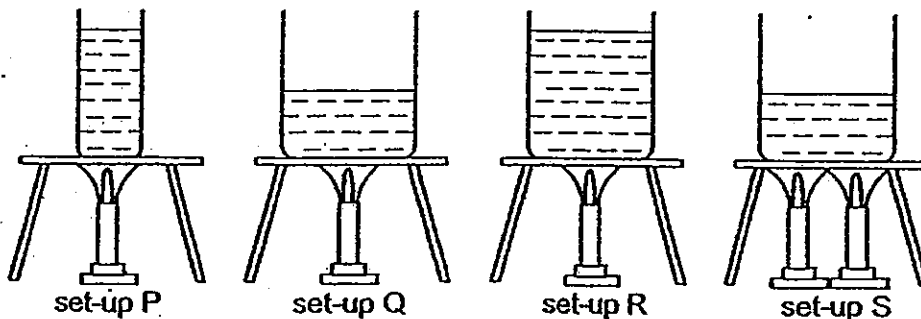
What was Alex trying to find out from his experiment?

He was trying to find out if _____

- (1) plants store excess food as starch
- (2) plants need sunlight to make food
- (3) the leaves of the plant contain starch
- (4) plants need chlorophyll to make food

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16. Similar heat sources were used to heat up four beakers of tap water as shown below.



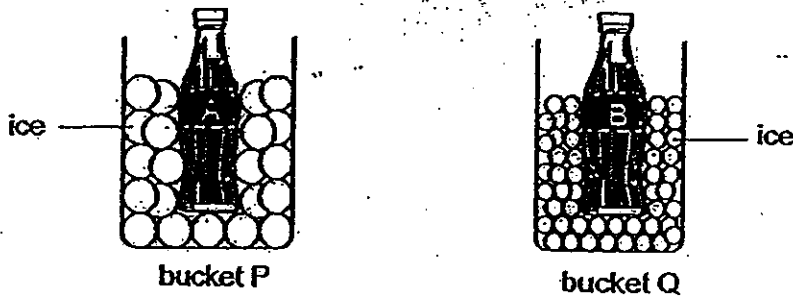
Which of the following statements are true?

- A : The water in Set-up R takes the longest time to boil.
- B : The water in Set-up Q and S will boil at different temperatures.
- C : The water in Set-up Q and R will boil at the same temperature.
- D : The water in Set-up P will take a shorter time to boil than the water in Set-up Q.

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

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17. Two identical glass bottles of cola of the same temperature were placed into two buckets of ice as shown below. Both buckets had the same amount of ice of the same temperature but the ice pieces are of different sizes.

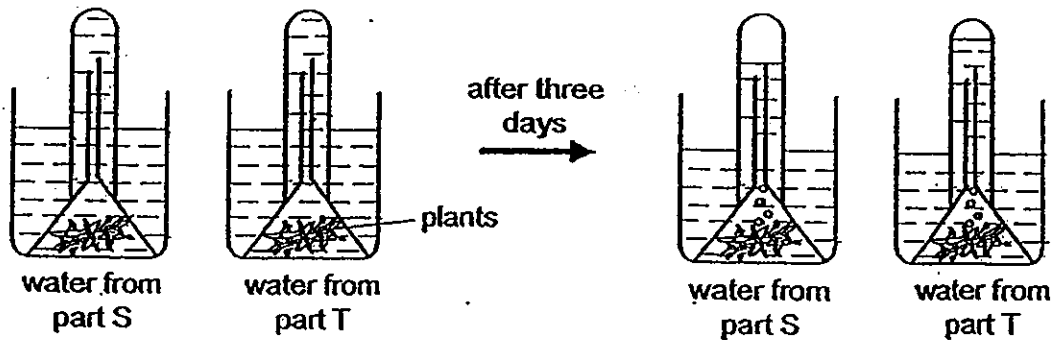


Which of the following correctly describes and explains the change in the temperature of the two bottles of cola after five minutes?

	Which bottle of cola will have a lower temperature?	Explanation
(1)	A	Each ice piece in bucket P has a greater exposed surface area.
(2)	B	Each ice piece in bucket Q has a smaller exposed surface area.
(3)	A	The surface area in contact between the ice pieces and bottle A is greater.
(4)	B	The surface area in contact between the ice pieces and bottle B is greater.

18. Salim wanted to study how clear the water in a river was. He collected water from two different parts of a river, S and T.

He set up his experiment as shown below. He placed the two set-ups by an open window and observed the amount of gas collected in the test-tubes after three days.

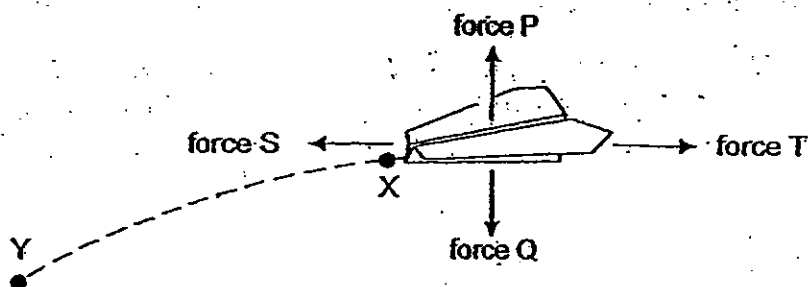


Which of the following statements about the experiment are correct?

- E : The water from part S is clearer than the water from part T.
- F : The water from part T is clearer than the water from part S.
- G : The plants in the water from part S produced more oxygen.
- H : The plants in the water from part S produced more carbon dioxide.

- (1) E and G
- (2) E and H
- (3) F and G
- (4) F and H

19. The diagram below shows four different forces that act on a paper plane when it is in the air. All these forces affect the paper plane's ability to fly.



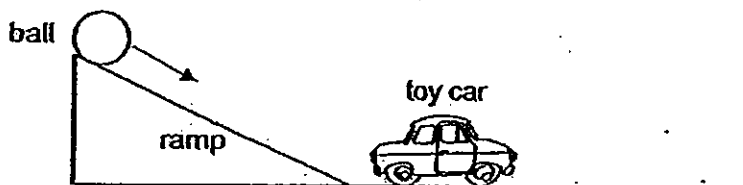
Which of the forces must be greater than its opposing force for the paper plane to fly from point X to point Y?

- A : Force P is greater than force Q.
- B : Force Q is greater than force P.
- C : Force S is greater than force T.
- D : Force T is greater than force S.

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

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20. Yongkang released a ball from the top of a ramp as shown below.



The ball hit a toy car and the toy car moved about 80 cm away from its original position.

What of the following changes should he make to his set-up so that the toy car would travel a longer distance?

- A : Use a lighter ball
- B : Use a heavier ball.
- C : Use a lighter toy car
- D : Use a heavier toy car

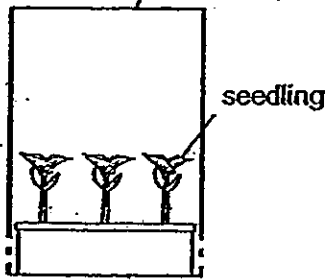
- (1) A and C
- (2) A and D
- (3) B and C
- (4) B and D

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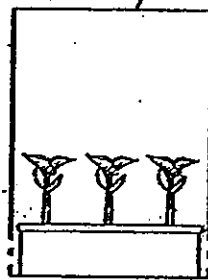
21. Freddy wanted to find out if the colour of light affects the growth of a type of plant.

The diagram below shows each of his set-ups. He covered the glass tanks with different coloured cellophane paper to produce different coloured light in the tank.

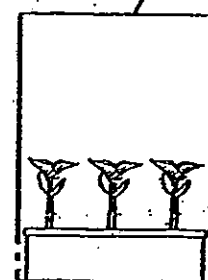
glass tank covered with blue cellophane paper



glass tank covered with red cellophane paper



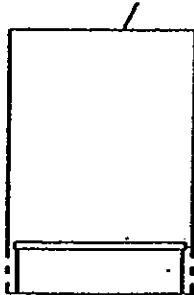
glass tank covered with green cellophane paper



Which of the following should he use as a control for his experiment?

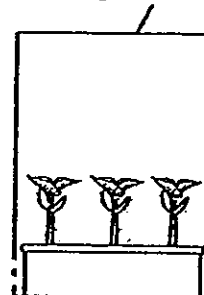
(1)

glass tank



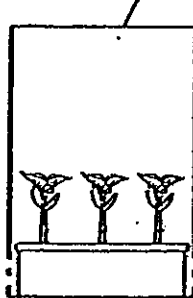
(2)

glass tank



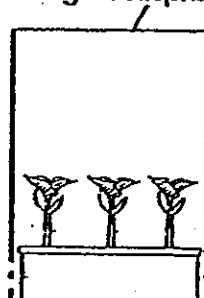
(3)

glass tank covered with black paper



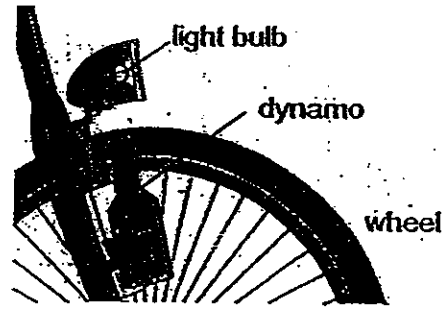
(4)

glass tank covered with orange cellophane paper



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22. The diagram below shows a dynamo fixed to the front wheel of a bicycle.



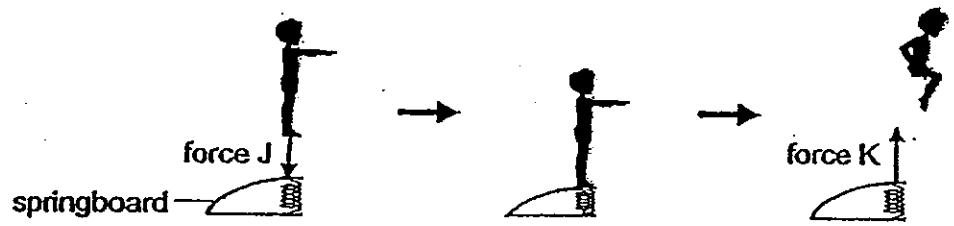
When the wheel of the bicycle rotated, the top of the dynamo, which is touching the wheel, spun and the light bulb lit up. The faster the wheel turned, the brighter the bulb.

Which of the following shows the conversion of energy that took place?

- (1) kinetic energy → electrical energy → heat energy + light energy
- (2) kinetic energy → heat energy → light energy
- (3) potential energy → electrical energy → heat energy + light energy
- (4) potential energy → heat energy → light energy

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23. James jumped onto a springboard as shown below. When he landed on the springboard, the board was pushed down by force J. He bounced off the board as he was pushed up by force K.

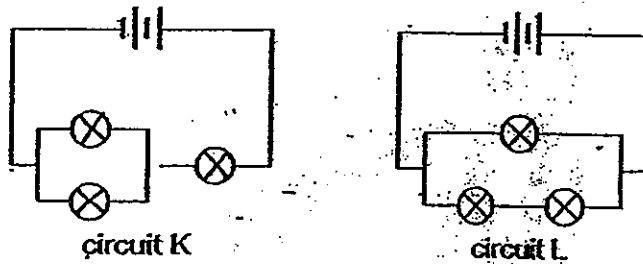


Which of the following correctly identifies forces J and K?

	force J	force K
(1)	elastic spring force	elastic spring force
(2)	gravitational force	elastic spring force
(3)	elastic spring force	gravitational force
(4)	gravitational force	gravitational force

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24. In the circuits K and L shown below, all the bulbs are lit.

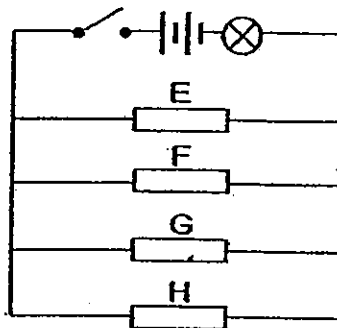


Which of the following shows correctly the smallest number of bulbs that would remain lit in circuits K and L when one of the bulbs in each circuit is blown?

Smallest number of bulbs remaining lit	
	circuit K
	circuit L
(1)	0
(2)	0
(3)	1
(4)	1

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25. Four rods made of different materials were connected to a circuit as shown.



The table below shows what happened when the switch was closed and certain rods were removed.

Rods removed from the circuit	Did the bulb light up?
E, F and H	yes
E, F and G	no
F and G	no
G and H	yes

Which of the following correctly describes rods E, F, G and H?

Does it conduct electricity?			
E	F	G	H
(1) yes	yes	yes	no
(2) no	no	no	yes
(3) yes	no	no	yes
(4) no	yes	yes	no

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

Pei Chun Public School
Continual Assessment – 2012

Science
Primary 6

Name: _____ ()

Class: Pri. 6 ()

Date: 1 March 2012

Science Teacher: _____

Time: 1 h 45 min

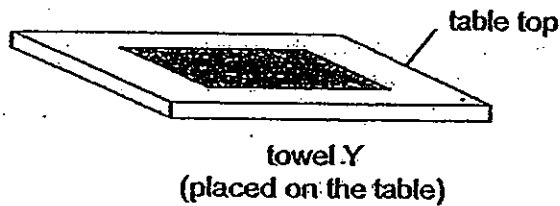
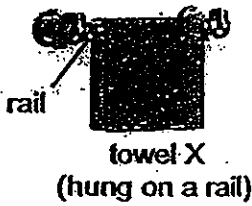
Parent's Signature: _____

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

Section B (30 marks)

For questions 31 to 40, write your answers in the spaces provided.

31. April had two identical kitchen towels, X and Y, which were equally wet. She dried them in two different ways as shown below. The two towels were placed in the same room, near to each other.



She observed that towel X took a shorter time to dry.

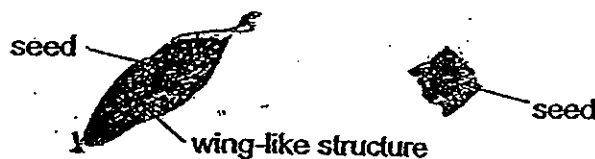
Give two reasons why towel X took a shorter time to dry.

[2]

Reason 1: _____

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32. Adriel was given two fruits from plant G. The first fruit had a wing-like structure and the second fruit had its wing-like structure cut off.



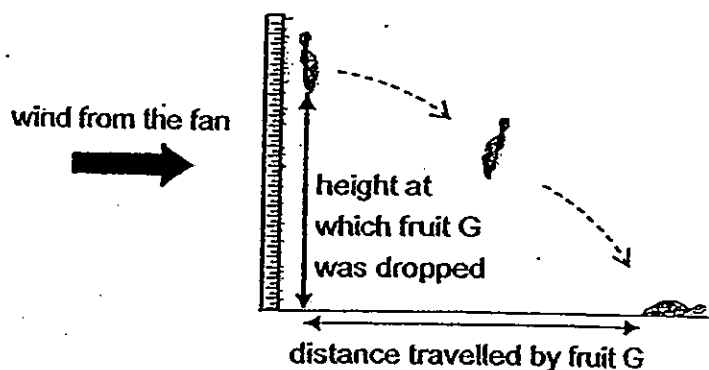
He dropped both fruits from a height of 2 m and recorded the time taken for the fruits to reach the ground. He repeated the experiment twice.

The results are shown in the table below.

	Time taken for fruit to reach the ground (s)			
	1 st try	2 nd try	3 rd try	Average
Fruit with wing-like structure	8.6	8.1	8.5	8.4
Fruit without wing-like structure	4.5	4.8	4.2	4.5

- a) Based on the information given, explain how the fruit's wing-like structure enables it to be dispersed by wind. [1]

- b) Adriel wanted to find out how the distance travelled by the fruit of Plant G is affected by the height at which it was dropped. He conducted the experiment as shown below.



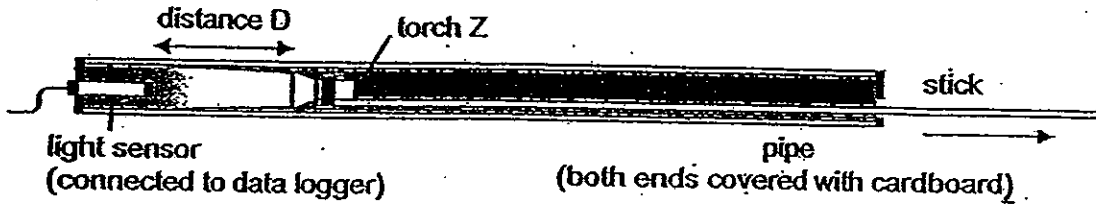
Which of the following variables must be kept the same to ensure a fair test? Put a tick (✓) in the appropriate boxes.

[1]

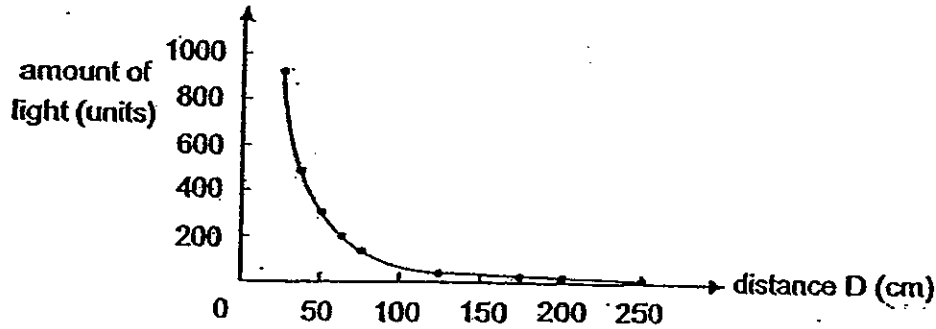
mass of fruit G	<input type="checkbox"/>
speed of wind from the fan	<input type="checkbox"/>
distance travelled by fruit G	<input type="checkbox"/>
height at which fruit G was dropped	<input type="checkbox"/>



33. Nadia carried out the experiment shown below. She placed torch Z in a pipe with black interior and measured the amount of light detected by a light sensor when she moved the torch away from it.

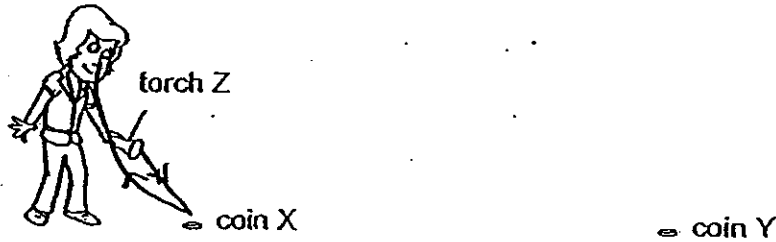


The graph below shows her results.



- a) State how the amount of light detected by the sensor changes with distance D. [1]

- b) Nadia entered a dark room with torch Z. The only source of light is the lit torch she was holding. There were two coins placed on the floor. She could see coin X that was 50 cm from the torch.



Coin Y was placed 400 cm from her in the dark room.

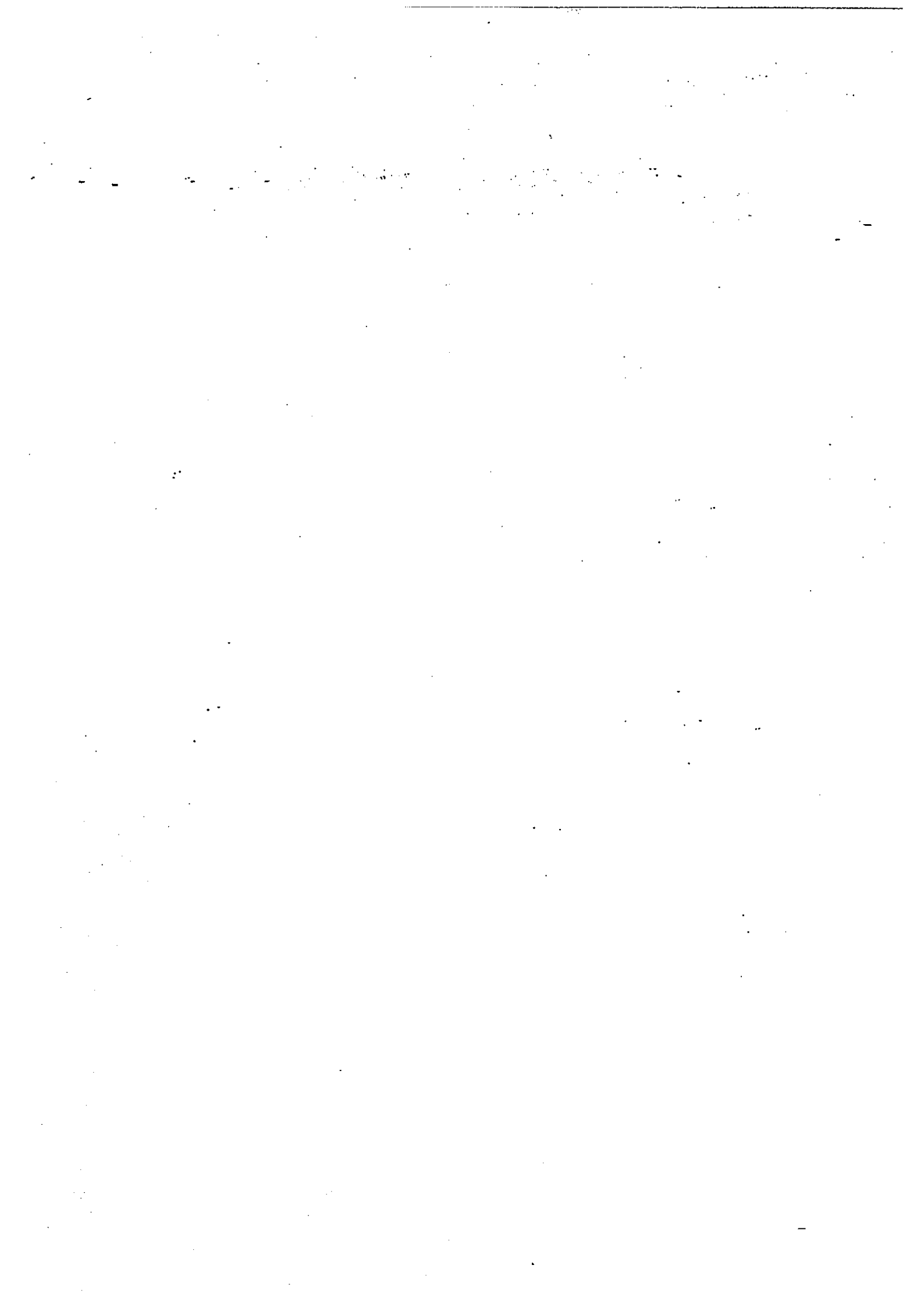
Based on her results, would she be able to see coin Y from where she was?

Give a reason for your answer.

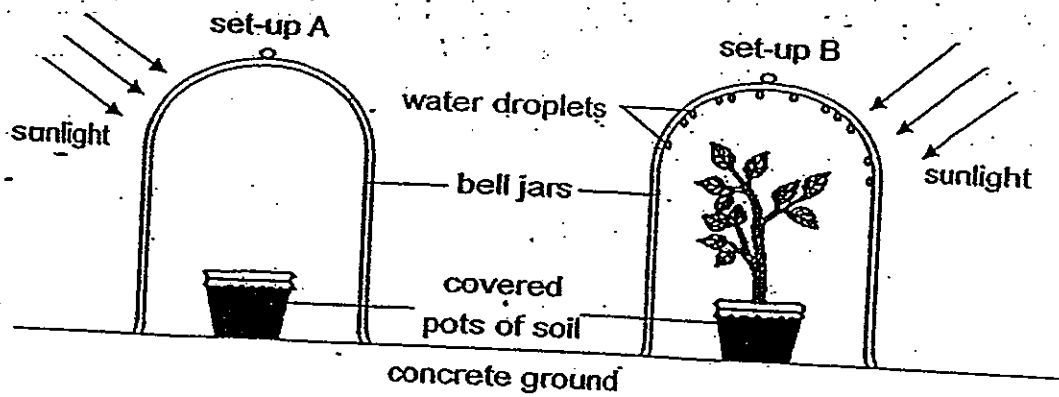
[1]

- c) Which of the following shows correctly the path of light that makes it possible for her to see coin X? Put a tick (✓) in the appropriate box. [1]

From coin X to torch Z to Nadia's eyes	<input type="checkbox"/>
From torch Z to Nadia's eyes to coin X	<input type="checkbox"/>
From torch Z to coin X to Nadia's eyes	<input type="checkbox"/>



34. James made the hypothesis that plants can cool the environment around them. He conducted an experiment to find out if his hypothesis was correct. He prepared two set-ups as shown below.

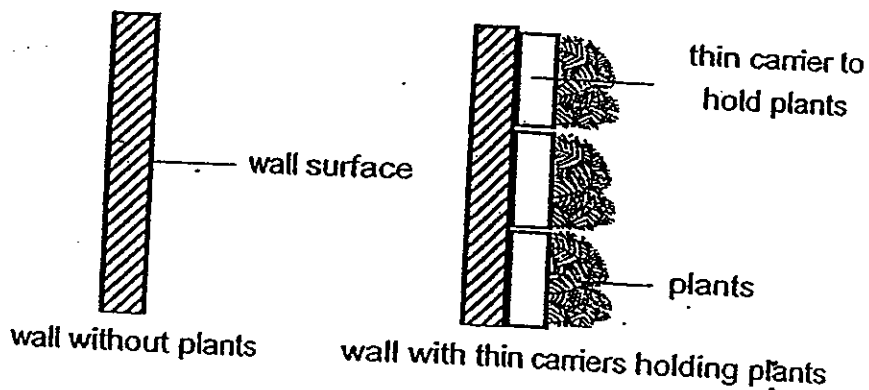


The next day, he observed that water droplets were formed only on the inner surface of the bell jar in set-up B.

(a) Explain how the water droplets in set-up B were formed.

[2]

(b) Next, he used a datalogger to measure the surface temperatures of two walls. One wall was not covered with plants and the other was covered with thin carriers holding plants. The diagrams below show the side view of the set-up.



The table below shows the results.

Time	Temperature (°C)	
	Wall without plants	Wall with thin carriers holding plants
10 a.m.	34	27
12 p.m.	38	27
2 p.m.	37	28

Source: Vertical Greenery for the Tropics

- (i) Based on the results, James confirmed that his hypothesis was correct.

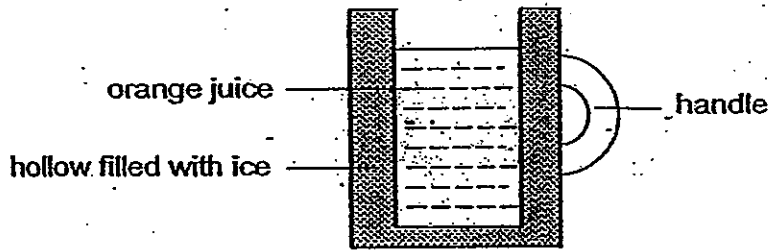
Give a reason.

[1]

- (ii) Based on the experiment, state the main reason how plants in the set-ups were able to cool their environment around them, other than providing shade.

[1]

35. James wanted to have a cold drink. He took out a specially-designed mug from the freezer. The mug has a hollow filled with ice. He then filled it with some orange juice at room temperature as shown below.

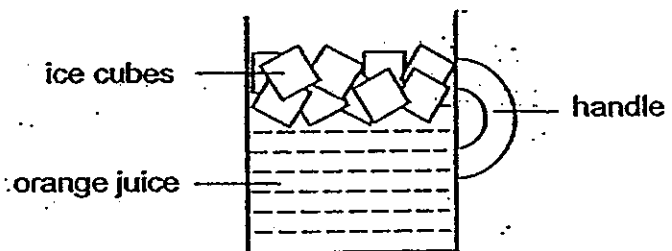


After leaving it on the table for some time, the orange juice turned cold.

- (a) Give a reason why the orange juice turned cold.

[1]

James added ice cubes to another mug of orange juice.

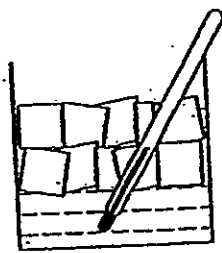


- (b) What would happen to the volume of the orange juice after all the ice cubes had melted? Give a reason for your answer.

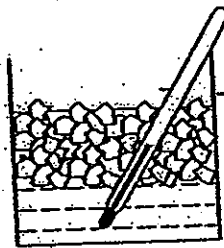
[1]

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•
•
•

36. Jenny conducted an experiment as shown below to find out how the size of ice cubes affects the rate of cooling. She put some ice cubes into a beaker of hot water. She prepared a similar set-up using crushed ice cubes.



set-up X



set-up Y

She recorded the temperature of the hot water with ice every ten minutes.

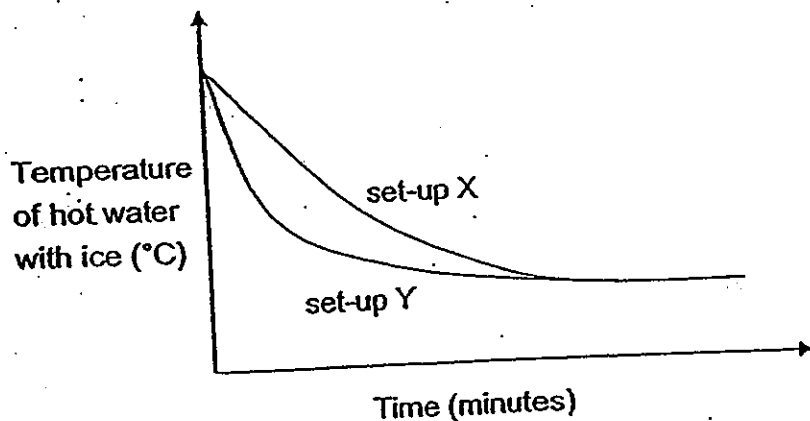
(a) Which variables should Jenny keep constant so that the experiment is fair?

Tick (✓) the appropriate boxes.

[2]

Variable	Should be kept constant
(i) Volume of hot water	<input type="checkbox"/>
(ii) Mass of ice used	<input type="checkbox"/>
(iii) Size of ice cubes	<input type="checkbox"/>
(iv) Time taken for the experiment	<input type="checkbox"/>
(v) Place where the set-ups are put	<input type="checkbox"/>

The graph below shows the results.



(b) Based on the graph, what can you conclude from the experiment?

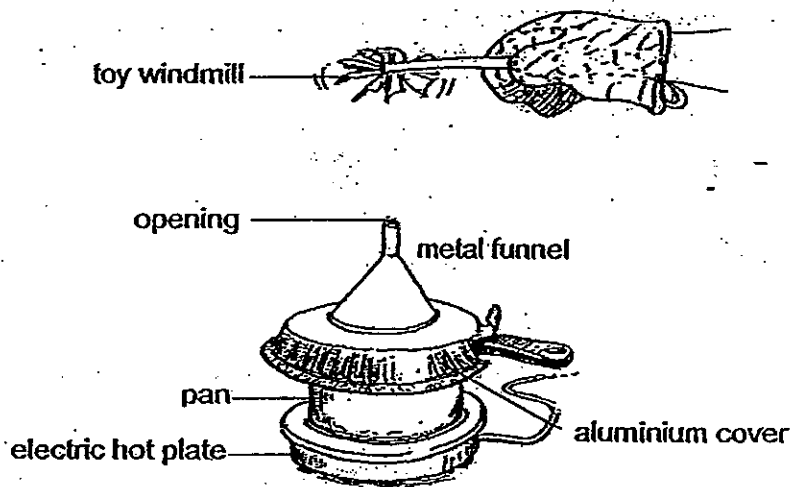
[1]

⋮

(c) Explain how the size of the ice cubes affects the rate of cooling hot water.

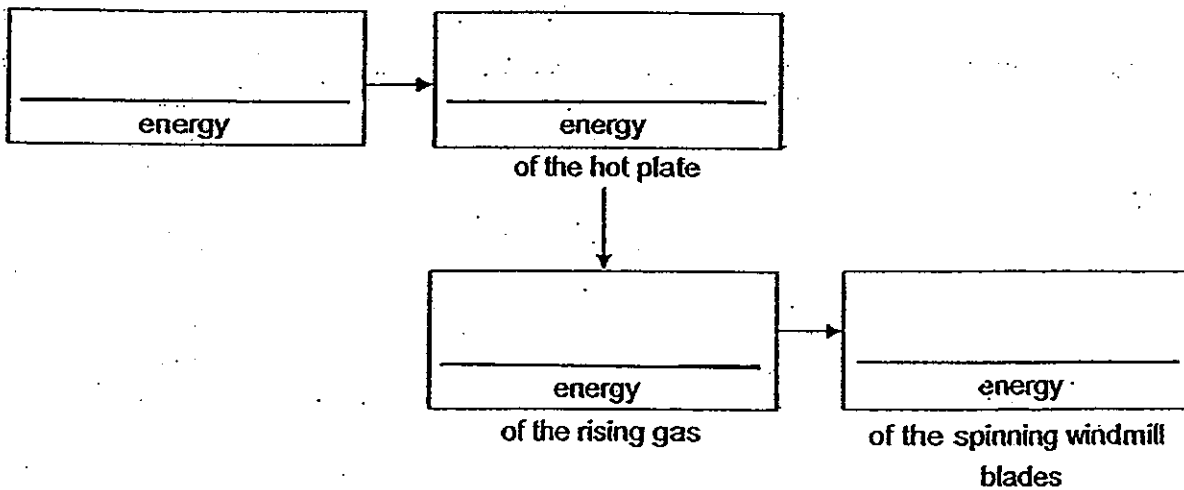
[1]

37. Ahmad heated some water in a pan as shown below. When the water was boiling, he placed a toy windmill over the opening of the funnel and the windmill started spinning.



- a) State the gas that caused the toy windmill to spin. [1]

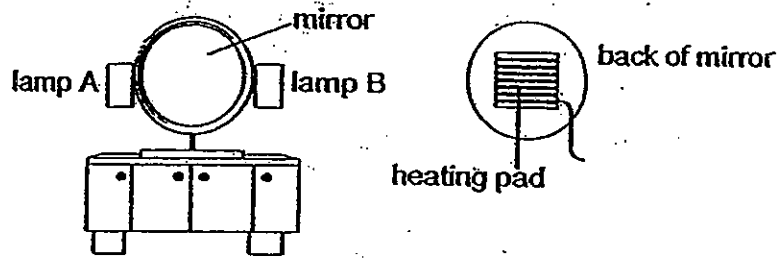
- b) State the main energy changes that occurred by filling in the forms of energy in the boxes provided. [2]



- c) Without changing any of the apparatus, suggest one change that Ahmad can make to his set-up if he wants the toy windmill to spin faster. [1]

38. After Sulaiman had taken a hot bath, he observed that tiny water droplets were formed on his bathroom mirror. He did not spray the water on the mirror.

The following day, he fixed a heating pad on the back of his bathroom mirror. When the heating pad was switched on, it heated up the mirror to about 40 °C and this prevented water droplets from forming on the mirror.



Sulaiman observed that there were no water droplets on his bathroom mirror after he had taken his hot bath.

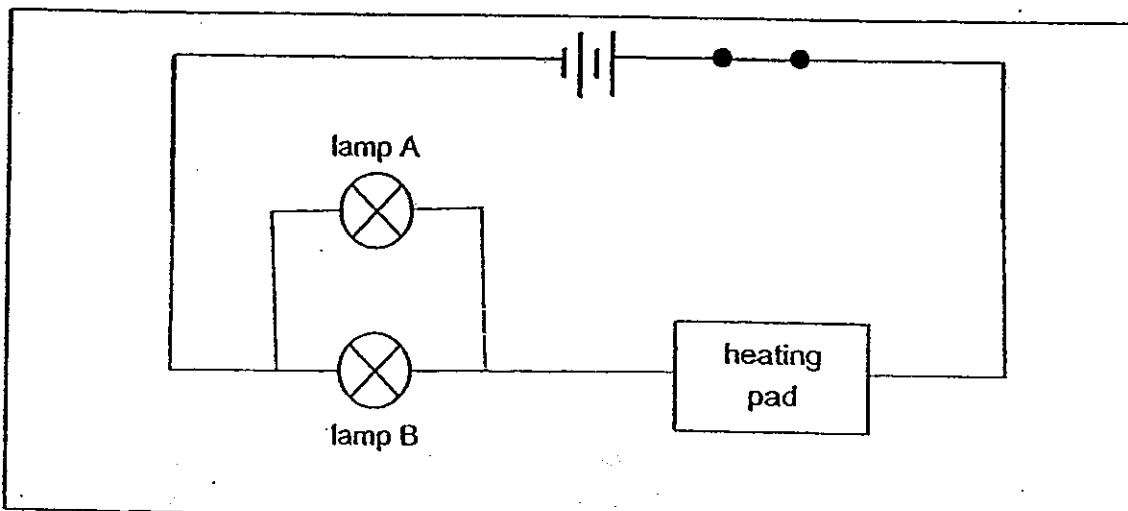
a) Explain why water droplets were not formed on the heated mirror. [2]

b) Sulaiman constructed an electrical circuit which connected the heating pad to the two lamps on both sides of the mirror. The three devices are controlled with only one switch.

The table below states his observations when one of the devices is faulty.

	Observations when the switch is closed
If lamp A is blown	lamp B lit up and the mirror heated up
If lamp B is blown	lamp A lit up and the mirror heated up
If the heating pad is faulty	both lamp A and lamp B did not light up

Complete the circuit diagram below to show how the two lamps and the heating pad could be connected. [2]



39. Benny conducted an experiment to find out if the area of contact between two surfaces affects the friction between the two surfaces. He set up the experiment as shown below. He pulled a wooden block along a plastic surface using a spring balance.



He repeated the experiment with two different wooden blocks of the same height and width. The blocks were made of the same type of wood.

The diagram below shows the three wooden blocks he used for his experiment.



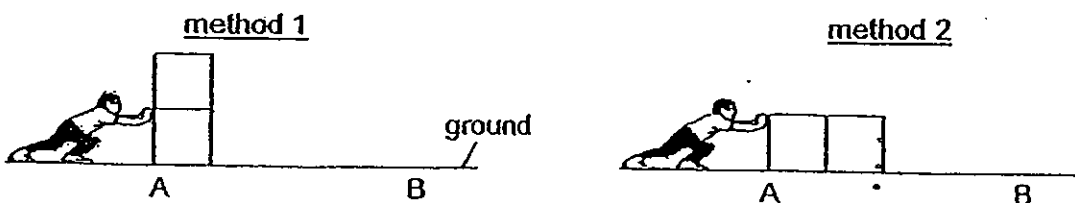
- a) Suggest one way in which his experiment might not have been fair. [1]

- b) His friend, Devi, conducted the same experiment using only one wooden block. She rested different surfaces of the block on the plastic surface and pulled it using the spring balance. The table below shows the results of her experiment.

Area of contact between the two surfaces (cm ²)	Friction (units)
24	10
32	10
48	10

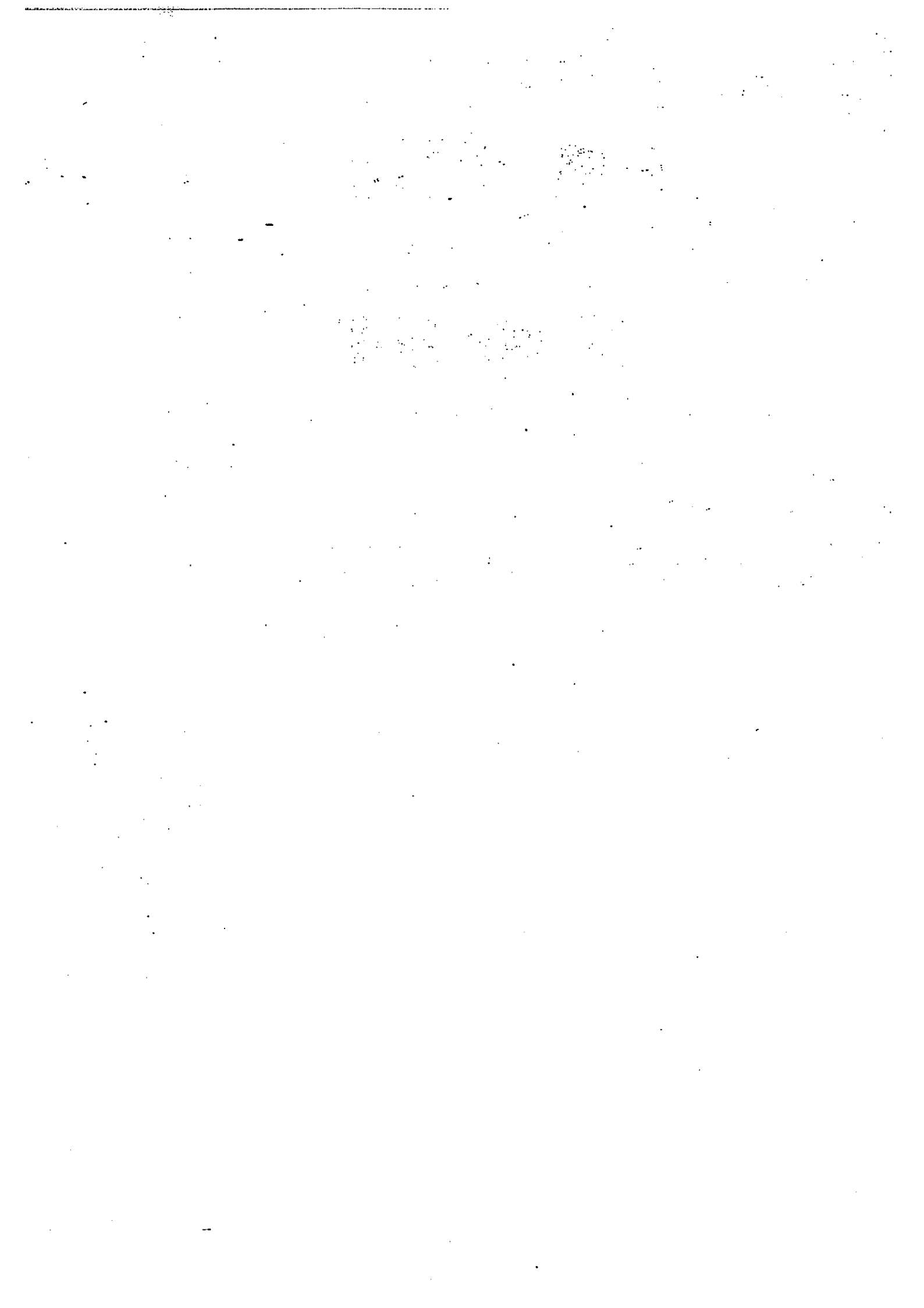
What could Devi conclude from her experiment?

- c) A worker wanted to push two heavy identical boxes from point A to point B. The diagram below shows two methods.

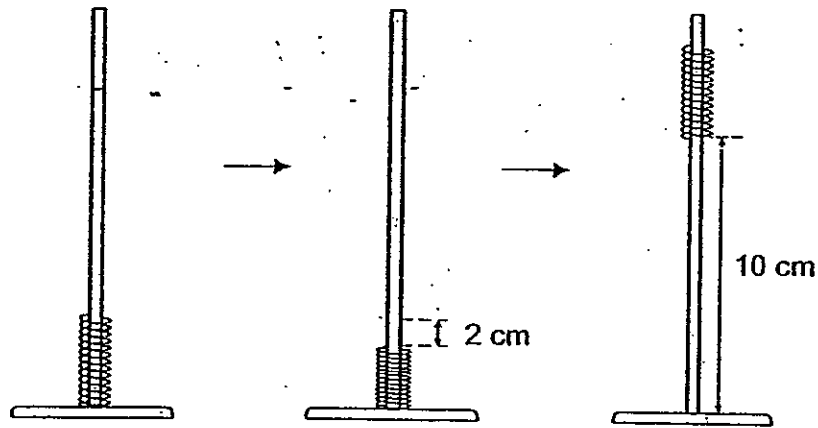


He said that method 1 will require less pushing force than method 2. Do you agree with him? Give a reason for your answer.

[1]

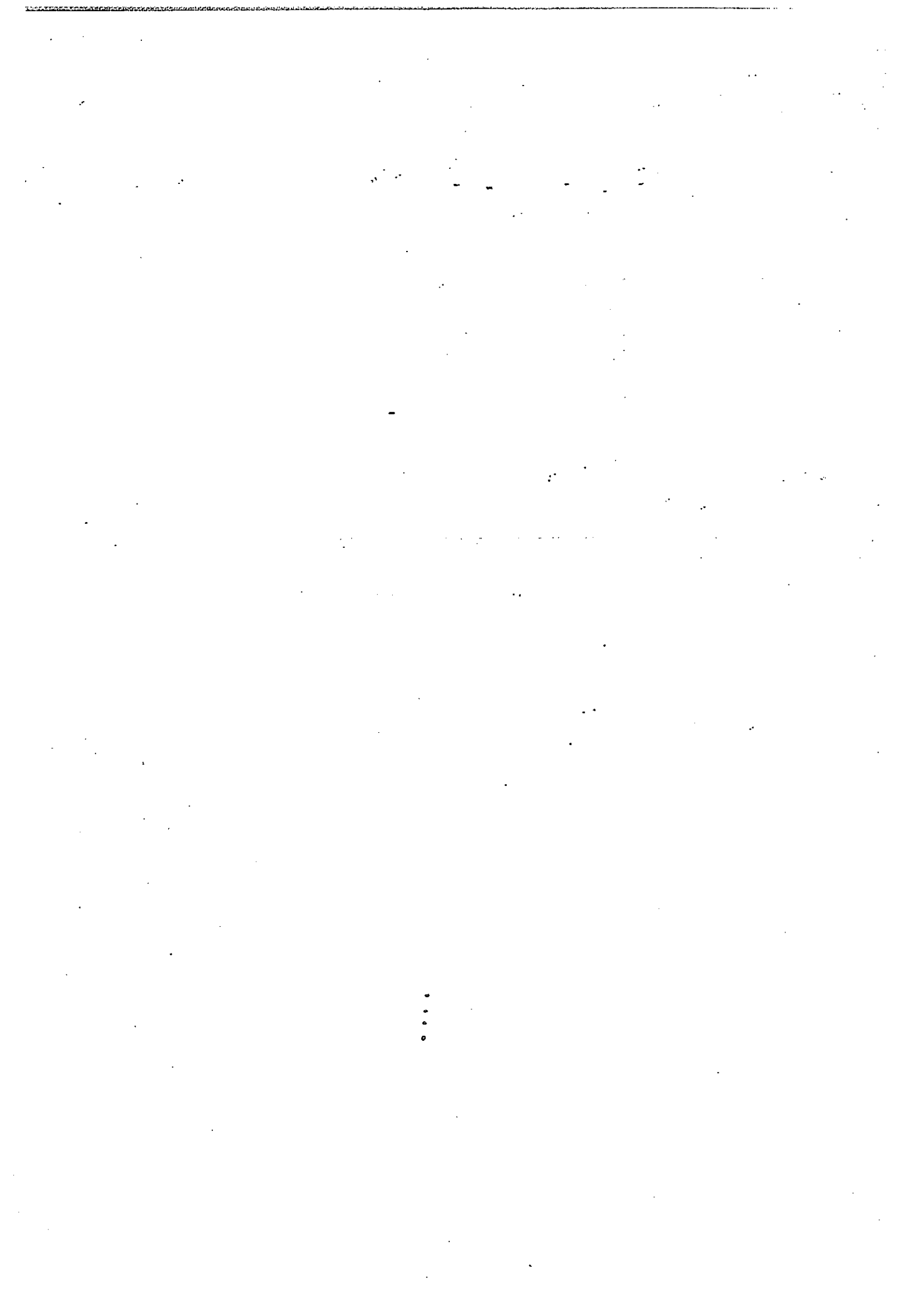


40. Jean carried out the following experiment. She placed a spring over a wooden rod and pressed it down by 2 cm. When she let go of the spring, the spring jumped up to a height of 10 cm.



She repeated the experiment by pressing the spring down by only 1 cm. Would the height reached by the spring be less than, equal to or more than 10 cm? Explain your answer using the energy change that took place. [2]

For Questions 41 to 44, please refer to Booklet K.
End of Section B



Pei Chun Public School
Continual Assessment, Primary 6
Science

3	6)	4	11)	2	16)	1	21)	2	26)	2
1	7)	3	12)	4	17)	4	22)	1	27)	2
1	8)	2	13)	3	18)	1	23)	2	28)	1
3	9)	4	14)	4	19)	3	24)	2	29)	2
4	10)	3	15)	4	20)	3	25)	4	30)	1

- 1: Towel X had a greater exposed surface area than towel Y.
2: The water in towel X can drip down the towel but not the water in towel Y.

i) The fruit's wing-like structure took a longer time for fruit to reach the ground.

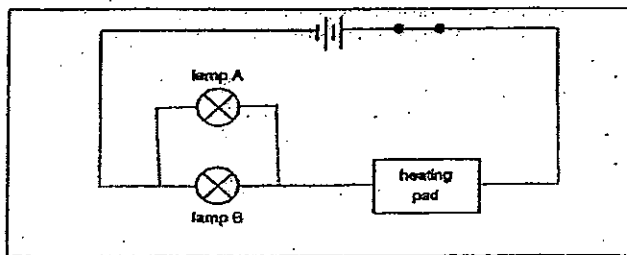
mass	v
speed	v
distance	
height	

- i) As distance D increases, the amount of light detected by the sensor decreases.
ii) No. Light from the torch cannot be detected by the sensor when it is at 250cm. The coin is 400cm away from the torch.

i)

From coin X	
From torch Z	
From torch Z	v

- i) Steam
ii) Electrical energy -> Heat energy -> Kinetic energy -> Kinetic energy
iii) Move the windmill closer to the opening of the metal funnel.
iv) Condensation did not take place, water vapour cannot condense on the mirror.
The temperature of the mirror was higher than water vapour.



- i) The masses of the three wooden block might be different.
ii) The area of contact between two surfaces does not affect the friction between the two surfaces.
No. Since the masses of the boxes is the same, the amount of friction between the box and the ground will be the same.

Less than 10cm. The spring is less compressed. So it would have lesser elastic potential energy, which will have lesser kinetic energy so it jumped lower than 10cm.

