# METHODIST GIRLS' SCHOOL

Founded in 1887

PRIMARY 4
SCIENCE
WEIGHTED ASSESSMENT 3 2023

Total Time for Paper: 45 min

INSTRUCTIONS TO CANDIDATES
Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.

Name: _____ (  )

Class: Primary 4 _____

Date : _____

Parent's signature: _____

| | |
|---|---|
| Section A | 18 |
| Section B | 12 |
| Total | 30 |

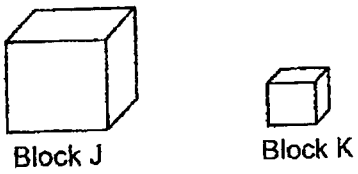
This paper consists of 10 printed pages including this page.

**Section A**

For each question from 1 to 9, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and write in the bracket provided. [18 marks]

1 The diagram below shows two steel blocks, J and K.

Both blocks are heated to 85°C. Which of the following statements is/are true?

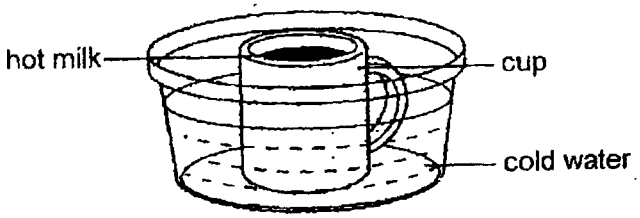



A Block K is hotter than Block J.
B Block J has more heat energy than Block K.
C Both blocks will take different amount of time to reach room temperature.

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

( )

2 A cup of hot milk is placed into a basin of cold water.




Which of the following correctly describes the heat transfer that took place?

| | cold water | hot milk | cup |
|---|---|---|---|
| (1) | lost heat to cup | lost heat to cup | lost heat to hot milk |
| (2) | lost heat to cup | gained heat from cup | lost heat to hot milk |
| (3) | gained heat from cup | lost heat to cup | gained heat from hot milk |
| (4) | gained heat from cup | gained heat from cup | gained heat from hot milk |

( )

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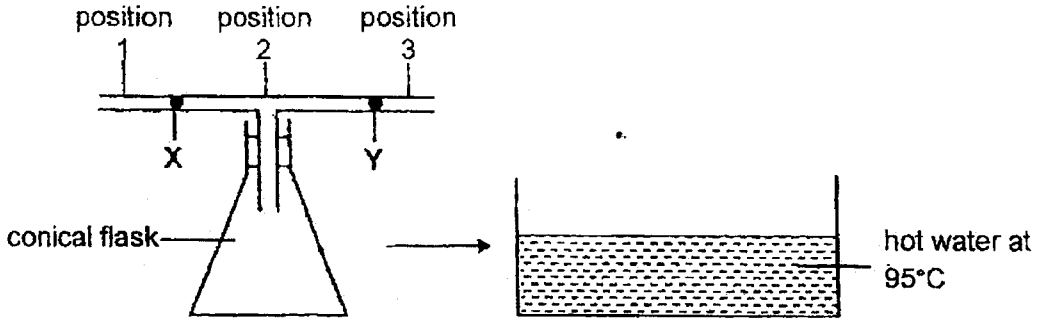
3 The diagram below shows an empty conical flask with a T-shaped tube. X and Y are two drops of ink in the tube. The conical flask was then immersed into a container of hot water at 95°C.

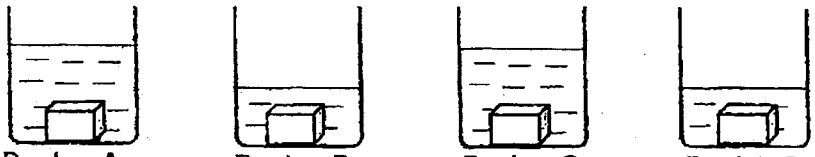



What will be positions of ink drops X and Y after the conical flask is placed into the hot water for 5 minutes?

| | X | Y |
|---|---|---|
| (1) | Position 1 | Position 2 |
| (2) | Position 1 | Position 3 |
| (3) | Position 2 | Position 2 |
| (4) | Position 2 | Position 3 |

( )

4 Four similar hot iron cubes were heated to 80°C. The cubes were then put into four beakers at the same time as shown below.



| Beaker A | Beaker B | Beaker C | Beaker D |
|---|---|---|---|
| 80ml of water at 15°C | 40ml of water at 15°C | 80ml of water at 70°C | 40ml of water at 70°C |

Which beaker of water will have the greatest increase in temperature?

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

( )

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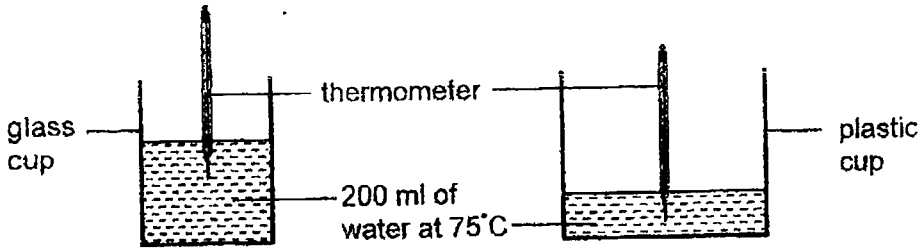
5 Elisa wanted to find out whether glass or plastic is a better conductor of heat. She filled the cups with water of the same volume and temperature, as shown below. She then measured the temperature of water every five minutes.




What should Elisa do to ensure that her experiment is a fair test?

(1) Use cups of the same size.
(2) Cover the cups with a metal lid.
(3) Pour the water to the same level in each cup.
(4) Use water of a lower temperature in each cup. ( )

6 Which of the following will not change when a matter is being heated?

(1) mass
(2) state
(3) volume
(4) temperature ( )

7 Which of the following statements about light is correct?

(1) Only shiny objects reflect light.
(2) Objects that reflect light are sources of light.
(3) An object can be seen when it is able to reflect light.
(4) Objects can be seen because our eyes give off light. ( )

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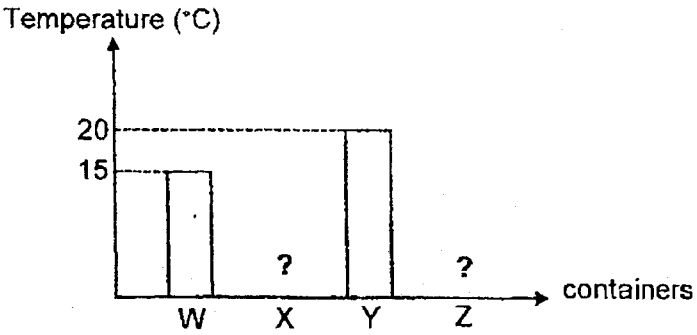
8 Ben poured equal volume of water at 10°C into four similar sized containers made of materials, W, X, Y and Z. He then left the four containers in the kitchen.

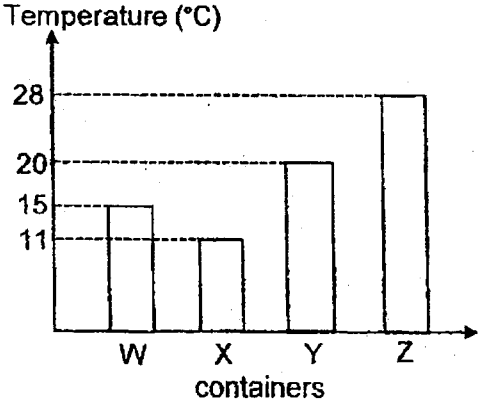
After some time, the temperature of the water in each container is recorded in the bar graph shown below.



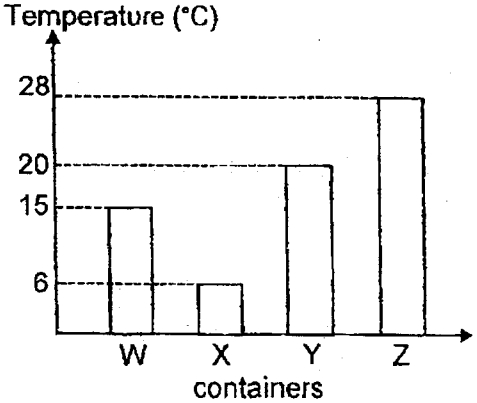

Based on the results, Ben concluded that material X is the best conductor of heat and material Z is the poorest conductor of heat.

Which bar graph correctly shows the temperature of water in the containers made of materials X and Z after some time?

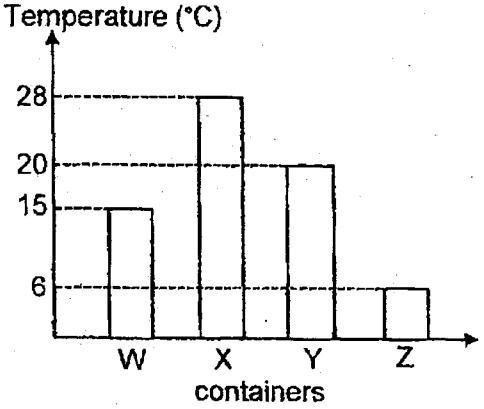
(1)



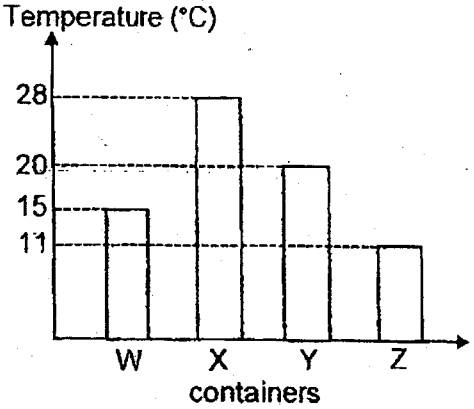

(2)




(3)




(4)

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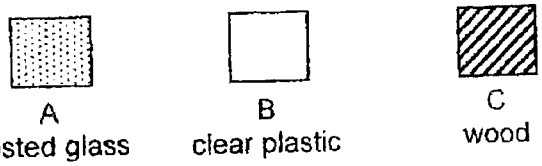
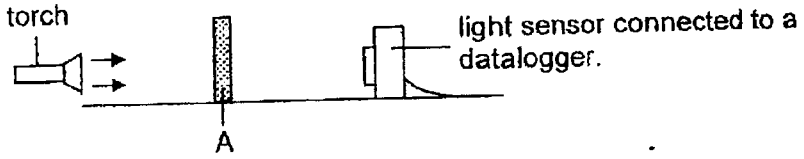
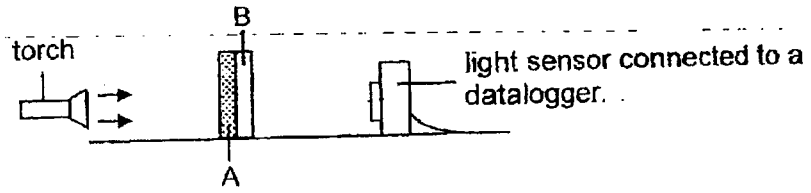
9 Siti conducted an experiment to investigate the amount of light that passes through three sheets, A, B and C, of the same thickness and size but made of different materials.



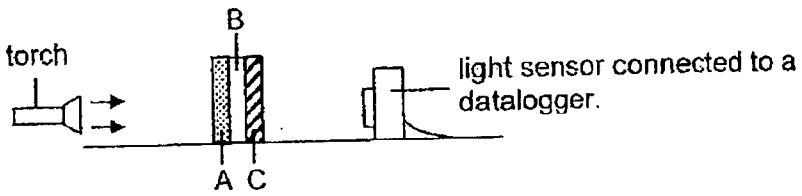

Siti recorded the amount of light that passed through sheet A as shown in the diagram below.




She repeated the experiment with sheets A and B attached together.




Finally, she repeated the same experiment with A, B and C attached together.




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

| | Amount of light recorded by datalogger (unit) | | |
|---|---|---|---|
| | A only | A and B attached | A, B and C attached |
| (1) | 100 | 300 | 400 |
| (2) | 100 | 100 | 0 |
| (3) | 300 | 300 | 100 |
| (4) | 300 | 100 | 0 |

( )

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**Section B**

For questions 10 to 12, write your answers in the space provided. [12 marks]

10 Mrs Lim placed a scoop of ice cream into a metal cup in the kitchen as shown in diagram 1 below.

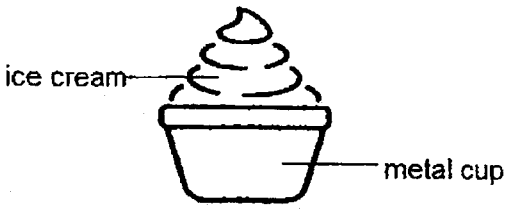


diagram 1

(a) State the change in state of the ice cream after some time. [1]

(b) Explain your answer in (a) [1]

Mrs Lim then placed another similar scoop of ice cream into a plastic cup in the same room as shown in diagram 2 below. The size and thickness of plastic cup is similar to the metal cup in diagram 1.

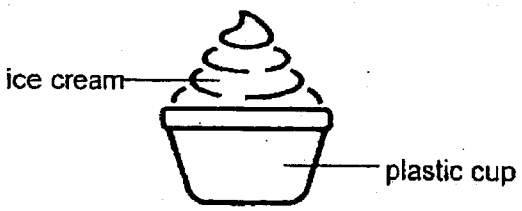


diagram 2

(c) Will the ice cream with the plastic cup in diagram 2 melt faster, slower, or at the same time as the ice cream in diagram 1? Explain your answer. [2]

4

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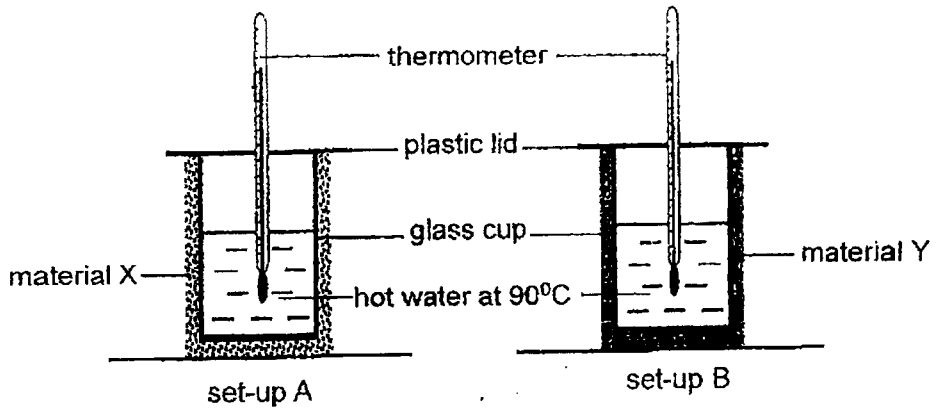
11 Lucy conducted an experiment using set-ups A and B as shown below. Both cups were filled with the same volume of hot water at 90°C and left in the kitchen.




She measured the temperature of water at different times and plotted her results in the graph as shown below.

| Time (min) | Temperature of water in (°C) | |
|---|---|---|
| | Set-up A | Set-up B |
| 5 | 90 | 90 |
| 10 | 82 | 71 |
| 15 | 71 | 60 |
| 20 | 67 | 51 |

(a) Based on the table, which material, X or Y is a better conductor of heat? Explain your answer. [1]

_____

_____

(b) How did the temperature of water in both set-ups change after two hours? [1]

_____

_____

2

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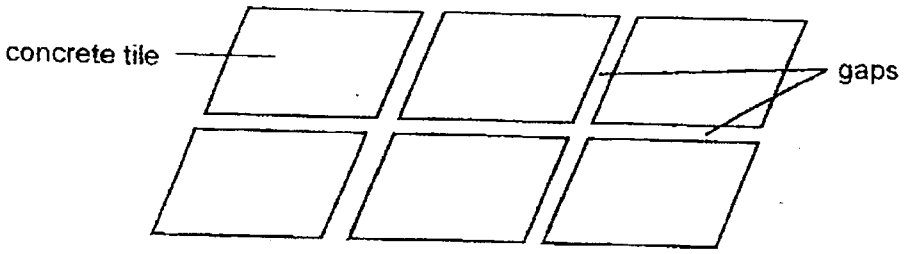
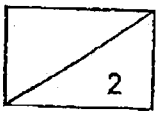
(c) The concrete tile on the pavement have gaps in between them as show below.




What would happen to the concrete tile on a very hot day if there were no gaps? Explain your answer. [2]

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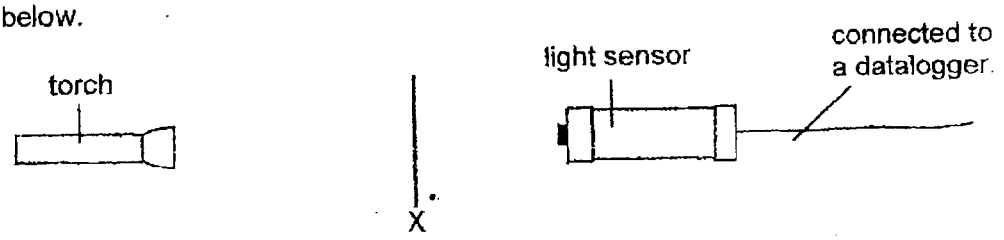
12 Ann designed a model that uses a light sensor to count sheets of paper as shown below.




(a) When no paper was placed at position X, the amount of light detected by the sensor was 200 units. When a sheet of paper was placed at X, the reading became 150 units. Explain why. [1]

Next, Ann repeated the experiment by increasing the number of sheets of the same type of paper. The table below shows her results.

| Number of sheets of paper | Amount of light (units) |
|---|---|
| 0 | 200 |
| 1 | 150 |
| 2 | 100 |
| 3 | 50 |
| 4 | 0 |
| 5 | 0 |

(b) Explain why the model cannot be used to count more than 4 sheets of paper? [2]

(c) Using only the above apparatus, state one change that Ann could make to the model if she wants to count more than 4 sheets of the same type of paper. [1]

4

End of paper

SCHOOL : METHODIST GIRLS' SCHOOL
LEVEL : PRIMARY 4
SUBJECT : SCIENCE
TERM : 2023 WA 3

CONTACT :

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

**SECTION B**

| | |
|---|---|
| Q10) | a) The ice cream changed from solid state to liquid state<br>b) The ice cream gained heat from the surrounding air, causing it to melt and change state<br>c) Ice cream in the plastic cup will melt slower than ice cream in diagram 1. Plastic is a poorer conductor of heat than metal, so ice cream in plastic cup will gain heat at a slower rate |
| Q11) | a) Y. The temperature of water in set-up B decreases faster as heat from the hot water will flow to the surrounding air more quickly<br>b) The temperature of water in both set-ups gradually reached room temperature after 2 hours.<br>c) The concrete tiles would crack on a very hot day if there were no gaps. The tiles would gain heat from the sun and expand, but there would be no space for the tiles to expand, causing them to crack |
| Q12) | a) The sheet of paper only allows some light to pass through, thus reading became 150 units<br>b) When 4 sheets of paper were placed together, no light could pass through. Hence adding any additional sheets will not make a difference<br>c) She can move the torch nearer to position X |