

NAME.....STREAM:.....

END OF TERM I 2023

S.2 PHYSICS ASSESSMENT

Time allowed: 1 hour 30 minutes

**Instruction: Answer all questions in this paper**

1. (a) Jerry has bought an irregular plot of land, he wishes to know the area of his plot of land, explain what jerry can do in order to determine area of his plot of land. (4marks)

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- (b) The Head teacher instructed the school Carpenter to make a notice board of dimensions **1.5m** by **0.5m**. If each notice is written on a Piece of dimensions **21cm** by **30 cm**, what is the maximum number of notices that can be put on the notice board at any one time. (4marks)

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2. (a) Nathan wishes to obtain the **external diameter of water pipe, length of the football pitch, diameter of the wire, and height of his friend.**

As a physics learner who have learnt about measurements, help Nathan to identify which measuring instruments, he can use to measure the above lengths accurately. (2 marks)

- i) external diameter of water pipe: .....
- ii) length of the football pitch:.....
- iii) Diameter of the wire:.....
- iv) Height of his friend:.....

- (b) Suggest a reason why it is not advisable to take only one measurement of the diameter of a wire. (1mark)

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- (c) A counter book of **384** pages is bound with sheets of paper, each of thickness **0.2mm**, and two hard covers of thickness **0.6mm**. What is the thickness of the book in meters? (4marks)

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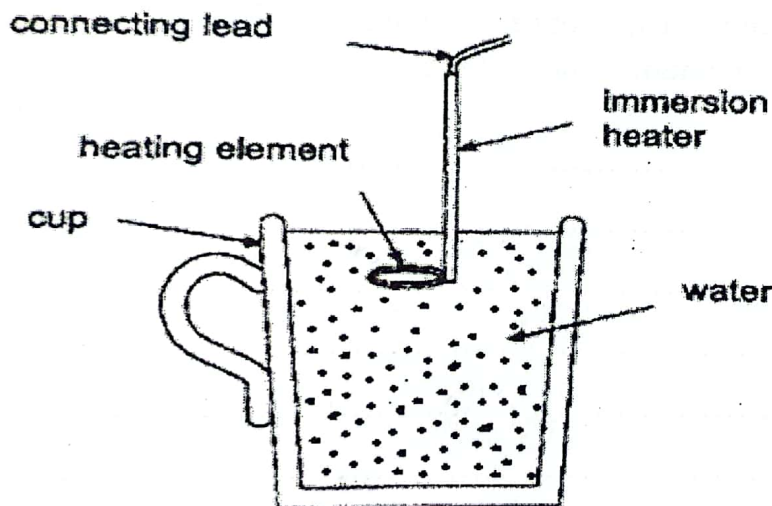
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- (d) A log of wood has more mass than a copper coin, but it does not sink in water. Explain why. (2marks)

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3. (a) The figure below shows an electric heater being used to heat up water in a cup.



- (i) With the heating element in the position shown above, the water at the bottom remains cold even after sometime. Explain why this is so.

(2marks)

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- (ii) The heating element is now placed at the bottom of the cup. Describe how all the water in the cup is heated with the heating element in its new position. (3marks)

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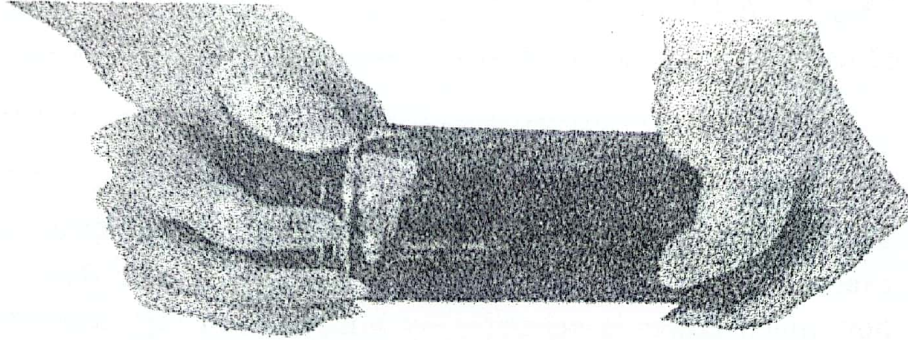
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- (iii) Suggest a way to reduce heat loss to the surrounding by the hot water.  
Explain your answer. (2marks)

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- (b) It is common to unsuccessfully open a tight metal lid on a glass jar as shown below:

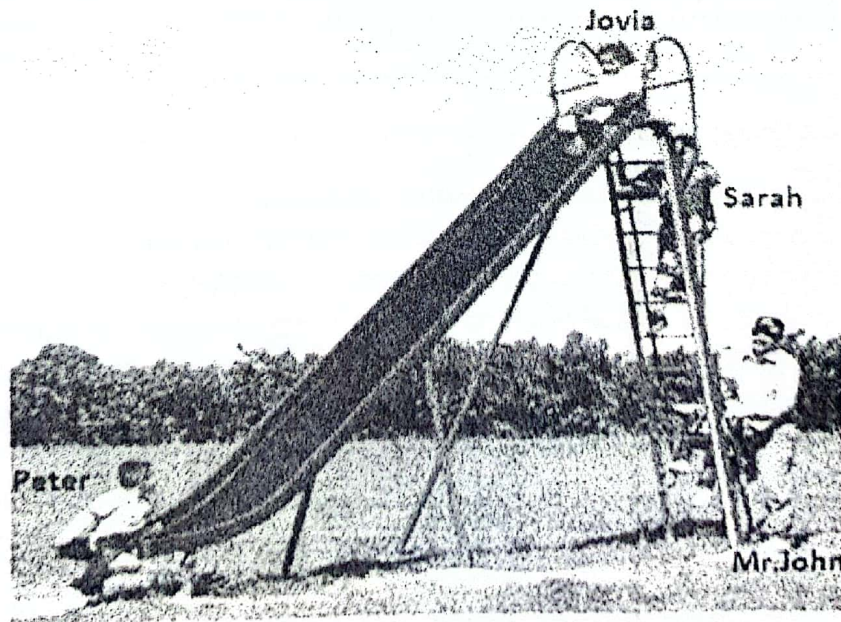


Using the knowledge of expansion, explain briefly how you would open the lid with ease. (1mark)

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4. (a) The pictures in the figure below showing kids playing on a slide with the help of their father Mr. John. Study it and answer the questions that follow



- (i) Sarah is climbing the ladder. How do you think her potential is changing? (1mark)

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- (i) Comment on the potential energies of Jovia and peter. (1mark)

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- (ii) Calculate the Sarah's speed as she will be reaching the ground if she is at a height of 340cm. (3 mark)

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- (b) Mike has a mass of **58kg**, and he is practicing gymnastics. He takes **6seconds** to climb a flight of stairs of **36 steps**. If each step is **12cm** high, how much power is generated by Mike? Given that acceleration due to gravity  $g = 10m/s^2$ . (3mark)

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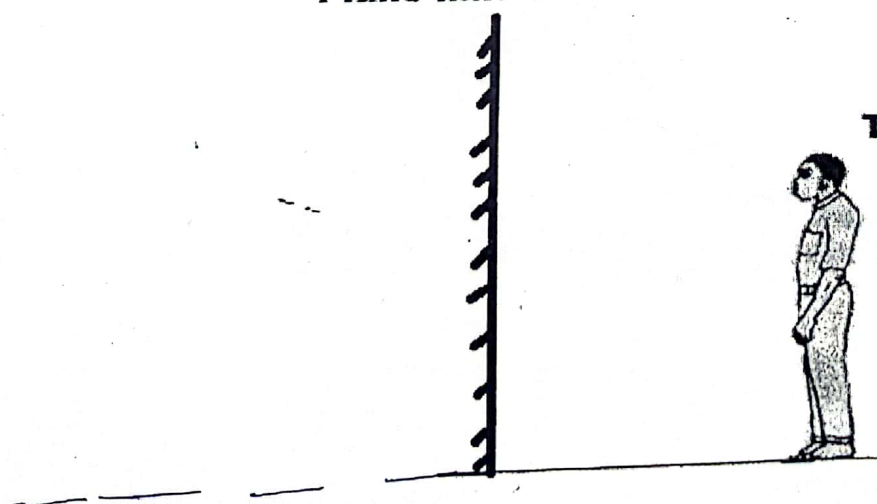
5. (a) Tom stood in front of a plane mirror as shown in the figure below.

- (i) Draw a ray diagram to show how he may see his image in the mirror.

(2marks)

**Plane mirror**

**Tom**



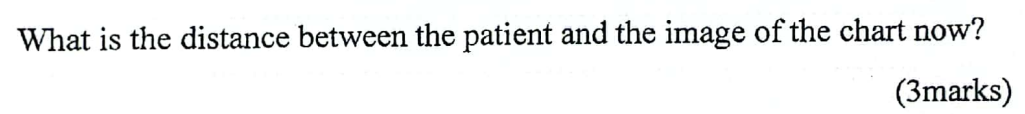


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- (i) explain why the dust particle are seen moving in a zig- zag pattern (2marks)

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- (ii) State and explain what would be observed within the ray of light when the temperature of the room gets hotter. (2marks)

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- (b) During a physics class activity, Madrine realised that it's easier to compress a balloon filled with air than ice cubes. Explain this phenomenon. (2marks)

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- (c) John's car has a mass of 2.6 tonnes. What is the weight of his car. (2marks)

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7. (a) Agnes was driving under a light drizzle along Naalya – Namugongo road, a motor rider (boda- boda), suddenly skidded off the road in front of Agnes's car. Agnes immediately applied her brakes but it was a useless move. There was an accident but fortunately enough, no one sustained injuries.

- (i) What was the problem between the tyre of Agnes's car and the road surface? (1mark)

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- (ii) Considering the above scenario, how is friction useful. (3marks)

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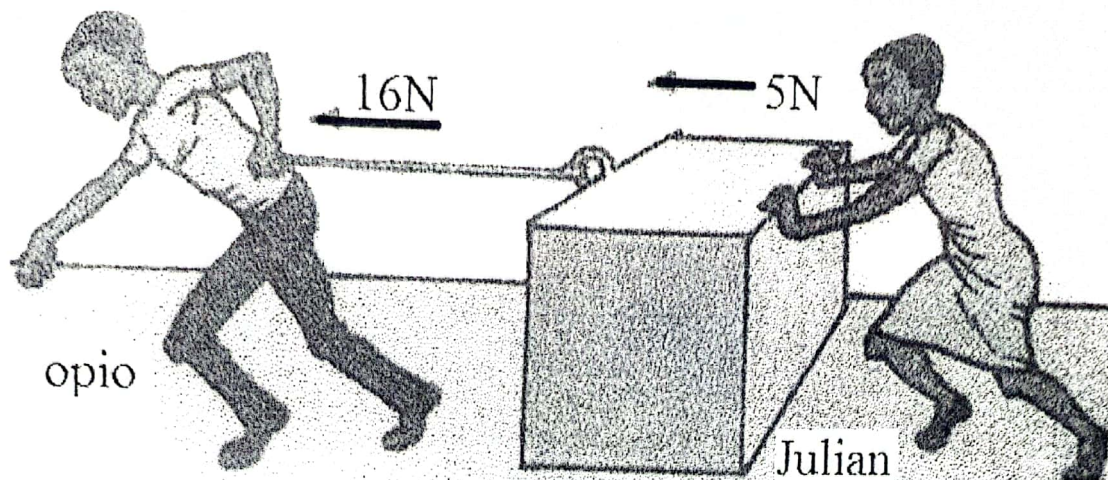
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light when the  
(2marks)

- (c). Opio is pulling a box using a rope while Julian is pushing using the box as shown below.



If Opio is exerting **16N** and Julian is exerting **5N**. Find the value of frictional force experienced between the box and the ground, if the resultant force is **14N**. (3marks)

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