

1. Aim: To determine the mass of the metre rule.

Variables:

Independent: - Distance, d of 50g from A.

Dependent: - Distances x and y .

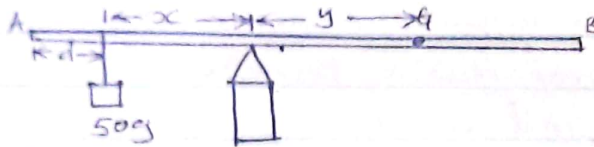
Controlled: The 50g mass.

Hypothesis: The mass of the metre rule is btrn 66g to 158g.

List of materials:

- 50g mass
- Uniform metre rule
- Knife edge
- Wooden block
- A piece of thread

Procedure



- a) A uniform metre rule AB is placed on a knife edge with its graduated face upwards.
- b) The position of the knife edge is adjusted until the metre rule balances horizontally.
- c) The balance point G of the metre rule is noted.
- d) A mass of 50g is suspended at a distance, $d = 5.0\text{ cm}$ from end A of the metre rule.
- e) The position of the knife edge is adjusted until the metre rule balances horizontally again.
- f) The distances x and y are read and recorded.
- g) The procedures d) to f) are repeated for $d = 10.0, 15.0, 20.0$ and 25.0 and 30.0 cm .
- h) The results are recorded in a suitable table.
- i) A graph of x against y is plotted.
- j) The slope S of the graph is calculated.
- k) The mass M of the metre rule is determined from $M = 10S$.

Data Presentation

$$G = (1 \text{ dp}) \text{ cm}$$

$d \text{ (cm)}$	$x \text{ (cm)}$	$y \text{ (cm)}$
5.0	1 dp	1 dp
10.0		
15.0		
20.0		
25.0		
30.0		

✓ A graph of x against y .

✓ slope, S no units

✓ $M = 50.5 \text{ g}$.

Conclusion: The mass is within the range in the hypothesis hence the hypothesis is valid.

Errors: - Error due to parallax ...
- Wind resistance

Precautions: - Repeating the experiment
- Taking reading at right angles

Advice: Carry out the experiment in closed doors.

2.

Aim: To determine the internal resistance r of the dry cells provided to ascertain whether they conform the set standards.

Variables: Independent: - length L of bare wire

Dependent: - P.d drop V and current I .

Controlled: Room temp., Wire material of connecting wires.

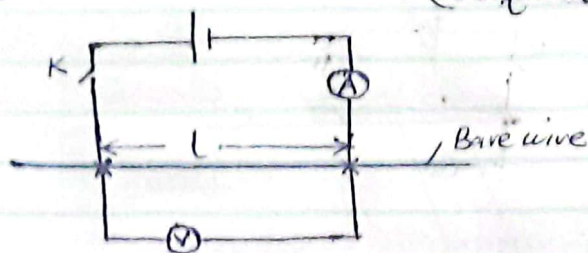
Hypothesis: The internal resistance of a cell is b/n 0.5Ω to 1.3Ω .

List of materials

- Ammeter - Switch - Constantan wireSWG 28
- Voltmeter - Connecting wires - Metre rule
- Double cells in a cell holder - 2 Crocodile clips.

Procedure

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- The voltmeter is connected directly to the terminals of the cell and the voltmeter reading, E is recorded.
- The apparatus is then setup as above.
- The length L of the bare wire is adjusted such that $L = 10.0\text{ cm}$ and switch K is then closed.
- The voltmeter reading V and ammeter reading I are read and recorded.
- The switch K is then opened.
- The procedures c) to f) are repeated for values of $L = 20.0, 30.0, 40.0, 50.0$ and 60.0 cm .
- The results are recorded in a suitable table including values of $(E - V)$.
- A graph of $(E - V)$ against I is plotted.
- The slope, S of the graph is determined.
- The internal resistance r of the cell is determined from $r = S$.

Data Presentation

$E =$

$L (\text{cm})$	$V (\text{V})$	$I (\text{A})$	$(E - V) (\text{V})$
10.0			
20.0			
30.0			
40.0			
50.0			
60.0			

- * A graph of $(E - V)$ against I
- * Slope, S units Ω
- * $r = S$.

Conclusion : The Internal resistance of the cell is
between 0.5Ω - 1.3Ω , the hypothesis is
valid. The cells meet the set
Standards.

Errors : - Error due to parallax
- Insensitivity of Instruments
- Over drained cells and Staged cells

Precautions : - Repeating the experiment
- Taking the reading at right angles

Advice : - Use of depolarizing agent to improve
on the efficiency.

END . @aquila 0702285589.