live

GCSE Physics

1st Mar 2021 – Moments and Lamps Practical

Suitable for ALL exam boards

This session looks at both moments and the characteristics of a filament lamp.

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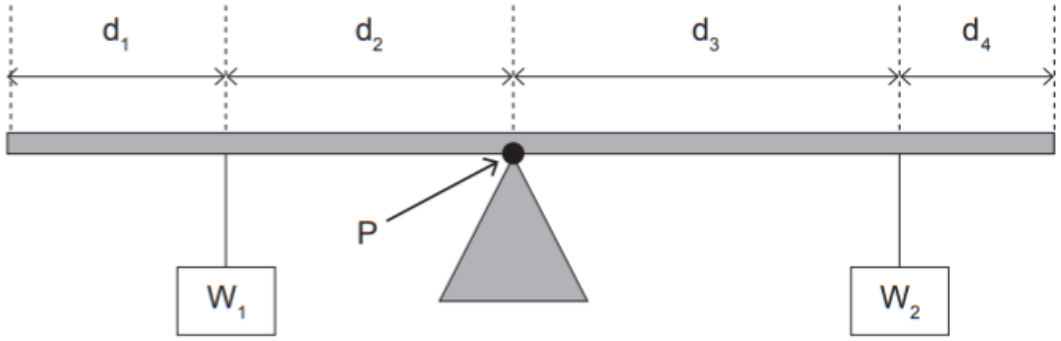
Question taken from:

CCEA GCSE Physics – 2019 – Unit 7 Booklet B Higher – Question 1 and 2

1 A student carries out an experiment to verify the Principle of Moments.
Weights W_1 and W_2 and distances d_1, d_2, d_3 and d_4 are shown on the diagram.



Source: Author

In this question you will be assessed on your written communication skills including the use of specialist scientific terms.

Name the point P in the diagram.

_____

State the distances you would record to verify the Principle of Moments.

_____

Using the symbols on the diagram, state how you would calculate the anticlockwise moment.

_____

State a unit for a moment.

_____

State fully, in words, the Principle of Moments.

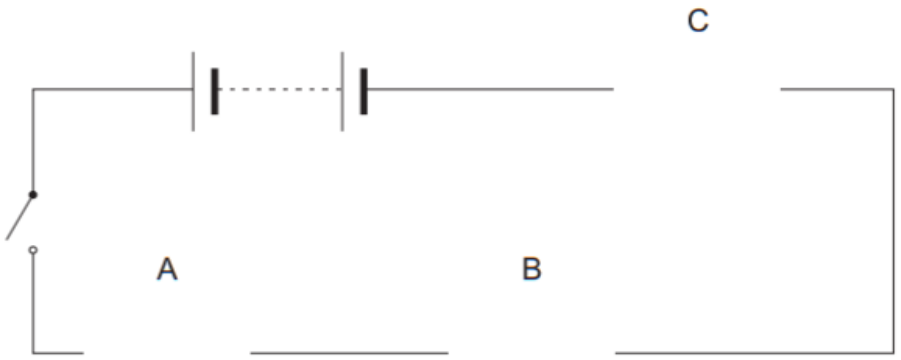
_____

_____

_____ [6]

A student carries out an investigation into how the current through a resistor depends on the voltage across it.

An incomplete circuit is shown.



Source: Author

(a) (i) In the gap A insert the symbol for the resistor. [1]

(ii) In the gap B insert the symbol for the component which measures one of the quantities needed in this investigation. [2]

(iii) In the gap C insert the symbol for the component to allow the current to be varied. [1]

(iv) What name is given to this component?

Name of component _____ [1]

(v) Add a further component, using the symbol, to measure the other quantity needed in this experiment. [2]

(vi) During this experiment one quantity should be kept constant.
What is this quantity and how do you ensure that it is kept constant?

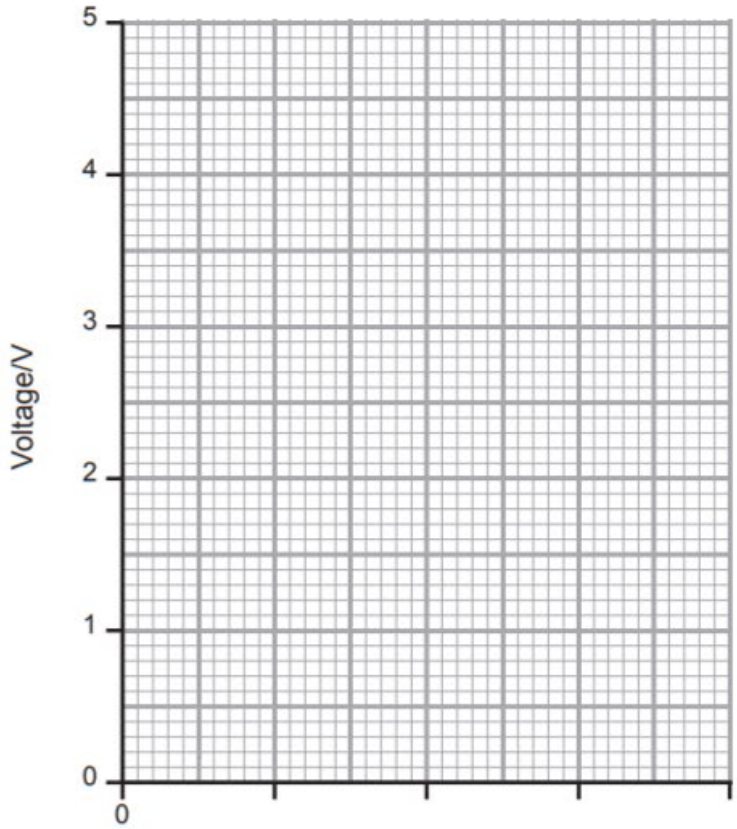
Quantity _____

How it is kept constant _____ [2]

This experiment is repeated but this time the resistor is replaced by a filament lamp. The following values were obtained.

Voltage/V	Current/A
0.0	0.0
0.4	0.1
1.2	0.2
2.4	0.3
5.0	0.4

You are asked to plot a graph of voltage (vertical axis) against current (horizontal axis).



(b) (i) Choose a suitable scale for the horizontal axis and label it. [2]

(ii) Plot the points. [2]

(iii) Draw the curve of best fit. [1]

(iv) By first using your graph to find the current, calculate the resistance of the lamp when the voltage across it is 4 V.
Give your answer to one decimal place.

You are advised to show your working out.

Resistance = _____ Ω [4]