cea
Rewarding Learning

Centre Number

Candidate Number

Double Award Science: Physics

Unit 7 Practical Skills
Booklet B
Foundation Tier

MV18

[GDW74]

FRIDAY 14 JUNE, MORNING

Time

30 minutes, plus your additional time allowance.

Instructions to Candidates

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
You must answer the questions in the spaces provided.
Do not write on blank pages.
Complete in black ink only.
Answer **all** questions.

## Information for Candidates

The total mark for this paper is 35.
Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in Question **2**.

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1 A student investigates how much gravitational potential energy is transferred to his body when he runs up a flight of stairs.
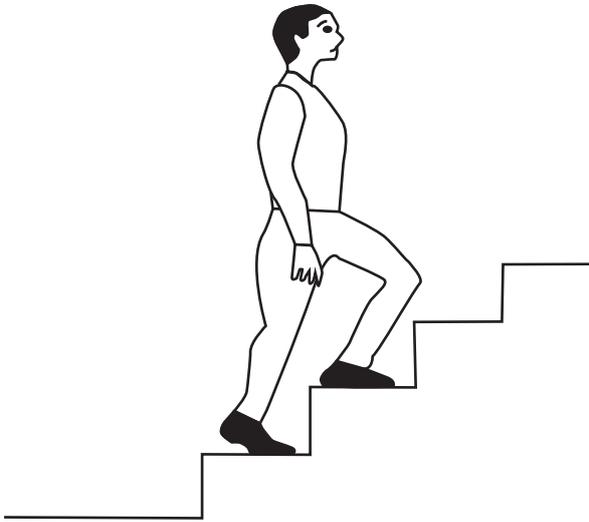
(a) Name two measurements and the apparatus used to take them, so that the gain in gravitational potential energy can be calculated.   [4 marks]
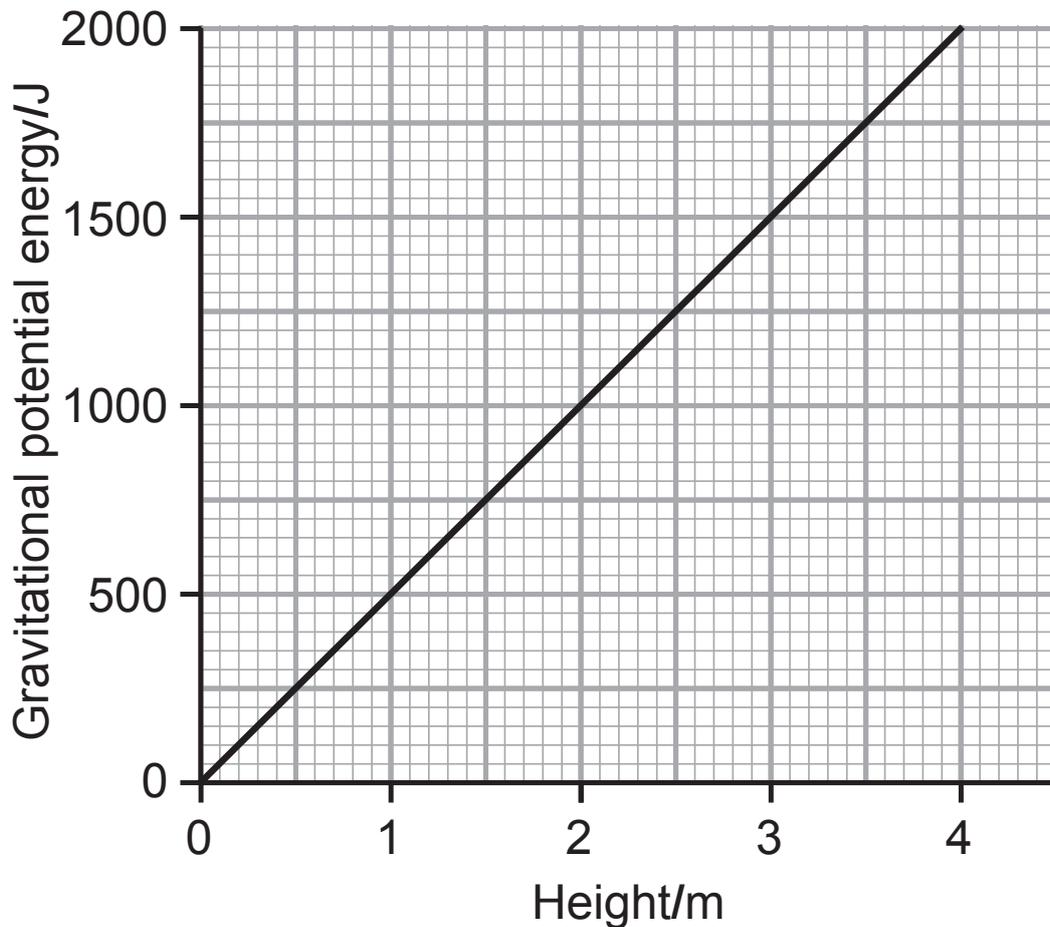
1. Measurement: _____

Apparatus used: _____

2. Measurement: _____

Apparatus used: _____

3

[Turn over

The graph below shows how his gravitational potential energy changes as he runs up the stairs.

(b) (i) Use the graph to decide if his gravitational potential energy is directly proportional to the height.
[2 marks]

Circle the correct response.   YES   NO

Give two reasons for your answer.

1. _____

2. _____

(ii) Use the graph to find the height when he has a gravitational potential energy of 1250 J.   [2 marks]

Show your evidence on the graph.

Height = _____ m

(iii) Use the gravitational potential energy of 1250 J and your answer to part **(ii)** to calculate his mass. Include the unit with your answer.   [4 marks]

You are advised to show your working out.

Mass = _____

2 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.
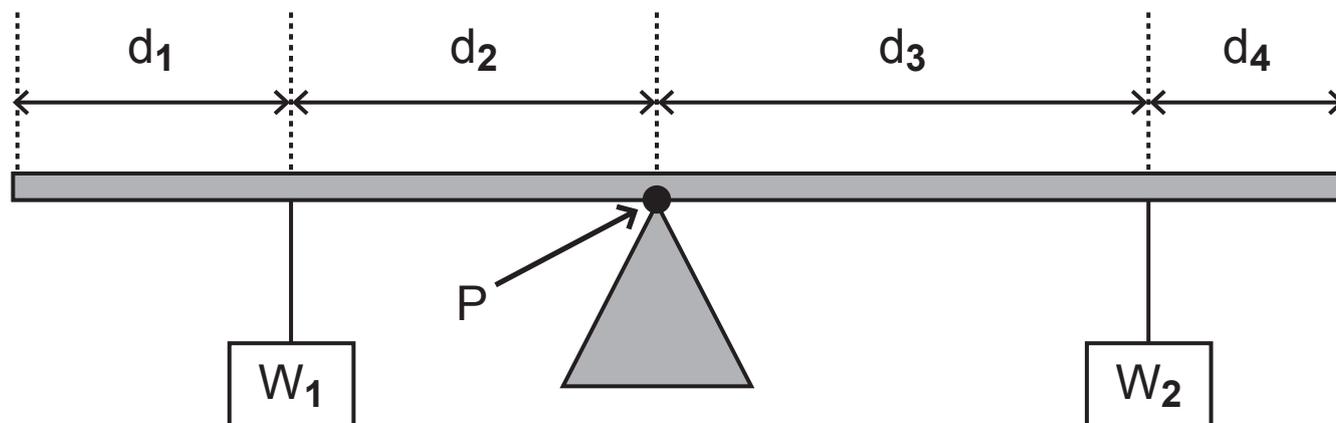
In this question you will be assessed on your written communication skills including the use of specialist scientific terms. [6 marks]

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.

_____

_____

_____

7

[Turn over

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3 A student carries out an investigation into how the current through a resistor depends on the voltage across it.
An incomplete circuit is shown.
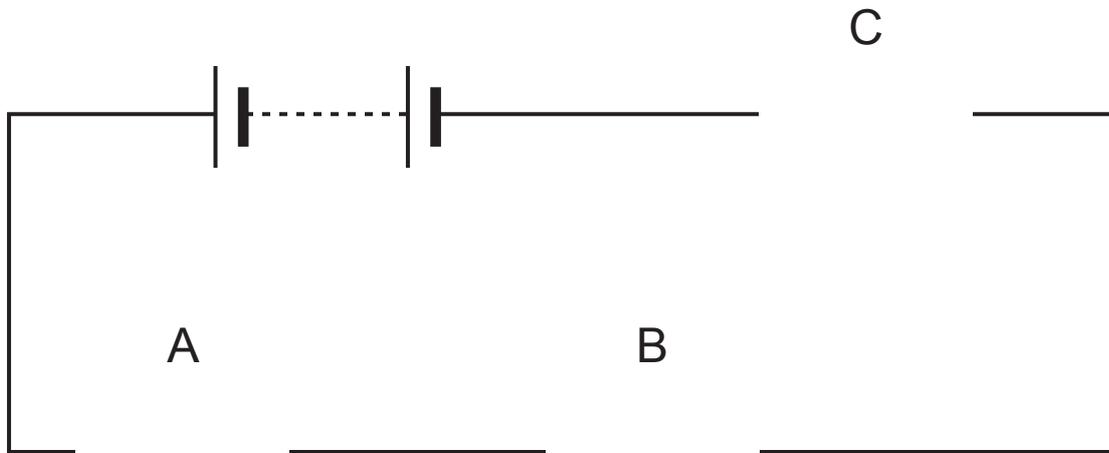
(a) (i) In the gap A insert the symbol for the resistor.
[1 mark]

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

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

(iv) What name is given to this component?   [1 mark]

Name of component _____

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

The results obtained in the experiment are shown in the table.

Voltage/V	Current/A
1.0	0.2
2.0	0.4
3.0	0.6
4.0	0.8
5.0	1.0

Current/A

10
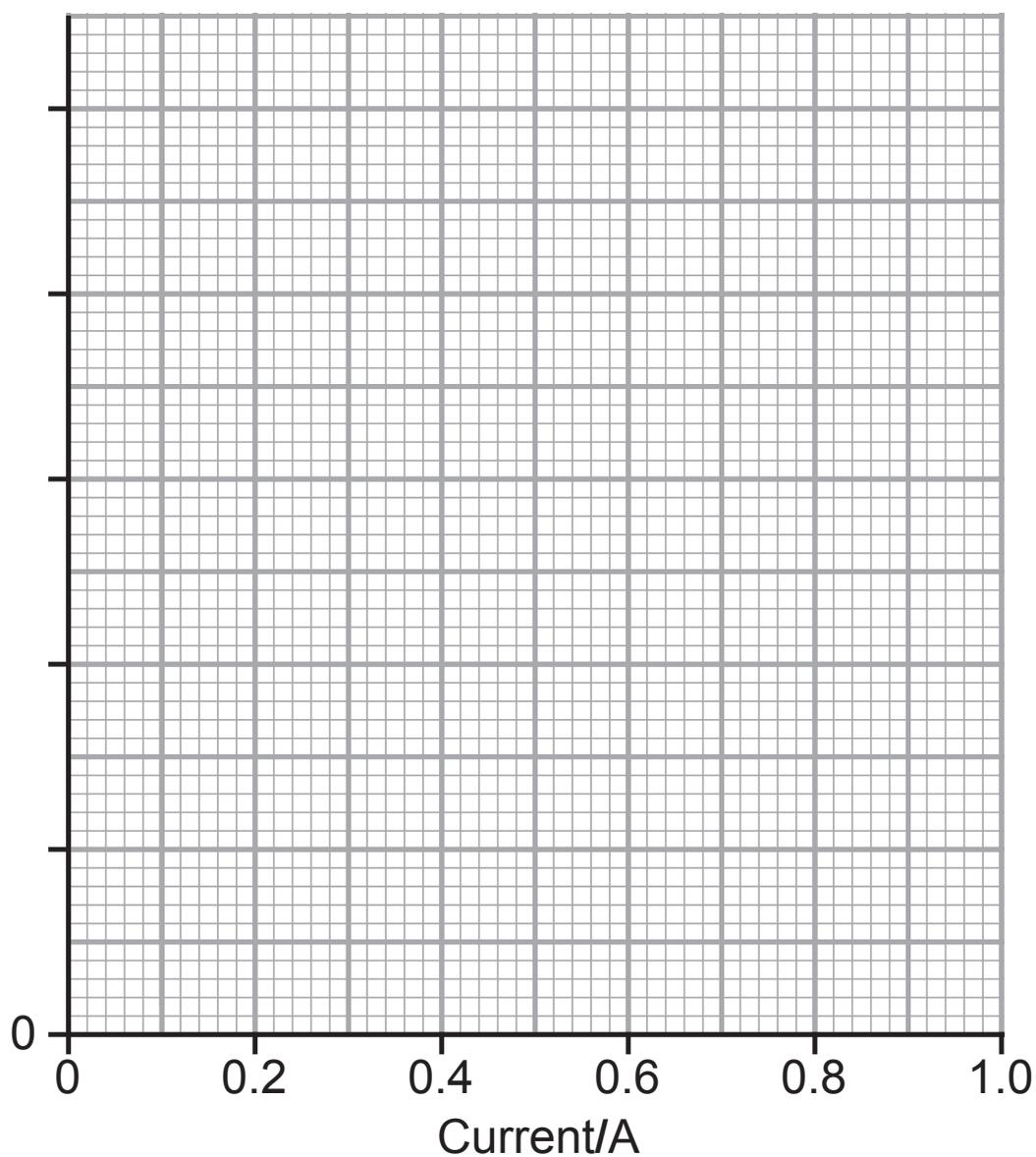
You are asked to plot a graph of voltage (vertical axis) against current (horizontal axis).

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

(ii) Plot the points.   [2 marks]

(iii) Draw the best fit line.   [1 mark]

(iv) Using the graph find the voltage if a current of 0.7 A is flowing through the resistor.   [1 mark]

Voltage = _____ V

(v) Calculate the resistance of the resistor when a current of 0.4 A is flowing through it.   [4 marks]

You are advised to show your working out.

Resistance = _____ Ω

_____

THIS IS THE END OF THE QUESTION PAPER

_____

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