

Gateway Science Physics A

J249/01 Physics A P1-P4 and P9 (Foundation Tier)

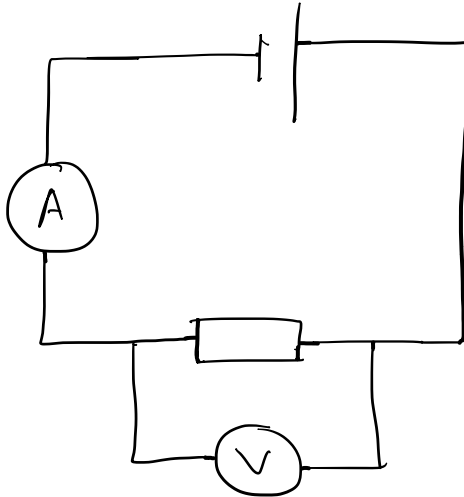
Question Set 22

22

A student finds a resistor which has no markings on it.

The student uses a voltmeter, an ammeter and a cell to find the resistance of the resistor.

- (a) Draw a circuit diagram to show how the student could set up this apparatus to find the resistance of the resistor.



- (b) In the experiment the current is 0.15 A and the potential difference is 2.0 V. [3]

potential difference = current × resistance

Calculate the resistance of the unknown resistor.

Show your working.

Record your answer to **3** significant figures.

$$R = \frac{V}{I} = \frac{2}{0.15} = \frac{40}{3} = 13.\dot{3} \approx 13.3 \text{ (3sf)}$$

Answer = 13.3 Ω

[3]

- (c) The student repeats the experiment with different potential differences and currents.

Look at the results.

Potential difference (V)	Current (A) (Attempt 1)	Current (A) (Attempt 2)	Current (A) (Attempt 3)	Mean current (A)
2.0	0.15	0.14	0.16	0.15
4.0	0.31	0.31	0.31	0.31
6.0	0.44	0.44	0.38	0.44
8.0	0.60	0.62	0.58	0.60
10.0	0.74	0.75	0.73	0.74

There is an anomaly in the results.

- (i) Write down the anomaly from the table.

0.38

[1]

- (ii) How did the student deal with the anomaly?

removed the anomaly

[1]

(not include anomaly when calculating the mean)

Total Marks for Question Set 22: 8

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