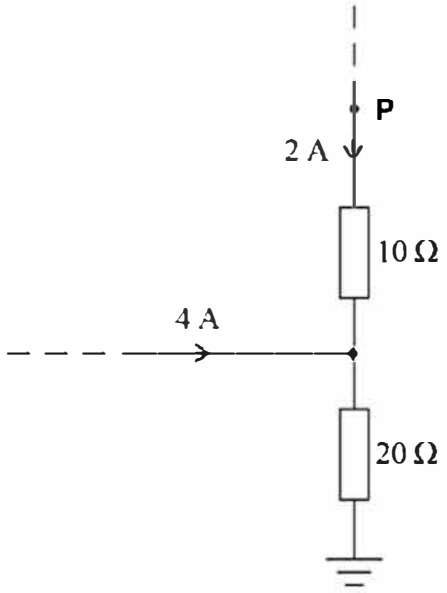
Do not write outside the box

2 3 The diagram shows part of a circuit and the currents in the circuit.



What is the potential difference between point **P** and earth?

[1 mark]

A 60 V ○

B 100 V ○

C 120 V ○

D 140 V ○

2 4 A voltmeter has a resistance of 4.0 kΩ and reads 1.0 V for every scale division on the meter.

A power supply of emf 20 V and negligible internal resistance is connected across this voltmeter and a resistor in series. The voltmeter reads two divisions.

What is the value of the resistor?

[1 mark]

A 44 kΩ ○

B 36 kΩ ○

C 4.4 kΩ ○

D 3.6 kΩ ○

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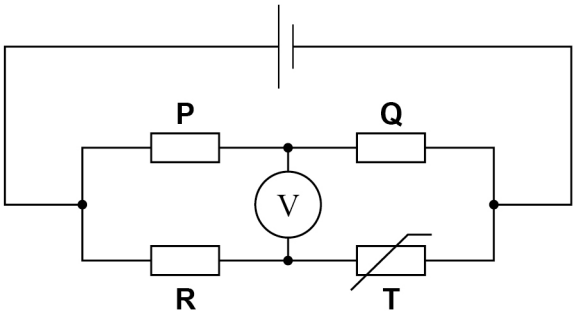
2 7 In the circuit below, the voltmeter reading is zero.



When the temperature of the thermistor **T** is increased, the voltmeter reading changes.

Which change to the circuit will restore the voltmeter to zero?

[1 mark]

A a reduction in the emf of the cell ⬭

B a reduction in the resistance of **P** ⬭

C an increase in the resistance of **Q** ⬭

D a reduction in the resistance of **R** ⬭

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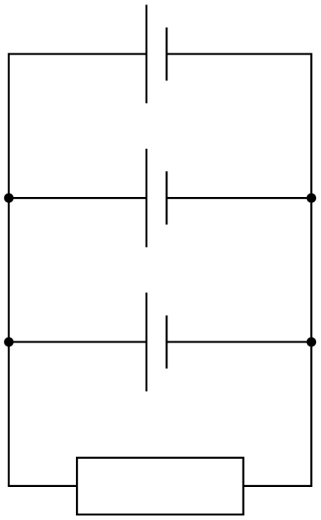
2 8 A resistor of resistance R and three identical cells of emf E and internal resistance r are connected as shown.



What is the current in the resistor?

[1 mark]

A $\frac{3E}{(3R+r)}$ ⬭

B $\frac{9E}{(3R+r)}$ ⬭

C $\frac{E}{R}$ ⬭

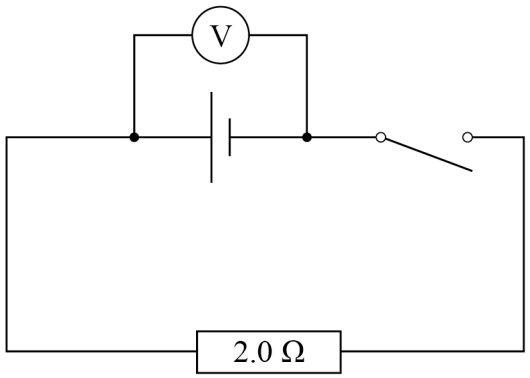
D $\frac{3E}{R}$ ⬭

Turn over for the next question

Do not write outside the box

2 9 In the circuit, the reading of the voltmeter is V.

When the switch is closed the reading becomes $\frac{V}{3}$.



What is the internal resistance of the cell?

[1 mark]

A $0.33\ \Omega$ ⬭

B $0.67\ \Omega$ ⬭

C $4.0\ \Omega$ ⬭

D $6.0\ \Omega$ ⬭

25

END OF QUESTIONS