

Resistance and how Ohm linked v, i and r

Grade 8 science (Year 9 · Class 8) · Test

Name: _____ Date: _____ Class: _____ Mark: ____ / 20

This test lasts 45 minutes and is worth 20 marks. Show the formula, the substitution and the answer with a unit in every calculation. Convert mA and k Ω before you calculate.

Level: Grade 8 science (Year 9 · Class 8) · **Curriculum:** MS-PS2-3

Time: 45 minutes · 8 questions · Total: 20 marks · Calculator allowed

Question 1 Meters (2 marks)

- State how an ammeter is connected to a component. (1 mark)
- State how a voltmeter is connected. (1 mark)

Question 2 Find the current (3 marks)

A 45 Ω resistor is connected to a 9.0 V battery.

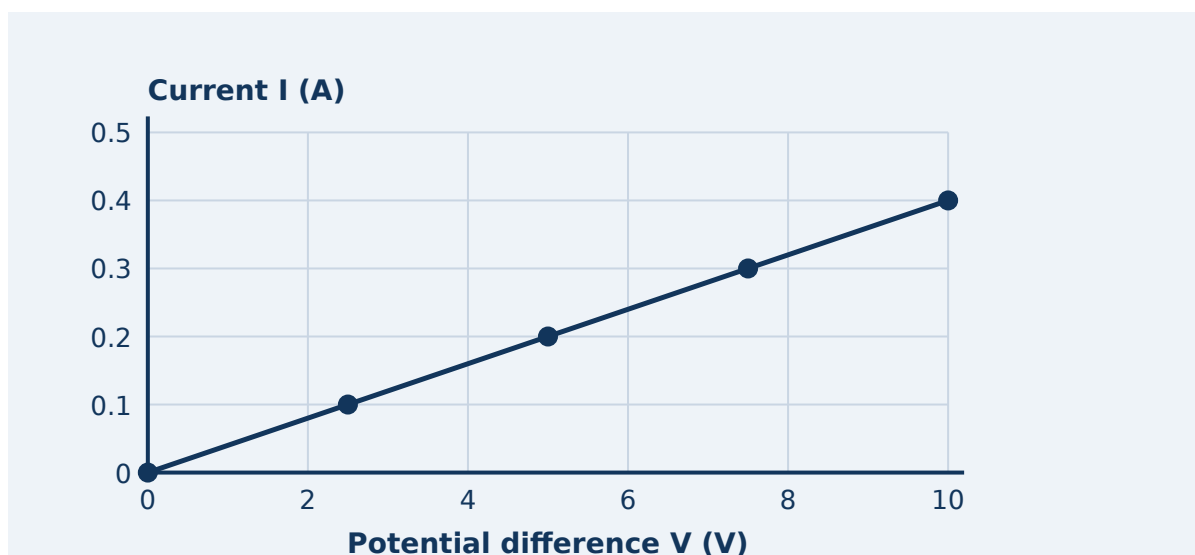
- Calculate the current. (2 marks)
- The resistance is doubled with the same battery. Calculate the new current. (1 mark)

Question 3 Unit conversion (2 marks)

- Convert 330 mA to A. (1 mark)
- Convert 2.2 k Ω to Ω . (1 mark)

Question 4 Reading a graph (3 marks)

The graph shows readings for a resistor.



Current against potential difference for a resistor.

- Calculate the resistance. (2 marks)
- Use the graph to find the current at 6.0 V. (1 mark)

Question 5 Filament lamp (3 marks)

- Explain why the I-V graph of a filament lamp is a curve and not a straight line. (3 marks)

Question 6 An LED resistor (3 marks)

An LED needs 2.0 V and passes 0.020 A. It is in series with a resistor on a 6.0 V supply.

- Calculate the potential difference across the resistor. (1 mark)
- Calculate the resistance needed. (2 marks)

Question 7 Wet hands (2 marks)

- Explain why touching a mains wire with wet hands is more dangerous than with dry hands. (2 marks)

Question 8 Wire resistance (2 marks)

- State two ways of lowering the resistance of a metal wire. (2 marks)