

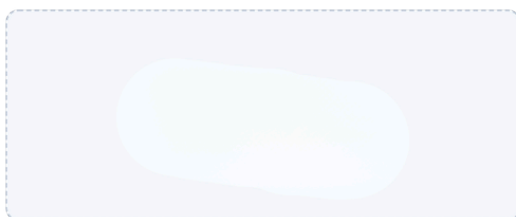
Current, Resistance and Potential Difference

AQA GCSE Physics · Electricity

Resistance of a Wire REQUIRED PRACTICAL

Aim: investigate how the **length** of a wire (kept at constant temperature) affects its **resistance**.

Apparatus — tick each item as you add it to your circuit



Use these to draw your circuit:

- | | |
|--|------------------------------------|
| ☐ cells | ☐ switch |
| ☐ ammeter | ☐ voltmeter |
| ☐ wire (under test) | ☐ ruler |
| ☐ variable resistor | |

Method — fill in the gaps

1. Measure the _____ with an _____ connected in _____.
2. Measure the _____ with a _____ connected in _____.
3. Connect the crocodile clips across _____ cm of wire, measured with a _____.
4. Calculate the resistance: $R = \frac{V}{I}$ _____
5. Increase the length by _____ cm and repeat. _____, until the wire is 100 cm long.

Safety & accuracy — fill in the gaps

Safety: _____ the switch between readings so the wire does not get _____.

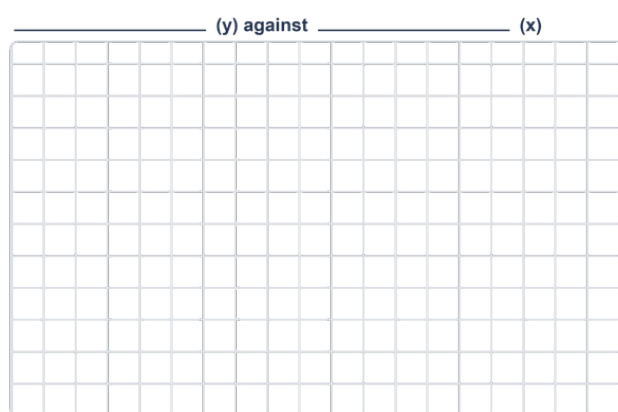
Accuracy: open the switch between readings so the wire stays at a _____, which could _____ your fingers.

Accuracy: adjust the _____ so there is always the same _____ through the wire.

Results

length / cm	p.d. / V	current / A	resistance / Ω

Graph



Conclusion

SENTENCE STARTER

The _____ is directly proportional to the _____, because the graph is a **straight line through the origin**.

Evaluation

If the line does **not** pass through the origin, there is a _____ error.

Reduce the length of the _____ to reduce this error and make the results more _____.

Resistors

AQA GCSE Physics · Electricity

Resistors

Resistance is constant for an ohmic conductor (when the temperature is kept constant), but varies for other resistors.

Formula in words

Formula in algebra

How to describe how resistance changes

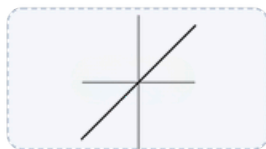
For each mark: **voltage / light intensity / temperature** — **current** — **resistance**

1 Set up the circuit.

2 Increase the **voltage**, **temperature** or **light intensity**.

3 Describe the change in **current**, then the change in **resistance**.

a Describe how the resistance is affected by the voltage. [2 marks]



Draw the circuit symbol

Component: _____

b Explain how the resistance is affected by the voltage. [3 marks]



Draw the circuit symbol

Component: _____

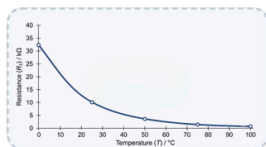
c Describe how the resistance affects the current. [2 marks]



Draw the circuit symbol

Component: _____

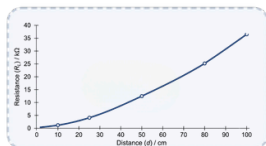
d Describe how the temperature affects the resistance. [2 marks]



Draw the circuit symbol

Component: _____

e Describe how the light intensity affects the resistance. [2 marks]



Draw the circuit symbol

Component: _____

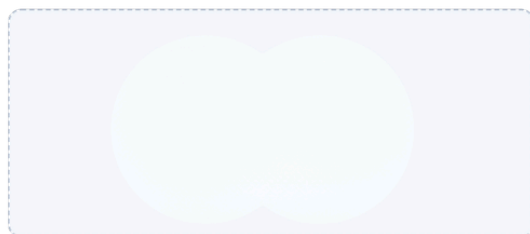
Resistors

AQA GCSE Physics · Electricity

Resistance of a Thermistor

Aim: investigate how the **temperature** of a thermistor affects its **resistance**.

Apparatus — tick each item as you add it to your circuit



Use these to set up the experiment:

- | | |
|--|--------------------------------------|
| ☐ cell | ☐ switch |
| ☐ thermistor | ☐ ammeter |
| ☐ voltmeter | ☐ thermometer |
| ☐ beaker of water + heater
(to change the temperature) | |

Method — fill in the gaps

1. Measure the _____ with an _____ connected in _____.
2. Measure the _____ with a _____ connected in _____.
3. Put the thermistor in a beaker of water and measure the _____ with a _____.
4. Calculate the resistance: $R = \text{_____}$
5. Heat the water and take readings every _____ °C.

Safety & accuracy — fill in the gaps

Safety: take _____ with the hot water and heater — do not touch the hot _____.

Accuracy: _____ the water so the temperature is even before taking a reading.

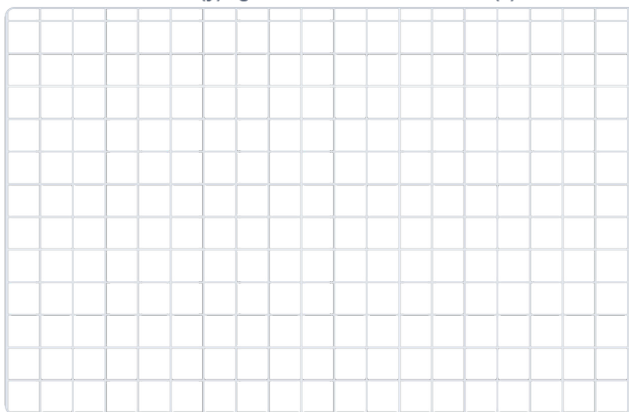
Accuracy: use a _____ current so the thermistor does not _____ itself up.

Results

temperature / °C	p.d. / V	current / A	resistance / Ω

Graph

_____ (y) against _____ (x)



Conclusion

SENTENCE STARTER

As the temperature increases, the resistance of the thermistor _____.