



# Circuits - the basics - workbook

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Q1 Use the words in the box to fill in the gaps. Use each word once only.

- a) The flow of electrons round a circuit is called the current.
- b) Voltage is the force that pushes the current round the circuit.
- c) If you increase the voltage, more current will flow.
- d) If you increase the resistance, less current will flow.

more  
voltage  
resistance  
less  
current  
force

I don't like you to think of voltage as a force - it is not one. It is not measured in newton.

It is an 'electrical slope' that makes a force act on charged particles - but at GCSE they simplify it a bit - and that causes problems at a higher level.

For GCSE 'play the game' and give them what they want!

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Q2 Match up these items from a standard test circuit with the correct description and symbol.

ITEM	DESCRIPTION	SYMBOL
Cell	The item you're testing.	
Variable Resistor	Provides the voltage.	
Component	Used to alter the current.	
Voltmeter	Measures the current.	
Ammeter	Measures the voltage.	

The component symbol here as a resistor symbol - all components have resistance so if you are not sure what it is this is the best symbol to use!

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Q3 Write down:

- a) the unit of:
  - i) current Amps (A) ii) voltage Volts (V) iii) resistance Ohms (Ω)
- b) two ways of **decreasing** the current in a standard test circuit:
  1. Increase the resistance by adding a resistor or adjusting the variable resistor
  2. Decrease the voltage by reducing the power supply voltage or voltage of the battery.

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Q4 Indicate whether these statements are true or false. Write out a correct version of the false statements.

- |   |                                     |                                     |
|---|-------------------------------------|-------------------------------------|
|   | True                                | False                               |
| a) Current flows from positive to negative.                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| b) An ammeter should be connected in parallel with a component. | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| c) Items that are in series can be in any order.                | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| d) A voltmeter should be connected in series with a component.  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

An ammeter should be connected in series with the component it is measuring the current through.

A voltmeter should be connected in parallel with the component it is measuring the potential difference (voltage) across.

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