

# Electromagnets

## 1. Voltage and resistance

### CONCEPT 1

### TEST YOURSELF

## ELECTRIC CIRCUITS

### KNOW

- Q1 If pencil lead is placed in a circuit with a light bulb, the bulb lights up. What conclusion can you draw about this material?
- Q2 Draw a circuit diagram for a circuit with one cell and three bulbs.
- Q3 Why is it important to represent components with symbols?

### APPLY

Current is the rate of flow of charge (electrons) in the circuit, and is given the symbol,  $I$  (uppercase  $i$ ). It is measured by an ammeter in amperes (A), after the French scientist Andre-Marie Ampere.

Models and analogies are often used to explain circuits. One analogy is to compare electric current to water flowing in a stream. The charges are the water particles, and the current is the flowing stream.

Another analogy used to represent current is that of a convoy of coal trucks. The trucks represent the charged particles, the movement of the trucks represents the current, and the coal they carry represents the energy they transfer.



- Q4 Using the water analogy and then the coal truck analogy, draw diagrams to show the difference between a low current and a high current.
- Q5 Which analogy is better at explaining that current transfers energy to different components? Explain your answer.

### EXTEND

- Q6 Create your own model and analogy to help explain and understand electric circuits.