

### Key Knowledge:

Everything is made of tiny particles. These particles may have positive or negative charges. Electricity is the presence or flow of charged particles.

All materials contain negatively-charged particles called electrons. In metals, the electrons are free to move which means that they are good conductors. If there is a complete circuit, a battery can push electrons all around it. This is an electric current. We use electric currents to control and operate devices.

An electric current is the flow of electrons around the electrical circuit. When scientists study electrical circuits, they use symbols to represent the different components of a circuit.

Circuits are all around us: in our televisions, mobile phones and toasters.

A series circuit is one in which there is only one pathway for the electrical current to travel. The components are arranged one after the other in a single pathway.

A parallel circuit offers more than one pathway for the electrical current to follow.

A switch is a component in a circuit which completes or breaks the circuit, controlling whether or not current flows.

A cell provides energy to the circuit. The number of cells can be increased which will increase the amount of energy in that circuit.

### Possible Experiments:

- What happens to the brightness of a bulb when the number of cells is increased?
- What happens in a series or parallel circuit if a bulb breaks?

### Key Vocabulary:

Series circuit – a circuit made from only one loop.

Parallel circuit – a circuit which has more than one route for the current to take.

Current – the amount of charge flowing per second. The flow of electrons around a circuit.

Potential difference – the 'force' used to move electrons around a circuit. The change in energy across a component.

Resistance – how easy or hard it is for the charge to move through a component.

Circuit symbol – a picture which represents a component in a circuit.

Battery – a group of two or more cells.

Bulb – a component that lights up when current flows through it.

Resistor – a component which reduces the amount of current in a circuit.

Ammeter – a measuring device which measures current.

Conductor – materials which allow electricity to pass through them easily.

### Diagrams and Symbols:

