

The Knowledge

Supporting the National Curriculum



Knowing More Remembering More Learning More

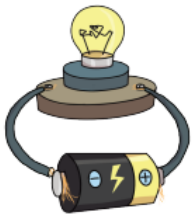
Electricity

ARDLEIGH GREEN
JUNIOR SCHOOL

Year 4
Science

Circuits and Switches

A circuit contains a **battery (cell)**, **wires** and a **component** that requires electricity to work (**bulb, motor or buzzer**). Electrical current **flows** through the **wires** from the **battery (cell)** to the **bulb, motor or buzzer**. A **switch** can **break** or **reconnect** a circuit. A switch **controls** the **flow** of the electrical current around the circuit. When the switch is off, the current cannot flow.



paddle switch



push button switch



pull switch

Key Facts

Lots of **appliances** around our house use **electricity** to work. Most big appliances in our house have to be plugged in. These are powered by **mains power**. Some smaller appliances can be powered by **batteries**. Some appliances have batteries that need to be charged by mains power.



Battery Power

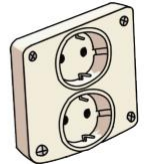
Battery powered appliances are **portable** which means you can use it anywhere without it having to be plugged into a plug socket. There are different types of battery for different appliances.



Mains Power

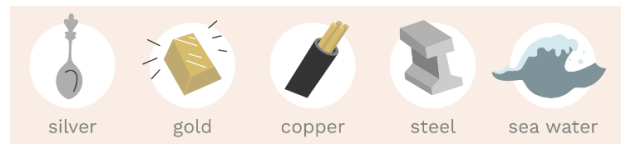
Mains power is produced mainly in a **gas, coal or nuclear** power station. **Wind turbines, solar panels** and **hydroelectric dams** are also used to produce mains power but are not used as often.

The electricity then travels **from the power stations to our houses** through **overhead wires and pylons**. We use the electricity in our house by plugging the appliance into a plug socket. Finally, the electricity enters the appliance's electrical circuit through the **wires**.



Conductors and Insulators

Materials that **allow electricity to pass** through to create a complete circuit are called **electrical conductors**.



Materials that **do not allow electricity to pass** through and do not complete a circuit are called **electrical insulators**.



Key Vocabulary

electricity - energy that powers electrical appliances
appliance - a **device** or piece of **equipment** that has been made to perform a specific **task**
batteries - **containers** made of **cells** in which **chemical energy** is **converted** into **electricity**
circuit - a **pathway** that electricity **flows** around
components - the **parts** of a **circuit**
current - the **flow** of **electricity**
bulb - the **glass case** that contains the **filament** of an electric lamp
conductor - electrical conductors are materials which **allow electricity to flow** through them easily
insulator - materials that **do not let electricity pass** through them easily
switch - a device which **builds and breaks the connection** in an electric circuit
mains power - electricity provided by **power stations**

Test Yourself

- How can we stay safe when using electrical appliances?
- What is the difference between mains powered and battery powered appliances?
- What is a simple circuit and what components can be used?
- What is the difference between a closed and broken circuit?
- What are conductors and insulators?
- How do switches affect a circuit?
- How can electrical components change within a circuit?