



Electricity – a form of energy carried by wires

Circuit – a complete loop which an electric current can flow around

Battery/cell – a device that stores electrical energy as a chemical

Bulb – electrical device which gives out light

Buzzer – electrical device which makes sound

Switch – a control for an electrical device used to turn it on and off

Insulator – does not conduct electricity

Conductor – lets electricity pass through it

Generate – to make or produce

Renewable – source of energy which will not run out

Non-renewable – a source of energy that will run out eventually

Appliances – equipment or a device which is designed to do a particular job

Wire – long thin piece of metal used to carry electric current

By the end of this unit, you will be able to identify appliances that run on electricity, construct a simple series electrical circuit. You will identify whether a lamp will light in a complete circuit and recognise that a switch opens and closes a circuit. You will recognise common insulators and conductors.

Important information

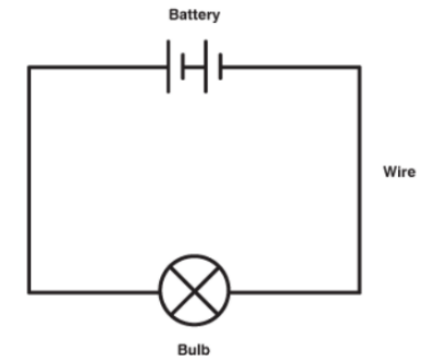


Many everyday **appliances** around our home use **electricity** to work. Some appliances use mains electricity (are plugged into a socket) and some, usually smaller, appliances use **batteries** to make them work.

Mains power is produced mainly in gas, coal or nuclear power stations. This is a **non-renewable** source of energy which means it will eventually run out. Electricity can also be produced from **renewable** sources of energy such as solar, geothermal, hydro and wind.



Electricity can only flow around a complete **circuit** that has no gaps. There must be **wires** connected to both the positive and negative end of the power supply/battery. **Switches** can be used to open or close a circuit. When off, a switch 'breaks' the circuit to stop the flow of electricity. When on, a switch 'completes' the circuit and allows the electricity to flow.



Some materials let electricity pass through them easily. These are known as **conductors**. Many metals are good electrical conductors such as copper, iron and steel.

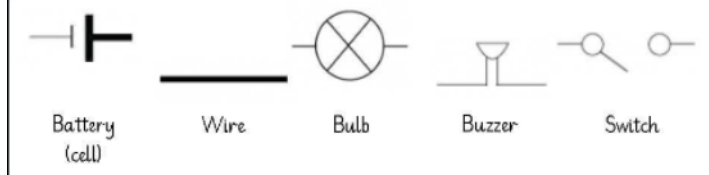


Some materials do **not** let electricity pass through them. These materials are known as **insulators**. Plastic, wood, glass and rubber are good electrical insulators.



Below are the conventional circuit symbols used to draw an electrical circuit which you will learn more about in UKS2:

Electrical Components – Circuit Diagrams



Science – Electricity

Year Four

By the end of this unit, you will be able to identify appliances that run on electricity, construct a simple series electrical circuit. You will identify whether a lamp will light in a complete circuit and recognise that a switch opens and closes a circuit. You will recognise common insulators and conductors.

	Lesson Question	What you will learn	Learning Review
1	What is an electrical appliance? How can we classify them? Where does our mains electricity come from?	Identify common appliances that run on electricity. Classify them in different ways. Where does our mains electricity come from? Know the difference between renewable and non-renewable sources of energy.	
2	Can you identify electrical dangers in the home? Can you construct a working circuit?	You will learn how to work safely with electricity. Electrical safety in your home - Switched on Kids Explain electrical safety in the home. Using a range of electrical components, explore and construct a simple series circuit to light a bulb/sound a buzzer. Draw and label your working circuit.	
3	Can you identify whether, or not, a lamp will light in different circuits?	You will predict whether, or not, a lamp will light from a circuit drawing. You will understand what makes a complete circuit and be able to explain why a lamp will or will not light in reasoning problems. Generate questions/observe patterns e.g. will the circuit work with 2 lamps? True/false statements	
4	Which STEM career involves electricity? What is a switch? Can you identify which circuits will light a lamp?	Learn about careers involving electricity. 'A scientist just like me': Helen Mason, Solar Scientist. Know what a switch is and that they open and close a circuit. You will be able to explain whether, or not, a circuit is complete and will light a lamp.	
5	What are conductors and insulators?	Understand what a conductor and insulator is and what materials make good conductors. You will investigate and classify materials into conductors and insulators and identify which would make a good switch in a circuit.	
6	How can I use my knowledge of electrical circuits to make a device? Build a Brushbot STEM Activity (sciencebuddies.org)	Real life context: letter from B. Toys: new toy bot ideas which use recycled materials. Construct an electrical simple series circuit to make a bot work. Use knowledge of switches and incorporate into game. (ideas – junk/brush/art bots) Explain how your bot and circuit works with a switch	

