



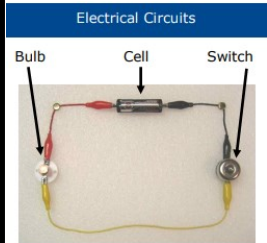
Year 4 Spring 2 Electricity

Sustainability Links—Energy Science strand—Physics

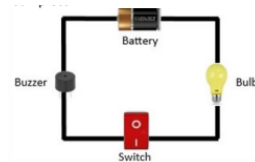
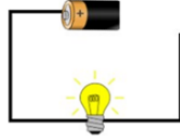
Vocabulary

Word	Definition
Battery	A battery is a collection of cells.
Bulb	A device made of rounded glass used to create electric light.
Cell	A cell is a single unit of electricity.
Circuit	Electric circuits are paths for transmitting electrical current or moving electricity.
Electrical Conductor	Material that allows electricity to pass through.
Electricity	A form of energy used for lighting, heating, making sound and making machines work.
Electrical Insulator	Material that does not allow electricity to pass through.
Switch	Can be added to a circuit to turn a component on or off. It allows the electricity to flow or it stops it.
Electrical component	A part that combines with others to form a circuit. E.g. bulb, motor, buzzer.
Motor	A device which changes electrical energy into mechanical movement

Key Facts



The switch opens and closes the circuit. The bulb lights because the switch is



This circuit is complete so the buzzer will sound and the bulb will light.

The switch opens and closes the circuit. The bulb lights because the switch is

Conductors and Insulators

Some materials enable electricity to pass through them whilst others do not. The former are known as conductors and the latter are insulators. Conductors and insulators are chosen to make different parts of everyday objects.

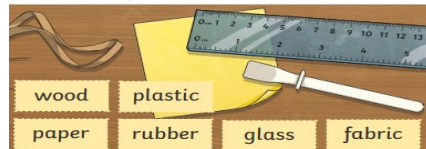
Circuits

<p>Incomplete Circuit</p> <p>There is a break in the circuit that prevents the electricity from flowing. The components will not work.</p>	<p>Series Circuit</p> <p>A circuit where the components are connected in a loop. Electricity flows through each component in a single pathway.</p>	<p>Complete Circuit</p> <p>Electricity can flow. The components will work.</p>
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Examples of Electrical Conductors

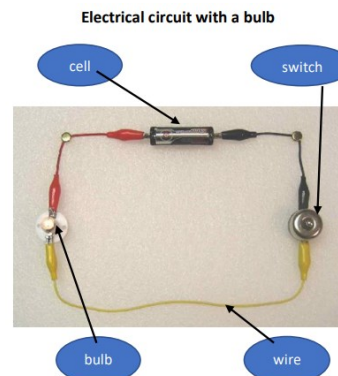


Examples of Electrical Insulators



Electrical Safety

Electricity can be dangerous if not used properly. It can cause shocks, burns and even death. There are electrical dangers both in the home and outdoors.



Appliances that run on electricity

Some plug into the mains and others run on batteries.



Significant scientist

Thomas Edison
(1847-1931)



Thomas Edison was an American inventor. He is sometimes described as America's greatest inventor. He invented the first practical incandescent light bulb.

Knowledge and Understanding:

Children will learn:

- In this module they will identify electrical appliances, distinguishing between those which are powered by mains and battery (including those with integral rechargeable batteries) and recognising that electricity can be used to produce light, sound, heat and movement.
- They will explore the production of light, sound and movement by making simple series circuits with cells, wires, bulbs, buzzers and motors, learning the names of the components. They will work mostly with single components.
- Through detailed observation and role play they will be able to describe the flow of electricity round a circuit and give reasons why some circuits do not work. They will then learn to control their circuits with switches.
- They will test materials, classify them as electrical conductors or insulators and recognise that metals are good conductors and plastics are good electrical insulators.
- Throughout this module they will learn the safe use of electrical components and the dangers of mains electricity.

Key skills and concepts:

Children will be able to:

- When working scientifically children will **make observations** and describe how circuits work using scientific language.
- They will also communicate using **labelled and annotated drawings**. Drawings are an important way for children to demonstrate their developing understanding.
- They will **plan and carry out a classifying enquiry**, recording findings using tables, Venn and Carroll diagrams and will recognise that generalisations cannot be made from small amounts of evidence.

Key Questions

What common appliances use electricity?

How can we draw and build electrical circuits?

How can we recognise a complete circuit?

What materials are conductors or insulators of electricity and is there a pattern?

How does a conductor or insulator affect a circuit?

How can we keep safe with electricity?

What is energy?

How can we reduce our energy usage?

How can we connect the quiz board?

Who is Thomas Edison? Who is Ben Franklin?