Prior Knowledge

What you should know.

Common appliances that run on electricity.
The names of parts of a simple series electrical circuit: including cells, wires, bulbs, switches and buzzers.
Whether or not a lamp will light in a simple series circuit.
A switch opens and closes a circuit.

Vocabulary Dozen

battery	A container consisting of one or more cells that is used for generating electrical current.
bulb	Glass globe that provides light by passing an electrical current through a filament.
cell	A device that converts chemical energy into electrical energy.
circuit	A complete and closed path around which electrical current can flow.
circuit diagram	Graphical representations of electrical circuits.
conductor	A material that allows electricity to pass though easily.
current	The flow of electricity.
insulator	A material in which electric current does not flow freely.
motor	A machine that provides motive power.
switch	A device for making and breaking the connection in a circuit.
symbol	A pictogram used to represent various devices or functions, such as wires, batteries, bulbs and switches.
voltage	the force that makes electricity flow through a wire.

Did you know?

Electricity was **discovered** not **invented**. Since electricity is a natural force that exists in our world, **it didn't have to be invented**. It did, however, have to be discovered and understood. It was not discovered and developed by just one person – see **Key Scientists.**

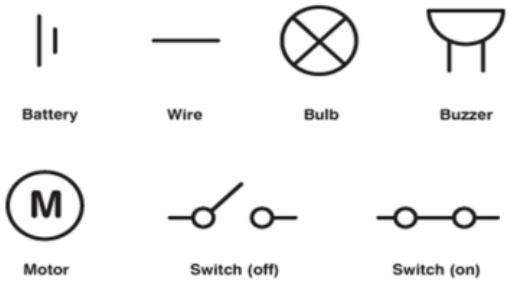
OAK CLASS

Electricity

Science

Electricity

Adding more cells to a complete circuit will make a bulb brighter. If you use a battery with a higher voltage, the same thing happens. Adding more bulbs to a circuit will make each bulb less bright. Turning a switch off (open) breaks a circuit so the circuit is not complete and electricity cannot flow. Any bulbs, motors or buzzers will then turn off as well. Circuit symbols can be used to draw simple circuit diagrams.



Key Scientists & Discoveries

Ancient Greeks knew that rubbing amber would make light objects attract to it. They thought it was a magnetic force but it was actually static electricity.
William Gilbert studied and distinguished between magnetism of metals and static electricity. He used the Greek word for amber – 'elektron' – and invented a new Latin word – electricus.
Benjamin Franklin was the first person to study electricity in depth. One of his most important findings was proving that lightning was electrical.
Alessandro Volta invented the first battery. The word **voltage** derives from his name.
Michael Faraday used Volta's discoveries and was able to make an electric current move by using a magnet inside a wired coil.
Thomas Edison invented the modern lightbulb.
Lewis Latimer worked for Edison and invented a filament which enabled Edison's lightbulb to stay lit for a long time.

DANGER!

Electricity is made at a power station and travels down large cables to houses. This kind of electricity is called **mains power** and is **very dangerous.**
Electricity can kill.
Stay away from power lines, pylons, sub stations, railway lines and old empty buildings. When experimenting with electricity **use only battery power – never mains power**.

Electricity Conductors & Insulators

Electrical Conductors

A conductor is a material that allows charges to flow easily throughout the material. Metals are often good conductors. Examples include: silver, gold, copper, steel and salt water

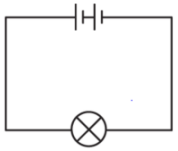
Electrical Insulators

An insulator is a material that does not allow charges to flow easily throughout the material. Examples include: rubber, glass, oil, diamond and dry wood.

A Simple Circuit

In order for electricity to flow, a circuit needs three things:

- a source of electricity
- no gaps in the circuit
- conductors.



This circuit diagram shows a circuit containing a bulb and battery. The bulb would be lit as the circuit is complete.

By changing the components in a circuit the brightness of the bulb speed of the motor, or volume of the buzzer can be varied.