

Science

Electricity

Year 4

Summer 1

## Key Knowledge

Electricity

Electricity is a form of energy that can be used to power electrical items, such as toasters, kettles, cookers, televisions and tablets. Electricity is generated using energy from natural sources, such as the Sun, oil, water and wind.

Simple Series Electrical Circuit

A complete circuit is a loop that allows electrical current to flow through wires. In order for electricity to flow, a circuit needs 3 things: a source of electricity, no gaps in the circuit and conductors. The bulb will not light in the circuit if the switch is open.

Electrical Conductors and Insulators

Electrical conductors are objects made from materials that allow electricity to pass through and create a complete circuit. For example: silver, gold, copper and steel. Electrical insulators are objects made from materials that do not allow electricity to pass through and do not complete a circuit. For example: rubber, glass and wood.

## Statutory Requirements

- Identify common appliances that run on electricity
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- Recognise some common conductors and insulators, and associate metals with being good conductors

## Key Vocabulary

Circuit	A path that an electrical current can flow around.
Circuit diagram	A visual representation of an electrical circuit using symbols to represent the electrical components.
Cell/ Battery	A device that stores energy as a chemical unit until it is needed. A cell is a single unit and a battery is a collection of cells.
Switch	An electrical component that can make or break an electrical circuit.
Bulb	A glass bulb which provides light by passing an electrical current through a filament.
Buzzer	An electrical device that makes a buzzing sound.
Current	A flow of electricity through a wire or circuit
Motor	A machine that produces motion or power for doing work.

## Pictures and Diagrams

Electrical circuit symbols

Switches can be used to open or close a circuit



Battery



Wire



Bulb



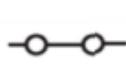
Buzzer



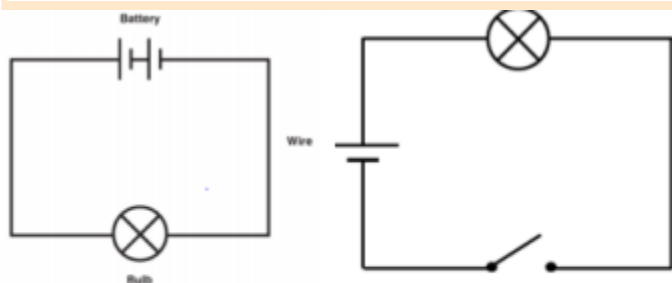
Motor



Switch (off)



Switch (on)



The bulb will not light in this circuit until the switch is closed.

## Possible Experiences

- Research how to work safely with electricity.
- Make a variety of circuits, investigating which circuits work and why.
- Name the basic parts including cell, batteries, wires, bulbs, switches, motors and buzzers.
- Investigate which materials are electrical conductors and insulators.