Sholing Junior School - Science

Topic: Electricity	Year: 4	Strand: Physics

What should I already know?

- **Electricity** is a form of **energy** that can be carried by wires and is used for heating and lighting, and to provide **power** for **devices**.
- **Sources** of light and sound may need **electricity** to work.

What I will learn

I will:

- 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.

Investigate!

We will construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use my circuits to create simple devices.

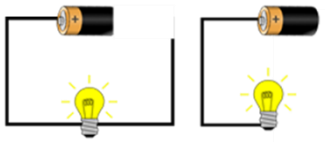
We will draw the circuit as a pictorial representation.

We might use the terms current and voltage and we will be taught about precautions for working safely with electricity.

We will work scientifically by: observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.

How does a **circuit** work?	• A complete **circuit** is a loop that allows **electrical current** to flow through **wires**. • A **circuit** contains a **battery (cell)**, **wires** and an **appliance** that requires **electricity** to work (such as a **bulb**, **motor** or **buzzer**). • The **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. This is not the same as an incomplete **circuit**.
What are **electrical conductors** and **insulators**?	• When objects are placed in the **circuits**, they may or may not allow **electricity** to pass through. • Objects that are made from materials that allow **electricity** to pass through a create a complete **circuit** are called **electrical conductors**. • Objects that are made from materials that do not allow **electricity** to pass through and do not complete a **circuit** are called **electrical insulators**.

Vocabulary

appliances	A **device** or machine in your home that you use to do a job such as cleaning or cooking. **Appliances** are often **electrical**.
battery	Small **devices** that provide the **power** for **electrical** items such as torches
bulb	The glass part of an **electric** lamp, which gives out light when **electricity** passes through it.
buzzer	An **electrical device** that is used to make a buzzing sound
cell	A synonym for **battery**
circuit	A complete route which an **electric current** can flow around. These are incomplete examples. 
component	The parts that something is made of
conductor	A substance that heat or **electricity** can pass through or along
current	A flow of **electricity** through a **wire** or **circuit**
device	An object that has been invented for a particular purpose
electricity	A form of **energy** that can be carried by **wires** and in used for heating and lighting, and to provide **power** for **devices**
energy	The **power** from **sources** such as **electricity** that makes machines work or provides heat
fuel	A substance such as coal, oil, or petrol that is burned to provide heat or **power**
generate	Cause it to begin and develop
insulator	A non-**conductor** of **electricity** or heat
mains	Where the supply of water, **electricity**, or gas enters a building
motor	A **device** that uses **electricity** or fuel to produce movement
power	**Power** is **energy**, especially **electricity**, that is obtained in large quantities from a fuel **source** and used to operate lights, heating, and machinery.
source	Where something comes from
switch	A small control for an **electrical device** which you use to turn the **device** on or off
wires	A long thin piece of metal that is used to fasten things or to carry **electric current**