



## Year 3/4 Science Knowledge Organiser: Electricity



### Subject Specific Skills

- 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.

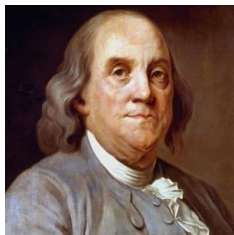
### Prior Learning

- Electricity can power appliances and other items.

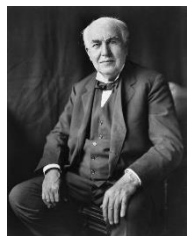
### Key Knowledge

- Lightning and static electricity are examples of electricity occurring naturally but for us to use electricity to power appliances, we need to make it.
- Coal, oil and natural gases are fossil fuels which, when burnt, produce heat which can be used to generate electricity.
- Electricity can be generated from wind power used to turn windmills and hydroelectric power from water used in dams. The Sun's rays can be converted into electricity by solar panels.
- Nuclear energy is created when atoms are split. This creates heat which can be used to generate electricity. Geothermal energy is heat from the Earth that is converted into electricity.

### Key Individual: Benjamin Franklin



### Key Individual: Thomas Edison



### Key Vocabulary

**Electricity** The flow of an electric current or charge through a material, e.g. from a power source through wires to an appliance.

**Generate** To make or produce.

**Renewable** A source of electricity that will not run out. These include solar, nuclear, geothermal, hydro and wind.

**Non-renewable** This source of energy will eventually run out and so will no longer be able to be used to make electricity. These include fossil fuels – coal, oil and natural gas.

**Appliances** A piece of equipment or device designed to perform a particular job, such as a washing machine or mobile phone.

**Battery** A device that stores electrical energy as a chemical.

**Circuit** A pathway that electricity can flow around. It includes wires and a power supply and may include bulbs, switches or buzzers.

### Key Knowledge

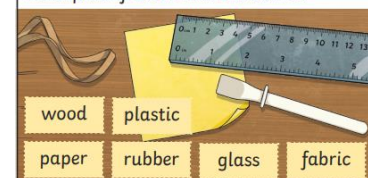
- There are two types of electricity: mains and battery.
- Switches can be used to open or close the circuit. When off, a switch 'breaks' the circuit to stop the flow of electrons. When the switch is on, the circuit is complete and the electrons are able to flow around the circuit.
- Electricity can only flow around a complete circuit.
- A conductor of electricity is a material that is made up of free electrons which can be made to move in one direction, creating an electric current.
- Electrical insulators have no free electrons and so no electric current can be made

#### Examples of Electrical Conductors



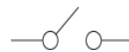
water metal

#### Examples of Electrical Insulators



wood plastic

paper rubber glass fabric



Switch



Cell



Battery



Lamp



Voltmeter



Ammeter



Resistor



Variable resistor



Motor