

# Year 6 Science Knowledge Organiser Electricity



## Prior Learning

- Identify common appliances that run on electricity
- Construct a simple series electrical circuit, identifying and naming its basic parts
- 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.

## Subject Specific Skills

- I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- I can compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
- I can use recognised symbols when representing a simple circuit in a diagram.

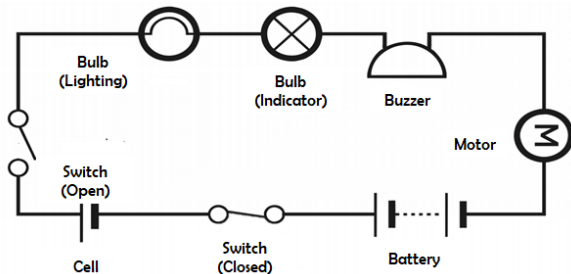
## Electricity is a type of energy

- It is used to power lots of different things, including many items that we use in everyday life.
- Electricity can flow through wires and cables, and can be stored in batteries (sometimes called cells).
- Electricity can flow in simple series electrical circuits.
- Some materials conduct electricity, and others do not (insulators).



## Circuit Diagrams

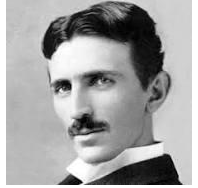
When drawing electrical circuits, you should use the standard symbols to show the different components.



## Key Vocabulary

- Amps:** How electric current is measured.
- Circuit:** The path around which an electric current circulates. An electric current will only travel around a closed, complete circuit.
- Cell/Battery:** A device that stores energy as a chemical until it is needed. A cell is a single unit. A battery is a collection of cells.
- Current:** The flow of electrons, measured in amps.
- Electrical Energy:** Energy carried by electricity. Electrons carry electrical energy as they flow through a circuit.
- Electricity:** A type of energy that consists of moving electrons. When electrons flow through a circuit an electric current is created.
- Electron:** Very small particles that travel around an electrical circuit.
- Resistance:** The difficulty that the electric current has when flowing around a circuit.
- Voltage:** The force or 'push' that makes the electric current move through the wires. The greater the voltage, the more current will flow. Voltage is measured in volts (V).

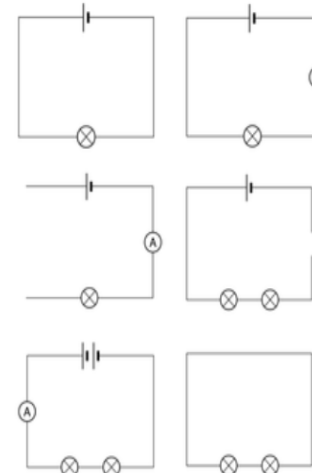
## Key Individual: Nikola Tesla



Tesla is best known for the design of modern electricity supply systems.

## Variation of Components

*When changes are made to circuits, components can function differently...*



- When switches are open or wires are removed from a circuit (so that it is no longer a closed circuit), bulbs and buzzers will turn off. You can use crocodile clips to investigate adding and removing wires.
- When more batteries or cells are added (or batteries or cells are included with a higher voltage) the brightness of bulbs and the volume of buzzers will increase.
- When more bulbs are added to a simple circuit, they will be dimmer than if there were one bulb. This is because the electricity is shared between the two bulbs. More voltage would be needed to make them brighter. You should be able to look at circuits like those on the left, and work out what would happen.

## Series Circuit

A circuit that has only one route for the current to take. If more bulbs or buzzers are added, the power has to be shared and so they will be dimmer or quieter. If just one part of this series circuit breaks, the circuit is broken and the flow of current stops.

