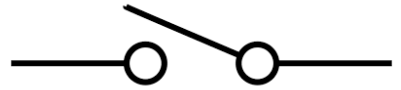




# Electricity



Vocabulary	Definition
Electricity	A form of energy resulting from the existence of charged particles such as electrons.
Circuit	A complete path through which electricity can flow.
Conductor	A material that allows electricity to flow through it easily (e.g., copper).
Insulator	A material that does not allow electricity to flow through it easily (e.g., rubber).
Voltage	The difference in electrical potential energy between two points in a circuit, measured in volts.
Current	The flow of electric charge, measured in amperes (A).
Series Circuit	A circuit in which the components are connected end-to-end, so that current flows through each.
Parallel Circuit	A circuit in which the components are connected alongside each other, allowing multiple paths for current.
Battery	A device that stores electrical energy and provides power to a circuit.
Switch	A device that can open or close a circuit, controlling the flow of electricity.
Resistance	A measure of how much a component resists the flow of electricity, measured in ohms ( $\Omega$ ).
Component	Any part used in an electric circuit, such as a resistor, bulb, or battery.
Short Circuit	A pathway that allows current to travel along an unintended route, often causing excessive current flow.
Electromagnet	A type of magnet created by an electric current, which can be turned on or off.
Fuse	A safety device that stops the electric current if it becomes too high.

## Timeline of Important Events or Concepts

- **1752:** Benjamin Franklin conducts his famous kite experiment, demonstrating that lightning is a form of electricity.
- **1800:** Alessandro Volta invents the first chemical battery, known as the Voltaic Pile.
- **1821:** Michael Faraday demonstrates the relationship between electricity and magnetism, laying the groundwork for electromagnetism.

- **1831:** Faraday discovers electromagnetic induction, which leads to the development of electric generators.
- **1879:** Thomas Edison invents the practical incandescent light bulb, bringing electricity to homes.
- **1888:** Nikola Tesla demonstrates alternating current (AC) electricity, which eventually becomes the main form of electrical power distribution.
- **1930s:** Introduction of electrical wiring systems in homes, allowing for widespread electricity usage.
- **21st Century:** Advances in renewable energy sources, smart grids, and increased understanding of electricity's impact on the environment.

### Useful and Reliable Websites

- [BBC Bitesize: Electricity](#)
- [National Geographic Kids: Electricity](#)
- [Science for Kids: Electricity](#)
- [Kids Discover: Electric Circuits](#)
- [ElectroCity](#) (An interactive game about creating and managing a power grid)

### Interesting Facts Related to Electricity

- Lightning can be five times hotter than the surface of the sun, reaching temperatures of up to 30,000 degrees Fahrenheit (16,600 degrees Celsius).
- A single bolt of lightning can contain enough energy to toast approximately 100,000 slices of bread.
- The average household appliance could use about 1,500 watts of power, which is enough to power about 15 light bulbs at once.
- Electromagnets are used in various technologies, including magnetic levitation trains and MRI machines in hospitals.
- The phenomena of static electricity can be observed when you rub a balloon against your hair and it sticks due to an electric charge.

### Endpoints: What Pupils Should Know by the End of this Topic

By the end of this topic on electricity, students should be able to:

1. Understand basic concepts of electricity, including current, voltage, and resistance.
2. Identify and describe different components of electrical circuits, including batteries, wires, switches, and bulbs.
3. Distinguish between series and parallel circuits and explain how they function.
4. Conduct simple experiments to create their own circuits, demonstrating comprehension of circuit design.
5. Explain the difference between conductors and insulators, providing examples of each.
6. Recognise the importance of safety in handling electricity and the role of devices like fuses.
7. Understand the practical applications of electricity in everyday life and its historical significance.
8. Explore renewable sources of electricity and their importance in sustainability.

