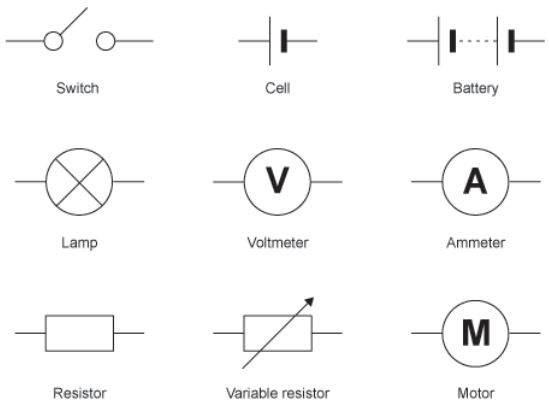
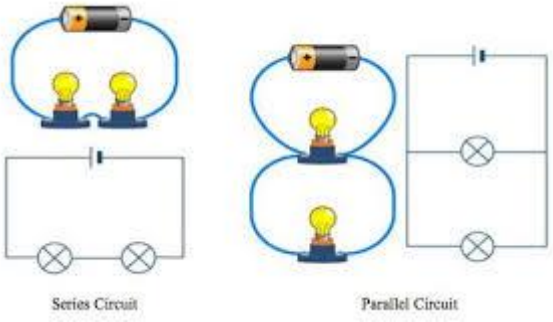
Electricity – knowledge organiser

Key knowledge	
What is electricity?	• Electricity is created by **generators** which can be powered by gas, coal, oil, wind or solar. • Electricity is the presence or flow of **charged particles.** • An electric current is the flow of **electrons** around a circuit. • The electrical energy can be converted into other types of energy such as light, heat, movement or sound. • Electricity is **dangerous**, so be careful when using electrical appliances.
What uses electricity?	• Lots of things use electricity including: o TV o Hair dryer o Cooker o Lights o Games consoles
Mains or Battery?	• Appliances that use electricity get it either from the mains (need to be plugged in) such as a TV or washing machine • Some get their electricity from a battery such as a torch • Some might need to be plugged in to charge a battery like a mobile phone
Electrical circuits	Electricity can flow through the components in a complete electric circuit. A circuit always needs a power source, such as a battery. A circuit can also contain other electrical components, such as bulbs, buzzers or motors.
Switches	When a switch is open (off), there is a gap in the circuit. Electricity cannot travel around the circuit. When a switch is closed (on), it makes the circuit complete. Electricity can travel around the circuit.
Changing circuits	More batteries • Adding more batteries to a simple circuit will increase the electrical energy, which will make a bulb brighter. More bulbs • Adding more bulbs to a simple circuit will reduce the electrical energy and make the bulbs dimmer. Longer wires • Lengthening the wires in a simple circuit will reduce the electrical energy, as it has further to travel. The extra distance will make the bulb dimmer.
Scientists we need to know about	
5 facts about Michael Faraday	• Michael Faraday was born on September 22, 1791 • His father was a blacksmith • Due to money constraints, Faraday had to leave school at the age of 13 • In 1821, he proved that magnetism that was created by an electric current could set a magnet in motion. • He made the very first dynamo which was used in electricity generation. It was this discovery that opened the path to the age of electricity.

Circuit symbols



Series and parallel circuits



Key Vocabulary

Ammeter - A device used to measure electric current.

Ampere - Unit of current, eg the current in the bulb is 4 amps or amperes (A).

Battery - A chemical supply of electrical energy. For example, common battery voltages include 1.5 V and 9 V.

Cell - A store of internal energy that can be transferred as an electric current in a circuit.

Circuit - A closed loop through which current moves - from a power source, through a series of components, and back into the power source.

Circuit diagram - A diagram that represents an electric circuit using lines and symbols.

Circuit symbol - Diagram used to represent an electrical component in a circuit diagram.

Conductor - A material which allows charge to move easily through it.

Electric current - The movement of electrically charged particles, for example, electrons moving through a wire or ions moving through a solution.

Electron - Subatomic particle, with a negative charge and a negligible mass relative to protons and neutrons.

Insulator - Material that does not allow charge or heat to pass through it easily.

Ohms - The unit of electrical resistance, whose symbol is Ω.

Parallel - In a parallel circuit, the current divides into two or more paths before recombining to complete the circuit

Potential difference (voltage) - A measure of the energy given to the charge carriers in a circuit.

Resistance - The opposition in an electrical component to the movement of electrical charge through it. Resistance is measured in ohms.

Series - Connected to a circuit in such a way that the same current flows through each component in turn. Opposite of in parallel.

Volt - Unit of voltage. For example, the voltage across the lamp was 6 volts (V).

Voltmeter - A device used to measure potential difference or voltage.