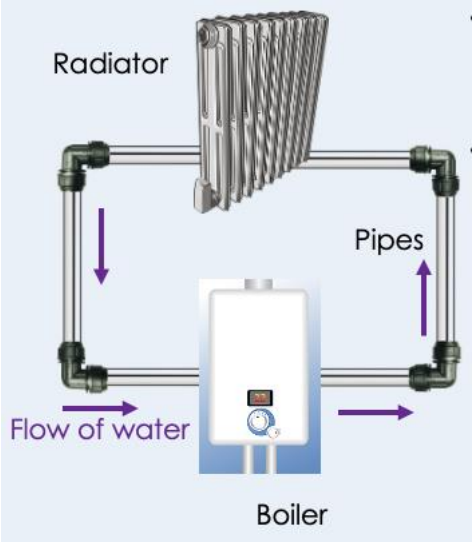
Models of Electricity

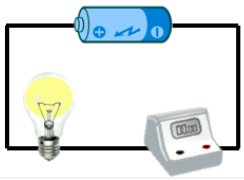
1. Electric circuits can be described using **models**, like a heating system.
2. No model is perfect because they are not exactly the same as the real thing.



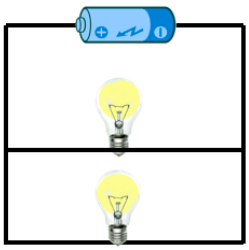
3. **Increasing the current in a heating system** means more water is flowing through the pipes each second.
4. **Increasing the current in a circuit** means more charges flow through the wire each second.
5. **Turning up the temperature on a boiler** means more thermal energy is given to the water, and the radiator gets hotter.
6. **Increasing the voltage by adding batteries** means more energy is given to the charges and the bulbs shine brighter.

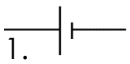
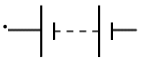
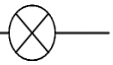
Series and Parallel Circuits

7. A complete circuit has no gaps, so the electricity can flow all around in a loop.
8. If the circuit is **incomplete,** the electricity cannot flow.
9. If all of the components are connected into one main loop, it is a **series circuit**.



10. If there's more than one loop with junctions, it's a **parallel circuit**.



Circuit Symbol	Component Name	Function
1. 	Cell	Push charges around the circuit. Supplies electrical energy
2. 	Battery	
3. 	Bulb/Lamp	Lights up
4. 	Ammeter	Measures current
5. 	Voltmeter	Measures voltage
6. 	Motor	Spins around or moves
7. 	Switch	Completes the circuit
8. 	Buzzer	Makes a sound

Current

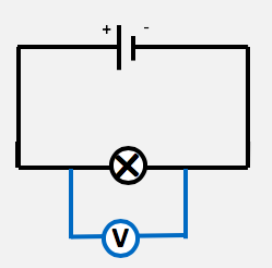
11. Current is the rate of flow of charge and is measured in Amperes/**Amps** (**A**) by an **Ammeter**.
12. Ammeters are placed **in series**.
13. Current transfers **energy** from one place to another.
14. Current can be calculated using the equation:

$$\text{Current} = \frac{\text{Charge}}{\text{Time}}$$

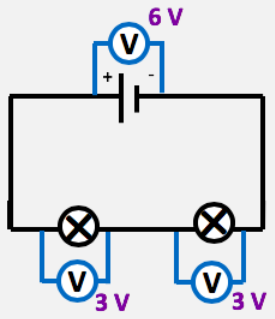
15. Charge is measured in Coulombs (C) and time is measured in seconds (s).
16. The brightness of a bulb is increased by adding cells/ batteries and decreased by adding more bulbs (components).
17. Current is the **same everywhere** in a **series** circuit.
18. Current **splits** at the **junctions** in a **parallel** circuit.

Voltage

19. Voltage is measured in **Volts** (**V**) by a **Voltmeter**.
20. Voltmeters are connected **in parallel.**



21. **Voltage** is the amount of energy shifted from the power source to the moving charges, or from the charges to the circuit component.
22. Adding voltage (adding batteries) **increases** the **current** and increases the **brightness** of bulbs.
23. The voltage in a series circuit is shared between components.



24. The voltage across the cell is equal to the voltage on each pathway of a parallel circuit.