



# Current and Voltage: The Difference Explained

KS4 PHYSICS

ELECTRICITY

Ages 11-14 ⌚ 3 min read

## What is Voltage?

**Voltage** is the **push** or **force** that makes electricity move. It's like the pressure in a water pipe — the higher the pressure, the harder the water pushes. Voltage is measured in **volts (V)**. Your home electricity supply is usually **230 volts** in the UK, while batteries come in different voltages — an **AA battery** is **1.5 volts**.

Think of it like a water slide: voltage is how high up the slide you are. The higher you start, the more potential energy you have to push you down.

## What is Current?

**Current** is the **flow** of electricity itself — it's the actual movement of tiny particles called **electrons** through a circuit. Current is measured in **amperes or amps (A)**. A higher current means more electrons are flowing, like having more water flowing through a pipe each second.

Think of it like water flowing down that water slide: current is how much water is actually moving. More water = higher current.

## How They Work Together

You need **both** voltage and current for electricity to work properly. Voltage is the force that **makes** the electrons move, and current is the **actual flow** of those electrons. Imagine pushing a shopping trolley: voltage is how hard you push, and current is how fast the trolley actually moves.

Think of it like a garden hose: voltage is the water pressure from the tap, and current is the amount of water actually flowing out.

## A Real-Life Example

When you plug in your phone charger, the voltage from the wall socket (**230V**) provides the push, and the current (**measured in amps**) determines how quickly your

phone charges. A high-power charger has higher current and charges faster. A weaker charger has lower current and charges more slowly — same voltage push, but less water flowing through the hose.

## Why Does This Matter?

Understanding current and voltage helps us design safe electronics. Too much current can damage a device or cause a fire. That's why we use **fuses** and **circuit breakers** — they stop the current if it gets dangerously high. Engineers must balance voltage and current to make devices work safely and efficiently.