

Electricity

Electricity is described as the flow of electrons. And like flowing water, this current is affected by pressure, intensity, and resistance.



PLAY PICMONIC

Charge

Charging the city

Electrical charge is characterized by the relative imbalance of positively and negatively charged particles in matter. For example, an object with more negatively charged particles (electrons) is said to have a negative charge.

Flow of Electrons

Electrons flowing across atoms

Objects powered by electricity harness the flow of electrons to operate. These electrons will generate charge as they accumulate, a form of potential energy.

Voltage

Vault

Voltage is defined as the quantity of a charge. Voltage is the amount of pent-up electrical energy in a given circuit. Voltage can be calculated by multiplying Amperes by Ohms. $V=IR$.

Pressure

Pressure-gauge

Voltage is analogous to pressure. Visualizing water pressure building up behind a dam. The potential energy of water pushing against the wall of the dam is analogous to voltage.

Current

Flowing Current

Electrical current is defined as the amount of energy flowing through a circuit per unit time. It is measured in amperes and is analogous to water flowing through a pipe. As the amount of water that can flow through a pipe is dependent on the pressure of the water and the diameter of the pipe, so too is electrical current dependent on voltage and resistance. Current equals volts divided by Ohms.

Amperes

Emperor

Amperes is the unit of measurement associated with current. It can be calculated by dividing the volts in a circuit by the Ohms.

Resistance

Resisting Flow

Resistance is the third component of electrical flow and the namesake of Ohm's law. Electrical resistance is defined by how conductive to electricity a given circuit is. Good conductors of electricity, such as copper and gold, have low resistance- whereas poor conductors such as wood or distilled water have high resistance. In our dam analogy, think of resistance as the diameter of the pipe water must flow through.

Ohms

Om-monks

Resistance is measured in Ohms. Calculate Ohms by dividing the Volts by the Amperes in a given circuit.