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Help

Most students reading this will have had some prior training in electronics. However, this brief section will provide an overview of the electronics needed to understand electric circuits in this class. **Current**, I , is defined as the movement of electrons. In particular, 1 ampere (A) of current is 6.241×10^{18} electrons per second, or one coulomb per second. Current is measured at one point as the number of electrons travelling per second. Current has an amplitude and a direction. Because electrons are negatively charged, if the electrons are moving to the left, we define current as flowing to the right. **Voltage**, V , is an electrical term representing the potential difference between two points. The units of voltage are volts (V), and it is always measured as a difference. Voltage is the electromotive force or potential to produce current. We will see two types of conducting media: a **wire** and a **resistor**. Wires, made from copper, will allow current to freely flow, but forcing current to flow through a resistor will require energy. The electrical property of a resistor is resistance in ohms (Ω). Ideally, a wire is simply a resistor with a resistance of 0Ω . The basic relation between voltage, current, and resistance for a resistor is known as **Ohm's Law**, which can be written three ways:

$$V = I * R \quad \text{Voltage} = \text{Current} * \text{Resistance}$$

$$I = V / R \quad \text{Current} = \text{Voltage} / \text{Resistance}$$

$$R = V / I \quad \text{Resistance} = \text{Voltage} / \text{Current}$$



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