

Ohm's Law Quiz

Name KEY

1. A machine turns a wheel by passing a current of 175 A through a wire. If the resistance of the wire is 1.5 ohms, what is the voltage?

$$\begin{array}{c} \text{E} \\ \hline 175 \mid 1.5 \\ \hline \end{array}$$

$$\begin{array}{l} E = \\ I = 175 \text{ A} \\ R = 1.5 \Omega \end{array}$$

$$\begin{array}{c} \text{E} \\ \hline 175 \mid 1.5 \\ \hline \end{array}$$

$$\begin{array}{l} E = I \cdot R \\ E = 175 \text{ A} \cdot 1.5 \Omega \\ \boxed{E = 262.5 \text{ V}} \end{array}$$

2. What is the electrical current that flows through a coffee maker plugged into a 110 Volt circuit if it has a resistance of 20Ω?

$$\begin{array}{c} 110 \text{ V} \\ \hline 1 \mid 20 \Omega \\ \hline \end{array}$$

$$\begin{array}{l} E = 110 \text{ V} \\ I = \\ R = 20 \Omega \end{array}$$

$$I = \frac{E}{R}$$

$$I = \frac{110 \text{ V}}{20 \Omega}$$

$$\boxed{I = 5.5 \text{ A}}$$

3. A TV remote control uses a standard 1.5 V battery. How much resistance is in the circuit if it uses a current of 0.3 A?

$$\begin{array}{c} 1.5 \\ \hline .3 \mid R \\ \hline \end{array}$$

$$\begin{array}{l} E = 1.5 \text{ V} \\ I = .3 \text{ A} \\ R = \end{array}$$

$$R = \frac{E}{I}$$

$$R = \frac{1.5 \text{ V}}{.3 \text{ A}}$$

$$\boxed{R = 5 \Omega}$$

4. A 12 Volt car battery pushes a charge through the radio circuit with a resistance of 5 ohms. How much current is passing through the circuit?

$$\begin{array}{c} 12 \text{ V} \\ \hline I \mid 5 \Omega \\ \hline \end{array}$$

$$\begin{array}{l} E = 12 \text{ V} \\ I = \\ R = 5 \Omega \end{array}$$

$$I = \frac{E}{R}$$

$$I = \frac{12 \text{ V}}{5 \Omega}$$

$$\boxed{I = 2.4 \text{ A}}$$

5. A hair dryer needs a household voltage of 110 V to push a current of 15 A through its coil (circuit). What is the resistance of the hair dryer?

$$\begin{array}{c} 110 \text{ V} \\ \hline 15 \text{ A} \mid R \\ \hline \end{array}$$

$$\begin{array}{l} E = 110 \text{ V} \\ I = 15 \text{ A} \\ R = \end{array}$$

$$R = \frac{E}{I}$$

$$R = \frac{110 \text{ V}}{15 \text{ A}}$$

$$\boxed{R = 7.33 \Omega}$$