

Name Key

OHM'S LAW WORKSHEET

USEFUL EQUATIONS : Current(I) (in amps) = $\frac{\text{Voltage (V) (in volts)}}{\text{Resistance(R) (in ohms)}}$ $I = \frac{V}{R}$ or $V = I \times R$

$$V = IR$$

1. A walkman uses a standard 1.5 V battery. How much resistance is in the circuit if it uses a current of 0.01 A?

$$V = IR$$

$$1.5 \text{ V} = 0.01 \text{ A} (R)$$

$$\frac{1.5 \text{ V}}{0.01 \text{ A}} = \frac{0.01 \text{ A} (R)}{0.01 \text{ A}}$$

$$150 \Omega = R$$

2. What current flows through a hair dryer plugged into a 110 Volt circuit if it has a resistance of 25 ohms?

$$V = IR$$

$$110 \text{ V} = I (25 \Omega)$$

$$\frac{110 \text{ V}}{25 \Omega} = \frac{I (25 \Omega)}{25 \Omega}$$

$$4.4 \text{ A} = I$$

3. A 12 Volt car battery pushes charge through the headlight circuit resistance of 10 ohms. How much current is passing through the circuit?

$$V = IR$$

$$12 \text{ V} = I (10 \Omega)$$

$$\frac{12 \text{ V}}{10 \Omega} = \frac{I (10 \Omega)}{10 \Omega}$$

$$1.2 \text{ A} = I$$

4. An electric heater works by passing a current of 100 A through a coiled metal wire, making it red hot. If the resistance of the wire is 1.1 ohms, what voltage must be applied to it?

$$V = IR$$

$$V = (100 \text{ A})(1.1 \Omega)$$

$$V = 110 \text{ V}$$

5. A subwoofer needs a household voltage of 110 V to push a current of 5.5 A through its coil (circuit).

What is the resistance of the subwoofer?

$$V = IR$$

$$110 \text{ V} = 5.5 \text{ A}(R)$$

$$\frac{110 \text{ V}}{5.5} = \frac{5.5 \text{ A}}{5.5} R$$

$$20 \Omega = R$$

6. A light bulb has a resistance of 5 ohms and a maximum current of 10 A. How much voltage can be applied before the bulb will break?

$$V = IR$$

$$V = (10 \text{ A})(5 \Omega)$$

$$V = 50 \text{ V}$$