

A. When Volts and OHMS are known:

$$\text{Amperes} = \frac{\text{Volts}}{\text{OHMS}} \text{ of } I = \frac{E}{R}$$

Example: Find the current of a 120 volt circuit with a resistance of 60 OHMS.

$$I = \frac{E}{R} = \frac{120}{60} = 2 \text{ Amperes}$$

B. When Watts and Volts are known:

$$\text{Amperes} = \frac{\text{Watts}}{\text{Volts}} \text{ of } I = \frac{P}{E}$$

Example: A 120 Volt Circuit has a 1440 Watt Load. Determine the current.

$$I = \frac{P}{E} = \frac{1440}{120} = 12 \text{ Amperes}$$

C. When OHMS and Watts are known:

$$\text{Amperes} = \sqrt{\frac{\text{Watts}}{\text{OHMS}}} \text{ of } I = \sqrt{\frac{P}{R}}$$

Example: A circuit consumes 625 watts through a 12.75 OHM resistor. Determine the current.

$$I = \sqrt{\frac{P}{R}} = \sqrt{\frac{625}{12.75}} = \sqrt{49} = 7 \text{ Amperes}$$

Notes:

1. One Electrical Horsepower = 746 watts. Electric Motors are rated in horsepower.
2. One kilowatt = 1000 watts. Generators are rated in kilowatts.

