

Ch 6

Sec 6.2A

obj: How does Ohm's law relate current, voltage difference and resistance?

Electric Circuit

- Source - Voltage (V), volts (V)
- Load - Resistance (R), ohms (Ω)
- Path - Current (I), Amperes (A)
- Both the Voltage and Resistance in a circuit are physical components.
 - * They can be changed.
- The current in a circuit is directly dependent on the voltage and resistance in the circuit.
 - * The current in a circuit is calculated.

Ohm's Law

- Shows how V , R , + I are related.
- In a closed circuit the current is directly related to Voltage and inversely related to Resistance.

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

- Voltage and Resistance of the circuit can be calculated using Ohm's Law.

$$V = IR \quad R = \frac{V}{I}$$

In a closed circuit w/ 120V and a resistance of 30Ω how much current flows through the circuit?

Known

$$I = \frac{V}{R}$$
$$= \frac{120V}{30\Omega}$$
$$= 4A$$

Unknown

$$I = ?$$

If 3 Amps of current flows through 25Ω of resistance, How much Voltage is in the circuit?

Knowns

$$I = 3 \text{ Amps}$$
$$R = 25\Omega$$

Unknown

$$V = ?$$

What is the resistance of the Load
when 100V pushes a 5 Amp current
through it?

Known

$$V = 100 \text{ Volts}$$

$$I = 5 \text{ Amps}$$

Unknown

$$R = ?$$

