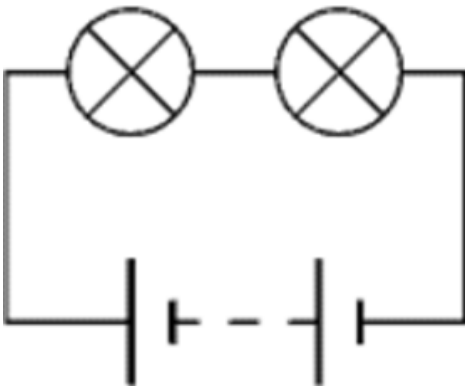
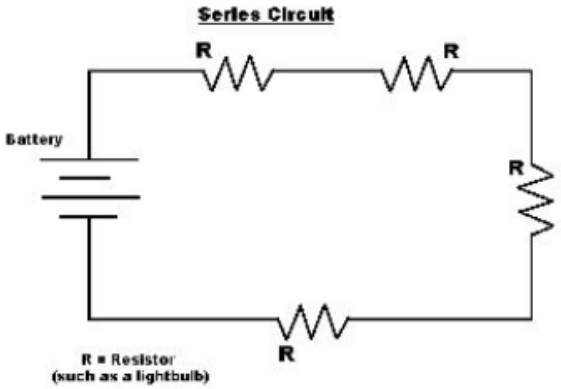
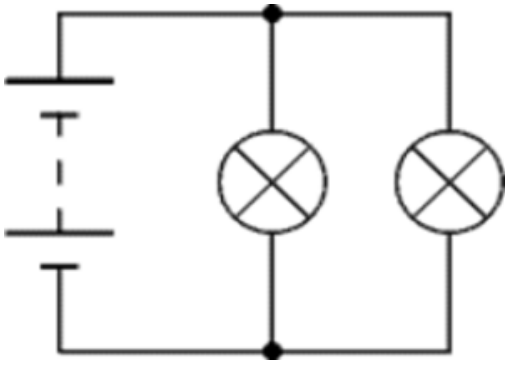
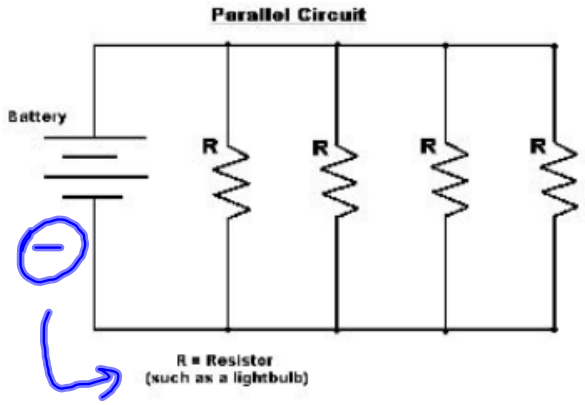
Electric Circuit

- involves the flow of electrons from one place to another
- must contain four aspects: source, control device, conductors, load
- electrons flow from negative terminal of source









Electric Potential

the energy that each electron has as it leaves the source.

Potential Difference (voltage drop) V

the energy loss experienced as a current passes through a resistor.
Measured in volts (V).

Current I

a measure of the rate at which electric charges move past any given point in the circuit.
Measured in amperes (A).

Resistance R

a measure of the ability of a conductor to impede the flow of electrons.
Measured in ohms (Ω)

Quantity	Symbol	Unit of Measurement	Unit Abbreviation
Current	I	Ampere ("Amp")	A
Voltage	V	Volt	V
Resistance	R	Ohm	Ω

Ohm's Law

- **Ohm's Law states that the potential difference between two points on a conductor is proportional (directly related) to the electric current flowing through the conductor.**

- **V = I x R (voltage drop = electric current x elec. resistance.)**

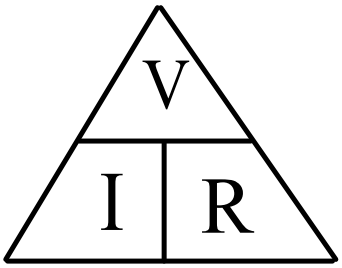
Ohm's Law

current

$$V = I \times R$$

pot. diff.

resistance

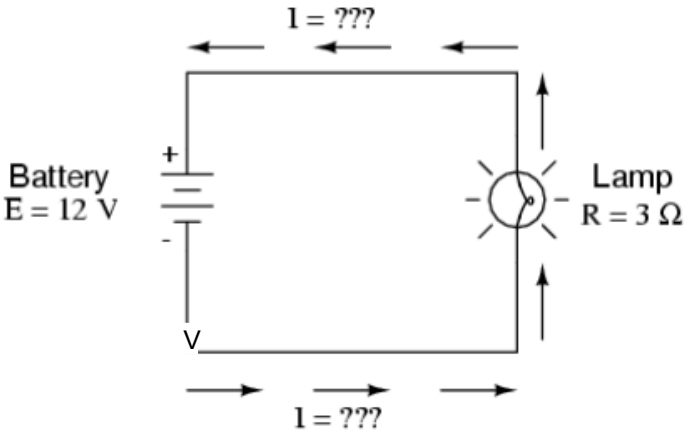


$$\frac{V}{R} = \frac{I \times \cancel{R}}{\cancel{R}}$$

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

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

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



V = 12 V

I = ?

R = 3 Ω

$V = I \times R$

$I = \frac{V}{R} = \frac{12\,V}{3\,\Omega} =$ **4 A**

Sample Problem

Calculate the resistance of an electric circuit that has a voltage of 40.0 V and a current of 7.50 A.

3 3

$V = 40.0\ V$

$I = 7.50\ A$

$R = ?$

$V = I \times R$

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

$R = \frac{40.0\ V}{7.50\ A}$

$R = 5.33\ \Omega$

Homework

p. 319 #1-3,5,7

Attachments

Answers Series and Parallel Circuit Assignment.notebook