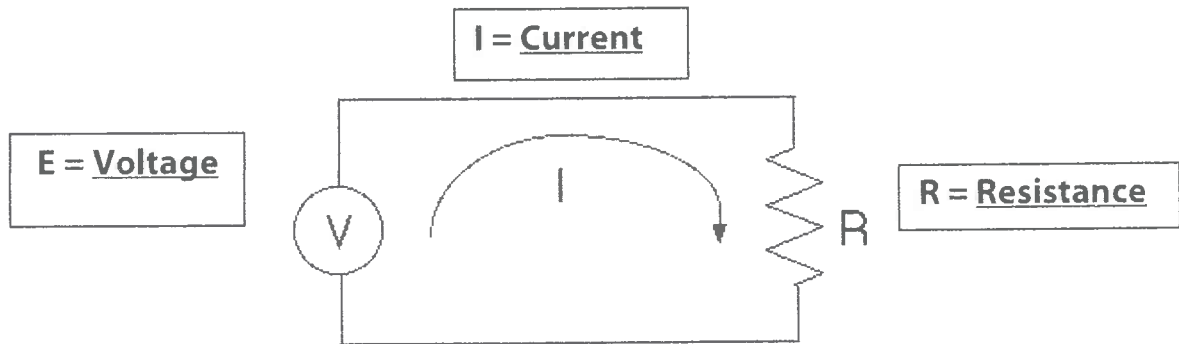
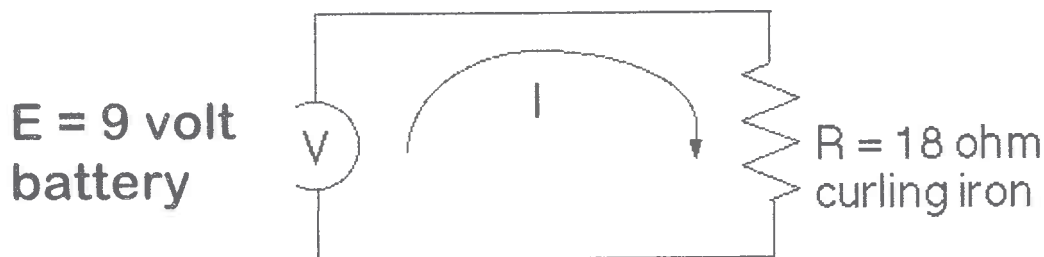


Electricity and Ohm's Law Example Problem



Example Problem:

A nine volt battery supplies power to a cordless curling iron with a resistance of 18 ohms. How much current is flowing through the curling iron?



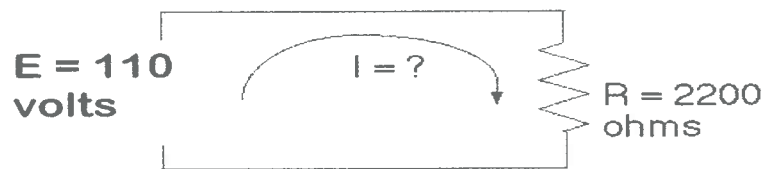
Solution: OHM'S LAW $E = I \times R$

| | |
|--|--------------------------------------|
| 1.) Since E (Voltage) and R (Resistance) are known, solve for I (Current) by dividing both sides of the equation by R. | $\frac{E}{R} = \frac{I \times R}{R}$ |
| 2.) The R's on the right hand side of the equation cancel. This will isolate I. | $\frac{E}{R} = I$ |
| 3.) I is then left in terms of E and R. | $I = \frac{E}{R}$ |
| 4.) Substitute in the values for E (Voltage) and R (Resistance). | $I = \frac{9}{18}$ |
| 5.) Solve for I (Current). | $I = 0.5 \text{ amps}$ |

Electricity and Ohm's Law Worksheets

Problem #1

A 110 volt wall outlet supplies power to a strobe light with a resistance of 2200 ohms. How much current is flowing through the strobe light?



$$E = I \times R \quad 110 = I \times 2200$$

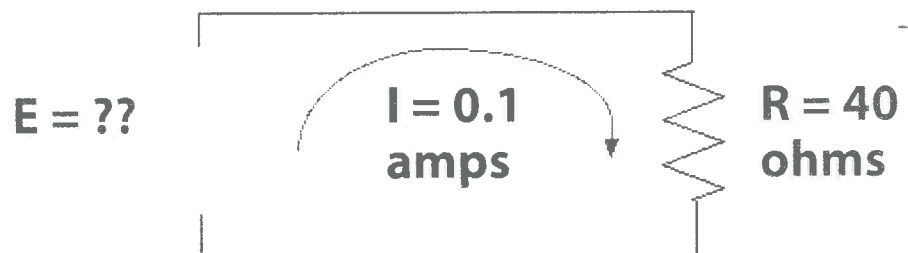
$$110/2200 = I \quad I = 0.05 \text{ amps}$$

Choose your answer below

1. 0.5 amps
2. 2.0 amps
- ③ 0.05 amps
4. 1.0 amps

Problem #2

A CD player with a resistance of 40 ohms has a current of 0.1 amps flowing through it. Sketch the circuit diagram and calculate how many volts supply the CD player.



Choose your answer below

1. 0.0025 volts
- ② 4.0 volts
3. 10.0 volts
4. 400.0 volts

$$E = I \times R \quad E = 0.1 \times 40 \quad E = 4.0 \text{ volts}$$

Problem #3

A 120-volt power source supplies a lamp with a resistance of 192 ohms. What is the current flow of the circuit?

$$E = I \times R \quad E = 120 \text{ volts} \quad R = 192$$

Replace known values in sentence: $120 = I \times 192$

Divide both sides by 192: $120/192 = I \quad I = 0.625$

Check answer: $120 = 0.625 \times 192$

Problem #4**KEY**

What is the resistance of the circuit conductors when the conductor voltage drop is 3 volts and the current flowing through the conductors is 100 amperes?

$$E = I \times R \quad E = 3 \text{ volts} \quad I = 100 \text{ amps}$$

Replace known values in sentence: $3 = 100 \times R$

Divide both sides by 100: $3/100 = R$ $R = 0.03 \text{ Ohms}$

Check answer: $3 = 100 \times 0.03$

Problem #5

Given: $I = 15\text{A}$, $R = 2$, find E

$$E = I \times R$$

Replace known values in sentence: $E = 15 \times 2$

Complete multiplication: $E = 30$

Check answer: $30 = 15 \times 2$

Problem #6

Given: $E = 250\text{V}$, $R = 5$, find I

$$E = I \times R$$

Replace known values in sentence: $250 = I \times 5$

Divide both sides by 5: $250/5 = I$ $I = 50 \text{ amps}$

Check answer: $250 = 50 \times 5$

Problem #7

Given: $E = 100\text{V}$, $I = 0.01\text{A}$, find R

$$E = I \times R$$

Replace known values in sentence: $100 = 0.01 \times R$

Divide both sides by 0.01: $100/0.01 = R$ $R = 10,000 \text{ Ohms}$

Check answer: $100 = 0.01 \times 10,000$