Answers Ohms Law Practice Worksheet

1. How much current is in a circuit that includes a 9- volt battery and a bulb with resistance of 3 ohms ?

   V = 9V   I = V/R
   R = 3 Ω   I = 9V / 3 Ω
   I = ?   I = 3 A

2. How much current is in a circuit that includes a 9- volt battery and a bulb with a resistance of 12 ohms?

   V = 9V   I = V/ R
   R = 12 Ω   I = 9V / 12 Ω
   I = ?   I = 0.75 A

   I=0.8A

3. A circuit contains a 1.5V battery and a bulb with a resistance of 3 ohms. Calculate the current.

   V = 1.5 V   I = V/R
   R = 3 Ω   I = 1.5V / 3 Ω
   I = ?   I = 0.5 A

4. A circuit contains two 1.5V batteries and a bulb with a resistance of 3 ohms. Calculate the current.

   V = 3V (1.5 x 2)   I = V/R
   R = 3 Ω   I = 3V / 3 Ω
   I = ?   I = 1A

5. What is the voltage of a circuit with 15 amps of current and a toaster with 8 ohms of resistance.

$V = ?$ $V = I \times R$

$I = 15 A$ $V = 15 A \times 8 \Omega$

$R = 8 \Omega$ $V = 120$ volts

$V = 100V$

6. A light bulb has a resistance of 4 ohms and a current of 2A. What is the voltage across the bulb?

$R = 4 \Omega$ $V = I \times R$

$I = 2A$ $V = 2A \times 4 \Omega$

$V = ?$ $V = 8$ volts

7. How much voltage would be necessary to generate 10 amps of current in a circuit that has 5 ohms of resistance?

$V = ?$ $V = I \times R$

$I = 10 A$ $V = 10A \times 5 \Omega$

$R = 5 \Omega$ $V = 50$ volts

8. How many ohms of resistance must be present in a circuit that has 120 volts and a current of 10 amps?

$R = ?$ $R = V / I$

$V = 120 V$ $R = 120 v / 10A$

$I = 10 A$ $R = 12 \Omega$

$R = 10 \Omega$

9. An alarm clock draws 0.5A of current when connected to a 120 volt circuit. Calculate its resistance.

I = 0.5A $R = V / I$
V = 120 v $R = 120 v / 0.5A$
R = ? $R = 240 \, \Omega$
                  $R = 200 \, \Omega$

10. A portable CD player uses two 1.5 V batteries. If the current in the CD player is 2 A, what is its resistance?

V = 3V (1.5 x 2) $R = V / I$
I = 2A $R = 3V / 2A$
R = ? $R = 1.5 \, \Omega$
                   $R = 2 \, \Omega$

11. You have a large flashlight that takes 4 D cell batteries. If the current in the flashlight is 2 amps, what is the resistance of the light bulb? (HINT: a D-cell battery has 1.5 volts)

V = 1.5 x 4 = 6V $R = V / I$
I = 2 A $R = 6V / 2A$
R = ? $R = 3 \, \Omega$

12. a) Circuit A has 6 volts
    Circuit B has 12 volts

b) Circuit A   I = ?   I = V / R   Circuit B   I = ?   I = V / R
                   V = 6V   I = 6V / 6 Ω   V = 12V   I = 12V/6 Ω
                   R = 6 Ω   I = 1A   R = 6 Ω   I = 2A

c) Circuit A   I = ?   I = V /R   Circuit B   I = ?   I = V / R
                   V = 6V   I = 6V / 12 Ω   V= 12V   I = 12V / 12 Ω
                   R = 12 Ω   I = 0.5 A   R = 12 Ω   I = 1A

d) Is the bulb brighter in circuit A or B? The bulb would be brighter in circuit B because it has a greater voltage.

13. What happens to the current in a circuit if a 1.5- volt battery is removed and replaced by a 9-volt battery?
        The current would increase.

14. The relationship between resistance and current in a circuit is that the greater the resistance the less the current and the greater the current the less the resistance is.

15. The relationship between voltage and current in a circuit is that the greater the voltage the greater the current and vice versa.

16. What could you do to a closed circuit consisting of 2 batteries, 2 light bulbs and a switch to INCREASE the current?

Put the light bulbs in parallel. Each bulb would get the full amount of voltage from the batteries drawing more current.

17. What could you do to a closed circuit consisting of 2 batteries, 2 light bulbs and a switch to DESCREASE the current?

Put the bulbs in series. The voltage would be divdied up between the 2 light bulbs and would draw less current.
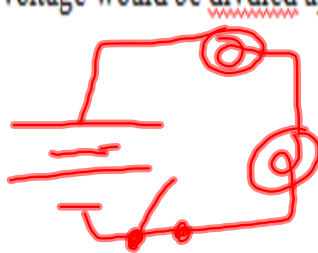
18. You have four 1.5 V batteries, a 1Ω bulb a 2 Ω bulb, and a 3 Ω bulb. Draw a circuit you could build to create each of the following currents.

a)

3 Ω

1.5V

1.5V

b)

3 Ω

1.5V
1.5V
1.5V
1.5V

d)

1 Ω

1.5V
1.5V

1 Ω

1.5V
1.5V
1.5V
1.5V