Ohm's Law Practice Problems

V = Voltage in volts, I = Current in amps, R = Resistance in ohms
V = IR   R = V/I   I = V/R

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

2. A subwoofer needs a household voltage of 110 V to push a current of 5.5 A through its coil. What is the resistance of the subwoofer?

3. A Sony Walkman uses a standard 1.5 V battery. How much resistance is in the circuit if it uses a current of 0.01A?

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

5. What current flows through a hair dryer plugged into a 120 Volt circuit if it has a resistance of 25 ohms?

6. If a toaster produces 12 ohms of resistance in a 120-volt circuit, what is the amount of current in the circuit?

7. A 12 Volt car battery pushes charge through the headlight circuit resistance of 10 ohms. How much current is passing through the circuit?

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

9. An electric heater works by passing a current of 100 A though a coiled metal wire, making it red hot. If the resistance of the wire is 1.1 ohms, what voltage must be applied to it?

10. A light bulb has a resistance of 5 ohms and a maximum current of 10 A. How much voltage can be applied before the bulb will break?

11. What happens to the current in a circuit if a 1.5-volt battery is removed and is replaced by a 3-volt battery?

12. What happens to the current in a circuit if a 10Ω resistor is removed and replaced by a 20Ω resistor?

Ohm's Law Practice Problems Solutions

V = Voltage in volts, I = Current in amps, R = Resistance in ohms
V = IR   R = V/I   I = V/R

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

   R = V/I   R = 120V/0.5A   R = 240Ω

2. A subwoofer needs a household voltage of 110 V to push a current of 5.5 A through its coil. What is the resistance of the subwoofer?

   R = V/I   R = 110V/5.5A   R = 20Ω

3. A Sony Walkman uses a standard 1.5 V battery. How much resistance is in the circuit if it uses a current of 0.01A?

   R = V/I   R = 1.5V/0.01A   R = 150Ω

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

   I = V/R   I = 1.5V/3Ω   I = .5A

5. What current flows through a hair dryer plugged into a 120 Volt circuit if it has a resistance of 25 ohms?

   I = V/R   I = 120V/25Ω   I = 4.8A

6. If a toaster produces 12 ohms of resistance in a 120-volt circuit, what is the amount of current in the circuit?

   I = V/R   I = 120V/12Ω   I = 10A

7. A 12 Volt car battery pushes charge through the headlight circuit resistance of 10 ohms. How much current is passing through the circuit?

    I = V/R   I = 12V/10Ω   I = 1.2A

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

    V = IR   V = 10A * 5Ω   V = 50V

9. An electric heater works by passing a current of 100 amps though a coiled metal wire, making it red hot. If the resistance of the wire is 1.1 ohms, what voltage must be applied to it?

    V = IR   V = 100A * 1.1Ω   V = 110V

10. A light bulb has a resistance of 5 ohms and a maximum current of 10 amps. How much voltage can be applied before the bulb will break?

    V = IR   V = 10A * 5Ω   V = 50V

11. What happens to the current in a circuit if a 1.5-volt battery is removed and is replaced by a 3-volt battery?

    I = V/R   It doubles

12. What happens to the current in a circuit if a 10Ω resistor is removed and replaced by a 20Ω resistor?

    I = V/R   It is cut in half