

## Practice Questions

$$\text{Voltage [Volts]} = \text{Resistance [Ohm]} \times \text{Current [Amperes]}$$

$$V [V] = R [\Omega] \times I [A]$$

1. A resistance of  $60 \Omega$  has a current of  $1 \text{ A}$  through it when it is connected to the terminals of a battery. What is the voltage of the battery? **60V**
2. What voltage is applied to a  $4 \Omega$  resistor if the current is  $1.5 \text{ A}$ ? **6V**
3. What voltage is placed across a motor of  $10 \Omega$  operating resistance if the current is  $8 \text{ A}$  of current? **80V**
4. A voltage of  $75 \text{ V}$  is placed across a  $25 \Omega$  resistor. What is the current through the resistor? **3A**
5. A  $20 \Omega$  resistor is connected to a  $40 \text{ V}$  battery. What is the current through the resistor? **2A**
6. The current through a lamp connected across  $100 \text{ V}$  is  $5 \text{ A}$  when the lamp is on. What is its resistance when it is on? **20 $\Omega$**
7. A  $12 \text{ V}$  battery is connected to a device and  $2 \text{ A}$  of current flows through it. If the device obeys Ohm's law, how much current will flow when a  $24 \text{ V}$  battery is used? **4A**
8. A  $30 \text{ V}$  battery maintains current through a  $10 \Omega$  resistance. What is the current? **3A**
9. An automobile headlight with a resistance of  $3 \Omega$  is placed across a  $12 \text{ V}$  battery. What is the current through the circuit? **4A**
10. A motor with an operating resistance of  $30 \Omega$  is connected to a voltage source. The current in the circuit is  $4 \text{ A}$ . What is the voltage of the source? **120V**
11. A transistor radio uses  $2 \text{ mA}$  of current when it is operated by a  $3 \text{ V}$  battery. What is the resistance of the radio circuit? **1500 $\Omega$**
12. A lamp draws a current of  $0.5 \text{ A}$  when it is connected to a  $120 \text{ V}$  source. What is the resistance of the lamp? **240 $\Omega$**
13. A  $75 \text{ W}$  lamp is connected to a  $150 \text{ V}$ . What is the resistance of the lamp? **300 $\Omega$**   
(Don't worry about this question)
14. A lamp draws a  $1 \text{ A}$  current when connected to a  $6 \text{ V}$  battery. When a  $9 \text{ V}$  battery is used, the lamp draws  $1.5 \text{ A}$ . Does the lamp obey Ohm's law? **Yes, the resistance of the lamp is  $6\text{V}/1\text{A} = 6\Omega$ , entering in the current resistance and the new voltage into Ohm's law returns the following  $9\text{V}/6\Omega = 1.5\text{A}$**