

## Applying Ohm's Law KEY

<p>1. What is the current produced with a 9-volt battery through a resistance of 100 ohms?</p> $I = V \div R$ $9 \div 100$ $I = .09 \text{ A}$	<p>6. What resistance would produce a current of 200 amperes with a potential difference of 2 000 volts?</p> $R = V \div I$ $2000 \div 200$ $R = 10 \Omega$
<p>2. What voltage produces a current of 50 amps with a resistance of 20 ohms?</p> $V = I \times R$ $20 \times 50$ $V = 1000 \text{ V}$	<p>7. If the potential difference is 120 volts and the resistance is 50 ohms. What is the current?</p> $I = V \div R$ $120 \div 50$ $I = 2.4 \text{ A}$
<p>3. What resistance would produce a current of 200 amperes with a potential differences of 2 000 volts?</p> $R = V \div I$ $2000 \div 200$ $R = \del{.10 \Omega} 10 \Omega$	<p>8. What voltage produces a current of 500 amps with a resistance of 50 ohms?</p> $V = I \times R$ $500 \times 50$ $V = 25\,000 \text{ V}$
<p>4. Find the current when a 12-volt battery is connected through a resistance of 25 ohms.</p> $I = V \div R$ $12 \div 25$ $I = 0.45\text{A} \quad \text{0.48A}$	<p>9. An overhead wire has a potential difference of 2 000 volts. If the current flowing through the wire is one million amperes, what is the resistance of the wire?</p> $R = V \div I$ $2\,000 \div 1\,000\,000$ $R = .002 \Omega$
<p>5. Silver has a resistance of <math>1.98 \times 10^{-4}</math> ohms. What voltage would produce a current of 100 amps?</p> $R = .000\,198 \Omega$ $V = I \times R$ $100 \times 0.000\,198$ $V = .0\,198 \text{ V}$	<p>10. What is the current produced by a potential difference of 240 volts through a resistance of 0.2 ohms?</p> $I = V \div R$ $240 \div 0.2$ $I = 1200 \text{ A}$

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<p>1. What voltage is required to force a current of 2.0 ampere through a resistance of 10 ohms?</p> $V = I \times R$ $2 \times 10$ $V = 20 \text{ V}$	<p>6. An incandescent bulb operate on a 110 volt circuit and uses 2.0 amps of current. What is the bulb's resistance?</p> $R = V \div I$ $110 \div 2$ $R = 55 \Omega$
<p>2. What current is there in a circuit when 2.4 volts is applied to a circuit with a 0.60 ohm resistor?</p> $I = V \div R$ $2.4 \div 0.6$ $I = 4 \text{ A}$	<p>7. Isaac's electric train operates on a 12 volt supply and offers a resistance of 0.60 ohm. How much current will there be in the circuit?</p> $I = V \div R$ $12 \div 0.6$ $I = 20 \text{ A}$
<p>3. If the current is 0.06 amps through a radio resistor when the potential difference is 12 volts, what is the value of the resistor?</p> $R = V \div I$ $12 \div 0.06$ $R = 200 \Omega$	<p>8. A vacuum cleaner is plugged into a 120-V outlet. The vacuum is rated at 12 A. What is the resistance of the motor and circuitry of the vacuum?</p> $R = V \div I$ $120 \div 12$ $R = 10 \Omega$
<p>4. If the voltage is 3.0 volts and the current is 2.0 amps, what will be the value of the resistance in the circuit?</p> $R = V \div I$ $3 \div 2$ $R = 1.5 \Omega$	<p>9. There is a 22-ohm resistance in the heating element of a coffee maker. It is plugged into a 110 volt circuit. How much current passes through the heating element?</p> $I = V \div R$ $110 \div 22$ $I = 5 \text{ A}$
<p>5. What voltage exists between the ends of an electric iron's heater coils if its resistance is 20 ohms and a current of 5.0 amps flows through the iron?</p> $V = I \times R$ $5 \times 20$ $V = 100 \text{ V}$	<p>10. A lamp operates at 115 volts with a current of 0.25 ampere. What is the lamp's resistance?</p> $R = V \div I$ $115 \div 0.25$ $R = 460 \Omega$