

Name:

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## Current and Resistance

What is dynamic electricity?

What does it mean to have a live electrical circuit? What requirements must be met in order to create a live electrical circuit?

What is meant by the terms power source and load? What do each do in the circuit?

Circuit diagrams use a variety of symbols. Find and draw the symbols for each of the following:

Wire	Cell	Battery	Open Switch	Closed Switch
Resistor	Ammeter	Voltmeter	Light Bulb/ Lamp	Ground

### Drawing circuit diagrams

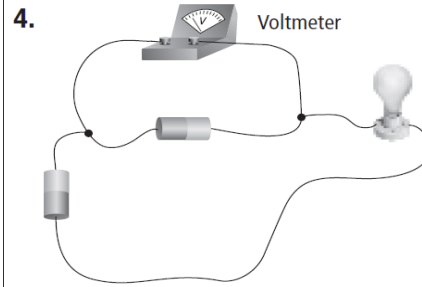
Use circuit symbols to draw circuit diagrams for each of the following.



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What is current? What type of measurement is it?

What is the unit for current, and how is current calculated?

State if each statement is true or false **and correct the statement if it is false.**

- a) \_\_\_\_ An electric circuit is a complete pathway through which electrons can flow.
- b) \_\_\_\_ Light bulbs, heaters, and batteries are all examples of electric loads.
- c) \_\_\_\_ The wire through which electric current flows is an insulator.
- d) \_\_\_\_ When a switch is in the open position, the circuit is not live.
- e) \_\_\_\_ Adding a battery to a circuit can only cause an increase to the circuit's current.

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What is the difference between conventional flow and electron flow? Which one is scientifically correct?

Are circuit diagrams assumed to be written in terms of conventional flow or electron flow? Why do we write circuit diagrams this way?

What is resistance in an electrical circuit?

All materials are resistant to some extent. However, the more resistant materials are called \_\_\_\_\_, while the less resistant materials are called \_\_\_\_\_.

How does a light bulb create light (and heat)? For your studies, assume you are using a tungsten light bulb.

How do resistor devices work? Why would we use this device? (see image below)



What is the unit for resistance, and how can resistance be measured?

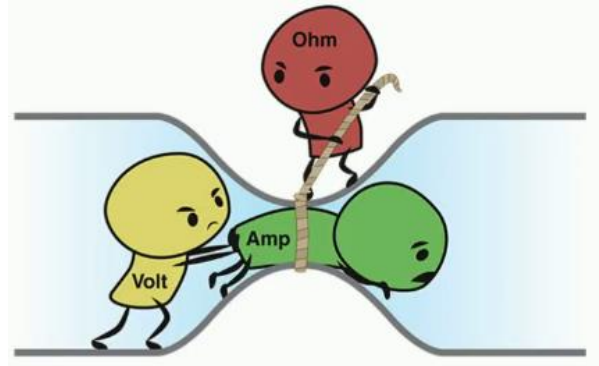
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Describe what **Ohm's Law** is. State the mathematical relationship it provides between voltage, current and resistance.

Use **Ohm's Law** to explain the following cartoon:



Use the graph to answer the following questions:

- 1) What happens to the current if the voltage is doubled?
- 2) What happens to the current if the voltage is quadrupled?
- 3) What is the relationship between current and voltage?

