

Chapter 20 Electricity

Section 20.3 Electric Circuits

(pages 609–613)

This section describes circuit diagrams and types of circuits. It also explains calculation of electric power and electric energy and discusses electrical safety.

Reading Strategy (page 609)

Relating Text and Visuals As you read about household circuits, complete the table by listing three things the diagram in Figure 13 helps you understand about circuits. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

Understanding a Circuit Diagram
What Can Be Seen in the Circuit Diagram?
Wire bringing current from outside Grounding wire
Separate circuit for the lights Separate circuit for the dryer

Circuit Diagrams (pages 609–610)

- Circuit diagrams use symbols to represent parts of a circuit, including a source of electrical energy and devices that are run by the electrical energy.

Match each symbol to what it indicates on a circuit diagram.

Symbol	What Symbol Indicates
<u>c</u> 2. +	a. The direction of current
<u>b</u> 3. –	b. A negative terminal
<u>a</u> 4. →	c. A positive terminal

Series Circuits (page 610)

- Is the following sentence true or false? In a series circuit, if one element stops functioning, then none of the elements can operate.

true

Parallel Circuits (page 610)

- Is the following sentence true or false? Circuits in a home are rarely wired in parallel. false
- If one light goes out in a parallel circuit, the rest of the lights

can still operate.

Chapter 20 Electricity

Power and Energy Calculations (pages 611–612)

8. The rate at which electrical energy is converted to another form of energy is called electric power.
9. Circle the letter of each measure of power.
 - a. joule per second
 - b. coulomb
 - c. watt
10. Is the following sentence true or false? Electric power is calculated by multiplying current times voltage. true
11. The unit of energy usually used by electric power companies is the _____. Circle the correct term.

joules/s kilowatt-hour watts/hour

Electrical Safety (pages 612–613)

12. Circle the letters of what could happen if the current in a wire exceeds the circuit’s safety limit.
 - a. The wire could get cooler.
 - b. A fuse could blow.
 - c. A fire could start.
13. The transfer of excess charge through a conductor to Earth is called grounding.
14. Use the words in the box to complete the following table about equipment used to prevent electrical accidents. You may use terms more than once.

fuse insulation circuit breaker
 three-pronged plug grounding wire

Equipment to Prevent Current Overload	Equipment to Protect People From Shock	Equipment to Prevent Short Circuits
a. <u>fuse</u>	c. <u>insulation</u>	f. <u>insulation</u>
b. <u>circuit breaker</u>	d. <u>three-pronged plug</u>	
	e. <u>grounding wire</u>	