

Chapter 20 Electricity

# Section 20.1 Electric Charge and Static Electricity

(pages 600–603)

*This section explains how electric charge is created and how positive and negative charges affect each other. It also discusses the different ways that electric charge can be transferred.*

## Reading Strategy (page 600)

**Identifying Main Ideas** Copy the table on a separate sheet of paper. As you read, write the main ideas. 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.

Characteristics of Electric Charge	
Topic	Main Idea
Electric Charge	An excess or shortage of electrons produces a net electric charge.
Electric Forces	
Electric Fields	
Static Electricity	

## Electric Charge (pages 600–601)

- What are the two types of electric charge?
  - \_\_\_\_\_
  - \_\_\_\_\_
- Is the following sentence true or false? In an atom, negatively charged electrons surround a positively charged nucleus.  
\_\_\_\_\_
- Is the following sentence true or false? If a neutral atom gains one or more electrons, it becomes a positively charged ion.  
\_\_\_\_\_
- What is the SI unit of electric charge? \_\_\_\_\_

## Electric Forces (page 601)

- Circle the letter of each sentence that is true about electric force.
  - Like charges attract and opposite charges repel.
  - Electric force is the attraction or repulsion between electrically charged objects.
  - Electric force is inversely proportional to the amount of charge.
  - Electric force is inversely proportional to the square of the distance between two charges.

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6. Which are stronger inside an atom, electric forces or gravitational forces? \_\_\_\_\_
7. Is the following sentence true or false? Electric forces cause friction and other contact forces. \_\_\_\_\_

### Electric Fields (page 602)

8. A charge's electric field is the effect the charge has on \_\_\_\_\_ in the space around it.
9. Circle the letters of the factors that the strength of an electric field depends on.
  - a. the direction of the field
  - b. whether the charge is positive or negative
  - c. the amount of charge that produces the field
  - d. the distance from the charge
10. Is the following sentence true or false? The field of a negative charge points away from the charge. \_\_\_\_\_

### Static Electricity and Charging (pages 602–603)

11. Static electricity is the study of the \_\_\_\_\_.
12. Is the following sentence true or false? Charge can be transferred by friction, by contact, and by induction. \_\_\_\_\_
13. What is the law of conservation of charge? \_\_\_\_\_  
\_\_\_\_\_
14. Rubbing a balloon on your hair is an example of charging by \_\_\_\_\_.
15. A charge transfer between objects that touch each other is called \_\_\_\_\_.
16. Circle the letter of each sentence that is true about charging.
  - a. When you rub a balloon on your hair, your hair loses electrons and becomes positively charged.
  - b. The sphere of a Van de Graaff generator transfers all of its charge to you when you touch it.
  - c. Induction occurs when charge is transferred without contact between materials.
  - d. Static charges cannot move.

### Static Discharge (page 603)

17. Is the following sentence true or false? Static discharge occurs when a pathway through which charges can move forms suddenly. \_\_\_\_\_
18. How does lightning occur? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_