

**Atoms and Bonding** ▪ *Guided Reading and Study*

# Ionic Bonds

*This section explains how an atom becomes electrically charged. It also describes the characteristic properties of bonds formed by the attraction of electrically charged atoms.*

## Use Target Reading Skills

*Before you read, preview Figure 17. Then write two questions that you have about the diagram in the graphic organizer below. As you read, answer your questions.*

**Formation of an Ionic Bond**

Q.	
A.	
Q.	
A.	

## Ions and Ionic Bonds

1. An atom or group of atoms that has an electric charge is called a(n)

\_\_\_\_\_.

2. What happens to an atom when it loses an electron?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. What happens to an atom when it gains an electron?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Atoms and Bonding** ▪ *Guided Reading and Study*

**Ionic Bonds** *(continued)*

4. Ions that are made of more than one atom are called \_\_\_\_\_.
5. Use the table in the textbook to complete the table below.

<b>Ions and Their Charges</b>		
<b>Name</b>	<b>Charge</b>	<b>Symbol or Formula</b>
Sodium	a.	b.
Magnesium	c.	d.
Chloride	e.	f.
Sulfate	g.	h.

6. Compared to the number of protons, how many electrons does the carbonate ion ( $\text{CO}_3^{2-}$ ) have? What is its charge?  
 \_\_\_\_\_  
 \_\_\_\_\_
7. What kinds of ions do a sodium atom and a chlorine atom become when a valence electron is transferred from one to the other?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
8. What is an ionic bond?  
 \_\_\_\_\_  
 \_\_\_\_\_
9. What causes ionic bonds to form?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Atoms and Bonding** ▪ *Guided Reading and Study*

**Chemical Formulas and Names**

10. A(n) \_\_\_\_\_ is a combination of symbols that shows the ratio of elements in a compound.
11. Is the following sentence true or false? When ionic compounds form, the ions come together in a way that balances out the charges on the ions.  
\_\_\_\_\_
12. In the chemical formula for magnesium chloride ( $MgCl_2$ ), what is the number "2" called, and what does it tell you?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
13. Is the following sentence true or false? For an ionic compound, the name of the negative ion comes first. \_\_\_\_\_
14. When does the end of a name of a negative ion end in *-ide*?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Properties of Ionic Compounds**

15. What are three characteristic properties of ionic compounds?  
a. \_\_\_\_\_  
b. \_\_\_\_\_  
c. \_\_\_\_\_
16. An orderly, three-dimensional arrangement formed by ions is called a(n) \_\_\_\_\_.
17. In an ionic compound, which ions are attracted to each other?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**Atoms and Bonding** ▪ *Guided Reading and Study*

**Ionic Bonds** *(continued)*

18. Why do ionic compounds have high melting points?

---

---

---

---

19. At room temperature, ionic bonds are strong enough to cause all ionic compounds to be \_\_\_\_\_.

20. Why do ionic compounds conduct electricity well when they are dissolved in water?

---

---

---

---

---

---