

SECTION 7.3 BONDING IN METALS (pages 201–203)

This section uses the theory of metallic bonds to explain the physical properties of metals. It also describes the arrangements of atoms in some common metallic crystal structures.

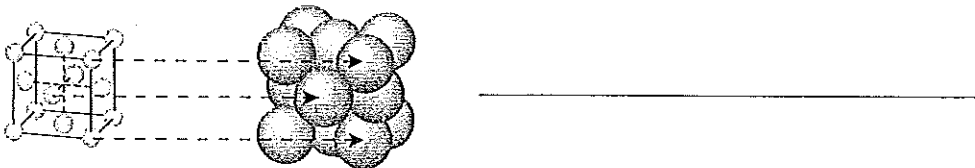
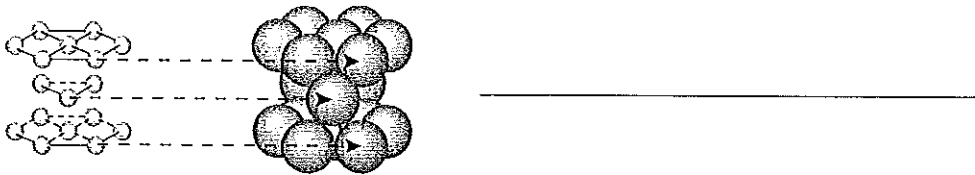
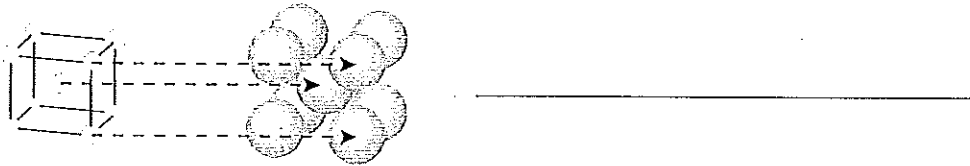
► Metallic Bonds and Metallic Properties (pages 201–202)

1. Is the following sentence true or false? Metals are made up of cations, not neutral atoms. _____
2. What are metallic bonds? _____

3. Name three properties of metals that can be explained by metallic bonding.
 - a. _____
 - b. _____
 - c. _____
4. What happens to an ionic crystal when a force is applied to it?

► Crystalline Structure of Metals (page 202)

5. Metal atoms in crystals are arranged into very _____ and orderly patterns.
6. Label each of the following arrangements of atoms with the correct name.



7. Circle the letter of each metal whose atoms form a face-centered cubic pattern.

- | | |
|--------------|-------------|
| a. magnesium | c. sodium |
| b. copper | d. aluminum |

► **Alloys (page 203)**

11. A mixture of two or more elements, at least one of which is a metal, is called a(n) _____.
12. Is the following sentence true or false? Pure metals are usually harder and more durable than alloys. _____
13. The most common use of nonferrous alloys is in _____.
14. What four properties make steel an important alloy?
 - a. _____
 - b. _____
 - c. _____
 - d. _____
15. What are the component elements for the following alloys?
 - a. sterling silver _____
 - b. brass _____
 - c. surgical steel _____
 - d. cast iron _____
16. _____ alloys have smaller atoms that fit into the spaces between larger atoms. _____ alloys have component atoms that are roughly equal in size.