

**SECTION**  
**1**
**Study Guide**
**Why do atoms combine?**
**Chapter**
**1**

**Directions:** Match the term from the word bank with each phrase below.

alkali metals	electron cloud	fourth	nucleus
charged	electron dot diagram	halogens	proton
chemical bond	empty space	neutral	stable
down	first	noble gases	up

- \_\_\_\_\_ 1. the energy level that can hold only 2 electrons
- \_\_\_\_\_ 2. what an atom will be if it has a different number of protons and electrons
- \_\_\_\_\_ 3. the energy level that can hold 32 electrons
- \_\_\_\_\_ 4. what an atom may be if it has a different number of protons and electrons
- \_\_\_\_\_ 5. the group that needs one more electron to fill its outer energy level
- \_\_\_\_\_ 6. an area of space around the nucleus where electrons are likely to be
- \_\_\_\_\_ 7. the group that has one electron in its outer level
- \_\_\_\_\_ 8. the area where protons and neutrons can be found
- \_\_\_\_\_ 9. the force that holds atoms together
- \_\_\_\_\_ 10. the most stable group on the periodic table
- \_\_\_\_\_ 11. what makes up most of an atom
- \_\_\_\_\_ 12. the particle that must be present in the same number as electrons in a neutral atom
- \_\_\_\_\_ 13. the reactivities of alkali metals increase as you go this direction in the group
- \_\_\_\_\_ 14. the reactivities of noble gases increase as you go this direction in the group
- \_\_\_\_\_ 15. a handy way to represent the outer electrons of an atom
- \_\_\_\_\_ 16. atoms join with each other to become more like this

**Directions:** Explain why, even though electrons closer to the nucleus have a lower energy than electrons further away from the nucleus, it takes more energy to remove the electrons closer to the nucleus.

17. \_\_\_\_\_
- \_\_\_\_\_

**SECTION**  
**1**

**Reinforcement**

**Why do atoms combine?**

**Directions:** Complete the sentences below using the following terms. Some of the terms may not be used.

atomic structure

electron dot diagram

outer energy level

electron

element families

proton

electron cloud

nucleus

period

1. An element is stable with eight electrons in its \_\_\_\_\_.
2. The closer a(n) \_\_\_\_\_ is to the nucleus, the stronger the attractive force.
3. An atom's \_\_\_\_\_ contains its protons and neutrons.
4. A(n) \_\_\_\_\_ model with dark bands representing energy levels shows where an atom's electrons are most likely to be.
5. The chemical symbol for an element surrounded by as many dots as there are electrons in its outer energy level is called a(n) \_\_\_\_\_.
6. Columns in the periodic table are known as \_\_\_\_\_.
7. The number of electrons in a neutral atom increases by one as you go from left to right across a \_\_\_\_\_ in the periodic table.
8. Each element has a different number of protons and electrons, so each has a different \_\_\_\_\_.

**Directions:** Answer the following questions.

9. Explain how the arrangement of electrons in an atom is related to the periodic table.

---



---



---



---



---

10. Use the periodic table to construct electron dot diagrams for the following elements: aluminum, magnesium, sulfur, and bromine.