

Directed Reading A

Section: Electrons and Chemical Bonding

COMBINING ATOMS THROUGH CHEMICAL BONDING

- _____ 1. Which of the following substances results from combining atoms of carbon, hydrogen, and oxygen?
- a. sugar
 - b. water
 - c. salt
 - d. sulfuric acid
- _____ 2. Which of the following is NOT true about electrons when chemical bonds form?
- a. Electrons are shared.
 - b. Electrons are lost.
 - c. Electrons are destroyed
 - d. Electrons are gained.
- _____ 3. Which of the following is an interaction that holds two atoms together?
- a. chemical hold
 - b. chemical bond
 - c. chemical interaction
 - d. bond of chemicals
4. The joining of atoms to form new substances is called _____.
5. An explanation of a phenomenon that is based on observation, experimentation, and reasoning is a(n) _____.
6. People can use _____ to discuss theories of how and why atoms form bonds.

ELECTRON NUMBER AND ORGANIZATION

- _____ 7. How can you determine the number of electrons in an atom?
- a. valence number
 - b. atomic number
 - c. chemical number
 - d. ionic number
- _____ 8. How many valence electrons are in an oxygen atom?
- a. 2
 - b. 4
 - c. 6
 - d. 8
- _____ 9. What do elements within a group number have the same number of?
- a. valence electrons
 - b. protons
 - c. neutrons
 - d. atoms

Directed Reading A *continued*

Match the correct description with the correct term. Write the letter in the space provided.

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|--|----------------------|
| _____ 10. an electron in the outermost energy level | a. group |
| _____ 11. number of protons in an atom | b. valence electrons |
| _____ 12. family on the periodic table to which an element belongs | c. atomic number |
13. Which electrons in an atom make chemical bonds? Why?

14. How can the periodic table help you determine the number of valence electrons?

TO BOND OR NOT TO BOND

- _____ 15. What determines whether an atom will form bonds?
- a. number of electrons
 - b. number of valence electrons
 - c. number of protons
 - d. number of neutrons
- _____ 16. Which group on the periodic table contains elements that do not normally form chemical bonds?
- a. Group 2
 - b. Group 6
 - c. Group 10
 - d. Group 18
17. The outermost energy level of an atom is considered full if the level contains _____ electrons.
18. Helium atoms only need _____ valence electrons to have a filled outermost energy level.
19. The first energy level of any atom can only hold _____ electrons.
20. Why is it uncommon for noble gases to form chemical bonds?

Directed Reading A *continued*

21. Which is more likely to form bonds, an atom with 8 valence electrons or an atom with less than 8 valence electrons?

22. How can atoms with fewer than 8 valence electrons fill their outermost energy level? Use either sulfur or magnesium to explain the process.
