

STUDY GUIDE

Chapter 20

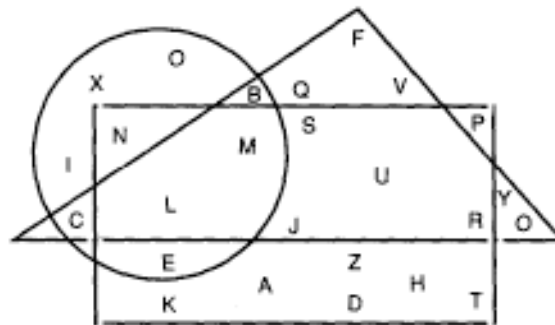
Why Atoms Combine

The definitions of several key terms about how atoms combine are given below. In the blanks, write the term from the word list that makes each definition complete.

atoms number chemical symbol ratios compound elements electrons energy level force

- Chemical formula:** tells what _____ make up a _____ and the _____ of the atoms of those elements.
- Subscript:** a _____ in a chemical formula written after a _____ that tells how many atoms of an element are in a unit of the compound.
- Chemically stable:** condition of an atom when its outer _____ is completely filled with _____
- Chemical bond:** in a compound, the _____ that holds the _____ together

Use the diagram below to select eight letters to form a word found in this chapter. Use the statements as hints to help you select the correct letters. Circle each letter as you find it in the diagram. Write the word in the space provided. Then define the term.



- The first letter must be in the triangle and in the circle, but not in the rectangle.
- The second letter must be in the triangle only.
- The third letter must be in the circle, triangle, and rectangle.
- The fourth letter must be in the rectangle only.
- The fifth letter must be in the circle only.
- The sixth letter must be in both the rectangle and the triangle, but not in the circle.
- The seventh letter must be in both the rectangle and circle, but not in the triangle.
- The eighth letter must be in the part of the rectangle that is below the triangle.

The word is _____ Definition: A _____ is

REINFORCEMENT**Chapter 20****Why Atoms Combine**

Each statement below contains a pair of terms or phrases in parentheses. Circle the term or phrase that makes each statement true.

1. Most of the matter around you is in the form of (elements, compounds).
2. The properties of a compound are (the same as, different from) the properties of the elements that make up the compound.
3. Na and Cl are (chemical symbols, chemical formulas).
4. NaCl and NaOH are (chemical symbols, chemical formulas).
5. H₂O is the formula for (salt, water).
6. In the formula H₂O, the number 2 is a (subscript, superscript).
7. In the formula HCl, the ratio of hydrogen atoms to chlorine atoms is (1:1, 2:1).
8. The number 2 in the formula H₂O tells you that each unit of this compound contains (2 hydrogen atoms, 2 oxygen atoms).
9. If a symbol in a chemical formula does not have a subscript after it, a unit of that compound contains (0 atoms, 1 atom) of that element.
10. In the formula Fe₂O₃, the ratio of iron atoms to oxygen atoms is (3:2, 2:3).
11. An atom is chemically stable if its outer energy level (is filled with, contains no) electrons.
12. For atoms of most elements, the outer energy level is filled when it has (3, 8) electrons.
13. The noble gases do not readily form compounds because they (are, are not) chemically stable.
14. A chemical bond is a (force, chemical) that holds together the atoms in a compound.
15. Chemical bonds form when atoms lose, gain, or (share, multiply) electrons.

Complete the table below by using the formula of each compound to identify the elements that each compound contains and the ratios of those elements. The first one has been done for you as an example.

Formula	Elements in Compound	Ratios
H ₂ O	hydrogen, oxygen	2:1
NaOH		
NaCl		
NH ₃		
H ₂ SO ₄		
SiO ₂		