Names and Formulas of Compounds – Study Guide

*sections 2.4, 2.6, and 2.7 in OpenStax*

**Chemical Formulas (section 2.4)**

The **Molecular Formula** shows the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a molecule.

The 7 elements that exist in nature as diatomic molecules are \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, \_\_\_\_, and \_\_\_\_.

The **Empirical Formula** indicates the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a compound.

**Molecular and Ionic Compounds (section 2.6)**

**Ionic Compounds** are composed of \_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_ bonded together by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

An **Ionic Bond** is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 A **cation** is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ charged ion. An **anion** is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charged ion.

When writing the chemical formula of an ionic compound, the following rules apply:

 1. Ionic compounds always contain a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ and a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 2. The sum of the charges of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ must always equal to sum of the charges of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

 3. The chemical formula indicates the \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ of its constituent ions.

**Molecular Compounds** are composed of 2 or more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonded together by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

A **Covalent Bond** is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Molecular compounds exist as discrete, neutral \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Chemical Nomenclature (section 2.6)**

When naming **ionic compounds**, the following rule applies:



What is the difference between a *fixed-charge* metal and a *variable-charge* metal?

***Watch video tutorial on*** [***Naming Ionic Compounds***](http://www.screencast.com/t/QL4NTOd9)

When naming **binary molecular compounds**, use the following rule:



and the following prefixes:

 mono = \_\_\_\_ tri = \_\_\_\_ penta = \_\_\_\_ hepta = \_\_\_\_ nona = \_\_\_\_

 di = \_\_\_\_ tetra = \_\_\_\_ hexa = \_\_\_\_ octa = \_\_\_\_ deca = \_\_\_\_

**Acids** are molecular compounds that release \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when dissolved in water.

An acid that is composed of only hydrogen and a nonmetal is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acid.

An acid that contains hydrogen and an oxyanion is called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acid.

An oxyanion is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

When naming **binary acids**, use the following rule:



When naming **oxyacids**, use the following rules:

|  |  |
| --- | --- |
| If the anion’s name ends in “**-ate**”, then the acid’s name is determined by: | If the anion’s name ends in “**-ite**”, then the acid’s name is determined by: |
|  |  |
| Give one example | Give one example |

**End of Chapter 2 Practice Problems**

#45, 49, 51, 53, 55, 57, 59

For detailed solutions to these problems, go to the [OpenStax website](https://openstaxcollege.org/textbooks/chemistry/resources) and download the “Student Answer and Solution Guide.”