

CHAPTER 3

Introduction to Chemistry
Section 3-2SKILL ACTIVITY
Analyzing information**Counting Atoms**

The formula for a compound indicates the elements that make up the compound and the number of atoms of each element present in the compound. These numbers of atoms are indicated by the use of small numbers called subscripts. Sometimes groups of atoms act as a single atom. Such a group of atoms is called a radical. If a radical is used in a formula more than once, the radical is put in parentheses and the subscript appears outside the parentheses. When a subscript appears outside the parentheses, it indicates that all the elements inside the parentheses should be multiplied by that subscript. For example, the formula $\text{Fe}(\text{OH})_3$ indicates the combination of one atom of iron, Fe, three atoms of oxygen, O, and three atoms of hydrogen, H.

In the following examples, list each element in the compound and the number of atoms of each element present. The first example has been done for you. You may already be familiar with some of the compounds.

Name	Use	Formula	Atoms in Formula
Calcium carbonate	Limestone	CaCO_3	Ca = calcium 1 C = carbon 1 O = oxygen 3
Aspirin	Pain reliever	$\text{C}_9\text{H}_8\text{O}_4$	
Magnesium hydroxide	Found in milk of magnesia	$\text{Mg}(\text{OH})_2$	
Paradichlorobenzene	Moth crystals	$\text{C}_6\text{H}_4\text{Cl}_2$	
Acetic acid	Found in vinegar	$\text{C}_2\text{H}_4\text{O}_2$	
Trinitrotoluene (TNT)	Explosive	$\text{C}_7\text{H}_5(\text{NO}_2)_3$	

Name	Use	Formula	Atoms in Formula
Calcium dihydrogen phosphate	Fertilizer	$\text{Ca}(\text{H}_2\text{PO}_4)_2$	
Pyrite	Fool's gold	FeS_2	
Sucrose	Sugar	$\text{C}_{12}\text{H}_{22}\text{O}_{11}$	
Heptane	One of several components in gasoline	C_7H_{14}	
Sulfuric acid	Used in car batteries	H_2SO_4	
Cellulose	Found in wood products such as your pencil and paper	$\text{C}_6\text{H}_7\text{O}_2(\text{OH})_3$	
Asbestos	Insulator	$\text{H}_4\text{Mg}_3\text{Si}_2\text{O}_9$	
Dichlorodiphenyl-trichloroethane (DDT)	Banned pesticide	$\text{C}_{14}\text{H}_9\text{Cl}_5$	
Silicon dioxide	Sand	SiO_2	
Iron oxide	Rust	Fe_2O_3	
Butane	Lighter fluid	C_4H_{10}	