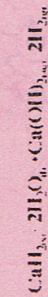


Name: _____ Class Number _____ Period: _____

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 polyatomic ion. If a polyatomic ion is used in a formula more than once, it 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 $\text{Ca}(\text{NO}_3)_2$ indicates the combination of 1 atom of calcium, Ca, 2 atoms of nitrogen, N, 6 atoms of oxygen, O.

Chemical Equations



Subscript Numbers
Indicate the number of each
type of atom

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	$\text{C}_9\text{H}_8\text{O}_4$	
Acetic acid	Found in vinegar	$\text{C}_2\text{H}_4\text{O}_2$	
Paradichlorobenzene	Moth crystals	$\text{C}_6\text{H}_4\text{Cl}_2$	
Magnesium hydroxide	Found in milk of magnesia	$\text{Mg}(\text{OH})_2$	
Trinitrotoluene (TNT)	Explosive	$\text{C}_7\text{H}_5(\text{NO}_2)_3$	
Cellulose	Found in wood products such as your pencil and paper	$\text{C}_6\text{H}_7\text{O}_2(\text{OH})_3$	

Name	Use	Formula	Atoms in Formula
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_{16}	
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 Dioxide	Rust	Fe_2O_3	
Butane	Lighter Fluid	C_4H_{10}	

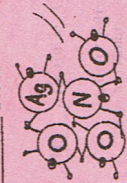
GREAT COMBINATIONS, CONTINUED

Use with page 80.
Write the chemical formula for each compound.

9. baking soda (sodium hydrogen carbonate)



10. silver nitrate



11. methane



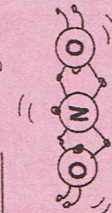
12. sodium peroxide



13. carbon monoxide



14. nitrogen dioxide



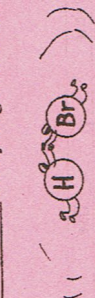
15. lead monoxide



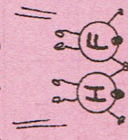
16. sulfuric acid



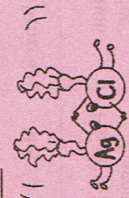
17. hydrogen bromide



18. hydrogen fluoride



19. silver chloride



20. salt (sodium chloride)



GREAT COMBINATIONS

Most of the solids, liquids, and gases around you exist because of their ability to combine, or chemically bond, with other elements and make new substances—called compounds. All compounds are created by chemical reactions in which the atoms rearrange themselves and share particles. Once atoms decide to bond, they often hang on tightly to their new arrangement and are not easy to split apart. Each of these groupings of atoms on this page and the next (page 81) shows the atoms that would make up one molecule of a compound. The compound is named, and the atoms are pictured. It's your job to write the formula that shows the makeup of the compound.

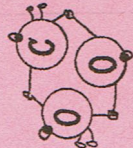
1. hydrogen chloride



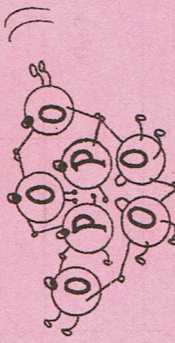
2. water



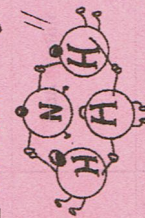
3. carbon dioxide



4. phosphorus pentoxide



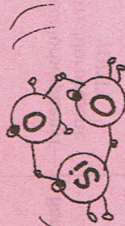
5. ammonia



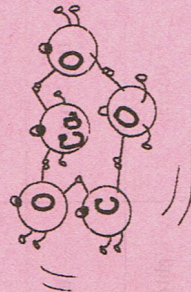
6. hydrogen peroxide



7. sand (silicon dioxide)



8. chalk (calcium carbonate)



Use with page 81.