PS Chemistry Chapter 20

Counting Atoms Name_____ Period____

Background: 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, and are called polyatomic ions. 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 the subscript appears outside the parentheses, it indicates that all the elements inside the parentheses should be multiplied by the subscript. For example, the formula $Fe(OH)_3$ indicates the combination of one atom of iron (Fe), three atoms of oxygen (O), and three atoms of hydrogen (H).

Directions: In the following table, list each element in the compound, the symbol and the number of atoms of each element present. Record the total atoms present and circle this number.

Name	Use/Found	Formula	Atoms in Formula
Calcium Carbonate	Limestone	$CaCO_3$	calcium Ca = 1 carbon C = 1 oxygen O = 3 (5)
Aspirin	Pain reliever	$C_9H_8O_4$	
Magnesium hydroxide	Found in milk of magnesia	$Mg(OH)_2$	
Paradichlorobenzene	Moth crystals	$C_6H_4Cl_2$	
Acetic Acid	Vinegar	$C_2H_4O_2$	
Trinitrotoluene (TNT)	Explosive	$C_7H_5(NO_2)_3$	
Calcium dihydrogen phoshphate	Fertilizer	$Ca(H_2PO_4)_2$	
Pyrite	Fool's gold	FeS_2	
Sucrose	Sugar	$C_{12}H_{22}O_{11}$	
Heptane	Gasoline	C_5H_{12}	
Sulfuric acid	Car batteries	H_2SO_4	
Cellulose	Plants/Wood	$C_6H_7O_2(OH)_3$	

Asbestos	Banned Insulator	$H_4Mg_3Si_2O_9$	
Dichlorodiphenyltrichloroethane	Banned pesticide	$C_{14}H_9Cl_5$	
Silicon dioxide	Sand	SiO_2	
Iron oxide	Rust	Fe_2O_3	
Butane	Lighter fluid	C_4H_{10}	

Charting Oxidation Numbers

Directions: Complete the missing information in the chart below. Refer to your Periodic Table.

Element	Atomic Number	Protons	Electrons	Valence Electrons	Type of Ion Formed	Oxidation Number
Hydrogen	1	1	1	1	+, -	+1, -1
Helium					none	none
Lithium						
Beryllium						
Boron						
Carbon				4	+, -	+4, -4
Nitrogen						
Oxygen		8				-2
Fluorine					-	
Neon						
Sodium						
Magnesium						
Aluminum					+	
Silicon						
Phosphorus						
Sulfur						
Chlorine						
Argon					none	
Potassium						
Calcium				2		+2