COMPOUND NAMING FLOWCHART

What type of compound do you have?

Ionic Compound

Metal + nonmetal
NH_4^{+1} + nonmetal

1. Name metal or ammonium
2. Name non-metal with "-ide" ending

Metal + poly ion
NH_4^{+1} + poly ion

1. Name metal or ammonium
2. Name polyatomic ion

If metal has more than one possible oxidation number (charge), show using roman numerals
(Applies to Group 3-15 metals, except Group 13 (+3), Zn^{+2}, Cd^{+2}, & Ag^{+1})

Examples:
AgCl, silver chloride
NH_4OH, ammonium hydroxide
$FeSO_4$, iron (II) sulfate
$Mg(ClO_3)_2$, magnesium chlorate

HYDRATES:
1. Name the ionic salt
2. Use the word "hydrate" for the waters
3. Use covalent prefixes to indicate the number of "hydrates"

Example: $CuCl_2 - 6H_2O$,
copper (II) chloride hexahydrate

Acid

H^{+1} + element (aq)
H^{+1} + poly ion (aq)

NOTE: if no (aq) attached, use ionic rules (ex: HCl (g), hydrogen chloride)

H^{+1} + ____-ide (nonmetal): hydro___ic acid
H^{+1} + ___-ate ion: ___ic acid
H^{+1} + ___-ite ion: ___ous acid

H^{+1} count balances charge of the anion.

NOTE: Add "ur" back to sulfur acids and "or" back to phosphorus acids

Examples:
HCl (aq) - hydrochloric acid
H_2SO_4 (aq) - sulfuric acid
H_2SO_3 (aq) - sulfurous acid

Covalent Compound

Organic Hydrocarbon C_xH_y

1. # Carbons indicate prefix

1 = meth
2 = eth
3 = prop
4 = but
5 = pent
6 = hex
7 = hept
8 = oct
9 = non
10 = dec

2. Add -ane ending
3. Decide if need "cyclo" in front of name by determining general structure

C_nH_{2n+2} = straight chain
C_nH_{2n} = cyclic, need "cyclo"

Examples:
C_4H_{10}, butane
C_4H_8, cyclobutane

Inorganic Non-metal + Non-metal

1. Name first nonmetal using prefix (except for mono)
2. Name 2nd nonmetal using prefix and "-ide" ending

Prefixes:
1 = mono
2 = di
3 = tri
4 = tetra
5 = penta
6 = hexa
7 = hepta
8 = octa
9 = nona
10 = deca

Examples:
CO_2, carbon dioxide
N_2O_4, dinitrogen tetraoxide

WRITING COMPOUND FORMULAS

IONICS	ACIDS	COVALENTS
1. Write down your two ions with their charge. 2. If you see a roman numeral, it is telling you the positive charge of the metal. 3. Add subscripts in order to cancel out the charge of the ions to zero for the overall compound. 4. If you need a balancing subscript on a polyatomic ion, add parentheses around the polyatomic ion, and place the balancing subscript outside of the parentheses.	1. You will be able to pick out these compounds easily because they include the term ACID! 2. Determine which ion is in the acid based on the name. *Hydro-__-ic acid = __-ide ion (nonmetal)* *__-ic acid = __-ate ion* *__-ous acid = __-ite ion* 3. Balance the charge on the ion using H^{+1} ions at the front of the compound. 4. Add (aq) to the end of the compound, as all acids are aqueous solutions!	1. You will be able to pick out these compounds easily because they include PREFIXES! 2. Determine if the covalent is organic (one word name with –ane ending) or if it is inorganic (two word name). 3. If organic, determine the carbon # subscript from the prefix, and determine the hydrogen # subscript from presence of "cyclo" 4. If inorganic, determine subscripts from prefixes

HINT: –ATE and –ITE endings = Polyatomic Ions, but
–IDE endings = Non-Metals (except OH^{-1} and CN^{-1})