Topic IV Test (Nomenclature) Overview

-Nomenclature
-Oxidation #'s
-Percent Composition

Monatomic Ions:

Cations	Anions
+ ions	- ions
lose e-	gain e-
metals	nonmetals

Representative or Main Group
("s" & "p" block)

Cations:
*Name metal + ion

Li+ Lithium ion

Ca2+ Calcium ion

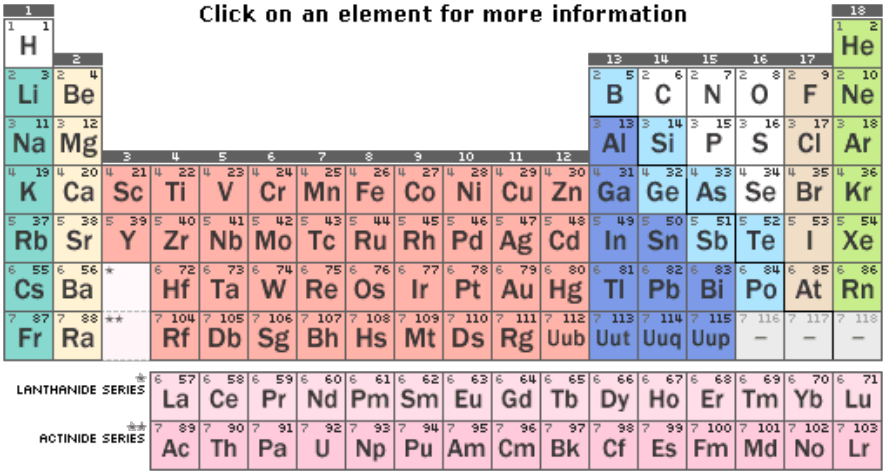
Al 3+ aluminum ion

Anions:
base + -ide ion

N-3 nitride ion

S-2 sulfide ion

I- iodide ion



Transition Metals; (Group 3-12)
lose e-
multivalent: form cation with more than one charge

Pb2+ Lead (II) ion
Pb 3+ Lead(III) ion

Cr4+ Chromium(IV) ion

Stock System:
Transition compounds (metals 3-12)

I VI
II VII
III
IV
V

****NEED TO KNOW*****
Do **NOT** use stock system :
- Zn 2+
- Cd 2+
- Ag +

Examples:
CaO calcium oxide

MgI_2 Magnesium iodide

Al_2O_3 Aluminum oxide

$AlCl_3$ Aluminum chloride

CuCl Copper(I) chloride

$SnBr_3$ Tin(IV) bromide

K_3S Potassium sulfide

(For more examples look at notes)

Covalent (molecular) Compound

*2 nonmetals
*Never have polyatomic ions

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

(Look at notes for examples)

ASK: _____

What type of Compound

NO Covalent I Ionic **YES**

I
V
Prefixes

Is a Metal Present?

NO I **YES**

Name
Cation followed by name anion-ide

Do I have multivalent metal
I
Stock System

Acids:
* Contain 1 or more H atoms
*Starts w/ "H"
* **HnX**

H: atom
n: # of atoms
X: anion monatomic
polyatomic

Anion Ending	Example of an anion	Acid (name) rule	Example of acid	Formula of Acid
-ide	Chloric Cl- Fluoride F- Phosphide P+	hydro(stem) -ic acid	hydrochloric acid hydrofluoric acid hydrophosphoric acid	HCl HF H_3P
-ite	Sulfite SO3 Nitrite NO2-	Stem-ous	Sulfurous acid nitrous acid	H_2SO_3 HNO_2
-ate	Sulfate SO42- PO43-	stem-ic	Sulfuric acid Phosphoric acid	H_2SO_4 H_3PO_4

<u>Rules For Oxidation #'s</u>

1. Elemental state is **0**
2. Monatomic Ion = **ionic charge**
3. Oxygen = **-2**
   - **Except:** Elemental state (0), Peroxides (-1)

4. Hydrogen= +1
   - **Except:** Elemental State (0), Metal hydride (NaH, CaH_2)

5. Binary Compounds more electronegative element is assigned an oxidation # = to **anion charge**
   - F > O > N > Cl

6. Sum Oxidation #'s in compound= **0**
7. Sum Oxidation #'s polyatomic ion= **ion's charge**