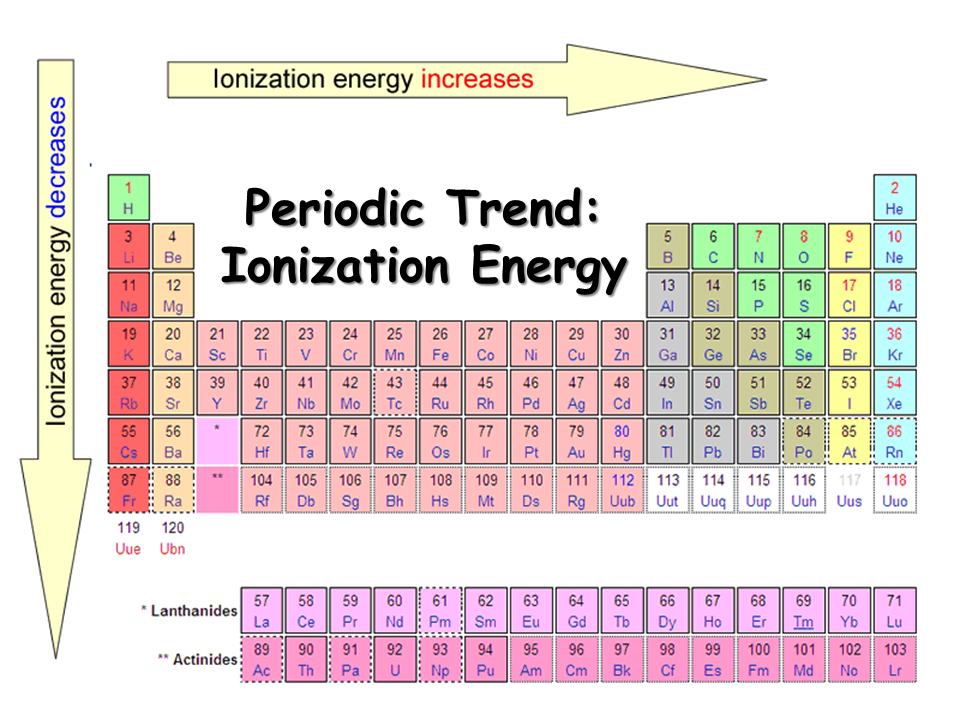
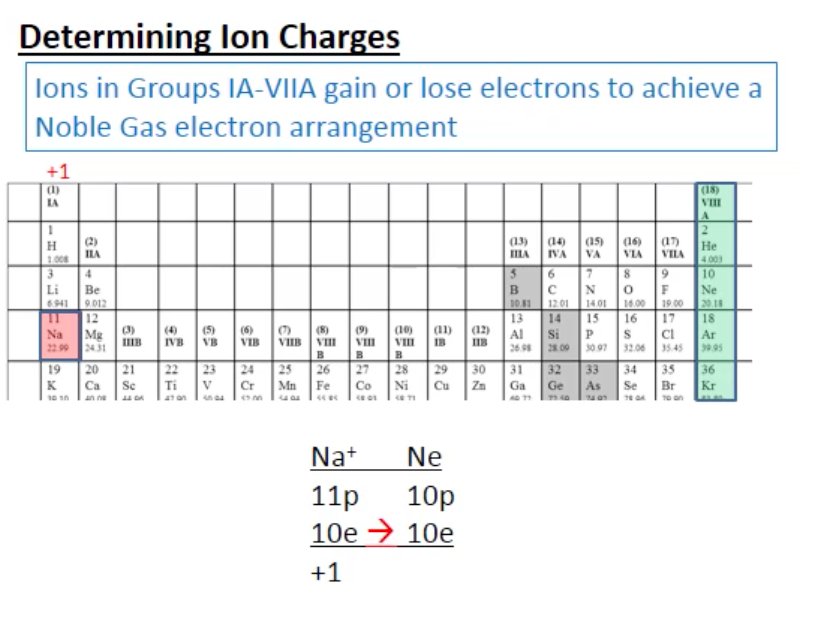
**Ionic Nomenclature**

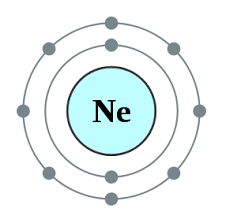
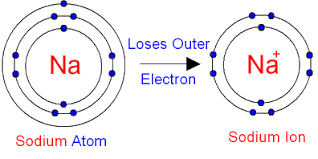


Consider the following list of elements: *Lithium, Bromine, Nitrogen*, *Calcium, Potassium, Phosphorous, Oxygen, Sulfur, Magnesium, Sodium, and Aluminum*

1. List the elements (from above) that can form cations easily, and list the charge you would expect with these cations:

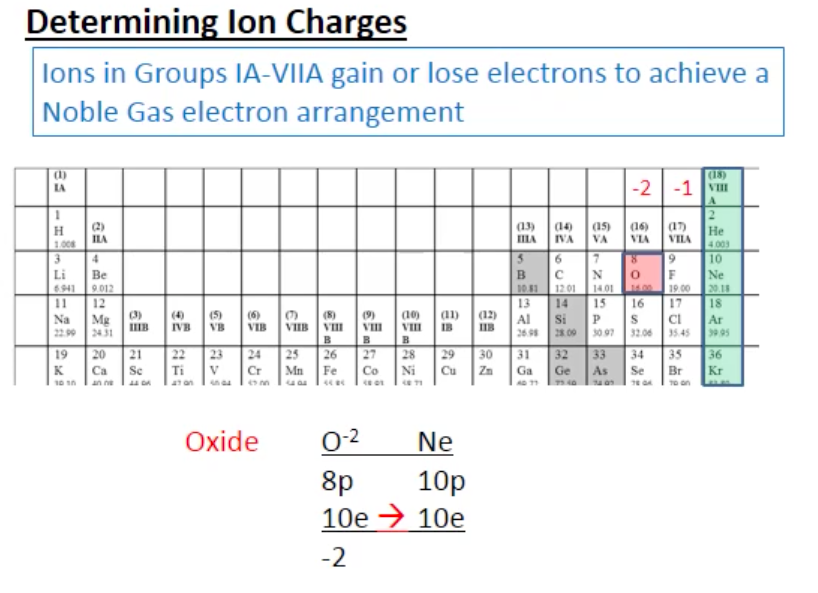
Lithium = +1, Calcium = +2, Potassium = +1, Magnesium = +2, Sodium = +1, Aluminum = +3

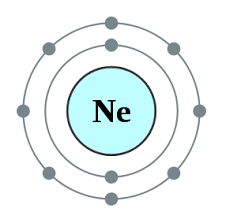
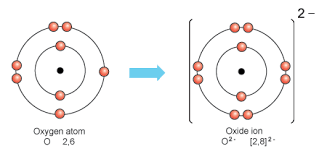


2. List the elements (from above) that can form anions easily, and list the charge you would expect with these anions:

Bromine = -1, Nitrogen = -3, Phosphorous = -3, Oxygen = -2, Sulfur = -2



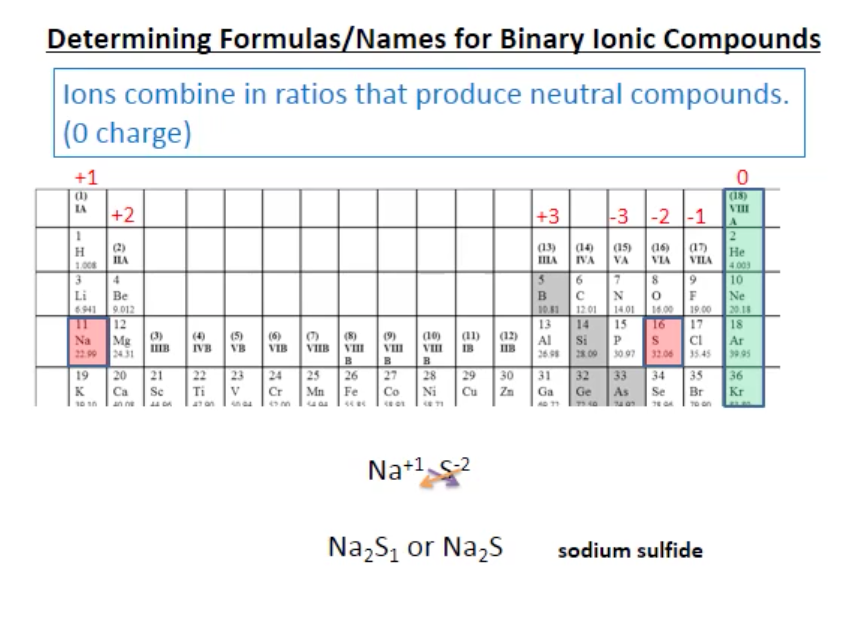
 

3. Write the formula, and name for ionic compounds formed from:

Na&S = Na2S (Sodium Sulfide) K&Br = KBr

(Potassium Bromide)

Ca&P = Ca3P2 (Calcium Phosphide) Al&F = AlF3 (Aluminum Fluoride)



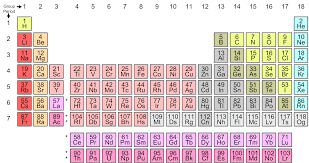
4. Write names for the following compounds:

NiS Nickel(II) Sulfide Cr2O3 Chromium(III) Oxide

Each O is 2- making 6-.

So 6+ divided by the 2 Cr is 3+

CuCl2 Copper(II) Chloride Hg2Cl2 Mercury(I) Chloride

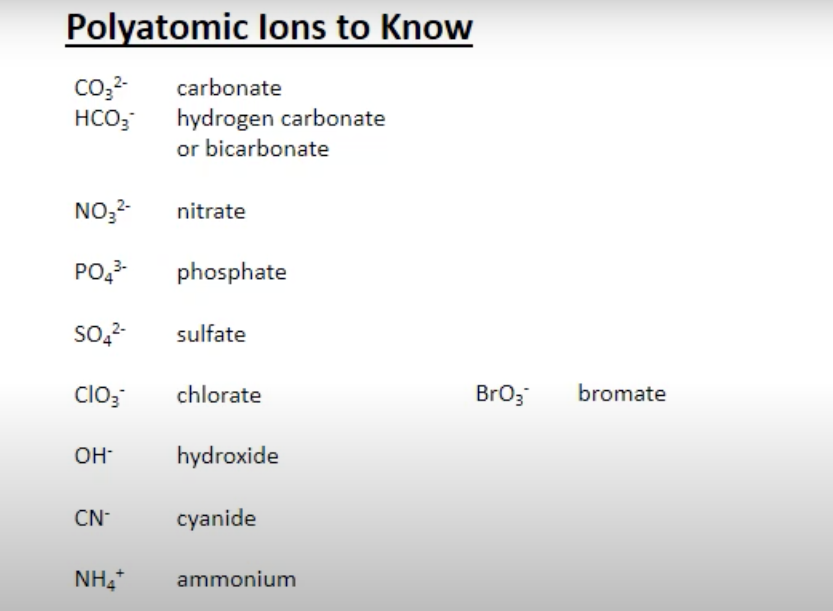


5. Name the following compounds with polyatomic ions:

CaCO3 Calcium Carbonate KNO3 Potassium Nitrate

NaHCO3 Sodium Hydrogencarbonate Al(NO3)3 Aluminum Nitrate

(or Sodium Bicarbonate)



**Covalent Nomenclature**

1. Supply Greek prefixes for the following numbers:

one: mono two: di three: tri

four: tetra five: penta six: hexa

seven: hepta eight: octa nine: nona

ten: deca

2. An easy way to spot ionic compounds:

Metal + nonmetal (KBr), metal + polyatomic anion (CaSO4), polyatomic anion + polyatomic cation (NH4NO3), polyatomic cation + nonmetal (NH4Cl)

3. An easy way to spot covalent (molecular) compounds: nonmetal + nonmetal(s)

4. Name the following compounds:

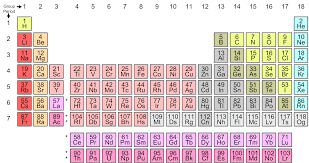
CaCl2 Calcium chloride CO2 Carbon dioxide

NO2 Nitrogen dioxide SF6 Sulfur hexafluoride

NaCl Sodium chloride PCl3 Phosphorous trichloride

ICl5 Iodine pentachloride H2O Water

NH3 Ammonia



5. Supply Chemical formulas for the following compounds:

Carbon tetrachloride CCl4 Copper(II) Sulfate CuSO4

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Formulas and Names of Common Ions | | |  |  |  |
|  | Metals |  |  | Nonmetals |  |
| Group Number | Cation | Name of Cation | Group Number | Anion | Name of Anion |
| 1A | Li+ | Lithium | 5A | N3- | Nitride |
|  | Na+ | Sodium |  | P3- | Phosphide |
|  | K+ | Potassium | 6A | O2- | Oxide |
| 2A | Mg2+ | Magnesium |  | S2- | Sulfide |
|  | Ca2+ | Calcium | 7A | F- | Fluoride |
|  | Ba2+ | Barium |  | Cl- | Chloride |
| 3A | Al3+ | Aluminum |  | Br - | Bromide |
|  |  |  |  | I- | Iodide |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Metals That Form More Than One Positive Ion | | | | |
| Element | Possible Ions | | Name of Ion | |
| Chromium | Cr2+ | | Chromium(II) | |
|  | Cr3+ | | Chromium(III) | |
| Copper | Cu+ | | Copper(I) | |
|  | Cu2+ | | Copper(II) | |
| Mercury | Hg22+ | | Mercury(I)\* | |
|  | Hg2+ | | Mercury(II) | |
| Nickel | Ni2+ | | Nickel(II) | |
|  | Ni3+ | | Nickel(III) | |
| \*Mercury (I) ions form an ion pair with a 2+ charge | | | | |
| Names and Formulas of Some Common Polyatomic Ions | | | | |
| Nonmetal | | Formula of Ion | | Name of Ion | |
| Hydrogen | | OH- | | Hydroxide | |
| Nitrogen | | NH4+ | | Ammonium | |
|  | | NO3- | | Nitrate | |
| Chlorine | | ClO3- | | Chlorate | |
| Carbon | | CO32- | | Carbonate | |
|  | | HCO3- | | Hydrogen carbonate (or bicarbonate) | |
| Sulfur | | SO42- | | Sulfate | |
| Phosphorus | | PO43- | | Phosphate | |