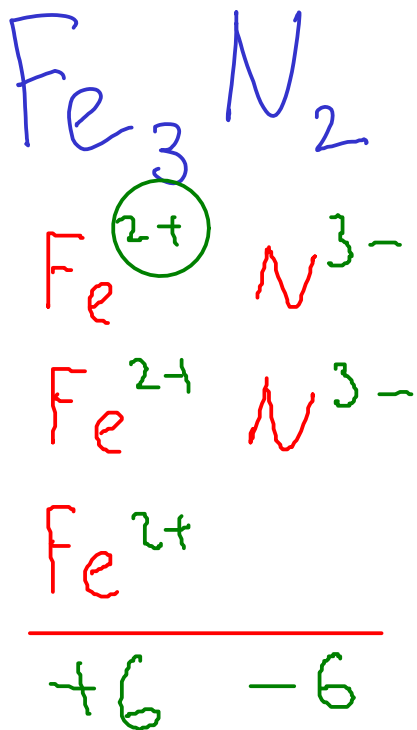


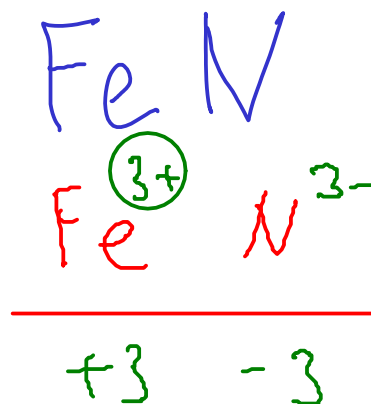
TRANSITION METAL CATIONS

- So how do you know which cation you're dealing with? For now, you'll have to be told
- Either the chemical formula of an ionic compound or the name of an ionic compound can tell you what charge is on the transition metal cation.

Examples:



* We call this form of iron "iron(II)" ... pronounced "iron two". We call this compound "iron(II) nitride", since it contains iron ions with a +2 charge.



* We call this form of iron "iron(III)" ... pronounced "iron three". We call this compound "iron(III) nitride", since it contains iron ions with a +3 charge.

POLYATOMIC IONS

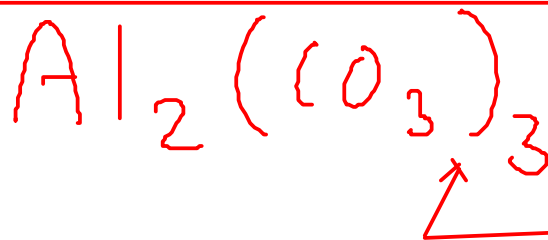
- Some MOLECULES can gain or lose electrons to form CATIONS or ANIONS. These are called POLYATOMIC IONS

- Polyatomic ions form ionic compounds in the same way that single-element ions do.

Example: CO_3^{2-} : CARBONATE ION

* Compare
to
 Al_2O_3

from
 Al^{3+} O^{2-}



* Use parenthesis when an ionic compound's formula contains more than one of a polyatomic ion.

See the web site or page 63 - table 2.5 (9th ed) or table 2.6 (10th ed) - for a list of common polyatomic ions!

NAMES OF IONS

- To properly discuss ions and ionic compounds, we have to know how to name them!

CATIONS

3 kinds:

① Main group cations (metals that take only one charge when forming ions)

- The element's name is the same as the ion's name!



② Transition metal cations (from metals that can form several cations)

- The CHARGE of the cation must be given. Use a ROMAN NUMERAL after the element name to indicate charge!



③ Polyatomic cations

- Memorize list.



ANIONS

2 kinds

①

Main-group nonmetals

- Use the STEM NAME of the element, then add "-ide" suffix

 N^{3-} : "nitride" ion P^{3-} : "phosphide ion" S^{2-} : sulfide ion O^{2-} : "oxide ion" F^{-} : "fluoride ion"

②

Polyatomic ions

- Memorize list.(see web site)

 $\text{C}_2\text{H}_3\text{O}_2^-$: "acetate ion" SO_4^{2-} : "sulfate ion" NO_3^- : "nitrate ion" SO_3^{2-} "sulfite ion" NO_2^- : "nitrite ion"

* Polyatomic ions ending in "-ate" and "-ite" suffixes always contain oxygen! "-ate" ions have more oxygen atoms than their "-ite" counterparts.

NAMING IONIC COMPOUNDS

- The name of the compound is based on the name of the ions in the compound
- Cation first, anion second

Examples:



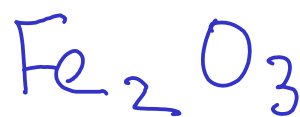
magnesium hydroxide



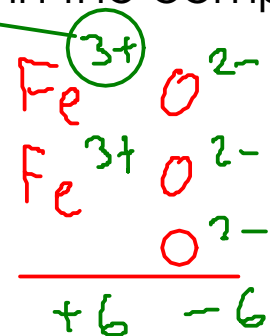
sodium sulfide



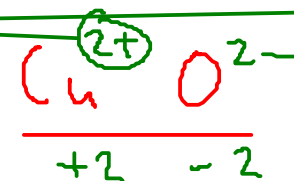
beryllium bromide



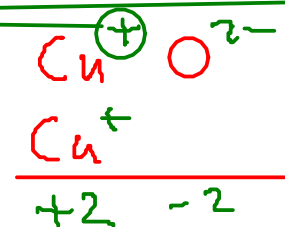
iron(III) oxide



copper(II) oxide



copper(I) oxide

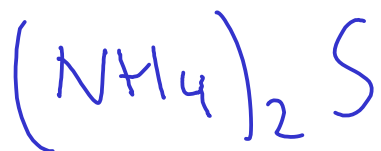


* Remember to include the Roman numeral for CHARGE when you're writing transition metal compound names!

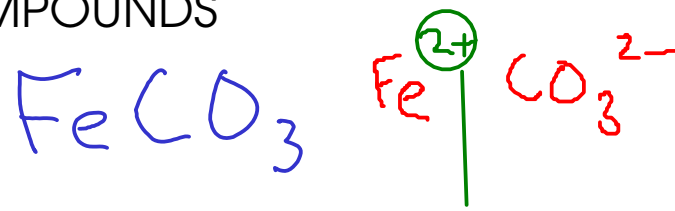
Page 63 (9th edition): Chart of polyatomic ions

Page 64 (10th edition)

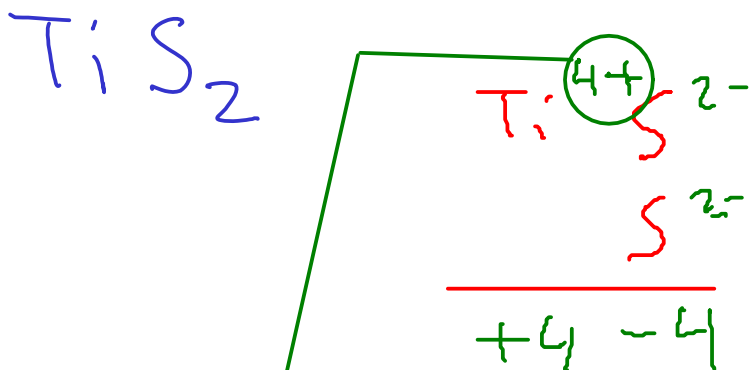
NAMING IONIC COMPOUNDS



ammonium sulfide



iron(II) carbonate



titanium(IV) sulfide



barium phosphate

Spelling
matters!



barium phosphide