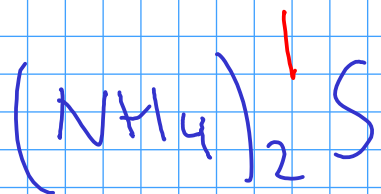
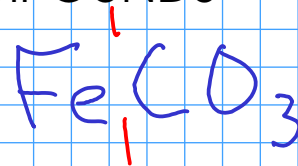


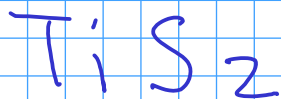
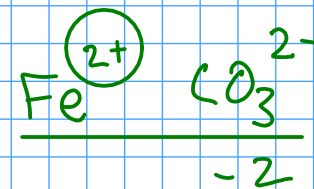
# NAMING IONIC COMPOUNDS



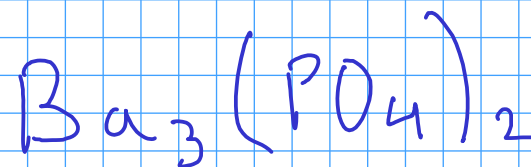
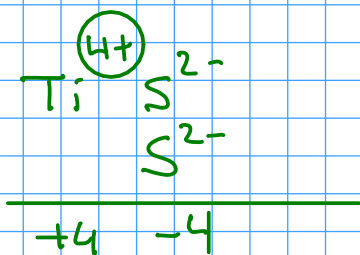
ammonium sulfide



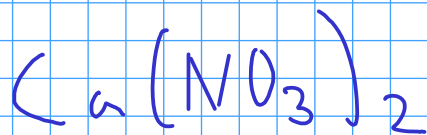
iron(II) carbonate



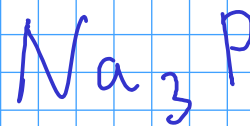
titanium(IV) sulfide



barium phosphate



calcium nitrate



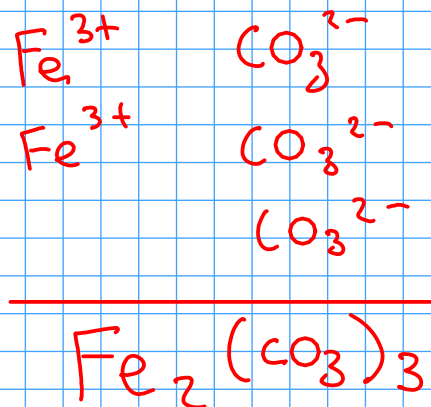
sodium phosphide

## DETERMINING THE FORMULA OF AN IONIC COMPOUND FROM THE NAME

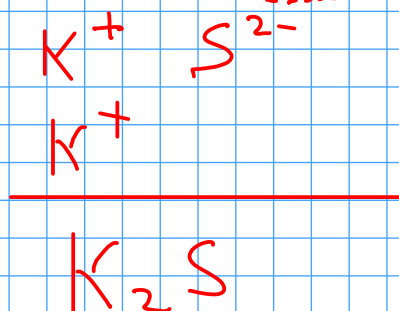
- The name of an ionic compound is made of the names of the CATION and ANION in the compound.
  - To get the FORMULA, you must figure out the SMALLEST RATIO of cation to anion that makes the charges balance out
- 

Examples:

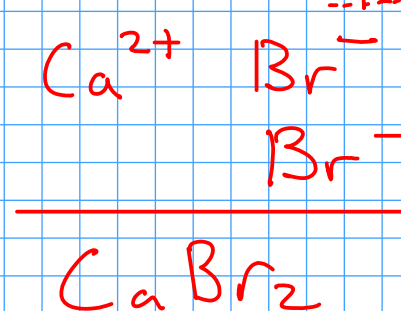
iron(III) carbonate



potassium sulfide

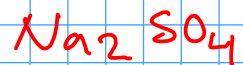
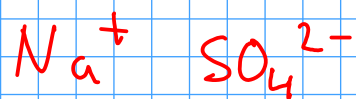


calcium bromide

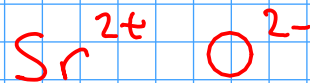


# DETERMINING IONIC FORMULAS

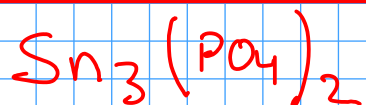
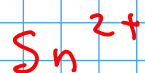
sodium sulfate



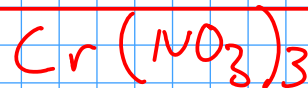
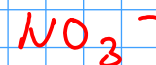
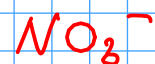
strontium oxide



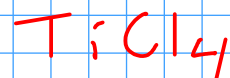
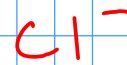
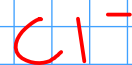
tin(II) phosphate



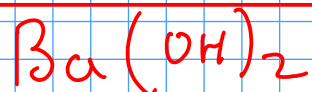
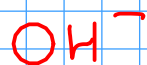
chromium(III) nitrate



titanium(IV) chloride



barium hydroxide



not  ~~$\text{BaOH}_2$~~

# MOLECULAR COMPOUNDS

- There are several kinds of molecular compound. We will learn to name two simple but important classes

## ① BINARY MOLECULAR COMPOUNDS


- molecular compounds containing only two elements

## ② ACIDS

- molecular compounds that dissolve in water to release  $H^+$  ions
- corrosive to metals (react with many to produce hydrogen gas)
- contact hazard: can cause chemical burns to eyes and skin
- sour taste
- turn litmus indicator RED
- two kinds of acids:

### ① BINARY ACIDS

- contain hydrogen and one other element

usually  
Group VIIA  


### ② OXYACIDS

- contain hydrogen, OXYGEN, and another element

## BINARY MOLECULAR COMPOUNDS

- Named based on the elements they contain, plus prefixes to indicate the number of atoms of each element in each molecule

### ① FIRST ELEMENT

- Add a GREEK PREFIX to the name of the element.
- Omit the "MONO-" (1) prefix if there is only one atom of the first element

### ② SECOND ELEMENT

- Add a GREEK PREFIX to the STEM NAME of the element
- Add the suffix "-ide" (as if you were naming an anion)
- DO NOT omit the "mono-" prefix if there is only one atom of the second element

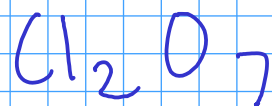
MEMORIZE THE GREEK PREFIXES. SEE COURSE WEB SITE FOR A LIST!

# BINARY MOLECULAR COMPOUNDS

Examples:



boron trifluoride



dichlorine heptaoxide



carbon monoxide



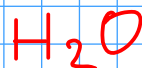
carbon dioxide

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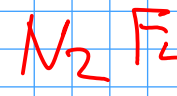
carbon tetrachloride



dihydrogen monoxide



dinitrogen tetrafluoride



$\text{MgCl}_2$  : This compound is called "magnesium chloride", NOT "magnesium dichloride".  
Why? This compound is IONIC, and is named using the system we discussed for ionic compounds.  
(Hint: Mg is a metal!)

# ACIDS

## ① BINARY ACIDS

- named after the element (other than hydrogen) they contain
- common binary acids include a Group VIIA element
- named: "Hydro-" + STEM NAME OF ELEMENT + "-ic acid"

Four  
common  
binary  
acids

$\text{HF}$ : hydrofluoric acid

\* dissolves glass!

$\text{HCl}$ : hydrochloric acid

\* most common binary acid!

$\text{HBr}$ : hydrobromic acid

$\text{HI}$ : hydroiodic acid

# ACIDS

## ② OXYACIDS

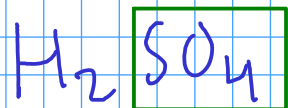
- Easy to think about as HYDROGEN IONS combined with POLYATOMIC IONS

- These acids are not true ionic compounds, but they interact with water to PRODUCE ions!

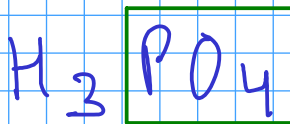
- named based on the polyatomic ion they contain, with an ending change:

① - ions ending in -ATE form acids ending in -IC

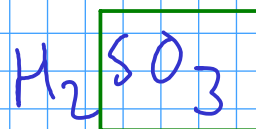
② - ions ending in -ITE form acids ending in -OUS



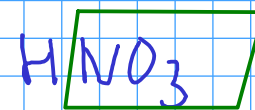
sulfuric acid



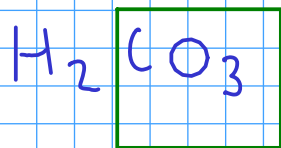
phosphoric acid



sulfurous acid



nitric acid



carbonic acid