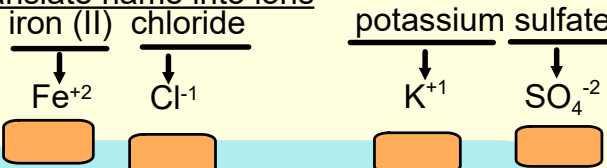


## Ionic Bonds - Writing formulas and names

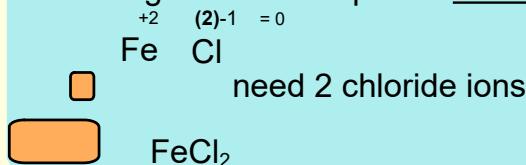
4. OBJ: I can write ionic unit formulas and name ionic substances.

### Writing Ionic Formulas

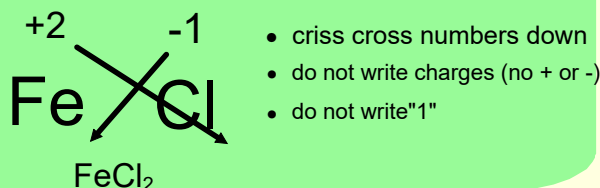
#### 1. Translate name into ions



#### 2. The charge on the compound must equal 0

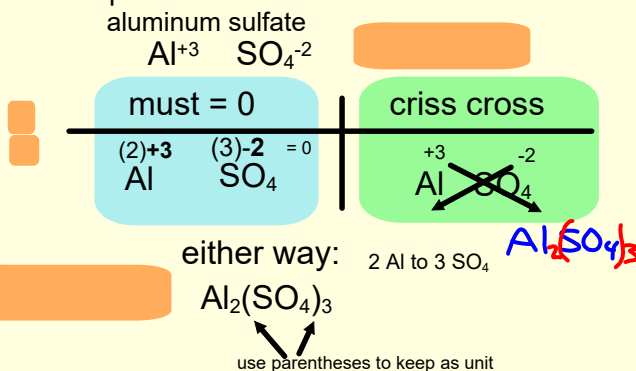


#### shortcut: crisscross method



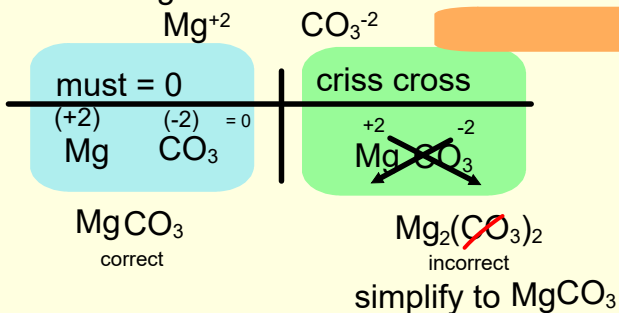
#### 3. Keep polyatomics as a unit (family)

use parentheses if more than one unit

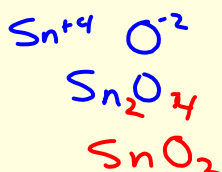


#### 4. Use simplest ratios (ionic only!!!)

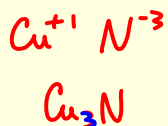
magnesium carbonate



tin(IV) oxide



Copper(I) nitride



4. OBJ: I can write ionic unit formulas and name ionic substances.

**Naming ionic compounds****1. Name cation first, then anion**

cation - same name as element

anion - mon-atomic (1 element)

end of element name is taken off, add -ide

chlorine ---&gt; chloride

CaF<sub>2</sub> calcium fluoride

MgO magnesium oxide

AlP aluminum phosphide

**2. transition metals with variable charges**need **roman numerals (I, II, III, IV)**

\*find roman numerals on ion chart

Roman numeral must match charge on cation

Examples to write:

Al<sup>+3</sup>

Cu<sup>+1</sup>

Cu<sup>+2</sup>

Pb<sup>+2</sup>

Pb<sup>+4</sup>

Look at charge of anion  
to determine  
charge of cation

CuCl

CuCl<sub>2</sub>

Table 6.3

Formulas and Names of Common Metal Ions w

| Formula                        | Stock name         |
|--------------------------------|--------------------|
| Cu <sup>+</sup>                | Copper(I) ion      |
| Cu <sup>2+</sup>               | Copper(II) ion     |
| Fe <sup>2+</sup>               | Iron(II) ion       |
| Fe <sup>3+</sup>               | Iron(III) ion      |
| *Hg <sub>2</sub> <sup>2+</sup> | Mercury(I) ion     |
| Hg <sup>2+</sup>               | Mercury(II) ion    |
| Pb <sup>2+</sup>               | Lead(II) ion       |
| Pb <sup>4+</sup>               | Lead(IV) ion       |
| Sn <sup>2+</sup>               | Tin(II) ion        |
| Sn <sup>4+</sup>               | Tin(IV) ion        |
| Cr <sup>2+</sup>               | Chromium(II) ion   |
| Cr <sup>3+</sup>               | Chromium(III) ion  |
| Mn <sup>2+</sup>               | Manganese(II) ion  |
| Mn <sup>3+</sup>               | Manganese(III) ion |
| Co <sup>2+</sup>               | Cobalt(II) ion     |
| Co <sup>3+</sup>               | Cobalt(III) ion    |

\*A diatomic elemental ion.

**3. Using polyatomic ions:**

If more than 2 elements (covalent bond), then use  
polyatomic name (count capital letters!)

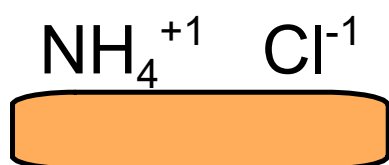
Use ion chart!

DON'T Mess with the  
FamilyMgSO<sub>4</sub> Ba(NO<sub>3</sub>)<sub>2</sub> Li<sub>3</sub>PO<sub>4</sub> Ca(C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>)<sub>2</sub> NH<sub>4</sub>ClO<sub>3</sub> 

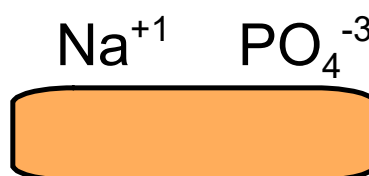
Try these:

FeCl<sub>3</sub>MnPO<sub>4</sub>Pb(CO<sub>3</sub>)<sub>2</sub>

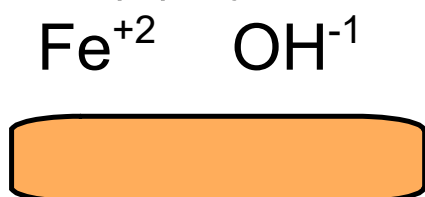
1. ammonium chloride



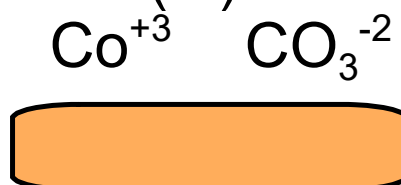
3. sodium phosphate



2. iron (II) hydroxide



4. cobalt (III) carbonate



4. OBJ: I can write ionic unit formulas and name ionic substances.

1. Write the formula for the compound with the following names:  
(hint—write ions first)

a. Nickel (II) Carbonate \_\_\_\_\_

b. magnesium cyanide \_\_\_\_\_

c. Iron (III) silicate \_\_\_\_\_

2. Write the correct compound name of the following:

a.  $\text{SnCl}_2$  \_\_\_\_\_

b.  $\text{Ag}_2\text{SO}_3$  \_\_\_\_\_

c.  $\text{FeCl}_2$  \_\_\_\_\_

3. Explain the difference between an ionic and covalent bond.