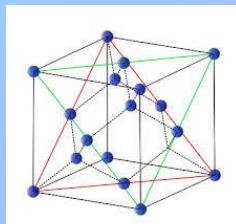
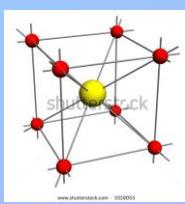
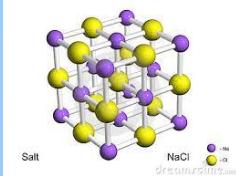


## Ionic Compounds

- Generally involves metal + nonmetal
- Units are called “formula units”  
(not called molecules)
- Structure is called a “crystal lattice”
- Ex:  $\text{NaCl}$      $\text{MgBr}_2$      $\text{Ca}(\text{NO}_3)_2$

### Polyatomic ion

A group of atoms with an overall charge



## Ionic Compounds: Formulas

- Cation 1<sup>st</sup> (positive, metal), Anion 2<sup>nd</sup> (negative, nonmetal)  
(One exception: ammonia,  $\text{NH}_3$ ) ← memorize
- Atoms tend to gain or lose a certain number of e-  
Oxidation number:  
Charge an atom gets when e- are lost or gained  
Can be predicted based on position on per. table
- Ions combine in a ratio so the total number of positives equals the total number of negatives

Ex:	$\text{Ca}^{+2}$	$\text{Cl}^{-1}$	$\text{CaCl}_2$
	$\text{Ca}^{+2}$	$\text{O}^{-2}$	$\text{CaO}$
	$\text{Al}^{+3}$	$\text{O}^{-2}$	$\text{Al}_2\text{O}_3$
	$\text{Na}^{+1}$	$\text{NO}_3^{-1}$	$\text{NaNO}_3$
	$\text{Mg}^{+2}$	$\text{C}_2\text{H}_3\text{O}_2^{-1}$	$\text{Mg}(\text{C}_2\text{H}_3\text{O}_2)_2$
	$\text{Al}^{+3}$	$\text{SO}_4^{-2}$	$\text{Al}_2(\text{SO}_4)_3$

## Ionic Compounds: Naming

### Binary Compounds (only two elements)

1<sup>st</sup> name the cation

2<sup>nd</sup> name the anion, change ending to “ide”

Ex: $\text{CaO}$	calcium oxide
$\text{Be}_3\text{N}_2$	beryllium nitride
$\text{SrF}_2$	strontium fluoride

## Ternary Compounds

- Usually a metal with a polyatomic ion
- 1<sup>st</sup> name the metal; 2<sup>nd</sup> name the polyatomic ion

Ex: BaSO<sub>3</sub> barium sulfite

(BaS barium sulfide)

Li<sub>3</sub>PO<sub>4</sub> lithium phosphate

Cu(NO<sub>3</sub>)<sub>2</sub> copper(II)nitrate

CuNO<sub>3</sub> copper(I)nitrate

## Use of Roman Numerals with Metals:

Most transition metals have more than one charge possible

Ex: iron +2 or +3

iron oxide Fe<sup>+2</sup> O<sup>-2</sup> FeO iron(II)oxide

Fe<sup>+3</sup> O<sup>-2</sup> Fe<sub>2</sub>O<sub>3</sub> iron(III)oxide

charge on the metal

Ion:	Cu <sup>+</sup>	Cu <sup>2+</sup>	Fe <sup>2+</sup>	Fe <sup>3+</sup>	Hg <sup>+</sup>	Hg <sup>2+</sup>	Hg <sup>3+</sup>	Pb <sup>2+</sup>	Pb <sup>3+</sup>	Sr <sup>2+</sup>	Sr <sup>3+</sup>
Name:	Cuprous	Cupric	Ferrous	Ferric	Mercous	Mercous	Mercuc	Plumbous	Plumbic	Stannous	Stannic

<http://library.thinkquest.org/C004970/stoms/oxidation.htm>