

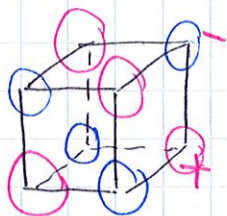
## 2. Properties of Compounds w/ Ionic Bonds

- extremely strong bonds
- high mp & bp. Ex) NaCl melts @  $801^{\circ}\text{C}$
- hard, brittle crystals ( $1473.8^{\circ}\text{F}$ )

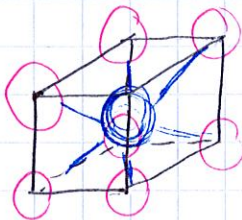
↳ repeating 3-D patterns of cations & anions

↳ called crystal lattice

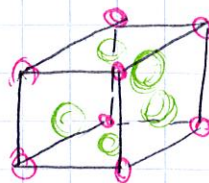
simple cubic



body-centered cubic



face-centered cubic

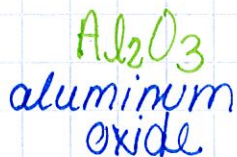


## 3. Type I Binary Ionic Nomenclature

metals (2 elements) (names & formulas)  
that are NOT transition metals

(A.) Names

- 1) Write the name of metal cation.
- 2) Write the name of the nonmetal anion, change ending to -ide



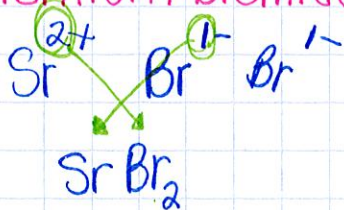


## (B) Formulas

(1) Write symbol & charge of metal cation & nonmetal anion.

(2) Use subscripts so that the total charge of the compound add to 0.

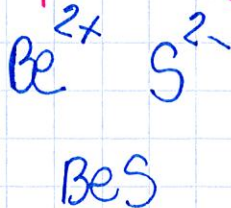
ex) strontium bromide



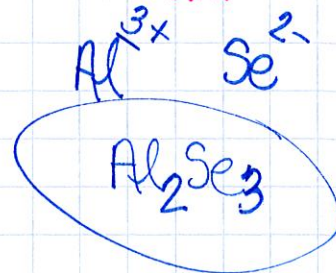
lithium nitride



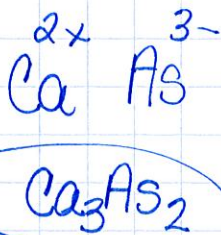
beryllium sulfide



aluminum selenide



calcium arsenide



## Practice

### Names

- (1) KCl
- (2)  $\text{Li}_2\text{O}$
- (3)  $\text{CaBr}_2$
- (4) BaS
- (5)  $\text{Mg}_3\text{N}_2$

### Formulas

- (6) strontium oxide
- (7) sodium nitride
- (8) potassium phosphide
- (9) beryllium fluoride
- (10) hydrogen iodide



# Type II Binary Ionic Compounds

transitions metals

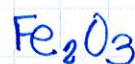
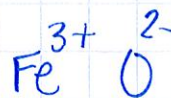
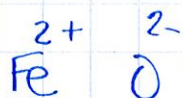
↳ use Roman numerals to tell you charge

1 I  
2 II  
3 III  
4 IV  
5 V

6 VI  
7 VII  
8 VIII  
9 IX  
10 X

Ex) iron (II) oxide or iron (III) oxide

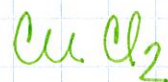
Formulas

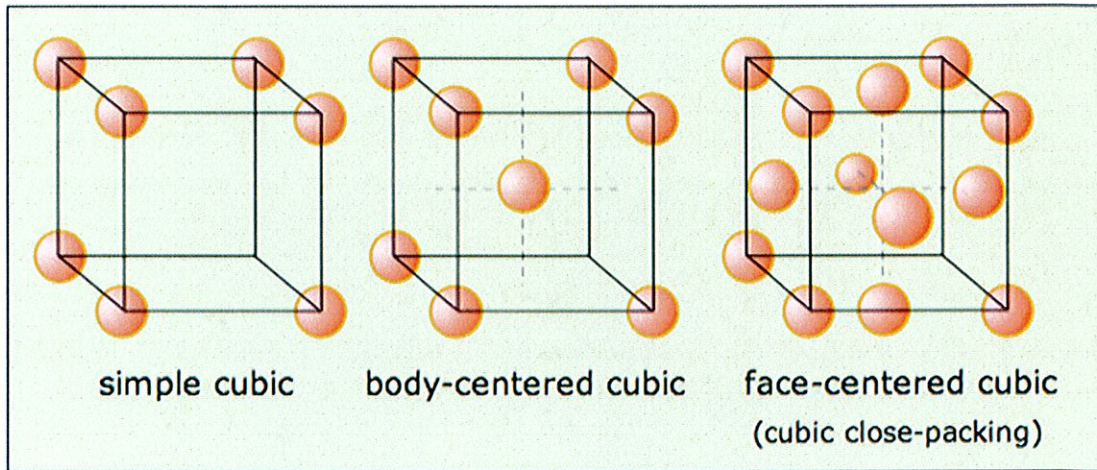


Ex) chromium (III) sulfide



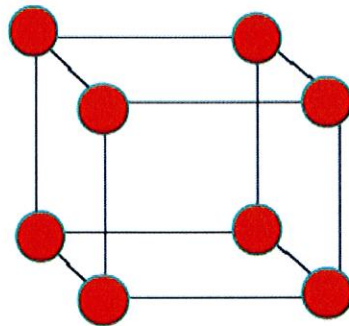
copper (II) chloride





Simple Cubic Example: Po

**Simple cubic arrangement**

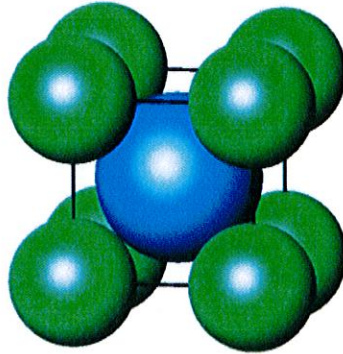


**e.g. Polonium**

*52% of the space is occupied by the atoms*

## Body Centered Cubic Example: CsCl

### Body centered cubic lattice

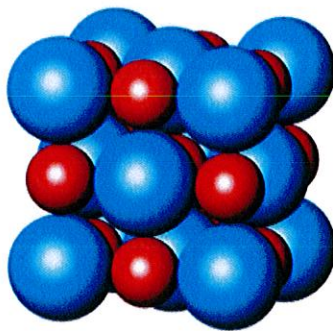


**e.g. CsCl, CsBr**

*68% of the space is occupied by the atoms*

## Face Centered Cubic Example: NaCl

### Face-centered cubic lattice



**e.g. NaCl, NaF, KBr, MgO**

*74% of the space is occupied by the atoms*