metals - see notes from Thur., 1/31/18

Ex) Na (11 e⁻) $1s^2 2s^2 2p^6 3s^1$ — 3p 4s — lose 1 val. e⁻

new valence e⁻ | valence e⁻

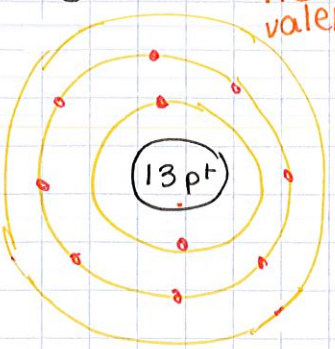
cation: Na^{+1} or Na^+ (1+)

Al (13 e⁻) $1s^2 2s^2 2p^6 3s^2 3p^1$

new valence e⁻ | valence e⁻

lose 3 val. e⁻

cation: Al^{+3}



Al^{+3} $13p^+ - 10e^- = +3$

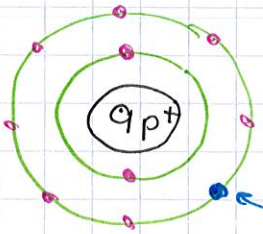
- nonmetals gain valence e⁻ to become negatively-charged ions (ANIONS)

Ex) F (9 e⁻) $1s^2 2s^2 2p^{5+1}$

valence e⁻

steal 1 val e⁻

anion: F^{-1}



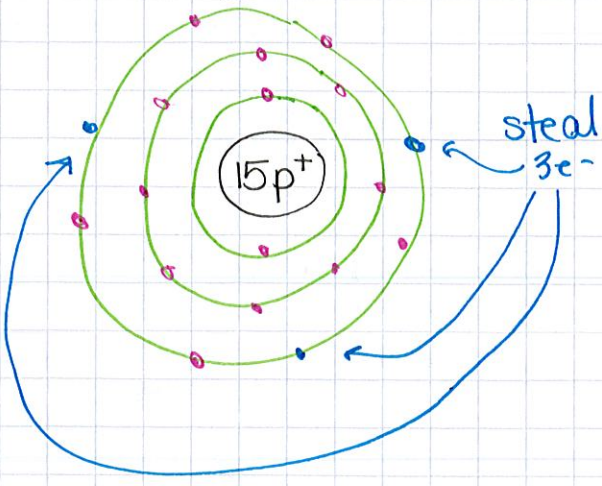
F^{-1} $9p^+ - 10e^- = -1$

Ex) P (15 e⁻) $1s^2 2s^2 2p^6 3s^2 3p^{3+3}$

valence e⁻

steal 3 val e⁻

anion: P^{-3}



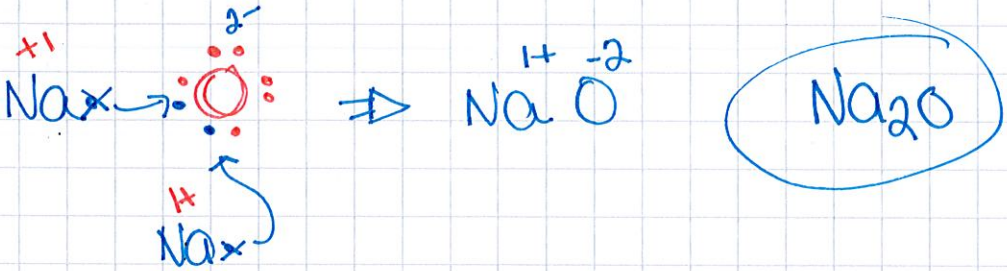
P $15p^+ - 18e^- = -3$

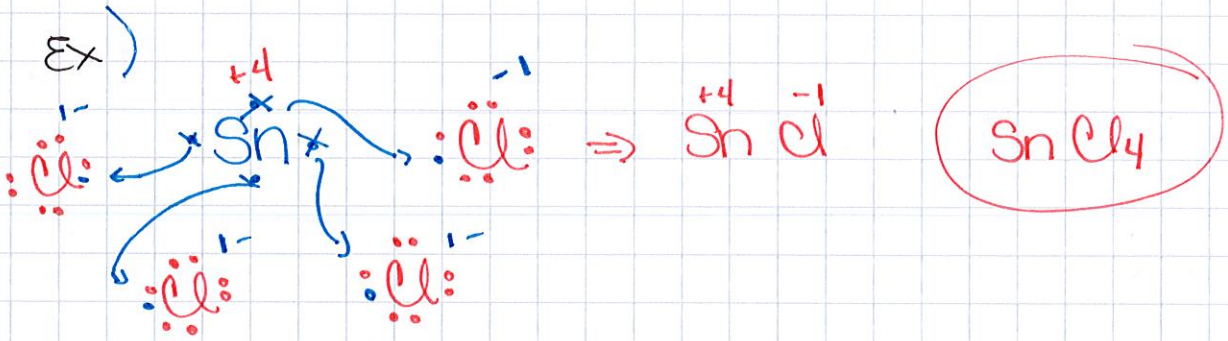
How Ionic Bonds Form

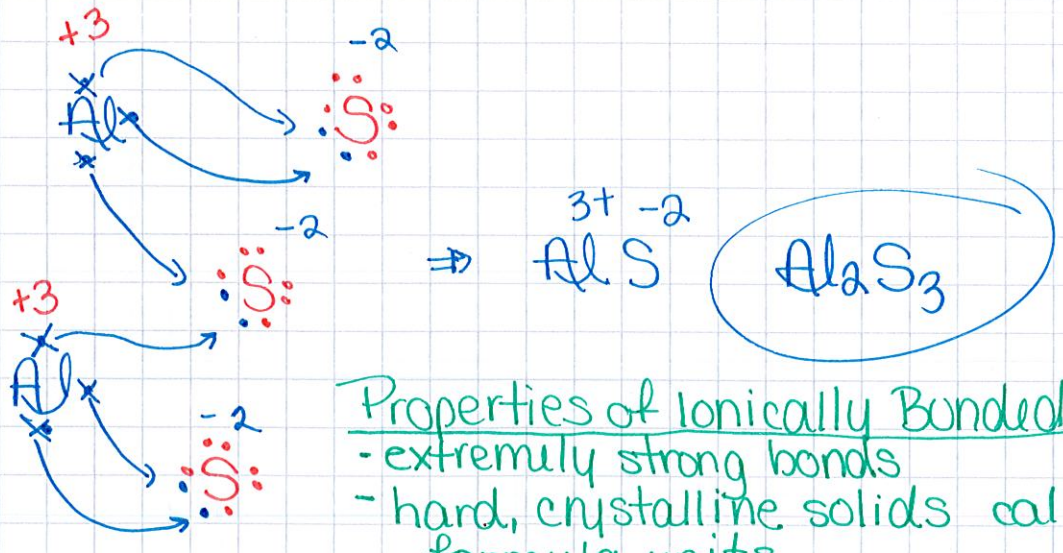
e⁻ dot diagrams - show element's symbol & valence e⁻ as dots around it

Ex) 

Use e⁻ dot diagrams to draw Lewis structures to show the transfer of e⁻ & form an ionic bond.

Ex) 

Ex) 

Ex) 

Properties of Ionically Bonded Compounds

- extremely strong bonds
- hard, crystalline solids called formula units
- high melting & boiling points
- conduct electricity ONLY when molten or dissolved in solution