

Bonding

Why do elements bond?

Octet Rule - In order to be stable, all elements "want" to have 8 valence e^- (highest orbital) (exception: H & He only need $2e^-$)

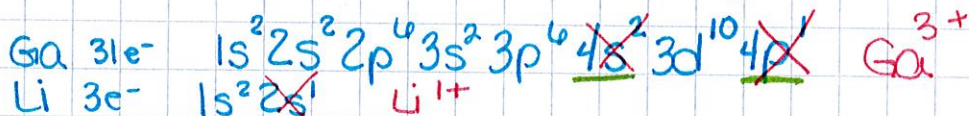
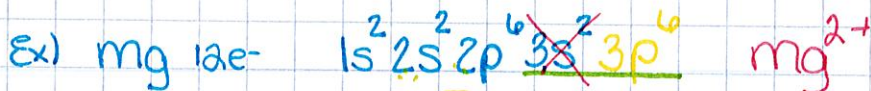
2 ways to bond

- (1) covalent bonding - share valence e^-
- (2) ionic bonding - transfer valence e^-

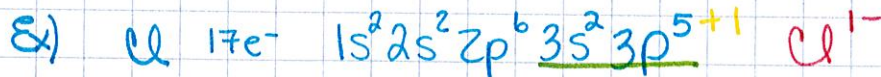
Ionic Bonding

What is an ionic bond? a strong electrostatic force of attraction that occurs when valence e^- are transferred from a metal to a nonmetal

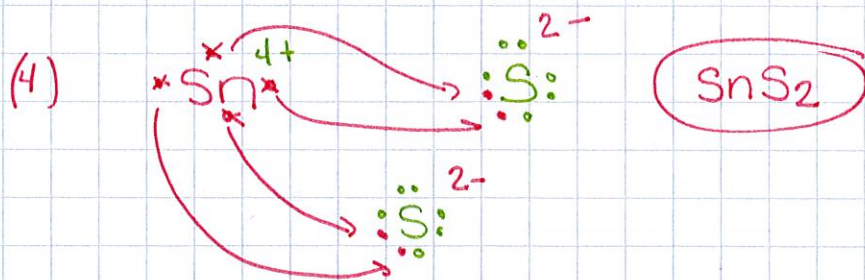
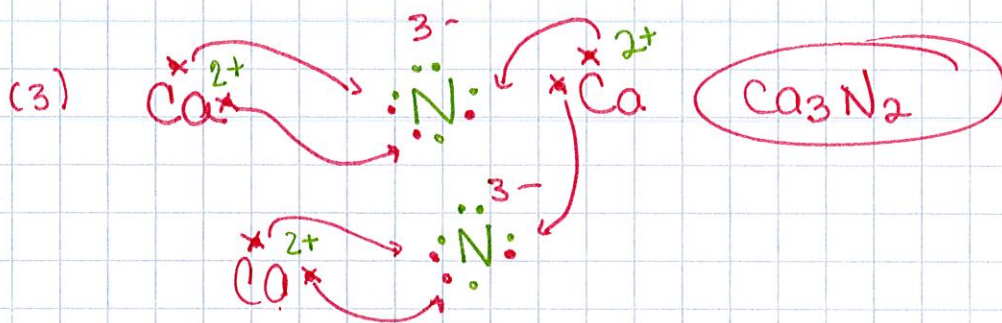
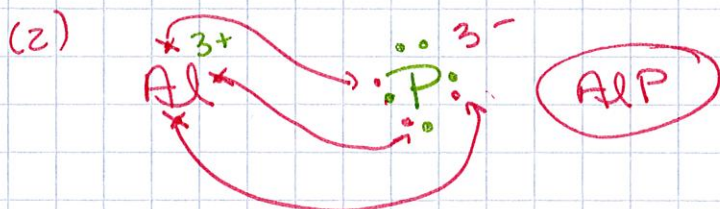
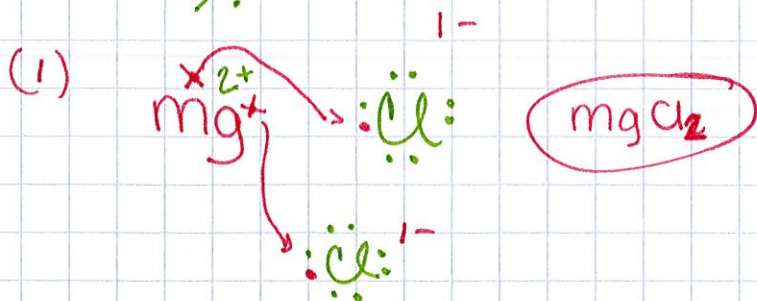
- metals lose valence e^- , called CATIONS positive ions
(takes less energy than stealing e^-)



- Nonmetals gain valence e^- , called ANIONS negative ions



- showing formation of an ionic bond
e- dot diagrams



Properties of Ionic Compounds

- They have crystal structures
- It takes a lot of energy to separate ions from each other
- high melting & boiling points Ex) NaCl melts 800°C
boils 1413°C
- conduct electricity when in solution or molten
(dissolved) (liquid)