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**IDX G9 Chemistry S STUDY GUIDE ISSUE 5**

**By Gorden**

# Ch 6

* Atomic Size (Atomic Radius):
  + Increases as you move down a group
  + Decreases as you move left to right across a period.
    - Happens because of attraction
  + Ex. Li > Na > K. Na > Mg > Al.
* Ionic Size:
  + Cations (positive), smaller than the original atom.
    - Ca + ions
  + Anions (negative), larger than the original atoms.
    - A n(egative) ions
  + Ex: Na+ < Na, Cl- > Cl.
* Ionization Energy (IE):
  + Def: Energy required to remove a electron from an atom.
  + Decreases down a group.
  + Increases left to right across a period.
  + Ex: Li < Na, Be > B > C.
* Electronegativity (EN):
  + Def: Ability of an atom to attract electrons in a bond.
  + Decreases down a group.
  + Increases left to right across a period.
  + Ex: F> O > N > C.

# Ch 7

* Valence Electrons
  + Def: Electrons in the outermost energy level.
  + Determine an element’s reactivity and chemical behavior.
  + Ex: 1A elements have 1 valence electron, Group 7A have 7
  + Octet Rule: Atoms gain, lose, or share electrons to achieve 8 valence electrons (noble gas)
* Naming Ion
  + Cations: Element name
    - Ex: Na+ = sodium ion
  + Anions: Element name + ide
    - Ex: Cl- = chloride ion
* Ionic Bonds
  + Def: Attraction between cation and anion
  + Ex: Na+ + Cl- = NaCl (force between Na+ and Cl-)
  + Ratio between Na+ and F- is 1:1
    - For Na+, 1 electron is taken and for F-, 1 electron is added.
      * Reverse the numbers (1 and 1) to get the ratio 1:1
* Formula unit: Simplest ratio of ions in a compound
  + Ex: Na2O is a formula for sodium oxide. Within a formula unit of Na2O, there are 2 sodium ions and 1 oxide ions.
* Coordinate number: the number of oppositely charged ions to a certain ion
  + Ex: in NaCl, the coordinate number of NaCl+ is 6. The coordinate number of Cl- is 6.
  + Each Na+ ions is surrounded by Cl- ions. Each Cl- ion is surrounded by 6 Na+ ions.
    - Na6Cl6 -> NaCl
* Naming rule: Name of cation + Name of anion
  + Ex: sodium chloride is [Na]+[Cl(8 dots)]-
  + Calcium fluoride is CaF2, net charge is (+2)+2\*(-1), which is 0.
* Ionic Compound properties
  + Higher melting and/or boiling points that other types of compound (Molecular Compound)
  + Break or shatter easily in room temperature.
  + Conduct electricity when melted or dissolved in water (Poor conductors in solid)
    - NaCl (solid) ->NaCl (molten)->Na+ (liquid)+Cl- (molten)
    - NaCl (solid) ->in H2o->NaCl (aqueous)->Na+ (aqueous)+Cl- (aqueous)