**CHEMISTRY BONDING UNIT STUDYGUIDE**

**Ionic bonding**

* Describe how ions are formed and which electron arrangements are stable
* Use the term cation as a positively charged ion and anion as a negatively charged ion
* Predict ionic charges for main group elements base on valence electrons
* Describe an ionic bond as an electrostatic attraction
* Know the characteristics of ionic bonds: high MP, high BP, brittle, and high electrical conductivity either in molten state or in aqueous solution
* Write binary compounds of metal/nonmetal\*/Name these compounds if given formula
* Write ternary compounds (polyatomic ions)\*/ Name these compounds if given formula

**Covalent bonding**

* Apply the concept that sharing electrons form a covalent compound that is a stable (inert gas) arrangement
* Determine that a bond is predominately covalent by the location of the atoms on the periodic table (nonmetals combined with nonmetals) or when ΔEN < 1.7
* Assess covalent bonding in molecular compounds as related to molecular geometry **(VESPR)** and chemical and physical properties.
* Draw the Lewis Dot Structures (HONC rule/Bonding Table)
* Write binary compounds of two nonmetals: use Greek prefixes (di-, tri-, tetra-, …)
* Know what determines if a MOLECULE is polar or nonpolar, and identify which molecules are polar and which are nonpolar.

**Metallic bonding**

* Describe metallic bonds as “metal ions plus ‘sea’ of electrons”
* Explain how metallic bonding determines the characteristics of metals: high MP, high BP, high conductivity, malleability, ductility, and luster
* Assess bonding in metals and ionic compounds as related to chemical and physical properties.