

## AP Chemistry Things You Should Know:

### Stoichiometry:

- Calculate the percentage by mass of all elements in a compound, using experimental data
- Determine the empirical or molecular formula from experimental data
- Balance an equation and use it to determine mole ratios
- Determine the amount of excess reagent remaining in a reaction
- Determine the theoretical yield for a reaction
- Convert between atoms or molecules (particles), moles, grams, volume, molarity (solutions), etc.

### Atomic Structure:

- Understand how isotopes differ from one another; do the math involved in calculating the average mass
- Define and use the mass number, atomic number, and charge to calculate  $\#p^+$ ,  $\#n^0$ , and  $\#e^-$  for atoms and ions
- State how mass number and mass (amu) are related to one another
- Write the electron configuration for any element and relate it to its location on the periodic table
- Define oxidation, reduction, oxidizing agent, reducing agent, and identify these in a reaction
- Explain the emission spectra (atomic line spectra) of atoms (particularly hydrogen): what information can be gained?

### Bonding:

- Distinguish between ionic and covalent bonding/compounds (conductivity, melting/boiling pt, solubility, IM forces)
- Write the formula for any ionic compound
- Draw the Lewis structure of any covalent compound or polyatomic ion and determine its number of bond and lone pairs
- Determine the polarity of a bond or molecule (using electronegativity values or the periodic table)
- Determine the shape and bond angle for any covalent compound or polyatomic ion
- Use polarity to determine the most important type(s) of intermolecular forces and use these forces to determine the trends for boiling point and solubility
- Describe metallic bonding (electron-sea model, properties)