

## AP Chemistry Summer Assignment 2017

### Prerequisites:

AP Chemistry is intended to be a second year chemistry course. It is assumed that prior to taking AP Chemistry, you have successfully completed a Chemistry I course (with at least a B average). The College Board also recommends that students have successfully completed an Algebra II course (or at the very least be familiar with logarithms). Due to the intense nature of the course curriculum, and the limited amount of time prior to the AP exam for covering the material, it is expected that you have a strong grasp of Chemistry I topics. If you need additional practice with these topics, there are resources at [www.khanacademy.org/science/chemistry](http://www.khanacademy.org/science/chemistry), [www.chemmybear.com](http://www.chemmybear.com), and [www.gpb.org/chemistry-physics/students/all](http://www.gpb.org/chemistry-physics/students/all) (in addition to many others out there on the internet) as well as on my course website: [www.teacherweb.com/KY/DupontManualHighSchool/moss](http://www.teacherweb.com/KY/DupontManualHighSchool/moss). You may also borrow a copy of an older edition AP chemistry textbook over the summer if you would like.

### Topics Expected to Have Been Mastered in Chemistry I:

- Chemical Foundations (Scientific Method, Measurement, Lab Equipment, Lab techniques, SI System, Significant Figures, Density, Matter, Calculations)
- Atoms, Molecules, and Ions (Fundamental Chemical laws, Historical - Democritus, Dalton, Lavoisier, Thomson, Rutherford, Bohr, Molecules & Ions)
- Stoichiometry (Atomic masses, mole conversions, percent composition, empirical formula, molecular formula, chemical equations, balancing equations, stoichiometric calculations, limiting reactants, percent yield)
- Types of Chemical Reactions & Solutions Stoichiometry (types of chemical reactions, precipitation reactions, describing reactions in solution, stoichiometry of precipitation reactions, net ionic equations)
- Gases (Pressure, Boyle's Law, Charles' Law, Avogadro's Law, Ideal Gas Law, Gas Stoichiometry, Dalton's Law of Partial Pressures, Kinetic Molecular Theory, Effusion & Diffusion, Real Gases)
- Atomic Structure & Periodicity (Electromagnetic Radiation, Nature of Matter, Atomic Spectrum of Hydrogen, Bohr model, Quantum-Mechanical Model, Electron Configurations & Rules, History of the Periodic Table, Periodic Trends)
- Bonding (Types of Chemical Bonds, Electronegativity, Bond Polarity and Dipole moments, Ions - electron configurations and sizes, binary ionic compounds, covalent bonds, Lewis structures, exceptions to the octet rule, nomenclature)
- Nuclear Chemistry (Nuclear Stability & Radioactive decay, nuclear transformations, half-life, nuclear fission & fusion)

There will be a chemical nomenclature (names and formulas of chemical compounds) test on the **SECOND** day of school. Keep in mind that in AP Chemistry you need to have the common polyatomic ions and their charges **MEMORIZED** (see list on class website under Notes-Chemistry) and the periodic table that is allowed to be used only has element symbols and not element names. Since nomenclature is a foundational concept of chemistry, there will be weekly nomenclature quizzes throughout the year as well.

## AP Chemistry Preview

The first unit of AP Chemistry will cover solutions chemistry and basic solubility concepts (Chapters 4 & 11 in Zumdahl Chemistry and Chapters 4 & 13 in Brown & LeMay Chemistry: The Central Science). The following topics are expected to be done during the summer:

- Hydration
- Strong and Weak Electrolytes
- Molarity
- Dilutions
- Precipitation Reactions
- Solubility Rules
- Complete and Net Ionic Equations
- Stoichiometry of Precipitation Reactions
- Acid-Base Neutralization
- Oxidation-Reduction Reactions
- Solution Composition
- Energies of Solution Formation
- Factors Affecting Solubility
- Vapor Pressures of Solutions
- Colloids

There will be a test over these concepts within the first few weeks of school, so if you haven't studied the material, you will already be behind. Some suggested problems can be found on the class website under "Handouts/Practice – AP Chem". There is a link to the 5<sup>th</sup> edition Zumdahl solutions manual on the website under "Links." You also need to look over "Things to Know for AP Chemistry" on the class website under "Handouts/Practice – AP Chem."

**THERE WILL ALSO BE VIDEO LINKS AND PROBLEMS TO HAVE PREPARED PRIOR TO THE START OF SCHOOL ON MY CLASS WEBSITE ANNOUNCEMENT PAGE BY JUNE 1<sup>ST</sup> – BE SURE TO CHECK IT SO THAT YOU ARE NOT BEHIND!**

If you would like to get early access to the AP Chemistry notes dropbox file, email me and I will add you.

AP Chemistry requires significant preparation and study on the part of the student. Make sure that your work skills are honed for the coming year.