

AP Chemistry

Quarter 1 Independent Unit

Review of Chemistry 1 Stoichiometry

The stoichiometry learned last year has been divided into five areas

1. Composition Stoichiometry
 - a. Simple conversions among moles, mass and molecules
 - b. Percent Composition
 - c. Empirical Formula
 - d. Molecular Formula
2. Reaction Stoichiometry⁺
 - a. mass-mass problems
 - b. mass-mole problems
 - c. mole-mass problems
 - d. mole-mole problems
 - e. limiting reactants
 - f. percent yield
3. Gas Stoichiometry
 - a. Boyles Law, Charles' Law, Gay-Lussac Law
 - b. Combined Gas Law
 - c. Ideal Gas Law
 - d. Dalton's Law of Partial Pressures
 - e. Grahams Law
 - f. Volume-Volume Problems
 - g. Converting from Volume of a gas to mass (or moles) of another reactant or product (or vice versa)
 - h. Converting between molar mass and density
 - i. Two step problems using any of the above
4. Solution Stoichiometry
 - a. Molarity Problems
 - b. Dilution Problems
 - c. Molality Problems
 - d. Freezing Point Depression or Boiling Point Elevation
5. Acid/Base Stoichiometry
 - a. Given any one of the following: $[H^+]$, $[OH^-]$, pH and pOH, find the others
 - b. Tell the pH of a strong acid or base
 - c. Titration Problems (long and short methods)
 - d. Given an acid-base reaction, tell the pH of the result

For each of the above areas, you have been given sets of problems to use to review.

- The first set in each area will have worked out solutions, and the rest of the sets have answers only.
- You are greatly encouraged to work out the Set 1 problems before you look at my solutions. If you have no idea how to do them, use the Internet by searching for the topic (e.g. empirical formula). There are loads of good tutorial sites out there.
- Once you have done the set 1 problems, check your answers **and your work** carefully
- Only after you thoroughly understand all of the problems of set 1 should you do the other sets.
- After you have done each set, check your answers. If the answers are wrong,
 - first check for copying errors (did you write the correct numbers)
 - Then check for computational errors. (Did you hit a wrong key on the calculator?, Did you use the calculator incorrectly?)
 - Then recheck your work, going back if necessary to the set 1 solutions.
 - If you cannot figure it out, leave it for trouble shooting later.
- Significant digits are important. If you need a review, the Honors Chemistry I web pages have the tutorial on significant digits (topic 1,2,3 and 4) Feel free to use it. A slightly shorter review is on the Honors Physics I page.

Important! Important! Important!

You are trying to make sure that you know this material either by reviewing it, relearning it, or in some cases (if you never got it last year) learn it. Don't take shortcuts by doing the exercises with the set 1 solutions open before you or, worse yet, copying from another student. You've got to go through the "pain" of working and re-working until you get it right, in order to learn the material.

There will be a test on this material on Wednesday August 28 (the first week of school). There will be 20 – 25 problems distributed pretty evenly throughout the 5 areas. The test will be equivalent to two major tests (200 pts)

Note that this material will not be covered in class. However, I will be available for help and also give an outside class review time in August..

Nothing needs to be handed in if you do not wish to. However, you will receive **EXTRA CREDIT** in the form of an extra grade of 100 added to your first quarter grades if you hand in all of the following sections on the first day of class. Sets 2 and 3 from Areas 1, 2, 4, and 5 and sets 4 and 5 from Area 3 (gas laws). If you hand in only parts of the above on the first day, you will still get extra credit proportional to the amount that you have done.