Chem 121: Homework 1

Due at the beginning of class on Wednesday, Apr 13th or Thursday, Apr 14th (depending on which section you are enrolled in.)

The problems listed in bold below are from the textbook and can be found at the end of the chapter indicated. In addition, do problems A through E, below.

**Chapter 3:** 30, 32, 34, 36, 38, 40, 42.

**Chapter 2:** 30, 32, 34, 38, 39, 40bc, 44, 46, 48, 50, 54, 56, 58, 60, 2.

A. Classify each of the following as physical or chemical properties:
   1. the hardness of a diamond
   2. flammability of alcohol
   3. the density of syrup
   4. elasticity (stretchiness) of a rubber band
   5. the transparency of glass
   6. the corrosive character of an acid

B. Classify each of the following events as physical or chemical changes, and give a brief reason for your choice:
   1. A silver spoon tarnishes because silver combines with sulfur in the air to form silver sulfide.
   2. Oil does not dissolve when poured into water; it floats on top.
   3. Sodium metal is soft, and can be cut with a knife.
   4. A mixture of dyes in a paint sample is separated by paper chromatography.
   5. Nitroglycerin (C₃N₃O₆H₅) explodes when hit, decomposing into a mixture of gases.

C. For i-v, below, list all that apply: compound, element, pure substance, mixture, homogeneous, heterogeneous.
   1. smoke from a campfire
   2. dirt
   3. baking soda (pure NaHCO₃)
   4. mercury
   5. orange juice
   6. lithium fluoride

D. Which of the following would be considered exact numbers?
   1. A dime is equivalent to 10 cents.
   2. Your physics textbook has 580 pages.
   3. 12 eggs make a dozen.
   4. Your left shoe has a mass of 500 g.
   5. The weatherman says there is an 80% chance of snow.
   6. It takes 8 minutes for the light of the sun to reach the earth.

E. Fill in the blanks below using the definitions of the four metric prefixes taught in lecture. The first one is done for you:

   a. ____ L = ____ cL
   b. ____ g = ____ kg
   c. ____ µm = ____ m
   d. ____ mg = ____ g
   e. ____ m = ____ km
   f. ____ L = ____ cL
   g. ____ g = ____ µg
   h. ____ L = ____ mL
   i. ____ g = ____ cg

Suggested problems for extra practice only; do not turn in.
   Chap 3: 29 through 41, all the odd problems.
   Chap 2: 29, 31, 33, 35, 37, 43, 47, 49, 51, 53, 55, 57, 59, 61