Section 3B

Practice

1. Perform the following calculations placing the <u>proper units</u> and <u>significant figures</u>.

a) 5.44 m + 3.882 m =	f) $9.06×10^{-3}$ L + $2.3×10^{-3}$ L =
b) 10.33 cm − 5.4 cm =	g) 24.50 mL − 12.70 mL =
c) 2.22 g − .9887 g =	h) 3.450 mg + 4.330 mg =
d) 2.55 moles + 3.224 moles =	i) $5.432×10^5$ g − $2.34×10^4$ g =
e) $6.55×10^3$ kg + $4.2259×10^2$ kg =	j) 89.34 lbs. + $1.34×10^5$ lbs. =

2. Perform the following calculations placing the <u>proper units</u> and <u>significant figures</u>.

a) 3.57 m × 3.1 m =	f) $5.33×10^4$ m × $2.3445×10^3$ m =
b) 35.8 g / 2.355 mL =	g) $1.2044×10^{24}$ atoms / 2.00 mol =
c) 5.34 cm × 9.335 cm =	h) 5.554 g / 5.5 mL =
d) 105.8 g / .235 mol =	i) 34.485 g / 1.50 mol =
e) 43.4 cm × 3.2 cm × 10.22 cm =	j) $5.665×10^{-4}$ m × $7.9×10^8$ m =

Sig Figs: Precision is Key

Significant figures can be difficult to deal with when performing calculations; however they play an important role in understanding how precise a measurement is. Your assignment for this discussion is to bring up a situation in which significant figures play a prominent role. The situation that you bring up needs to be a real world example. We are going to discuss each of your examples in class and you are going to have to defend why significant figures play such a large role in the model that you have brought up.

Example:

The concentration of lead in the blood should not exceed 3.0×10^{-5} g per deciliter of blood. Lead affects brain function and cognitive skills. If measuring lead concentration levels in blood that are accurate to the 1×10^{-5} g, this can be problematic. If the concentration of lead in someone's bloodstream is 3.4×10^{-5} g per deciliter, your instrument would read 3×10^{-5} g. However, this is a toxic level even though your measuring device reads as if the individual is within the safe range. Another individual could have a concentration of 2.7×10^{-5} g/dL, but the reading from the instrument will be 3×10^{-5} g/dL. This is a false reading in which an individual would start to receive unnecessary treatment for lead poisoning.

YOU WILL NOT USE A LEAD, CYANIDE, MERCURY, OR ARSENIC POISON EXAMPLE FOR YOUR DISCUSSION!!!

Think about what you are interested in and you can think of an example.

The following aspects should be discussed in class:

1. Description of the situation.
2. How this particular situation affects society or an individual.
   - While speaking about this part of your example go into some depth about how an individual may be affected.
   - Ex: The individual that has a false reading, this individual may start to receive treatment that could affect other areas of their life. Perhaps they are on a medication treating a different disease, once the anti-lead treatments start there may be complications with other drugs.

Book
Chang   Pg. 23–27   Ch. 1: 28,33,35,36