Chemistry 101
Solutions for Quiz # 1
Tuesday, September 9th version

1. (3 pts) Complete the following conversions:

   (a) 187 lbs into kg

   $$\frac{187\ lbs}{} \times \frac{1\ kg}{2.20\ lb} = 85.0\ kg$$

   (b) 35.00 ml into L

   $$\frac{35.00\ mL}{} \times \frac{1\ L}{1000\ mL} = 0.03500\ L$$

   Note that the zeros at the end of a decimal number are significant, so they are retained in the final answer.

   (c) 0.150 mg into μg

   $$\frac{0.150\ mg}{} \times \frac{1000\ \mu g}{1\ mg} = 150.\ \mu g$$

   note that the zeros at the end of a decimal number are significant, so we have placed a "." after 150 to indicate it is significant and the answer has 3 s.f.

2. (3 pts) For each measurement below, indicate the number of significant digits:

   (a) 510.5 mg

   4, all non-zero digits are significant, zeroes between non-zero digits are significant.

   (b) 0.0605 L

   3, all non-zero digits are significant, zeroes at the beginning of a decimal number are not significant, zeroes between non-zero digits are significant.

   (c) 2.0 $\times 10^6$ dL

   2, all the digits in the coefficient of a number in scientific notation are significant.

3. (2 pts) Give the answers to the following problems, rounding to the correct number of significant figures:

   (a) $1.03 + 10.5 + 10.881 = 22.4$

   addition - round to the smallest number of decimal places in the problem - in this case one.

   (b) $1.52 \times 2.0 \times 5.2 = 16$

   multiplication - round to smallest # s.f. in problem - in this case two.

4. (2 pts) A dialysis unit requires 75,000 mL of distilled water. How many gallons of water are needed?

   $$\frac{75,000\ mL}{} \times \frac{1\ qt}{946\ mL} \times \frac{1\ gallon}{4\ qt} = 20.\ gallons$$

Possibly Helpful Conversions

1 kg = 2.20 lb	946 mL = 1 qt	1 gallon = 4 qts
454 g = 1 lb	0.946 L = 1 qt	1 mg = 1000 μg
1 ton = 907.2 kg	1 L = 1.06 qt	