**PreAP Chemistry Homework Packet #1**

1. **In the following, give the power-of –ten equivalent of the prefix and give the prefix equivalent of the numerical value.**

a. centi- = \_\_\_\_\_\_\_\_\_\_\_

b. kilo- = \_\_\_\_\_\_\_\_\_\_\_

c. milli- = \_\_\_\_\_\_\_\_\_\_\_

d. micro- = \_\_\_\_\_\_\_\_\_\_\_

e. 10-9 = \_\_\_\_\_\_\_\_\_\_\_

f. 106 = \_\_\_\_\_\_\_\_\_\_\_

g. 10-1 = \_\_\_\_\_\_\_\_\_\_\_

h. 1012 = \_\_\_\_\_\_\_\_\_\_\_

1. **In the first blank, write the number of significant figures that are in each of these correctly taken measurements. In the second blank, write all the number(s) of the rules that apply for that example. The first one is done for you.**

 5 1, 2, 3, 4 a) 0.00040230 g \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ b) 807,000 kg

\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ c) 405000. kg \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ d) 0.0490450 s

\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ e) 508 beaker tongs \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ f) 0.000482 mL

\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ g) 820400.0 L \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ h) 3.1587 x 10-8 g

\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ i) 1.0200 x 105 kg \_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ j) 0.0084 mL

1. **Round off each of the following to the number of digits indicated in each column.**

Number 5 digits 4 digits 3 digits 2 digits

6.13159 \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

7.59530 \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

**4.) Add, subtract, multiply, or divide the following using significant figure rules.**

**a)** 258.3 kg + 257.11 kg + 253 kg = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **f)** 93.26 cm – 81.14 cm = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**b)** 13.65 cm x 23.20 cm x 42.05 cm = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **g)** 4.84 g/ 2.4 mL = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**c)** 120. m x 0.10 m = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **h)** 60.2 m / 20.1 s = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**d)** 2 x 103 mm · 3 x 102 mm = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **i)** 9 x 108 km / 3 x 10-4 h = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**e)** 6.02 x 1023 = ­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **j)** 4.32 x 103 m – 1.6 x 103 m = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 2.2 x 105  x 3.00 x 106

**5.) Express the following quantities in scientific notation.**

a. 5,800 m \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. 450,000 m \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. 302,000,000 m \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d. 86,000,000,000 m \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e. 0.000 508 kg \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

f. 0.000 000 45 kg \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

g. 0.000 360 0 kg \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

h. 0.004 kg \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6.) Write the following quantities from scientific notation to standard form with the correct number of significant digits.**

a. 5.80100 x 105 s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b. 8.12 x 107 m \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c. 5.0 x 10-2 kg \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d. 2.110 x 10-3 m \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**7.) Temperature Conversions**

Convert ºC to K; K = ºC + 273 Convert K to ºC; ºC = K – 273

Solve the following problems (remember sig figs and box your final answer):

**a)** 75ºC to K

**b)** 153ºC to K

**c)** 100. K to ºC

**8.) Use Dimensional Analysis to solve the following problems. Show all work. Remember to use sig figs and box your final answer.**

Common Conversion Factors:

1 meter = 100 centimeters 1 yard = 3 ft 1 in =2.54 cm 1000 mL = 1 L

1 meter = 1,000 millimeters 1 ft = 12 in 1000 g = 1 kg 30 mL = 1 oz

1 kilometer = 1,000 meters 1 mile = 5,280 ft 1 kg = 2.2 lb

a) Convert 3,644 centimeters to meters.

b) Convert 74.5 kilometers to meters.

c) Convert 3.4 kg to pounds (lbs).

d) How many milliliters are in a 20.0 oz. bottle of soda?

e) Susanna is 5.50 ft tall. What is her height in centimeters?

f) If we are in class for 1.5 hours, how many seconds are we in class?

g) An ant is about 4.0 mm long. How many feet is this?

h) How many inches are in 1.2 x 105 miles?