CHM 151 Quiz 1a 25 Pts Spring 2010 Name: _Key_____

Show All Work To Receive Credit!   Conversion factors and prefixes:

$G = 10^9$, $M = 10^6$, $k = 10^3$, $c = 10^{-2}$, $m = 10^{-3}$, $\mu = 10^{-6}$, $n = 10^{-9}$, 2.54 cm = 1 in,
12 in = 1 ft, 5280 ft = 1 mile, 3 feet = 1 yd, 60 sec = 1 min, 1 hr = 60 min, 4 quarts = 1 gal, 2 pints = 1 quart

1. (6 Pts) Perform each of the following conversions. You must show the complete setup.

a. Convert 65 mL to nL.

$$\frac{65\,mL}{}\left|\frac{10^{-3}}{mL}\right|\frac{n}{10^{-9}} = \frac{65 \times 10^6\,nL}{(6.5 \times 10^7\,nL)}$$

b. Convert 85 μL to mL.

$$\frac{85\,\mu L}{}\left|\frac{10^{-6}}{\mu L}\right|\frac{m}{10^{-3}} = \frac{85 \times 10^{-3}\,mL}{(8.5 \times 10^{-2}\,mL)}$$

2. (4 Pts) Assume each of following numbers are measurements. Perform the indicated operations and then report the answer with the proper number of significant figures.

Limited to 0.01 place

⤷ a. 2.1$\underline{4}$ cm + 12.126 cm + 0.1$\underline{2}$ cm = $14.3\not{8}6$ (14.39) cm

2 s.f.

b. 1.25 cm x 2.1 cm x 1.145 cm = ____3.0____ cm^3

3. (5 Pts) A poster measures 22 inches by 44 inches. Determine its area in square cm.

$$\frac{22\,in}{}\left|\frac{2.54\,cm}{1\,in}\right|\;\;\frac{44\,in}{}\left|\frac{2.54\,cm}{1\,in}\right| = 62\underline{4}5\,cm^2 \;\;(6200\,cm^2)$$

4. (5 Pts) How many inches are in 47 miles?

$$\frac{47\,miles}{}\left|\frac{5280\,ft}{1\,mile}\right|\frac{12\,in}{1\,ft} = 2977920\,in$$

5. (5 Pts) A sample of silver ore was found to contain 0.56 % silver by mass. How many grams of silver can be recovered 800.0 kg of ore?

$$\frac{800.0\,kg\,ore}{}\left|\frac{10^3}{k}\right|\frac{0.56\,Ag}{100\,ore} = 4480\,g\,Ag$$
$$\uparrow$$
$$4500\,g\,Ag$$

CHM 151 Quiz 1b 25 Pts Spring 2010 Name:___Key___

Show All Work To Receive Credit!   Conversion factors and prefixes:

G = 10^9, M = 10^6, k = 10^3, c = 10^{-2}, m = 10^{-3}, μ = 10^{-6}, n = 10^{-9} , 2.54 cm = 1 in,
12 in = 1 ft, 5280 ft = 1 mile, 3 feet = 1 yd, 60 sec = 1 min, 1 hr = 60 min, 4 quarts = 1 gal, 2 pints = 1 quart

1. (6 Pts) Perform each of the following conversions. You must show the complete setup.

a. Convert 55 nL to mL.

$$\frac{55\,nL}{} \left| \frac{10^{-9}}{n} \right| \frac{m}{10^{-3}} = 55 \times 10^{-6}\,mL$$
$$(5.5 \times 10^{-5}\,mL)$$

b. Convert 85 mL to μL.

$$\frac{85\,mL}{} \left| \frac{10^{-3}}{m} \right| \frac{\mu}{10^{-6}} = 85 \times 10^{3}\,\mu L$$
$$(8.5 \times 10^{4}\,\mu L)$$

2. (4 Pts) Assume each of following numbers are measurements. Perform the indicated operations and then report the answer with the proper number of significant figures.

— Limited to the 0.01 place

a. 3.1_4 cm + 12.526 cm + 0.1_2 cm = __15.7_86 (15.79)__ cm

3 s.f.

b. 1.25 cm x 6.12 cm x 1.145 cm = __8.7_5925 (8.76)__ cm³

3. (5 Pts) A poster measures 33 inches by 45 inches. Determine its area in square cm.

$$\frac{33\,in}{} \left| \frac{2.54\,cm}{1\,in} \right| \frac{45\,in}{} \left| \frac{2.54\,cm}{in} \right. = 9\underline{5}80\,cm^{2}$$
$$(9600\,cm^{2})$$

4. (5 Pts) How many inches are in 67 miles?

$$\frac{67\,miles}{} \left| \frac{5280\,ft}{1\,mile} \right| \frac{12\,in}{1\,ft} = 4245120\,in$$

5. (5 Pts) A sample of silver ore was found to contain 0.066 % silver by mass. How many grams of silver can be recovered 500.0 kg of ore?

$$\frac{500.0\,kg\ ore}{} \left| \frac{10^{3}}{k} \right| \frac{0.066\,Ag}{100\ ore} = 3\underline{3}0\,g\,Ag$$