CHM 151 Quiz 1a 25 Pts Fall 2013 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 808 μg to ng. $\frac{808\ \mu g}{1} \times \frac{10^{-6}}{\mu} \times \frac{n}{10^{-9}} = 808 \times 10^3\ ng$ or $8.08 \times 10^5\ ng$

b. Convert 805 **mL to μL.** $\frac{805\ mL}{1} \times \frac{10^{-3}}{m} \times \frac{\mu}{10^{-6}} = 805 \times 10^3\ \mu L$ or $8.05 \times 10^5\ \mu L$

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.

a. 12.145 cm + 15.1265 cm + 25.2 cm = 52.47 = 52.5 cm (limited to the tenth place)

b. 10.25 cm x 5.10 cm x 10.145 cm = 530 cm^3 (3 sig figs.; must show 0 to be sig.)

3. (5 Pts) A poster measures 22 inches by 28 inches. Determine its area in **square inches** and in **square cm (cm^2)**. (you may ignore significant figures).

a. in^2 $22\ in \times 28\ in = 616\ in^2$

b. cm^2 $\frac{616\ in^2}{1} \times \frac{2.54\ cm}{in} \times \frac{2.54\ cm}{in} = 3974\ cm^2$

4. (5 Pts) How many kilo-inches are in 2 miles (You may ignore significant figures)?

$\frac{2\ mi}{1} \times \frac{5280\ ft}{1\ mi} \times \frac{12\ in}{1\ ft} \times \frac{k}{10^3} = 126.72\ k\,in$

5. (5 Pts) A sample of silver ore was found to contain 0.36 % silver by mass. How many mg of silver can be recovered 800.0 kg of ore?

$\frac{800.0 \times 10^3\ g\ ore}{1} \times \frac{0.36\ Ag}{100\ ore} \times \frac{m}{10^{-3}} = 2880000\ mg\ Ag$ or $2.9 \times 10^6\ mg\ Ag$

CHM 151 Quiz 1b 25 Pts Fall 2013 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 427 nL to mL. $427\ nL \left|\frac{10^{-9}}{n}\right| \frac{m}{10^{-3}} = 427 \times 10^{-6}\ mL$ or $4.27 \times 10^{-4}\ mL$

b. Convert 85 **mg to μg.** $85\ mg \left|\frac{10^{-3}}{m}\right| \frac{\mu}{10^{-6}} = 85 \times 10^{3}\ \mu g$ or $8.5 \times 10^{4}\ \mu g$

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.

a. 313.4 cm + 12.526 cm + 0.052 cm = 325.978 (326.0) cm

(Limited to tenth place)

b. 6.2 cm x 6.12 cm x 12.145 cm = 460 cm^3

(2 sig figs)

3. (5 Pts) A poster measures 43 inches by 45 inches. Determine its area in **square inches** and in **square cm (cm^2).**
(You may ignore significant figures)

a. in^2 $43\ in \times 45\ in = 1935\ in^2$

b. cm^2 $1935\ in^2 \left|\frac{2.54\ cm}{in}\right| \frac{2.54\ cm}{in} = 12489\ cm^2$

4. (5 Pts) How many inches are in 0.8 kilo-miles (You may ignore significant figures)?

$0.8\ k\,mi \left|\frac{10^3}{k}\right| \frac{5280\ ft}{mi} \left|\frac{12\ in}{ft}\right| = 5068800\ in$

$5.07 \times 10^7\ in$

5. (5 Pts) A sample of silver ore was found to contain 0.036 % silver by mass. How many mg of silver can be recovered 500.0 kg of ore?

$500.0\ kg\ ore \left|\frac{10^3}{k}\right| \frac{0.036\ Ag}{100\ ore} \left|\frac{m}{10^{-3}}\right| = 180000\ mg\ Ag$

$1.8 \times 10^5\ mg\ Ag$