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

$G = 10^9$, $M = 10^6$, $k = 10^3$, $c = 10^{-2}$, $m = 10^{-3}$, $\mu = 10^{-6}$, $n = 10^{-9}$ $p = 10^{-12}$, 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 142 ng to pg.
$$\frac{142\ ng}{} \left| \frac{10^{-9}}{n} \right| \frac{p}{10^{-12}} = \boxed{1.42 \times 10^5 \text{ or } 142000\ pg}$$

b. Convert 85 μL to pL.
$$\frac{85\ \mu L}{} \left| \frac{10^{-6}}{\mu} \right| \frac{p}{10^{-12}} = \boxed{85 \times 10^6 \text{ or } 8.5 \times 10^7\ pL}$$

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. 212.145 cm + 15.1265 cm + 125.2 cm = ____352.5____ cm
└ to this place

4 sig figs

b. (10.25)cm x 12.100 cm x 18.145 cm = ____2250____ cm³
← this 0 is significant

3. (5 Pts) A sign measures 128 cm by 45 cm. Determine its area in square inches (inches²) (you
may ignore significant figures).

$$A = l \cdot w$$

$$\frac{128\ cm}{} \left| \frac{1\ in}{2.54\ cm} \right| \frac{45\ cm}{} \left| \frac{1\ in}{2.54\ cm} \right| = \boxed{892.8\ in^2}$$

4. (5 Pts) How many mega-inches are in 7 kilo miles (You may ignore significant figures)?

$$\frac{7\ k\ mi}{} \left| \frac{10^3}{k} \right| \frac{5280\ ft}{1\ mi} \left| \frac{12\ in}{1\ ft} \right| \frac{M}{10^6} = \boxed{443.52\ M\ in}$$

5. (5 Pts) A sample of silver ore was found to contain 0.25 % silver by mass. How many mg of
silver can be recovered 970.0 Mg of ore?

$$\frac{970.0 \times 10^6\ g\ ore}{} \left| \frac{0.25\ Ag}{100\ ore} \right| \frac{m}{10^{-3}} = 2.425 \times 10^9\ mg\ Ag$$

CHM 151 Quiz 1b 25 Pts Fall 2012 Name: _____Key_____

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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 667 nL to mL. $\dfrac{667\ nL}{}\bigg|\dfrac{10^{-9}}{n}\bigg|\dfrac{m}{10^{-3}} = \left(667 \times 10^{-6}\ \text{or}\ 6.67 \times 10^{-4}\ mL\right)$

b. Convert 805 µg to mg. $\dfrac{805\ \mu g}{}\bigg|\dfrac{10^{-6}}{\mu}\bigg|\dfrac{m}{10^{-3}} = \left(805 \times 10^{-3}\ \text{or}\ 8.05 \times 10^{-1}\ mg\right)$

0.805

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 this place

a. 13.1 cm + 122.526 cm + 0.052 cm = ___**135.7**___ cm

Limited to 3 sig. figs.

b. 1.200 cm x 6.12 cm x 12.145 cm = ___**89.2**___ cm³

3. (5 Pts) A poster measures 133 cm by 85 cm. Determine its area in square inches (inches²).
(You may ignore significant figures) $A = l \cdot w$

$\dfrac{133\ cm}{}\bigg|\dfrac{1\ in}{2.54\ cm}\bigg|\dfrac{85\ cm}{}\bigg|\dfrac{1\ in}{2.54\ cm} = \left(1752\ in^2\right)$

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

$\dfrac{2 \times 10^3\ mi}{}\bigg|\dfrac{5280\ ft}{1\ mi}\bigg|\dfrac{12\ in}{1\ ft}\bigg|\dfrac{M}{10^6} = \left(126.72\ M\ in\right)$

5. (5 Pts) A sample of silver ore was found to contain 0.46 % silver by mass. How many mg of silver can be recovered 950.0 Mg of ore? $\dfrac{0.46\ Ag}{100\ ore}$ ← ratio

$\dfrac{950.0 \times 10^6\ g\ ore}{}\bigg|\dfrac{0.46\ Ag}{100\ ore}\bigg|\dfrac{m}{10^{-3}} = \left(4.37 \times 10^9\ mg\ Ag\right)$