CHM 151 Quiz 1a 25 Pts Spring 2017 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 88 mg to ng.

$$\frac{88 \text{ mg}}{} \left| \frac{10^{-3}}{m} \right| \frac{n}{10^{-9}} = 88 \times 10^6 \text{ ng} \text{ or } 8.8 \times 10^7 \text{ ng}$$

b. Convert 85 μL to mL.

$$\frac{85 \times 10^{-6} \text{ L}}{} \left| \frac{m}{10^{-3}} \right| = 85 \times 10^{-3} \text{ mL} \text{ or } 8.5 \times 10^{-2} \text{ mL}$$

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.

to this place ↓

a. 12.145 cm + 15.1265 cm + 625.12 cm = ___652.39___ cm

3 Sig Figs ↙

b. 10.25 cm x 2.10 cm x 12.145 cm = ___261___ cm³

3. (5 Pts) A poster measures 24 inches by 26 inches. Determine its area in square cm (cm²) (you may ignore significant figures).

$$\frac{24 \text{ in}}{} \left| \frac{2.54 \text{ cm}}{1 \text{ in}} \right| \frac{26 \text{ in}}{} \left| \frac{2.54 \text{ cm}}{1 \text{ in}} \right| = 4025 \text{ cm}^2$$

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

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

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

ratio $\dfrac{0.56 \text{ Ag}}{100 \text{ ore}}$

$$\frac{800 \times 10^3 \text{ g ore}}{} \left| \frac{0.56 \text{ Ag}}{100 \text{ ore}} \right| \frac{m}{10^{-3}} = 4.\underline{4}8 \times 10^6 \text{ mg Ag}$$

CHM 151 Quiz 1b 25 Pts   Spring 2017   Name: _Key_____

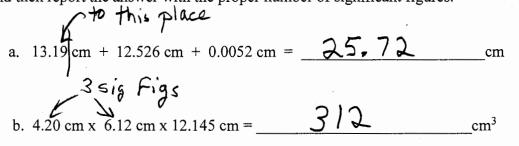**Show All Work To Receive Credit!**   Conversion factors and prefixes:

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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 327 µL to mL.

$$\frac{327 \mu L}{} \left|\frac{10^{-6}}{\mu}\right| \frac{m}{10^{-3}} = 327 \times 10^{-3} mL \text{ or } 3.27 \times 10^{-1} \mu L$$

b. Convert 805 mg to kg.

$$\frac{805 \times 10^{-3} g}{} \left|\frac{k}{10^3}\right. = 805 \times 10^{-6} kg \text{ or } 8.05 \times 10^{-4} kg$$

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. 13.19 cm + 12.526 cm + 0.0052 cm = __25.72__ cm (to this place)

b. 4.20 cm x 6.12 cm x 12.145 cm = __312__ cm³ (3 sig figs)

3. (5 Pts) A poster measures 33 inches by 36 inches. Determine its area in square cm (cm²). (You may ignore significant figures)

$$\frac{33 in}{} \left|\frac{2.54 cm}{1 in}\right| \frac{36 in}{} \left|\frac{2.54 cm}{1 in}\right. = 7664 cm^3$$

4. (5 Pts) How many inches are in 1.5 kilo-miles (You may ignore significant figures)?

$$\frac{1.5 kmi}{} \left|\frac{10^3}{k}\right| \frac{5280 ft}{mi} \left|\frac{12 in}{ft}\right. = 95,040,000 in \text{ or } 9.5 \times 10^7 in$$

5. (5 Pts) A sample of silver ore was found to contain 0.96 % silver by mass. How many mg of silver can be recovered 500.0 kg of ore?

$$\frac{500 \times 10^3 g \ ore}{} \left|\frac{0.96 \ Ag}{100 \ ore}\right| \frac{m}{10^{-3}} = 4.8 \times 10^6 mg \ Ag$$

or

$$4,800,000$$