CHM 151 Quiz 1a ~~25~~ 40 Pts Fall 2021 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) A car is traveling 65 miles per hour (65mi/hr). How fast is this in feet per second? Ignore significant figures. You must show the complete setup to receive credit.

$$\frac{65\ \text{mi}}{1\ \text{hr}} \left| \frac{5280\ \text{ft}}{1\ \text{mi}} \right| \frac{1\ \text{hr}}{60\ \text{min}} \left| \frac{1\ \text{min}}{60\ \text{s}} \right. = 95.5\ \frac{\text{ft}}{\text{s}}$$

2. (8 Pts)) Perform each of the following conversions. You must show the complete setup.

a. Convert 87 mL to μL $\quad 87\ \text{mL} \left| \frac{10^{-3}}{1\ \text{mL}} \right| \frac{\text{L}}{10^{-6}} = 87 \times 10^3\ \mu\text{L}$

b. Convert 115 **nL to mL.** $\quad 115 \times \text{nL} \left| \frac{10^{-9}}{1\ \text{nL}} \right| \frac{\text{mL}}{10^{-3}} = 1.15 \times 10^{-4}\ \text{mL}$

3. (12 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. 32.14 cm + 112.126 cm + 0.12 cm = 144.38 cm (to the 0.01 place)

b. 1.25 cm x 2.41 cm x 1.145 cm = 3.449 ⇒ 3.45 cm^3 (3 sig figs.)

c. (4.2 + 18.3) / 3.145 = $\frac{22.5}{3.145} = 7.15$ cm/s (22.5 ← 3 s.figs)

$\frac{4.2}{18.3}$ ← 0.1 place
$\frac{}{22.5}$ ↙ gives 3 sig figs

4. (5 Pts) Chloroform, $CHCl_3$, has a density of 1.48 g/mL. How many mL of chloroform are needed to provide 58.0 g?

$$58.0\ \text{g} \left| \frac{\text{mL}}{1.48\ \text{g}} \right. = 39.2\ \text{mL}$$

5. (6 Pts) A sample of silver ore was found to contain 0.26 % silver by mass. How many **grams** of silver can be recovered 400.0 kg of ore? Show the complete setup.

$$400.0 \times 10^3\ \text{g ore} \left| \frac{0.26\ \text{Ag}}{100\ \text{ore}} \right. = 1040\ \text{g Ag}$$

6. (3 Pts) How many significant figures are in each of the following: 0.0102 3, 50.00 4, 10100 3