CHM 151 Quiz 1a 25 Pts Fall 2014 Name: Key

Conversion factors: $k = 10^3$ $c = 10^{-2}$ $m = 10^{-3}$ $\mu = 10^{-6}$ $n = 10^{-9}$ hr = 60 min. 1 min = 60 sec.
1 mile = 5280 ft 1 ft = 12 inches 2.54 cm = 1 inch

******SHOW ALL WORK TO RECEIVE CREDIT******

1. (5 Pts) A car is traveling at speed of 48 mile/hour. Determine its speed in kilometers/second.

$$\frac{48\ \text{mi}}{1\ \text{hr}} \left| \frac{5280\ \text{ft}}{1\ \text{mi}} \right| \frac{12\ \text{in}}{1\ \text{ft}} \left| \frac{2.54\ \text{cm}}{1\ \text{in}} \right| \frac{10^{-2}}{c} \left| \frac{k}{10^3} \right| \frac{\text{hr}}{3600\ \text{sec}} = 0.0214\ \frac{\text{km}}{\text{sec}}$$

we are ignoring sig figs

2. (5 Pts) Determine how many micro (μ) inches there are in 927 milli inches.

$$\frac{927\ \text{m in}}{1} \left| \frac{10^{-3}}{\text{m}} \right| \frac{\mu}{10^{-6}} = 927000\ \mu\text{in}$$

or $9.27 \times 10^5\ \mu\text{in}$

3. (6 Pts) Assume each number is a measurement. Calculate each answer and express the answer with the proper significant figures.

a. $62.54 - 25.444 =$ 37.10

↑ 1/100 place

37.096

b. $\dfrac{(2.72 + 9.44)}{4.777} =$ 2.546

$\dfrac{12.16}{4.77}$ = (4 sig. figs)

2.5455

4. (5 Pts) A car has 3.0 liter engine. Determine its displacement volume in cubic inches?

$$\frac{3.0\ \text{k}}{1\ \text{k}} \left| \frac{1000\ \text{mL}}{1\ \text{mL}} \right| \frac{1\ \text{cm}^3}{1\ \text{mL}} \left| \frac{1^3\ \text{in}^3}{2.54^3\ \text{cm}^3} \right| = 183\ \text{in}^3$$

5. (4 Pts) An ore sample was found to contain 0.45 % Au by mass. How many grams of Au can be recovered from 250 kg of ore?

$$\frac{250 \times 10^3\ \text{g ore}}{100\ \text{ore}} \left| \frac{0.45\ \text{Au}}{} \right. = 1125\ \text{g Au}$$

CHM 151 Quiz 1b 25 Pts Fall 2014 Name: Key

Conversion factors: k = 10^3 c = 10^{-2} m = 10^{-3} μ = 10^{-6} n = 10^{-9} hr = 60 min. 1 min = 60 sec.
1 mile = 5280 ft 1 ft = 12 inches 2.54 cm = 1 inch

******SHOW ALL WORK TO RECEIVE CREDIT******

1. (5 Pts) A car is traveling at speed of 63 miles/hour. Determine its speed in kilometers/second.

$$\frac{63\ \text{mi}}{1\ \text{hr}} \left| \frac{5280\ \text{ft}}{1\ \text{mi}} \right| \frac{12\ \text{in}}{1\ \text{ft}} \left| \frac{2.54\ \text{cm}}{1\ \text{in}} \right| \frac{10^{-2}}{c} \left| \frac{k}{10^3} \right| \frac{hr}{3600\ \text{sec}} = 0.028\ \frac{km}{sec}$$

2. (5 Pts) Determine how many micro (μ) inches there are in 107 milli inches.

$$\frac{107\ \text{mi in}}{1\ \text{m}} \left| \frac{10^{-3}}{1\ \text{m}} \right| \frac{\mu}{10^{-6}} = 107 \times 10^3\ \mu\text{in}$$

$$1.07 \times 10^5\ \mu\text{in}$$

3. (6 Pts)

a. 62.54 + 25.444 = 87.98

↑
100th place

b. $\frac{(2.72 + 9.44)}{4.777} = 2.546$

$\frac{12.16}{4.777} =$ 4 Sig Figs

4. (5 Pts) A car has 4.0 liter engine. Determine its displacement volume in cubic inches?

$$\frac{4.0\ \text{L}}{1\ \text{L}} \left| \frac{1000\ \text{cm}^3}{2.54^3\ \text{cm}^3} \right| \frac{1^3\ \text{in}^3}{} = 244\ \text{in}^3$$

5. (4 Pts) An ore sample was found to contain 0.65 % Au by mass. How many grams of Au can be recovered from 350 kg of ore?

$$\frac{350 \times 10^3\ \text{g ore}}{100\ \text{ore}} \left| \frac{0.65\ \text{Au}}{} \right. = 2275\ \text{g Au}$$