WORKSHEET 2 Name_____
CHEMISTRY 110 last first .

Set-ups must be shown where applicable. You will not receive credit for only answers shown
*Problem sets are due within the first **five** minutes of lecture on the due date.*
No late work will be accepted.

Hint: *Work the problems assigned in the text first, many of these problems are similar to the homework problems.*

1] Perform the following conversions:
[Remember sig. figs. must be correct!!!]

a. 4.52 x 10^{-6}yards to cm

$$4.52 \times 10^{-6}\text{yards} \times \frac{36\text{in}}{1\text{yd}} \times \frac{2.54\text{cm}}{1\text{in}} = 4.13 \times 10^{-4}\ \text{cm}$$

Answer _____

b. 19.5 μsec to csec

$$19.5\ \mu\text{sec} \times \frac{10^{-6}\text{sec}}{1\mu\text{sec}} \times \frac{1\text{csec}}{10^{-2}\text{sec}} = 1.95 \times 10^{-3}\ \text{csec}$$

Answer _____

c. 6001 cm^3 to cubic millimeters

$$6001\text{cm}^3 \times \left(\frac{10^{-2}\text{m}}{1\text{cm}}\right)^3 \times \left(\frac{1\text{mm}}{10^{-3}\text{m}}\right)^3 =$$

$$6001\text{cm}^3 \times \frac{10^{-6}\text{m}}{1\text{cm}^3} \times \frac{1\text{mm}}{10^{-9}\text{m}^3} = 6.001 \times 10^{6}\ \text{mm}^3$$

Answer _____

d. 8.2 x 10^{12} nm to miles

$$8.2 \times 10^{12}\ \text{nm} \times \frac{10^{-9}\text{m}}{1\text{nm}} \times \frac{1\text{Km}}{10^{3}\text{m}} \times \frac{1\text{mi}}{1.609\text{Km}} = 5.1\ \text{miles}$$

Answer _____

e. 745.6 mi/hour to in/sec

$$\frac{745.6\text{mi}}{\text{hr}} \times \frac{1.609\ \text{Km}}{1\text{mi}} \times \frac{10^{3}\text{m}}{1\text{Km}} \times \frac{39.37\text{in}}{1\text{m}} \times \frac{1\text{hr}}{60\text{min}} \times \frac{1\text{min}}{60\text{sec}} = 1.312 \times 10^{4}$$

in/sec

Answer _____

f. 55 kL to mL

$$55\text{KL} \times \frac{10^3\text{L}}{1\text{KL}} \times \frac{1\text{mL}}{10^{-3}\text{L}} = 5.5 \times 10^7\ \text{mL}$$

Answer _____

2] Liquid sodium metal has a density of 0.93 g/cm^3. How many pounds of liquid sodium are needed to fill a container whose capacity is 15.0 L? $\{1\text{mL} = 1\text{cm}^3\}$

$$15.0\text{L}\ \frac{1\text{mL}}{10^{-3}\text{L}} \times \frac{1\text{cm}^3}{1\text{mL}} \times \frac{0.93\text{g}}{1\text{cm}^3} \times \frac{1\ \text{lb}}{453.6\text{g}} = 30.8\ \text{lbs}$$

Answer _____

3] A typical ice cube from the refrigerator measures 4.0 cm x 3.5 cm x 3.3 cm and weighs 42.4 grams. Calculate the density of the ice cube.

$$\text{Density} = \frac{\text{mass}}{\text{volume}} = \frac{42.4\ \text{g}}{4.0\text{cm} \times 3.5\text{cm} \times 3.3\text{cm}} = 0.92\ \text{g/cm}^3$$

Answer _____

4] A "track star" runs the 100.0 yd dash in 10.27 sec. What would be his time, **in seconds**, for a 100.0 m run if he ran it at the **same rate**?

$$\text{Rate} = \frac{100.0\text{yd}}{10.27\text{sec}} = 9.73\ \text{yd/sec}$$

$$100.0\text{m} \times \frac{39.37\text{in}}{1\text{m}} \times \frac{1\text{yd}}{36\text{in}} \times \frac{1\text{sec}}{9.737\text{yd}} = 11.21\text{sec}$$

Answer _____

5] 92.53 g of lead (density$_{\text{lead}}$= 11.34 g/cm^3) occupies the same volume as 64.2 g of iron

a. What is that volume?

$$92.53\text{g} \times \frac{1\text{cm}^3}{11.34\text{g}} = 8.16\text{cm}^3$$

Answer _____

b. What is the density of iron?

$$\text{Density} = \frac{64.2\text{g}}{8.16\text{cm}^3} = 7.87\text{g/cm}^3$$

Answer _____

c. Would one Kg of lead occupy more or less volume than one Kg of iron?

NO CALCULATION REQUIRED LESS Answer _____

6] Convert 99.0$^{\text{o}}$ C to Kelvin

$$99.0\ ^{\bullet}\text{C} + 273 = 372.0\text{K or } 372\text{K}$$

Answer _____