

WORKSHOP 1B

NAME: _____

METRICS, DENSITY & DIMENSIONAL ANALYSIS

1. Metrics

- a. Convert 275 kg to g, cg and mg

_____g _____cg _____mg

- b. Convert 32.7 m to km, cm and mm

_____km _____cm _____mm

- c. Convert 3.73×10^5 mL to L, cL and kL

_____L _____cL _____kL

- d. Acetone boils at 56°C . Express this temperature in Fahrenheit and Kelvin

_____°F _____K

2. Density **Show your work on a separate sheet of paper. Write your final answer below.**

- a. A student had a solid piece of iron, density 7.87 g/cm^3 , and place it in a graduated cylinder containing 75.0 mL of water. After placing the iron in the graduated cylinder, the water rose to 82.3 mL. What was the mass of the iron?

Answer: _____

- b. Calculate the density of copper, given that a 35.4 cm^3 block of the pure metal has a mass of 3.16×10^2 grams.

Answer: _____

- c. What is the volume of 22 grams of gold, which has a density of 19.3 g/cm^3 ?

Answer: _____

- d. An empty graduated cylinder has a mass of 54.772 g. When filled with 28.5 mL of an unknown liquid, the mass increases to 101.074 g. What is the density of the liquid?

Answer: _____

- e. A solid piece of nickel measures 25.5 mm x 21.5 mm x 80.5 mm and has a density of 8.90 g/cm³. What is the mass?

Answer: _____

- f. A pure gold coin has a mass of 100.0 grams and a diameter of 6.25 cm. Knowing that the density of pure gold is 19.32 g/cm³, calculate the thickness of the coin. ($V = \pi r^2 h$). Express your answer in mm.

Answer: _____

3. Dimensional Analysis **Show your work on a separate sheet of paper. Write your final answer below.**

- a. During a workout at the gym, you set the treadmill at a pace of 55 meters/min. How many minutes will it take you to walk 2.5 miles?

Answer: _____

- b. Humans typically produce 250 mL of sweat per day. What is this volume in ounces?

Answer: _____

- c. During liposuction a doctor removes 4.0 liters of fat from a patient. If the density of fat is 0.94 g/mL, how many pounds of fat were removed?

Answer: _____

- d. If water drips from a faucet at a rate of 1.0 drop per second, how many gallons of water will be collected in 24 hours? (20 drops = 1 mL)

Answer: _____

- e. The mass of premature babies is customarily measured in grams. If a premature baby weighs 1.550 kg, what is its mass in pounds?

Answer: _____

- f. How many liters of gasoline will be used to drive 436.3 km from LACC to UNLV in a car that averages 25.8 miles per gallon?

Answer: _____

- g. If you are driving 64 miles/hr and take your eyes off the road for “just a second”, how many feet did you travel in 1.0 second?

Answer: _____

- h. Who is taller, a man whose height is 1.62 meters or a woman whose height is 5 ft 6 in?

Answer: _____

- i. If you were in Japan and wanted to buy 2.00 pounds of apples. You see the price of apples was 500 Yen/kg. What is the price of the apples in U.S. dollars? (\$1.00 = 97.6 Yen)

Answer: _____

- j. Approximately how many seconds are there in the entire month of September?

Answer: _____