EXERCISE 1

Name _____

(last)   (first)

Lab Section # _____ Lab Instructor _____

A. METRIC-METRIC CONVERSIONS

1. How many centigrams are in 7,586 micrograms?

2. How many liters are in 1.5 milliliters?

3. How many micrometers are in 0.049 decimeters?

4. How many millimeters are in 43.29 centimeters?

5. How many kilograms are in 2,080 grams?

6. How many deciliters are in 0.289 kiloliters?

7. How many centigrams are in 12 decigrams?

8. How many meters are in 596 centimeters?

1. _____0.7586_____

2. _____0.0015_____

3. _____4900_____

4. _____432.9_____

5. _____2.080_____

6. _____2890_____

7. _____120_____

8. _____5.96_____

B. ENGLISH-METRIC CONVERSIONS.

Use English-Metric conversion factors provided in your lecture outline to solve the following. (Some English abbreviations you might need: ounce = oz., pound = lb. quart = qt. mile = mi. foot = ft. yard = yd.)

SHOW WORK

1. How many grams are in 0.20 ounces?

$$0.20 \text{ oz} \left(\frac{28.35 g}{1 \text{ oz}} \right) = 5.67 g$$

2. How many cubic inches are in 328 milliliters?

$$328 \text{ mL} \left(\frac{1 \text{ in}^3}{16.4 \text{ mL}} \right) = 20 \text{ in}^3$$

3. How many kilograms are in 15.4 pounds?

$$15.4 \text{ lb} \left(\frac{1 \text{ kg}}{2.20 \text{ lb.}} \right) = 7 \text{ kg}$$

4. How many quarts are in 4.5 liters?

$$4.5 \text{ L} \left(\frac{1.06 \text{ qt}}{1 \text{ L}} \right) = 4.77 \text{ qt}$$

5. How many square meters are in 960 square yards?

$$960 \text{ yd}^2 \left(\frac{1 \text{ m}^2}{1.20 \text{ yd}^2} \right) = 800 \text{ m}^2$$

6. How many kilometers are in 28 miles?

$$28 \text{ mi.} \left(\frac{1.61 \text{ km}}{1 \text{ mi}} \right) = 45.08 \text{ km}$$

1. _____5.67 g_____

2. _____20 in^3_____

3. _____7 kg_____

4. _____4.77 qt_____

5. _____800 m^2_____

6. _____45.08 km_____

(over)

7. How many feet are in 15 meters?

$$15\ m \left(\frac{3.28\ ft}{1\ m}\right) = 49.2\ ft$$

8. How many inches are in 3.81 centimeters?

$$3.81\ cm \left(\frac{1\ in.}{2.54\ cm}\right) = 1.5\ in$$

7. _____49.2 ft_____

8. _____1.5 in._____

C. Complete the following table.

°F	°C	K
260.6	127	400
98.6	37	310
-40	-40	233
59	15	288
5	-15	258
80	26.7	299.7

D. Solve the following density problems.

SHOW WORK

1. 40.0 mL of a substance has a mass of 30.0 grams. What is the density of the substance?

$$\frac{30.0\ g}{40.0\ mL} = 0.75\ g/mL$$

1. _____0.75 g/mL_____

2. Substance A has a density of 4.0 g/mL. What volume (in mL) would 12.0 grams of A occupy?

$$12.0\ g \left(\frac{1\ mL}{4.0\ g}\right) = 3.0\ mL$$

2. _____3.0 mL_____

3. Lead has a density of 11.3 g/mL. What is the mass (in grams) of a lead block that is 8 cm long by 5 cm wide by 2 cm high?

$$vol = (8cm)(5cm)(2cm) = 80\ cm^3$$

$$80\ cm^3 \left(\frac{11.3\ g}{1\ mL}\right) = 904\ g$$

3. _____904 g_____