

CHM 111 Worksheet Extra Credit

Chapter 1: Matter, Measurement and Problem solving

Name: _____

1. Complete the following conversions between metric units

a) 224.5 nanograms = _____ grams

b) 2.08 millimeter = _____ centimeter

c) 324 cm = _____ m = _____ mm

d) 150 μs = _____ s = _____ ns

e) 0.0000734 kg = _____ g = _____ mg

2. How many sig figs do the following numbers have?

a) 12.02040 cm _____

b) 0.7045 mL _____

c) 1.67×10^{-24} g _____

d) 6.022×10^{23} mol⁻¹ _____

e) 100 miles _____

f) 1050 kg _____

g) 100.00 meters _____

h) one dozen bagels _____

CHM 111 Worksheet Extra Credit

3. Carry out the following mathematical operations and report your final answer in the correct number of sig figs. Assume that all numbers are measurements.
- a) $24.6/7.1 + 1.23/5.27 =$ _____
- b) $0.0021 - 1.05 \times 10^{-1} =$ _____
- c) $(8.57 \times 10^3) / (0.035 \times 10^{-4}) =$ _____
- d) $7.56 \times 10.064 \div 1.297 =$ _____
- e) $1345.7 - 222.341 + 100 =$ _____
- f) $(27.09 - 25.6)/27.09 =$ _____
4. Classify the following as a pure substance or a mixture. If pure, then identify whether it is an element or a compound. If a mixture, identify whether it is homogeneous or heterogeneous.
- a) CO_2 _____
- b) Iced Tea _____
- c) Dirt _____
- d) NaCl _____
- e) Oatmeal Raisin Cookies _____
- f) Chicken Tikka Masala _____
- g) Fe _____
- h) Sulfur dioxide (SO_2) _____

CHM 111 Worksheet Extra Credit

5. Classify the following as Physical or Chemical changes.

- a) Water evaporating _____
- b) Sulfur dioxide reacts with water to make acid rain _____
- c) Metal rusting _____
- d) Dissolving sugar in a cup of coffee _____
- e) Burning of gasoline _____
- f) Ice melts _____

6. Carry out the following conversions. Make sure that the final answer is expressed in the correct number of significant figures.

a) 125 kg to pounds

b) 90. km/hour to miles/hour

c) If light travels at a speed of 3.00×10^8 meter/second, how far can light travel (in feet) in a nanosecond.

7. Diamond has a density of 3.53 g/cm^3 . What is the volume of a 3.00 carat diamond ring?

CHM 111 Worksheet Extra Credit

11. A standard gold bar weighs 12.4 kg. The density of gold is 19.3 g/mL. What is the volume of a gold bar?
If an ounce of gold is worth \$1255, what is the value of a bar of gold?

12. Carry out the following temperature conversions

a) -15°F to $^{\circ}\text{C}$.

b) $900.\text{ K}$ to $^{\circ}\text{C}$

c) 98.6°F to $^{\circ}\text{C}$ and K

13. Aluminum has a density of 2.70 g/mL.
What is the density in g/cm^3 ?

What is the density in pounds/ ft^3 ?