PRACTICE EXAM #1

Chem20, Elementary Chemistry

1.) Classify each of the following as a pure element, pure compound, homogeneous mixture, and/or heterogeneous mixture and clearly explain your reasoning. (9 points)

    a.) black, filtered coffee

    b.) chicken noodle soup

    c.) carbon monoxide (CO)

2.) Perform the following conversions to the correct significant figures. (15 points)

    a.) 1.2 kilometers = __?__ decimeters

    b.) 5.3923 µg = __?__ Mg

    c.) 18.2 $^{\circ}$C = __?__ K?

3.) Calculate the following to the correct number of significant figures. (10 points)

      a.) $(433.621 - 333.9) \div 11.900$

      b.) $249.361 + 41 \times (32.98 + 62)$

4.) A room measures 113 feet^2. A carpet costs \$12.34 per yard^2. How much will it cost to carpet the entire room? (1 yard = 3 feet) (12 points)

5.) The density of silver is 10.5 g/cm^3. If a pure silver ring has a volume of 1.345×10^{-2} L, what is its mass in grams? (10 points)

6.) A rock suspected to be pure gold is weighed, giving a mass of 22.34 g. The rock absorbs 98.2 J of heat, resulting in a temperature change from 25.0°C to 43.1°C. What is the specific heat of the rock? Given that the specific heat of gold is 0.128 J/g °C, is the rock pure gold? (15 points)

7.) Round the following to 3 significant figures. (9 points)

a.) 0.00030940 _____

b.) 9083400027 _____

c.) 4004.0001 _____

8.) An unknown metal sphere has a radius of 0.0126 m and weighs 0.1189 lbs. Calculate the density of the unknown in g/mL, given that 1 lb. = 454 g and the volume of a sphere = $4/3\pi(radius)^3$ (20 points)