1. (A pound of coffee beans yields 50 cups of coffee (4 cups = 1 qt.) How many milliliters of coffee can be obtained from 1.5g of coffee beans? (5pts)

(Notes:
1 lb = 453.59g
1L = 1.0567 qt)

2. The density of air at ordinary atmospheric pressure and 25°C is 1.19 g/L. What is the mass in kilograms of the air in a room that measures 10.5ft × 12.5ft × 7.0ft? (6pts)

(Notes:
12 in = 1 ft
2.54 cm = 1in
$1cm^3$ = 1mL)

3. The recommended single dose for acetaminophen (brand name: Tylenol) is 15.0 milligrams per kilogram of body weight for adults. Using this guideline, calculate the dosage in grams, for a single dose, for a person who weights 159 pounds. (5pts)

(Notes:
2.21 lbs = 1kg)

4. Bromine has two isotopes. The abundance of bromine-79 (78.9183 amu) is equal to 50.69%. The second isotope is bromine-81. What is the atomic mass of bromine-81 (record 4 places past the decimal)? (5pts)

Average Atomic Mass = (Fractional Abundance$_A$ x mass$_A$) + (Fractional Abundance$_B$ x mass$_B$)

5. Give the number of significant figures in each of the following. (3pts)

a) 10.0005 g _____

b) 0.003423 mm _____

c) 8.9×10^5 L _____

6. Determine the answer for each of the following. Be sure to use the correct number of significant figures. (6pts)

a) 27.34 + 6.90 - 13.124 =

b) 0.32 x 14.50 + 120 =

c) $(24.1 / 0.005) \times (1.23 \times 10^4)$ =

7. Convert each of the following into correct scientific notation with proper significant figures. (4pts)

1747 _____

0.00000984 _____

0.002014×10^2 _____

25600000000000000 _____

8. What are the names of the following groups AND what is the charge of the ions that form in each group? (6pts)

Group 1_____ _____

Group 2_____ _____

Group 7_____ _____

9. Give one example for each of the following: (4pts)

a. A physical change in chemistry.

b. A chemical change in chemistry.

10. Determine the number of protons, neutrons, and electrons in the following: (6pts)

a. Chlorine-37 p = n = e =

b. Iron-54 p = n = e =

c. $^{18}O^{2-}$ p = n = e =

d. $^{27}Al^{3+}$ p = n = e =

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Read Carefullly!

You must show ALL WORK for calculations – <u>all numbers must include units</u> in your work as well. Be neat and clear if your work is to be graded. Relax and good luck!!!