Name _____

Compounds, Percent, and Moles

Elements, Compounds, Mixtures
An element has only one type of atom, a compound has more than one, but has a specific formula, and a mixture has no set formula (made of many compounds).

Label each as an element, compound, or mixture (E,C,M)

_____ water (H_2O)   _____ gold necklace (Au)   _____ salt (NaCl)

_____ salad   _____ air   _____ gas in neon sign (Ne)

_____ glass (SiO_2)   _____ lead pipe (Pb)   _____ cake

Percents
1. Use a periodic table to find the masses of all the parts of the compound
    1b. If necessary, multiply the mass by the quantity of that element
2. Add all of the masses together to find the total mass
3. Divide mass of each element by total mass
4. Multiply by 100 to find percent (move decimal two places right)

Determine the percent for each element in the compound (rounded to the tenth)

Laughing Gas (N_2O)   Glass (SiO_2)   Fool's Gold (FeS_2)

    N _____   Si _____   Fe _____

    O _____   O _____   S _____

Epsom Salts ($MgSO_4$)   Vinegar* (CH_3COOH)   Bleach (NaClO)

    Mg _____   C _____   Na _____

    S _____   H _____   Cl _____

    O _____   O _____   O _____

Caffeine ($C_8H_{10}N_4O_2$)

    C _____   H _____

    N _____   O _____

Moles

How many atoms are in a mole (Avogadro's number) _____

To determine how much a mole of an element weighs, look at the atomic mass. The weight (mass) is in grams.

Determine the mass of each of the following elements (be sure to write the g.)

_____ One mole of gold (#79)   _____ One mole of zinc (#30)

_____ 1 mole barium (#56)   _____ 1 mole uranium (#92)

To determine the weight of a compound, add up all of the masses.

_____ One mole carbon dioxide (CO_2)

_____ One mole of Vitamin C ($C_6H_8O_6$)

_____ One mole of rubbing alcohol* (C_2H_5OH)

_____ One mole of baking soda ($NaHCO_3$)

_____ One mole of aspirin ($C_9H_8O_4$)

How many moles of water are present in 54 grams? (Show your work)

Molarity

A one molar solution is made by putting one mole of substance into one liter of water. A five molar solution is five moles of substance in one liter of water. To do this, calculate the weight of the moles and figure how much to add.

How would you make a 1M solution of table salt? (NaCl)

How would you make a 5M solution of table salt? (NaCl)

Ammonia is NH_3. How would you make a 1M solution of ammonia?

How would you make a 3M solution of ammonia?