**Worksheet #5  Calculating Number of Particles, Number of Moles, and Molar Mass**

1.      Calculating the following:
    a)      How many molecules are present in 0.75 mol of $H_2O$?
    b)      How many molecules of $C_3H_8$ are there in 7.21 mole of $C_3H_8$?
    c)      How many atoms of S are there in $6.89 \times 10^{-4}$ mol of S?
    d)      How many moles of magnesium are $3.01 \times 10^{22}$ atoms of magnesium?
    e)      How many molecules are in 4.00 mol of glucose, $C_6H_{12}O_6$?

2.      Calculate the mass of one mole  (molar mass) of each of these substances.
    a)      $S_8$      b)      Fe      c)      $C_8H_{18}$      d)      $N_2O_5$
    e)      $CCl_4$   f)      $PCl_5$   g)      $Al(NO_3)_3$      h)      $K_2Cr_2O_7$

3.      Calculate the molar mass of each of the following substances.
    a)      $BaSO_4$              b)      $(NH_4)_3PO_4$              c)      $H_2SO_4$
    d)      $Fe(NO_3)_3 \cdot 9H_2O$      e)      $Na_2CO_3$              f)      $CH_3COOH$

4.      Calculate the molar mass of each of the following substances: (be sure formula is correct)
    a)      carbon dioxide              b)      calcium phosphate
    c)      potassium sulfate              d)      strontium cyanide

**Worksheet #6 Calculating  Particles, Moles and Mass**

A.      Calculate the mass of each of the following.  Show all working, including units and correct  significant digits.
    1.      0.100 mol of cream of tartar  $(KHC_4H_4O_6)$
    2.      1.2 mol of detergent filler  $(Na_2SO_4 \cdot 10 H_2O)$
    3.      0.15 mol of white phosphorus

B.      Calculate the number of moles of each of the following.  Show all working, including units and correct  significant digits.
    1.      900 g of baking soda          $(NaHCO_3)$
    2.      900 g of washing soda          (sodium carbonate)
    3.      900 g of Epsom salts  $(MgSO_4 \cdot 7H_2O)$

C.      Complete the following calculations by calculating the...
    1.      mass of sodium hydroxide present in 0.641 mol.
    2.      number of moles present in 10.0 kg of ammonium phosphate.
    3.      mass of carbon dioxide present in 5.00 mol.
    4.      number of moles present in 142.2 g of potassium chloride.

D.      Calculate the number of particles (atoms, molecules, formula units) present in
    1.      5.00 mol of  Pb      2.      3.86 mol of NaCl      3.      6.80 mol of $SO_2$
    4.      5.00 g of Pb      5.      3.86 g of NaCl6.      6.80 g of $SO_2$

E.      Given the number of particles calculate the:
    1.      number moles present  in $5.85 \times 10^{23}$ atoms of copper
    2.      number moles present  in $5.85 \times 10^{23}$ molecules of ammonia
    3.      number moles present  in $5.85 \times 10^{23}$ formula units  of copper (II)  nitrate
    4.      mass present in $5.85 \times 10^{23}$ atoms of copper
    5.      mass present in $5.85 \times 10^{23}$ molecules of ammonia
    6.      mass present in $5.85 \times 10^{23}$ formula units  of copper (II)  nitrate