Mole Conversions Worksheet #1

1. Mole –> Mass Conversions – using molar mass of each substance, convert the following quantities.

   a. 10.0 mol Cr
   b. 3.32 mol K
   c. 2.20×10^{-3} mol Sn
   d. 0.720 mol Be
   e. 2.40 mol N2
   f. 0.160 mol H2O
   g. 5.08 mol $Ca(NO_3)_2$
   h. 15.0 mol H_2SO_4
   i. 4.52×10^{-5} mol C_2H_4
   j. 0.0112 mol K_2CO_3

2. Mass –> Mole Conversions – using molar mass of each substance convert the following quantities.

   a. 72.0 g Ar
   b. 3.70×10^{-1} g B
   c. 187 g Al
   d. 333 g SnF_2
   e. 7.21×10^{-2} g He
   f. 27.4 g NO_2
   g. 5.00 g H_2
   h. 2.64×10^{-4} g Li_3PO_4
   i. 11.0 g CH_4
   j. 847 g $(NH_4)_2CO_3$

3. What is the volume of the following gases?

   a. 5.40 mol O_2
   b. 3.20×10^{-2} mol CO_2
   c. 0.960 mol SO_3

4. How many moles are in each of the following volumes?

   a. 89.6 L Ne
   b. 1.00×10^{3} L C_2H_6
   c. 5.42×10^{-1} F_2

5. Find the number of moles in each of the number of representative particles.

   a. 1.20×10^{25} atoms of P
   b. 3.87×10^{21} molecules of AlF_3
   c. 4.81×10^{14} molecules of NH_3

6. How many representative particles are in each of the following mole quantities?

   a. 1.24 mol Cl_2
   b. 4.20×10^{-3} mol K_2S
   c. 34.02 mol $Ca(OH)_2$

7. Convert the following two-step quantities, converting first to moles and then to the desired quantity.

   a. Find the number of molecules in 60.0 g of N_2O.
   b. Find the volume of 3.24×10^{22} molecules of Ne
   c. Find the mass of 18.0 L of CH_4
   d. Find the volume of 835 g of SO_3
   e. Find the mass of one atom of nickel.