Name: _____

Honors Chemistry Practice, Part 2: The Mole

1. Convert the following:
   a.) 375 grams of iron to atoms.
   b.) 0.25 moles of K_2SO_4 to grams
   c.) 138 grams of S_2Cl_2 gas to liters at STP.
   d.) 3.11×10^{22} molecules of TNT (trinitrotoluene, aka "dynamite") to moles.
   e.) 15.0 grams of sodium carbonate to formula units.
   f.) 1.00×10^{2} Liters of mercaptin gas to moles.
   g.) 3.20 mg of dinitrogen monoxide to molecules.
   h.) 12.5 kg of nitric acid to moles.
   i.) 2.3×10^{-4} moles of chromium (III) nitrate to grams.
   j.) 5.88×10^{19} formula units of $Hg_2(NO_3)_2$ to moles.
   k.) 160.0 mg oxycodone, $C_{18}H_{21}NO_4$ to moles
   l.) 2.16 μg of rubidium chloride to formula units.
   m.) 9.33 grams of aluminum sulfate to moles.
   n.) 4.83×10^{24} molecules of PH_3 gas to liters at STP.
   o.) 0.031 moles of magnesium phosphate to grams.

2. If 6.47×10^{21} molecules has a mass of 2.000 grams what is the molar mass of the compound?
3. For 1.00 gram of each substance below, which substance has the greatest number of moles?
   A. I_2 B. Br_2 C. Cl_2 D. F_2
4. How many grams of iron are needed to equal the number of atoms in 1.00 grams of Al?
5. How many atoms of C are contained in 0.025 grams of butane, C_4H_{10}?
6. What is the mass of one formula unit of tin(II) sulfate