IB/Diff Chem: Gas Stoichiometry Wkst 2

Name:

YOU MUST SHOW ALL YOUR WORK FOR CREDIT. NO WORK, NO CREDIT!!!!

1. A liter of methane gas, CH₄, at STP contains more atoms of hydrogen than does a liter of pure hydrogen, at STP. Using Avogadros Law, explain why?

- 2. What is the total volume of the $CO_2(g)$ and $H_2O(g)$ at 600°C and 735 torr produced by the combustion of 1.00 L of $C_3H_8(g)$ measured at STP? Assume that the products are the only materials remaining.
- 3. What is the partial pressure of CO_2 in the product gases from #2.
- 4. Thin films of amorphous silicon for electronic applications are prepared by decomposing silane gas, SiH₄, on a hot surface at low pressures

 $SiH_4(g) \rightarrow Si(s) + 2H_2(g)$

What volume of silane gas at 130 Pa and 800 K is required to produce a 10.0cm x 10.0cm film that is 200 angstroms thick? The density of amorphous silicon is 1.9 g/cm^3 .

5. Cyclopropane, a gas used with oxygen as a general anesthetic, is composed of 85.7% carbon and 14.3% hydrogen by mass. If 1.56 g of cyclopropane has a volume of 1.00 L at 0.984 atm and 50.0°C, what is the molecular formula of cyclopropane?