Molecular Formula

Name - _____

1.) A gas has the empirical formula CH_2. If $0.850\ L$ of the gas at STP has a mass of $1.59\ g$, what is the molecular formula?

2.) A gas has the percentage composition: 30.4% N and 69.6% O. If the density of the gas is $4.11\frac{g}{L}$, at STP, what is the molecular formula of the gas?

3.) A compound has an empirical formula C_5H_{11}. If $0.0275\ mol$ of the compound has a mass of $3.91\ g$, what is the molecular formula of the compound?

4.) When a sample of nickel carbonyl is heated, $0.0600\ mol$ of a gas containing carbon and oxygen is formed. The gas has a mass of $1.68\ g$ and is 42.9% C. What is the molecular formula of the gas?

5.) A gas sample is analysed and found to contain 33.0% Si and 67.0% F. If the gas density $is\ 7.60\frac{g}{L}$ at STP, what is the molecular formula of the gas?

6.) A gas has the percentage composition: 78.3% B and 21.7% H. A sample bulb is filled with the unknown gas and weighed. The mass of unknown gas is found to be $0.986\ times$ the mass of a sample of nitrogen gas in the same bulb under the same conditions of temperature and pressure. What is the molecular formula of the unknown gas?

7.) A gas has an empirical formula CH_2. If $0.500\ L$ of the gas at STP has a mass of $0.938\ g$, what is the molecular formula of the compound?

8.) A sample of gas has an empirical formula of O and a molar mass which is 3 times that of CH_4. What is the molecular formula of the gas?