5.4 Gas Stoichiometry and Molar Mass

Molar Volume: 1 mole of an ideal gas occupies 22.4 Liters at STP, (0ºC and 1 atm).
Stoichiometric calculations employ the same factors of using a balanced chemical equation, mole rations and converting to desired units. In this case, the convenient unit fro a gas is volume. Volume is subject to change with pressure and temperature so employing the ideal gas equation is often necessary.

In Class example:

Density of a gas: if PV=nRT, and m/M =n, where m=mass in grams, and M= molar mass, then rearranging gives = $PV = \frac{mRT}{M}$, and $D = \frac{m}{V} = \frac{PM}{RT}$ = g/L units

Molecular Mass of a Gas: $\frac{mRT}{PV}$ *or* $\frac{DRT}{P}$ = g/mol units

Additionally, if moles are found, mass/moles = molecular mass

In Class, The density of a gas was measured at 1.50 atm and 27ºC and found to be 1.95 g/L. What is the molar mass of the gas? 32.0 g/mol

Homework: P.221 # 53, 54, 56, 57, 59, 61, 62, 63, 64, 105, 110, 116