Name: _____ Period: _____

Guided Notes: Gas Stoichiometry

___NH_3(g) + ___O_2(g) --> ___NO_2(g) + ___H_2O(g)

- When the reactants and products are solids (s), liquids (l) or aqueous (aq), the coefficients represent:
  - the number of _____
- When the reactants and products are gases (g) the coefficients represent:
  - the number of _____
  - volumes of _____ in _____

Practice:

1. Determine the volume of hydrogen gas needed to react completely with 5.00 L of oxygen gas to form water vapor. Conditions for the gases are STP.

$$2H_2(g) + O_2(g) \rightarrow 2H_2O(g)$$

2. If 5.0 L of N_2 reacts at STP, how many grams of NH_3 are produced?

$$N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$$

3. Calculate the volume of oxygen gas at 300. K and 1.5 atm that is required to completely react wth 52.0 g of iron.

$$4Fe(s) + 3O_2(g) \rightarrow 2Fe_2O_3(s)$$

   a. Why did we use stoichiometry first in this problem?

   b. Why do we have to use the ideal gas law for this problem?

   c. Why couldn't we use the molar volume in this problem?

   d. When you aren't sure how to solve the problems, what will always work?