Gas Stoichiometry Practice Sheet

1) For the reaction $2\ H_{2(g)} + O_{2(g)} \rightarrow 2\ H_2O_{(g)}$, how many liters of water can be made from 5 L of oxygen gas and an excess of hydrogen?

2) How many liters of water can be made from 55 grams of oxygen gas and an excess of hydrogen at STP?

3) How many liters of water can be made from 55 grams of oxygen gas and an excess of hydrogen at a pressure of 12.4 atm and a temperature of 85^0 C?

4) How many liters of water can be made from 34 grams of oxygen gas and 6.0 grams of hydrogen gas at STP? What is the limiting reactant for this reaction?

Gas Stoichiometry Practice

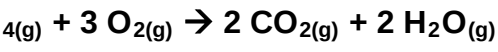
For all of these problems, assume that the reactions are being performed at a pressure of 1.0 atm and a temperature of 298 K.

1) Calcium carbonate decomposes at high temperatures to form carbon dioxide and calcium oxide:

$$CaCO_{3(s)} \rightarrow CO_{2(g)} + CaO_{(s)}$$

How many grams of calcium carbonate will I need to form 3.45 liters of carbon dioxide?

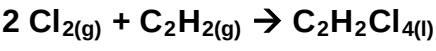
2) Ethylene burns in oxygen to form carbon dioxide and water vapor:



$$C_2H_{4(g)} + 3\ O_{2(g)} \rightarrow 2\ CO_{2(g)} + 2\ H_2O_{(g)}$$

How many liters of water can be formed if 1.25 liters of ethylene are consumed in this reaction?

3) When chlorine is added to acetylene, 1,1,2,2-tetrachloroethane is formed:



$$2\ Cl_{2(g)} + C_2H_{2(g)} \rightarrow C_2H_2Cl_{4(l)}$$

How many liters of chlorine will be needed to make 75.0 grams of $C_2H_2Cl_4$?