Ch. 1, part A: Ideal Gases
Genchem Review Problems

Example 1:
Argon is an inert gas used in some light bulbs. In one experiment, 452 mL of the gas is heated from 22 °C to 187 °C at constant pressure. What is the final volume of the argon?

Example 2:
If a sample of oxygen has a volume of 425 mL at 70 °C and a pressure of 0.950 atm, what will be its volume at STP?

Example 3:
A flask of volume 0.85 L is filled with carbon dioxide gas at a pressure of 1.44 atm and a temperature of 312 K. A solution of LiOH of negligible volume is introduced into the flask. Eventually the pressure of carbon dioxide is reduced to 0.56 atm due to the reaction:

$$CO_2\,(g) + 2\,LiOH\,(aq) \rightarrow Li_2CO_3\,(aq) + H_2O\,(l)$$

How many grams of lithium carbonate are formed by this process? (Assume that the temperature remains constant.)

Example 4:
An unknown gas has a density of 20.8 g/L at 3.57 atm and 32 °C. What is the molecular weight of this gas?

Example 5:
A 2.00 L flask contains 3.0 g of carbon dioxide and 0.10 g of He and has a temperature of 17 °C. What are the partial pressures of carbon dioxide and He? What is the total pressure exerted by the mixture of gases?