1. Calculate the molarity (M) of a solution made by dissolving 73.4 grams of sodium sulfate in enough water to form 275 milliliters of solution.

2. What volume of 0.101 M HNO_3 solution is needed to react with 24.9 mL of 0.00841 M $Ba(OH)_2$ solution? (Hint: Start with a balanced equation.)

3. How many liters of a 2.0 % v/v solution could you prepare using 75 liters of ethanol and an unlimited amount of water?

4. How many grams of sodium chloride are in 100.0 mL of a 2.50 M NaCl solution?

5. Calculate the mass percent of a solution prepared by adding 75 g of NaOH to 100. g of water.

6. In the previous problem,
   a. What is the solvent?
   b. What is the solute?

7. [15 pts] When heated, potassium chlorate decomposes to form potassium chloride and oxygen gas. What pressure of oxygen would accumulate in a 150.0-mL container by the decomposition of 15.0 grams of potassium chlorate at 22.0°C. (Hint: Start with a balanced equation.)

8. [10 pts] An unknown gaseous compound has a mass of 2.678 grams in a 2.00-Liter container at STP. What is its molar mass?