1. If a gas sample increases from 1.28L to 16.3L at a constant temperature, by what factor will the pressure change?

2. A sample of neon gas occupies a volume of 7.17 L at 60°C and 384 torr. If the volume of the gas sample is decreased to 4.84 L, while its temperature is increased to 134°C, what will the final pressure be?

3. Which of the following gas samples would have the largest volume, if all samples are at the same temperature and pressure?

3×10^{23} molecules of O_2 5.01 moles CH_4 41.9 grams of Kr   they would all have the same volume

4. How many moles of gas would occupy a $1.8 \cdot 10^6$ L hot air balloon at 110°C open to the sea level atmosphere?

5. What volume would be occupied by the evaporation (sublimation) of 22.39g of Dry Ice $(CO_{2(s)})$ at STP?

6. A submersible balloon that occupies 175L on the surface at 1atm and 25°C is lowered 185m into the ocean until the pressure is 18.2 atm and the temperature 3°C. What will the volume of the balloon be at this depth?

7. A 1.0 L container with <u>inflexible, rigid sides</u> is open at sea level (P = 760 Torr, T = 21.0 °C). The flask is sealed and transported to a higher elevation where the air pressure is 730 Torr and the temperature is 2.0 °C.
   a. What is the pressure inside the flask at the new location? Show work.
   b. Will air enter or leave the flask when it is opened? Explain.

8. A car's airbag is inflated with Nitrogen gas via a chemical decomposition of the compound Sodium Azide with Iron (III) Oxide. The reaction is as follows:

$$NaN_{3(s)} + Fe_2O_{3(s)} \rightarrow N_{2(g)} + Na_2O_{(s)} + Fe_{(s)}$$
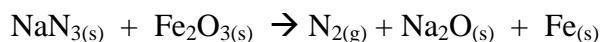
   a. Balance the equation
   b. calculate molar masses
   c. How many grams of $NaN_{3(g)}$ are required to release 75L worth of N_2 gas?