Gas Laws Worksheet
(Chapter 5)

Boyles Law: $P_1V_1=P_2V_2$
(Inverse Relationship)

Charles' Law: $\frac{V_1}{T_1}=\frac{V_2}{T_2}$
(Direct Relationship)

Combined Gas Law: $\frac{P_1V_1}{T_1}=\frac{P_2V_2}{T_2}$

Ideal Gas Law: $PV=nRT$

Density of a gas : $d=\frac{mass}{vol.}=\frac{P(MW)}{RT}$

P = Pressure in atmospheres (atm)
1 atm = 760 torr = 760 mm Hg

V = Volume in liters (L)

T = Temperature in Kelvin (K)

n = Number of moles

R = Ideal gas constant
R = 0.082057 L(atm)/K(mol)

Using the proper equations solve (complete) each question. Assume all are "ideal" gasses.

1. What is the pressure of a gas if you compressed the gas from its original 500 mL at 3.4 torr to a volume of 302 mL?

2. At what temperature will a gas be at if you allow it to expand from an original 456 mL at 65 °C to 3.4 L?

3. If you have 0.56 moles of an ideal gas at 87 °C and a pressure of 569 torr, what volume will the gas take up?

4. You have a gas at 453 mm Hg with a volume of 700 mL and a temperature of 25 °C, what will the temperature of the gas be, if you change the pressure to 278 mm Hg and a volume of 1200 mL?

5. Analysis of a gaseous chlorofluorocarbon, CCl_xF_y, shows it contains 11.79 % C and 69.57 % Cl. In another experiment you find that 0.107 g if the compound fills a 458 mL flask at 25 °C with a pressure of 21.3 mmHg. What is the molecular formula of the compound?