LAREDO COMMUNITY COLLEGE
Science Department

CHEM 1412 PROBLEM SET (GAS LAWS)

Name: _____ **Score** _____ **/ 20**

Section: ____ **Date:** 07/30/07

Show all work. Attach the work with these pages.

Variables (n, P, T, V) Relationship in gas Laws

Law	Constancy Requirement for a fixed mass of gas	Mathematical form of the law
Boyle's law	Temperature, T	$P_1V_1 = P_2V_2$
Charles' law	Pressure, P	$\frac{V_1}{T_1} = \frac{V_2}{T_2}$
Gay-Lussac's law	Volume, V	$\frac{P_1}{T_1} = \frac{P_2}{T_2}$
Avogadro's law	T, P	$\frac{V_1}{n_1} = \frac{V_2}{n_2}$
Combined gas law	None	$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$
Ideal gas law	None	PV = nRT

1. What pressure is required to cause N_2 to have a density of 1.00 g/L at 45 ºC?

2. A sample of ammonia gas, NH_3, in a 355-mL container at a pressure of 1.03 atm and a temperature of 27 ºC, is transferred to a container with a volume of 1.25 L.

a) What is the new pressure, in millimeters of mercury, if no change in temperature occurs?
b) What is the temperature, in degrees Celsius, if no change in pressure occurs?

3. Calculate the mass, in grams, of 5.50 L of SO_2 at STP.