**Salt Lake Community College, Chemistry Department**

**Chem 1110 Workshop 11**

**Topic: Gases Part I**

***Objective:***

* To understand and use the several individual gas laws, the combined gas law, and the ideal gas law to predict and explain how gases respond to changes in pressure and volume
* **Boyle’s Law: Charle’s Law:**
* **Avogadro’s Law:**



**Practice Problems:**

1. Volume and pressure are \_\_\_\_\_\_\_\_ proportional.
2. directly
3. **inversely**
4. all of the above
5. none of the above

2. According to Avogadro's Law, the volume of a gas will \_\_\_\_\_\_\_\_ as the \_\_\_\_\_\_\_\_ is increased while the \_\_\_\_\_\_\_\_ are held constant.

1. **increase; number of moles; pressure and temperature**
2. decrease; number of moles; pressure and temperature
3. increase; temperature; pressure and number of moles
4. decrease; pressure; temperature and number of moles
5. increase; pressure; temperature and number of moles
6. If the temperature of a 1.75 liter (V1) sample of gas is changed from 30.0°C (T1 to T2) 20.0°C at constant pressure, what will be the new volume?

**Answer (Charles Law🡪 1.69 L)**

1. What is the new volume of a balloon originally at 755 torr and 5.00 L is placed in a container in which the pressure is increased to 1.25 atm?

**Answer: (Boyles’s Law P1V1= P2V2 🡪3.97 L)**

1. A 6.3 L sample of helium gas stored at 25 °C and 1.0 atm pressure is transferred to a 2.0 L tank and maintained at a pressure of 2.8 atm. What temperature is needed to maintain this pressure?

**Combined gas Law : P1V1/T1= P2V2/T2**

P1= 1.0 atm

V1= 6.3 L

T1= 25 C + 273 = 298 K

P2= 2.8 atm

V2= 2.0 L

T2= ?

**Answer (264.8 K)**

1. Which of the following is the definition of standard temperature and pressure?
2. 273°C and 760 torr
3. 298 K and 1 atm
4. **273 K and 760 mm Hg**
5. 0 K and 1 atm