**Chem 20 – Unit 5 Exam – Gases** Name\_\_\_\_\_\_\_\_\_\_\_\_

 January 14th, 2011

**Part A**. **Matching**. Place the letter of the correct ending in the blank provided using **either** A or B. You can re-use A and B. The completed statements on the left must be matched with one of the laws on the right. The laws **cannot** be reused.

\_\_\_\_\_ The combination of the simple gas laws.

\_\_\_\_\_ As pressure increases, volume \_\_\_\_\_.

\_\_\_\_\_ States that the total pressure of a mixture of

gases equals the sum of the partial pressures of

each gas.



\_\_\_\_\_ States that pressure and volume are related

when the amount of gas and temperature are

fixed.

\_\_\_\_\_ As temperature increases, volume \_\_\_\_\_.

\_\_\_\_\_ As the amount of gas decreases, volume \_\_\_\_\_.

\_\_\_\_\_ Law that involves constant temperature and

 pressure.

\_\_\_\_\_ As the amount of gas increases, pressure \_\_\_\_\_.

\_\_\_\_\_ Explains if the volume of a gas is doubled, the

 temperature is doubled if the amount of gas and

 pressure are constant.

\_\_\_\_\_ As the pressure decreases, temperature \_\_\_\_\_.

1. Increases
2. Decreases
3. Boyle’s Law
4. Charles’s Law
5. Avagadro’s Law
6. Ideal Gas Law
7. Dalton’s Law

**Part B**. **Problems**. Answer the following questions. Each question is worth a differing amount of marks. Show all necessary equations, units, and use significant figures.



1. The volume of 3.00 g of CO(g) and 10.0 g of F2 in identical 1.0 L containers are identical at the same temperature. Use the characteristics of gases to answer the following questions:
2. What is the volume of each gas?
3. Explain your answer for part a.



1. Which gas has the greater pressure? Why?
2. Explain the distribution of the particles for the two gases. Why is the distribution like this?
3. The pressure a gas exert at a given temperature is 233 kPa. If the pressure of the gas decreases to 125 kPa and the volume is measured at 455 mL, what is the original volume? Pressure and amount of gas is constant.
4. 5.00 moles of O2 are contained in a 3.45 L container. What is the pressure exerted by the gas if the temperature is 60.0°C?



1. 20.0 g of chlorine gas exerts a pressure of 101.0 kPa at -28.0°C. What is the volume of the gas?
2. On a hot summer day, 35.0°C, Batman’s tires on his batmobile contain 5.00 L of air. 6 months later, he measures the volume in his tires to be 3.78 L. What is the temperature, in degrees Celsius on this winter day?



1. What is the mass of 608 mL of HCl(g) if it exerts a pressure of 635 000 Pa at 32.6°C?
2. 2.50 moles of hydrogen gas and 4.50 moles of sulfur dioxide gas exist in the same 5.00 L container at 35.0°C. What is each partial pressure and the total pressure?



1. Pure oxygen gas is collected over water. If the temperature is 90.0°C, and the total pressure exerted is 100.0 kPa, what is the pressure of the oxygen gas?

