Name _____ **Date** _____ **Period** _____

Gas Ws #3: The Combined Gas Law

$$\frac{P_1 \cdot V_1}{T_1} = \frac{P_2 \cdot V_2}{T_2}$$

Temperature must be in Kelvin
°C + 273 = K

1. A sample of gas at 240.0 K and 670.0 torr occupies a 128 ml volume. What volume will the gas occupy at -75.0°C if the pressure is changed to 680.0 torr?

2. A 700.0 mL gas sample gas sample at STP is compressed to a volume of 200.0 mL, and the temperature is increased to 30.0°C. What is the new pressure of the gas in kPa?

3. A sample of gas has a volume of 2.00L at -75.0°C and 1.480 atm. What volume will it have at 100.0°C and 1.50 atm?

4. In an airplane, a gas sample occurs at a volume of 1.5 Liters at 760.0 torr. Suppose, while flying, the airplane loses pressure and the volume of the gas increases to 11.40 Liters. What is the pressure in the airplane if the temperature is constant?

5. A balloon of air occupies 10.0 liters at 25.0°C and 1.00 atm. What volume will it occupy if it is placed in a freezer at -10.0°C and the pressure is constant?

6. A 50.0 ml sample of a gas is contained in a syringe with a pressure gauge attached. Initially, the gauge indicates a pressure of 1.00 atm. The plunger is pushed so that the pressure reads 1.45 atm. What is the new volume of the gas?

7. A sample of gas at 15.0°C and 760.0 torr is heated to 375 K, and the volume is allowed to increase from 150 mL to 200 mL. What is the new pressure of the gas in mmHg?

8. A balloon of gas occupies 2.500 L at 780 torr. What new volume will the gas occupy at 760.0 torr if the temperature is constant?

9. A helium-filled balloon has a volume of 50.0L at 25°C and 1.08 atm. What volume will have at 0.588 atm and 10.0°C?

10. The volume of a gas is 27.5 ml at 22.0°C and 0.974 atm. What will the volume be at 15.0°C and 0.993 atm?