Ideal Gas Law Worksheet **PV = nRT** (R = 0.08206 L·atm)

mol·K

Name:

Directions: Solve each problem. Show all your work, write your answer in the correct amount of significant figures.

1. A sample of 0.4351 mol of O2gas at 50.0°C has 0.986 atm of pressure. What is the volume of the container?
2. A sample of 2.45 moles of hydrogen gas at 20.0°C occupies a volume of 25.0 L. What is the pressure of this sample?
3. If a steel cylinder with a volume of 1.50 L contains 360.4g of water vapor, under what pressure is the water if the temperature is 23.0°C?
4. A hot air balloon contains 7.400 × 1010 mL of air is heated to a temperature of 120. °C and a pressure of 766.32 torr. What is the mass of the air in the balloon?
5. When the pressure in a certain gas cylinder with a volume of 4.50 L reaches 50662.50 kPa of pressure, the cylinder is likely to explode. **If** this cylinder contains 1598g of argon at 25.0°C, is it on the verge of exploding? (Solve for pressure, if it is equal to or more than the pressure mentioned above, then it will explode.)
6. The Hindenberg blimp had a volume of 2.00 × 108 L. How many grams of hydrogen gas would the blimp hold at a temperature of 22.0°C and a pressure of 0.00500 atm?
7. You want to send chlorine gas safely from Atlanta to Chicago. You have a 50000. L truck that can withstand a pressure of 76000. mmHg and hold 1.571 × 107 g of chlorine. What temperature does the chlorine need to be inside the truck for it to be safely transported?
8. A standard portable oxygen tank used by patients contains 640. L of oxygen gas (Remember, oxygen in a diatomic molecule.) If the oxygen tank is kept at 23.89°C and a pressure of 204.14 atm. What is the mass of oxygen in the tank?