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. Convert the following units:
   1. **742 mm Hg** into
      1. Torr
      2. kPa
      3. atm
   2. **-40.0°C** to K
   3. **193.77 mL** to L
   4. **50.00 g** of fluorine gas to moles
2. A sample of 1.00 mol of O2gas at 50°C has 0.986 atm of pressure. What is the volume of the container?
3. A sample of 4.25 moles of hydrogen gas at 20.0°C occupies a volume of 25.0 L. What is the pressure of this sample?
4. If a steel cylinder with a volume of 1.50 L contains 180.2g of water vapor, under what pressure is the water if the temperature is 27.0°C?
5. When the pressure in a certain gas cylinder with a volume of 4.50 L reaches 500 atm 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?
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 torr and hold 221567 moles of chlorine. What temperature does the chlorine need to be inside the truck for it to be safely transported?