

Name \_\_\_\_\_

## Ideal Gas Law Problems

Use the ideal gas law equation ( $PV = nRT$ , where  $R = 0.0821 \text{ atm}\cdot\text{L}/\text{K}\cdot\text{mole}$ ) to solve the following problems. Show all work for full credit.

- 1) If I have 4.00 moles of a gas at a pressure of 5.60 atm and a volume of 12.0 liters, what is the temperature?
- 2) If I have an unknown quantity of gas at a pressure of 1.20 atm, a volume of 31.0 liters, and a temperature of 87.0°C, how many moles of gas do I have?
- 3) If I contain 3.00 moles of gas in a container with a volume of 60.0 liters and at a temperature of 400. K, what is the pressure inside the container?
- 4) If I have 7.70 moles of gas at a pressure of 91.2 kPa and at a temperature of 56.0°C, what is the volume of the container that the gas is in?
- 5) How many moles of Helium gas will occupy a volume of 52.0 L at STP?
- 6) What pressure will 100.00 grams of oxygen exert in a 22.0 L container at 300. K?

### Extra Credit:

Calculate the universal gas constant (R) for the units kpa, mL, K and mole, knowing that 1 mole of ideal gas occupies a volume of 22.4 L at STP.