Name _____ Date _____ Period _____

Gas Ws #4: Ideal Gas Law

PV=nRT Temperature must be in Kelvin
R= 8.31 (L **kPa**)/(mol K)
R=0.0821 (L **atm**)/(mol K)

1. What is the pressure in atmospheres exerted by a 0.500 mole sample of nitrogen gas in a 10.0L container at 25.0°C?

2. What is the volume, in liters, of 0.250 mole of oxygen gas at 20.0°C and 0.974 atm of pressure?

3. What mass of chlorine gas, Cl_2, in grams, is contained in a 10.0L tank at 27.0°C and 3.50 atm of pressure?

4. An engineer pumps 5.00 moles of carbon monoxide gas into a cylinder that has a capacity of 20.0 L. What is the pressure in kPa of CO inside the cylinder at 25.0°C?

5. A student collects 425 ml of oxygen at a temperature of 24.0°C and a pressure of 0.899 atm. How many moles of oxygen did the student collect?

6. Determine the molar mass of an unknown gas that has a volume of 72.5 ml at a temperature of 68.0°C, and a pressure of 0.980 atm, and a mass of 0.207 g.

7. A sample of an unknown gas has a mass of 0.116g. It occupies a volume of 25.0 mL at a temperature of 127°C and has a pressure of 155.3kPa. Calculate the molar mass of the gas.

8. Determine the mass of CO_2 gas that has a volume of 7.10 L at a pressure of 1.11 atm and a temperature of 31.0°C.

9. What pressure in atmospheres will 1.36 kg of N_2O gas exert when it is compressed in a 25.0 L cylinder and its stored in an outdoor shed where the temperature reaches 59.0°C during the summer?

10. A large balloon contains 11.7 g of helium. What volume will the helium occupy at an altitude of 1.00×10^4 meters, where the atmospheric pressure is 0.262 atm ant the temperature is –50.0°C?