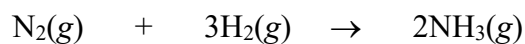


$$PV = nRT \quad P_1V_1T_2 = P_2V_2T_1 \quad \frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2} \quad \text{atomic masses: C 12.01, H 1.008, O 16.00, N 14.01}$$

$$R = 0.08206 \text{ L}\cdot\text{atm}\cdot\text{K}^{-1}\cdot\text{mol}^{-1} = 62.3656 \text{ L}\cdot\text{torr}\cdot\text{K}^{-1}\cdot\text{mol}^{-1}$$

1. Calculate the density of carbon dioxide, $\text{CO}_2(\text{g})$, at 100°C and 10.0 atm pressure ($R = 0.08206 \text{ L}\cdot\text{atm}\cdot\text{K}^{-1}\cdot\text{mol}^{-1}$).

2. What is the volume of NH_3 produced in the following reaction when 3.0 L of N_2 reacts with 4.0 L of H_2 ?



3. A sample of nitrogen gas is confined to a 14.0 L container at 375 torr and 37.0°C . How many moles of nitrogen are in the container ($R = 0.08206 \text{ L}\cdot\text{atm}\cdot\text{K}^{-1}\cdot\text{mol}^{-1}$, $1 \text{ atm} = 760 \text{ torr}$)?

4. Hydrogen and oxygen gas are mixed in a 7.75 L flask at 65°C and contains 0.482 g of hydrogen and 4.98 g of oxygen. What is the partial pressure of oxygen in the flask?

5. A sample of carbon dioxide gas at 125°C and 248 torr occupies a volume of 275 L. What will the gas pressure, in torr, be if the volume is increased to 321 L at 125°C ?
6. Calculate the volume occupied by 35.2 g of methane gas (CH_4) at 25°C and 1.0 atm ($R = 0.0821 \text{ L}\cdot\text{atm}\cdot\text{K}^{-1}\cdot\text{mol}^{-1}$).
7. Determine the molar mass of Freon-11 gas if a sample weighing 0.597 g occupies 100 cm^3 at 95°C , and 1000 mmHg ($R = 0.08206 \text{ L}\cdot\text{atm}\cdot\text{K}^{-1}\cdot\text{mol}^{-1}$, $1 \text{ atm} = 760 \text{ mmHg}$).
8. Arrange the following gases in order of increasing rate of effusion. (List from slowest to fastest)
 C_2H_6 Ar HCl PH_3