

15% correct A sample of methane has a pressure of 380.0 mmHg at 25.0 °C, and the volume is 73.4 L. What is the mass of the gas?

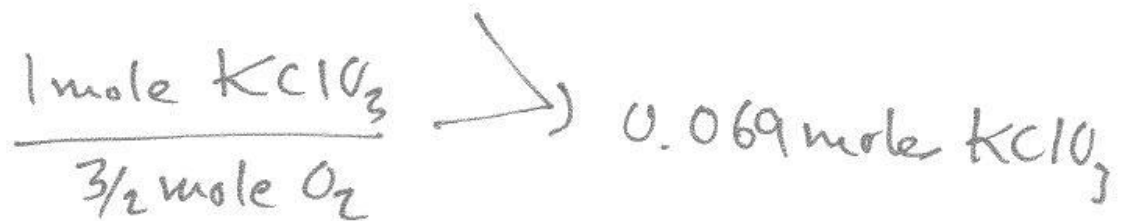
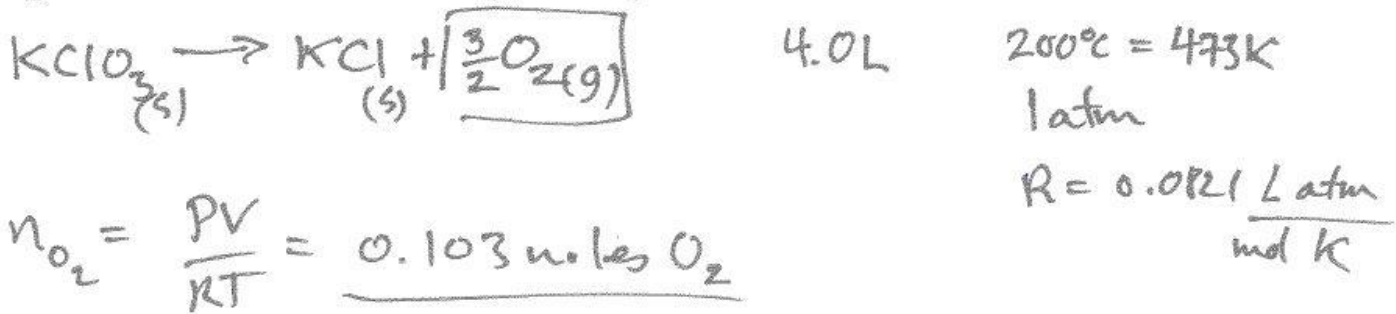
$$\frac{380}{760} \text{ atm} \quad 298\text{K} \quad 73.4\text{L} \quad \text{CH}_4 \quad 16\text{g/mol}$$

$$R = 0.0821 \frac{\text{L atm}}{\text{mol K}}$$

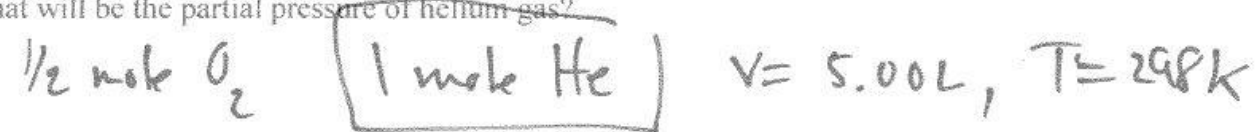
$$n = \frac{PV}{RT} = 1.5 \text{ moles}$$

$$1.5 \text{ moles} \times \frac{16\text{g}}{\text{mol}} = 24\text{g}$$

21% correct A sample of potassium chlorate decomposed to potassium chloride and 4.0 L of oxygen gas at 200 °C and 1.0 atm. How many moles of potassium chlorate were used?



13% If 16.0 g of O₂ gas and 4.00 g of He gas are mixed in a 5.00 L vessel at 25 °C, what will be the partial pressure of helium gas?



$$P = \frac{nRT}{V} = \frac{1 \times 0.0821 \times 298}{5} \text{ atm} = \boxed{4.89 \text{ atm He}}$$

A tank holds a mixture of oxygen and nitrogen gases. If the partial pressure of oxygen is 3.3 atm and the mole fraction of N₂ gas X(N₂) = 0.78, what are the total pressure in the tank and the partial pressure of N₂?

$$P_{\text{O}_2} = 3.3 \text{ atm} \quad X_{\text{N}_2} = 0.78 \quad X_{\text{O}_2} = 0.22$$

$$P_T X_{\text{O}_2} = P_{\text{O}_2}$$

$$\boxed{P_T = P_{\text{O}_2} / X_{\text{O}_2} = 15 \text{ atm}}$$

$$\boxed{P_{\text{N}_2} = 11.7 \text{ atm}}$$