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?

$\frac{380}{760}$ atm 298K 73.4L CH_4 16g/mol

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

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

$1.5\ mole \times \frac{16g}{mole} = 24g$

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?

$KClO_{3(s)} \rightarrow KCl_{(s)} + \boxed{\frac{3}{2}O_{2(g)}}$ 4.0L 200°C = 473K 1 atm

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

$n_{O_2} = \frac{PV}{RT} = 0.103$ moles O_2

$\frac{1\ mole\ KClO_3}{3/2\ mole\ O_2} \rightarrow 0.069\ mole\ KClO_3$

13% If 16.0 g of O_2 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?

1/2 mole O_2 [1 mole He] V = 5.00L, T = 298K

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

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 N_2gas $X(N_2) = 0.78$, what are the total pressure in the tank and the partial pressure of N_2?

$P_{O_2} = 3.3$ atm $\chi_{N_2} = 0.78$ $\chi_{O_2} = 0.22$

$P_T \chi_{O_2} = P_{O_2}$

$\boxed{P_T = P_{O_2}/\chi_{O_2} = 15\ atm}$

$\boxed{P_{N_2} = 11.7\ atm}$