1. A flask contains 0.25 mole of $SO_2(g)$, 0.50 mole of $CH_4(g)$, and 0.50 mole of $O_2(g)$. The total pressure of the gases in the flask is 800 mm Hg. What is the partial pressure of the $SO_2(g)$ in the flask?

A) 800 mm Hg
B) 600 mm Hg
C) 200 mm Hg
D) 160 mm Hg

P_T

$25 + 50 + 50 = 125$

$0.25 + 0.5 + 0.5 = 1.25$ mol

Mole Fraction

$\frac{0.25}{1.25} = 0.2 = 20\%$

20% of 800 = 160

10% of 800 = 80

30% of 800 = 80 x 3 = 240

$\frac{25}{125} = \frac{1}{5} = .2 = 20\%$

15% of 800

10% = 80

+ 5% = 40

120

2. Which of the following has an average atomic or molecular speed closest to that of N_2 molecules at 0°C and 1 atm?

SAME T = SAME KE

28

A) Ne 20
B) Xe 131
C) O_2 32
D) CO 28

$KE = \frac{1}{2}mv^2$

same ↑ same

Same Molar Mass

$V_1 = 16$ $P_1 = 1$

3. When 6.0 L of He(g) and 10. L of N_2(g), both at 0°C and 1.0 atm, are pumped into an evacuated 4.0 L rigid container, the final pressure in the container at 0°C is

empty

A) 2.0 atm
B) 4.0 atm
C) 6.4 atm
D) 16 atm

Constant Volume

He		New
6 L	→	4 L
0°C	→	0°C
1 atm	→	? atm

N_2		New
10 L	→	4 L
0°C	→	0°C
1 atm	→	? atm

$P_1V_1 = P_2V_2$

$(1)(6) = P_2(4)$

$P_2 = \frac{6}{4}$ atm He

$P_1V_1 = P_2V_2$

$(1)(10) = P_2(4)$

$P_2 = \frac{10}{4}$ atm N_2

$P_T = \frac{6}{4} + \frac{10}{4} = \frac{16}{4} = 4$