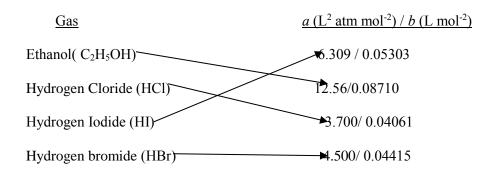
Discussion Quiz #4 2019 Thursday Key

- 1. (6 points) A container is filled with Ne at 18°C and 9.00 bar. The pressure of the container drops by 50% in 55 minutes, due to a small hole. If the container instead were filled with Xe at 18°C and 9.00 bar, what would be the pressure of the Ne after 35 minutes? Express your answer in bar.
 - 2. T-constant, time is the same

$$\begin{split} |\Delta P_{He}| &= 0.50 * 9.00 bar = 4.5 \quad 2points \quad \Delta P_{He} = -4.5 \\ \frac{rateHe}{rateNe} &= \frac{\Delta P_{He}}{\frac{L}{M_{Ne}}} = \frac{\Delta P_{He}}{\Delta P_{Ne}} = \sqrt{\frac{M_{Ne}}{M_{He}}} = 2.246 \quad 1 \text{ point or } \sqrt{\frac{M_{He}}{M_{Ne}}} = 0.445 \\ |\Delta P_{Ne}| &= |\Delta P_{He}| \sqrt{\frac{M_{He}}{M_{Ne}}} = 2.00 \quad 2 \text{ points or } 22.26\% \\ \Delta P_{Ne} &= -2.00 \end{split}$$

$$P_{Ne}=(9.00-2.00)$$
bar=7.00 bar *l points*

3. (4points) Match the molecules below with their corresponding *a* and *b* van der Waals coefficients. 1point each



Discussion Quiz #4 2019 Friday Key

(6 points) A container is filled with Ne at 18°C and 8.00 bar. The pressure of the container drops by 50% in 50 minutes, due to a small hole. If the container instead were filled with Xe at 18°C and 8.00 bar, what would be the pressure of the Ne after 50 minutes? Express your answer in bar.

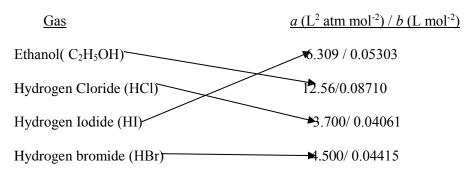
T-constant, time is the same

 $|\Delta P_{He}|=0.50*8.00bar=4.00 \ 2 \text{ points}$ $\frac{rateHe}{rateNe} = \frac{\Delta P_{He}}{\frac{\Delta P_{Ne}}{t}} = \frac{\Delta P_{He}}{\Delta P_{Ne}} = \sqrt{\frac{M_{Ne}}{M_{He}}} = 2.246 \ 1 \text{ point or } \sqrt{\frac{M_{He}}{M_{Ne}}} = 0.445$ $|\Delta P_{Ne}|=|\Delta P_{He}| \sqrt{\frac{M_{He}}{M_{Ne}}} = 1.78 \ 1 \text{ points or } 22.26\%$ $\Delta P_{Ne} = -1.78$

 $P_{Ne} = (8.00 - 1.78) \text{ bar} = 6.22 \text{ bar}$ 2 points

2. (4 points) Match the molecules below with their corresponding *a* and *b* van der Waals coefficients.

1point each



Discussion Quiz #4 2019 Friday Key