



$$K_c = \frac{[C]^2}{[A]^2 [B]}$$

$$= \frac{(0.20)^2}{(0.30)^2 (0.10)}$$



$$K_p = P_{\text{NH}_3 \text{ eq}} \cdot P_{\text{H}_2\text{S} \text{ eq}}$$

$$P_T = P_{\text{NH}_3 \text{ eq}} + P_{\text{H}_2\text{S} \text{ eq}} = 0.766 \text{ atm}$$

$$P_{\text{H}_2\text{S} \text{ eq}} = P_{\text{NH}_3 \text{ eq}}$$

$$P_{\text{NH}_3 \text{ eq}} + P_{\text{NH}_3 \text{ eq}} = 2 \cdot P_{\text{NH}_3 \text{ eq}} = 0.766 \text{ atm}$$

$$P_{\text{NH}_3 \text{ eq}} = \frac{0.766 \text{ atm}}{2} = 0.383 \text{ atm}$$

$$P_{\text{H}_2\text{S} \text{ eq}} = 0.383 \text{ atm}$$

$$K_p = (0.383)(0.383) = 0.147$$

$$K_p = K_c (RT)^{\Delta n}$$

$$K_c = K_p (RT)^{-\Delta n}$$

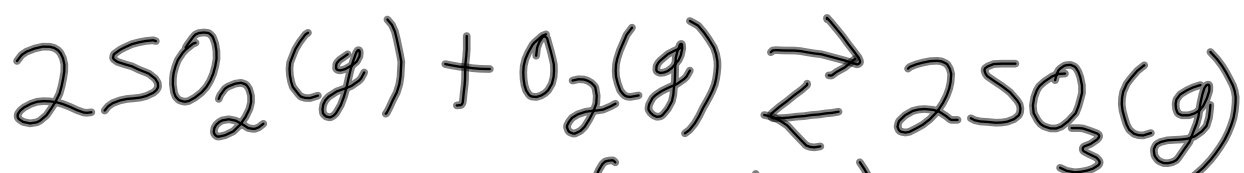


$$\Delta n = 2 - (1 + 1)$$

$$= 2 - 2 = 0$$

$$K_c = K_p (RT)^{-0}$$

$$= K_p (1) = K_p$$

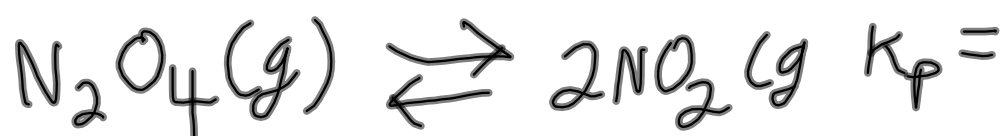
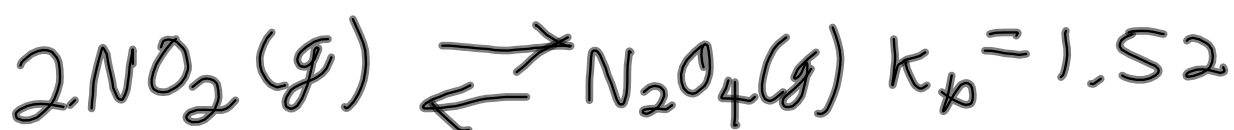


$$\Delta n = 2 - (2 + 1)$$

$$= 2 - 3 = -1$$

$$K_p = K_c (RT)^{\Delta n}$$
$$= 2.7 \times 10^2 (0.08206(960))^{-1}$$

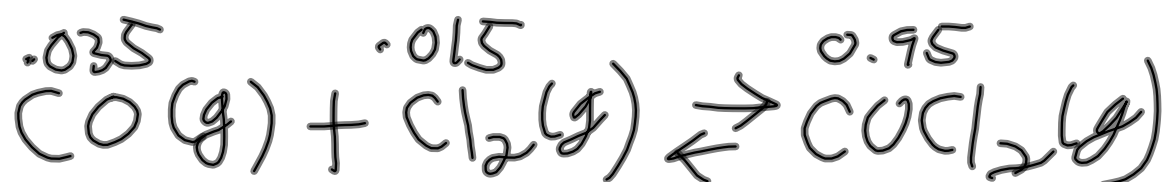
$$= \frac{2.7 \times 10^2}{0.08206(960)} = 3.4$$



$$K_p = \frac{1}{1.52} = 0.658$$



$$K_p = \sqrt{\frac{1}{1.52}} = 0.811$$



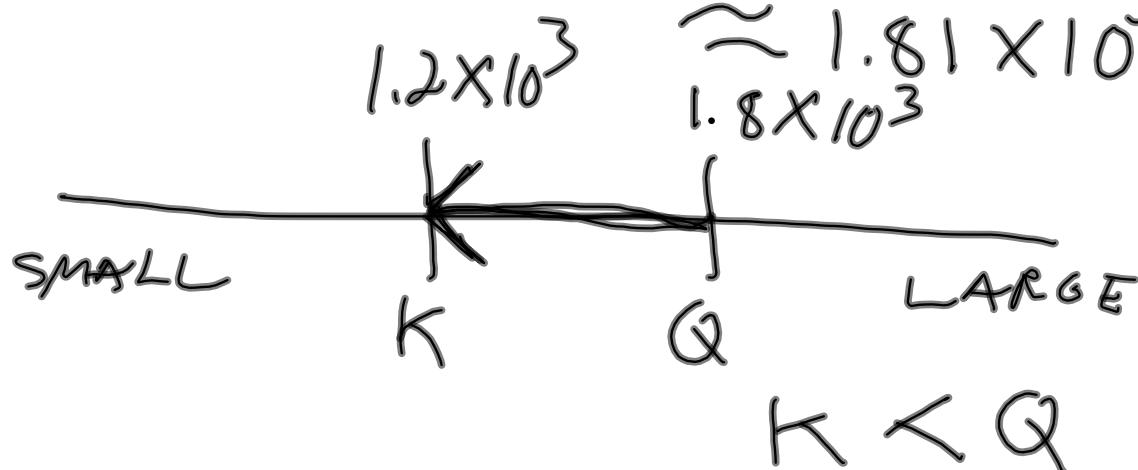
$$K_c = 1.2 \times 10^3$$

$$Q_c = \frac{[\text{COCl}_2]}{[\text{CO}][\text{Cl}_2]} = \frac{(0.95)}{(0.035)(0.015)}$$

$$= 1810$$

$$\approx 1.81 \times 10^3$$

$$1.8 \times 10^3$$





$$K_p = P_{\text{NH}_3} \cdot P_{\text{HCl}} = 25$$

$$\begin{aligned} P_{\text{NH}_3} &= P_{\text{HCl}} \\ &= P_{\text{NH}_3} \cdot P_{\text{NH}_3} = P_{\text{NH}_3}^2 = 25 \end{aligned}$$

$$P_{\text{NH}_3} = 5 \text{ atm}$$

$$P_{\text{HCl}} = 5 \text{ atm}$$

$$\begin{aligned} P_T &= P_{\text{NH}_3} + P_{\text{HCl}} \\ &= 5 \text{ atm} + 5 \text{ atm} \\ &= 10 \text{ atm} \end{aligned}$$



$$K_p = \frac{P_{\text{NO}_2}^2}{P_{\text{N}_2\text{O}_4}} = 0.660$$

$$Q_p = \frac{P_{\text{NO}_2}^2}{P_{\text{N}_2\text{O}_4}} = \frac{(0.10)^2}{0.10} = 0.10$$

	$[\text{N}_2\text{O}_4]$	$[\text{NO}_2]$
I	0.10	0.10
C	-X	+2X
E	0.10-X	0.10+2X

$$0 \leq X \leq 0.10$$

$$K_p = \frac{P_{\text{NO}_2}^2}{P_{\text{N}_2\text{O}_4}} = \frac{(0.10+2X)^2}{(0.10-X)} = 0.660$$

$$(0.10+2X)^2 = 0.660(0.10-X)$$

$$4X^2 + 0.40X + 0.010 = 0.0660 - 0.660X$$

$$4X^2 + 1.06X - 0.056 = 0$$

$$ax^2 + bx + c = 0$$

$$a = 4 \quad b = 1.06 \quad c = -0.056$$

$$X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$X = \frac{-1.06 \pm \sqrt{(1.06)^2 - 4(4)(-0.056)}}{2(4)}$$

$$= 0.0451$$