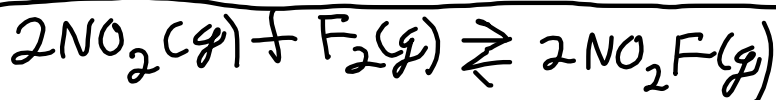
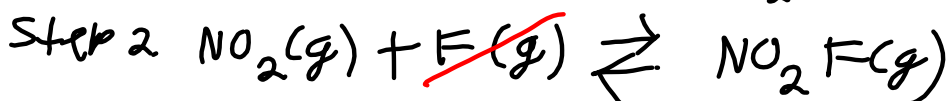
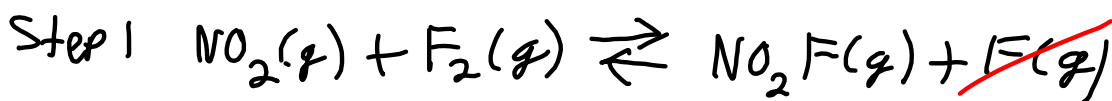


$$R_f = K_f [\text{NO}_2][\text{F}_2]$$

$$K_c = \frac{[\text{NO}_2\text{F}]^2}{[\text{NO}_2]^2 [\text{F}_2]}$$



$$K_{c1} = \frac{[\text{NO}_2\text{F}][\text{F}]}{[\text{NO}_2][\text{F}_2]}$$

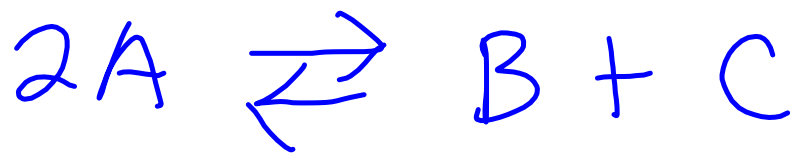
$$K_{c2} = \frac{[\text{NO}_2\text{F}]}{[\text{NO}_2][\text{F}]}$$

$$K_{c1} K_{c2} = \frac{[\text{NO}_2\text{F}][\cancel{\text{F}}]}{[\text{NO}_2][\text{F}_2]} \cdot \frac{[\text{NO}_2\text{F}]}{[\text{NO}_2][\cancel{\text{F}}]}$$

$\underbrace{\hspace{10em}}_{K_c} = \frac{[\text{NO}_2\text{F}]^2}{[\text{NO}_2]^2 [\text{F}_2]}$

Manipulating the Equilibrium Constant

1. When reactions are added, their equilibrium constants are multiplied.
2. When you multiply a reaction by a constant, you raise the equilibrium constant to that power.
3. When you reverse the direction of a reaction, you take the reciprocal of its equilibrium constant.



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

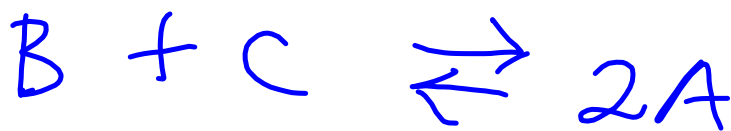


$$\begin{aligned} K'_c &= \frac{[B]_{\text{M}}^2 [C]_{\text{M}}^2}{[A]_{\text{M}}^4} \\ &= \left(\frac{[B]_{\text{M}} [C]_{\text{M}}}{[A]_{\text{M}}^2} \right)^2 \\ &= (K_c)^2 \end{aligned}$$

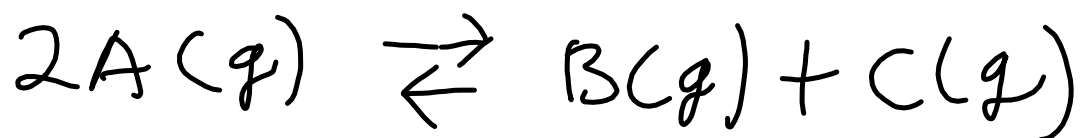
$$\begin{aligned} \sqrt{x} \cdot \sqrt{x} &= x \\ x^{\frac{1}{2}} \cdot x^{\frac{1}{2}} &= x^{\frac{1}{2} + \frac{1}{2}} \\ &= x^1 \\ &= x \end{aligned}$$



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



$$\begin{aligned} K_c'' &= \frac{[A]_{eq}^2}{[B]_{eq} [C]_{eq}} \\ &= \frac{1}{\frac{[B]_{eq} [C]_{eq}}{[A]_{eq}^2}} \\ &= \frac{1}{K_c} \end{aligned}$$



We start with pure A at a concentration of 1.50 mol L^{-1} . At equilibrium, the concentration of substance B is found to be 0.50 mol L^{-1} . What is the numerical value of K_c for this reaction?