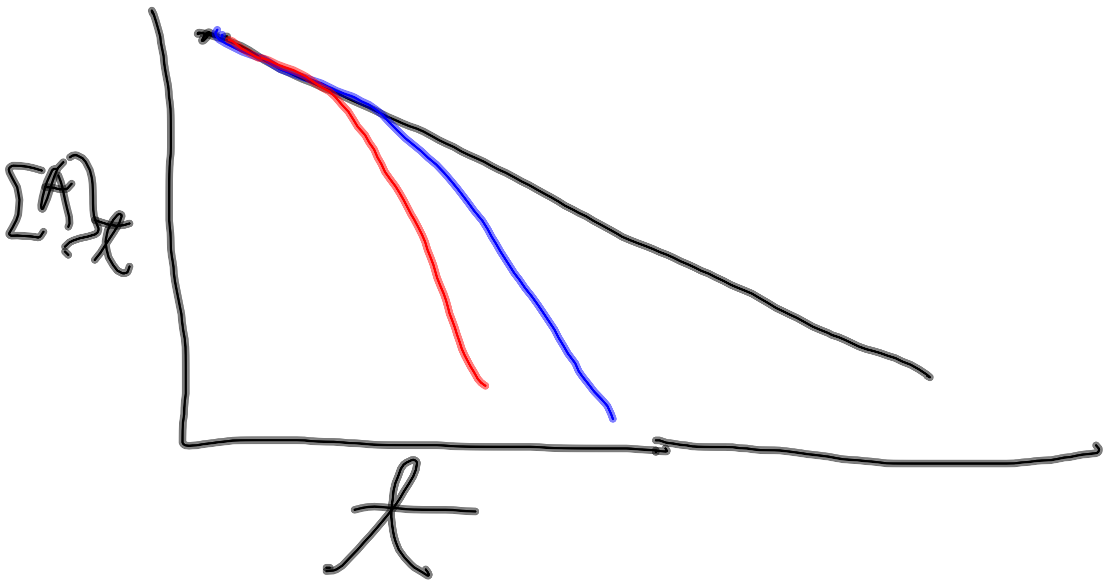
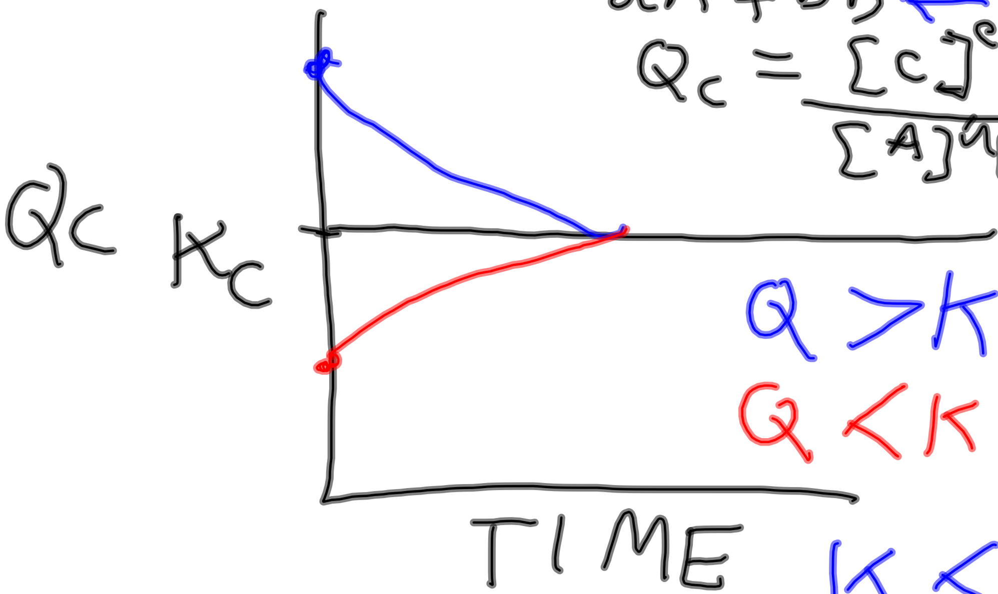

[A]$_t$
t

$Q_c = K_c$ at equil.

$$aA + bB \rightleftarrows cC + dD$$

$$Q_c = \frac{[C]^c [D]^d}{[A]^a [B]^b}$$

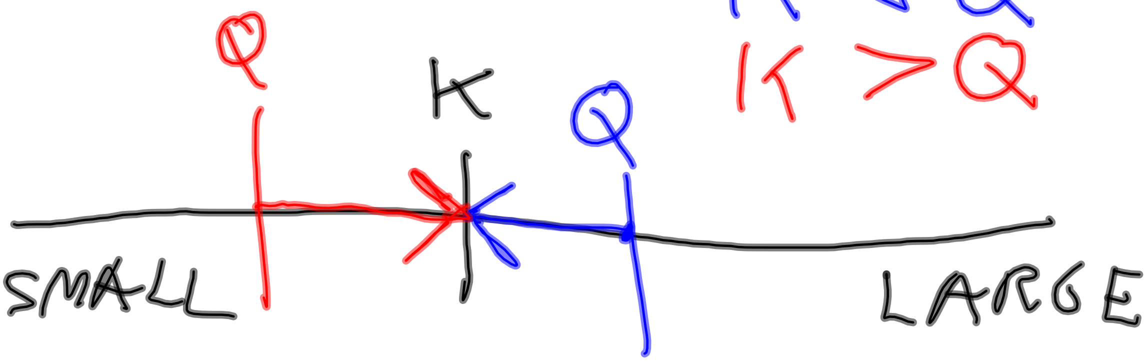


Q > K left

Q < K right

K < Q

K > Q



$$aA(g) + bB(g) \rightleftarrows cC(g) + dD(g)$$

$$K_p = \frac{P_{C_{eq}}^{c} \cdot P_{D_{eq}}^{d}}{P_{A_{eq}}^{a} \cdot P_{B_{eq}}^{b}}$$

$$PV = nRT$$

$$\downarrow$$

$$P = \frac{nRT}{V} = \left(\frac{n}{V}\right)RT$$

$$= MRT$$

$$K_p = \frac{([C]_g RT)^c ([D]_g RT)^d}{([A]_g RT)^a ([B]_g RT)^b}$$

$$= \frac{[C]_g^c (RT)^c \cdot [D]_g^d (RT)^d}{[A]_g^a (RT)^a \cdot [B]_g^b (RT)^b}$$

$$= \frac{[C]_g^c [D]_g^d \cdot (RT)^c (RT)^d}{[A]_g^a [B]_g^b \cdot (RT)^a (RT)^b}$$

$$= \frac{[C]_g^c [D]_g^d}{[A]_g^a [B]_g^b} \cdot \frac{(RT)^c (RT)^d}{(RT)^a (RT)^b}$$

$$= K_c \cdot \frac{(RT)^{c+d}}{(RT)^{a+b}}$$

$$= K_c \cdot (RT)^{c+d-(a+b)}$$

$$\Delta n = c+d-(a+b)$$

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

$$R = 0.08206 \frac{L\,atm}{K\,mol}$$

algebra

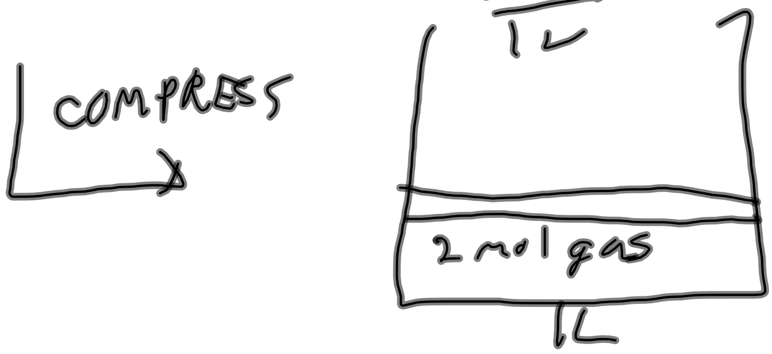
$$K_c = K_p (RT)^{-\Delta n}$$

$$aA(s) + bB(aq) \rightleftarrows cC(g) + dD(l)$$

$$K_c' = \frac{[C]_{eq}^{c}\,[D]_{eq}^{d}}{[A]_{eq}^{a}\,[B]_{eq}^{b}}$$

$$\frac{2\,mol}{2\,L} = 1\,\frac{mol}{L}$$

$$\frac{2\,mol}{1\,L} = 2\,\frac{mol}{L}$$



$$\frac{1.00\ \cancel{g}}{\cancel{mL}}\left(\frac{1000\ \cancel{mL}}{1\ L}\right)\left(\frac{1\ mol}{18.016\ \cancel{g}}\right)$$

$$= 55.5\ \frac{mol}{L}$$

$$aA(s) + bB(aq) \rightleftarrows cC(g) + dD(l)$$

$$\frac{[A]_{eq}^{a}}{[D]_{eq}^{d}} \quad K_c' = \frac{[C]_{eq}^{c}[D]_{eq}^{d}}{[A]_{eq}^{a}[B]_{eq}^{b}} \cdot \frac{[A]_{eq}^{a}}{[D]_{eq}^{d}}$$

$$K_c = \frac{[C]_{eq}^{c}}{[B]_{eq}^{b}}$$