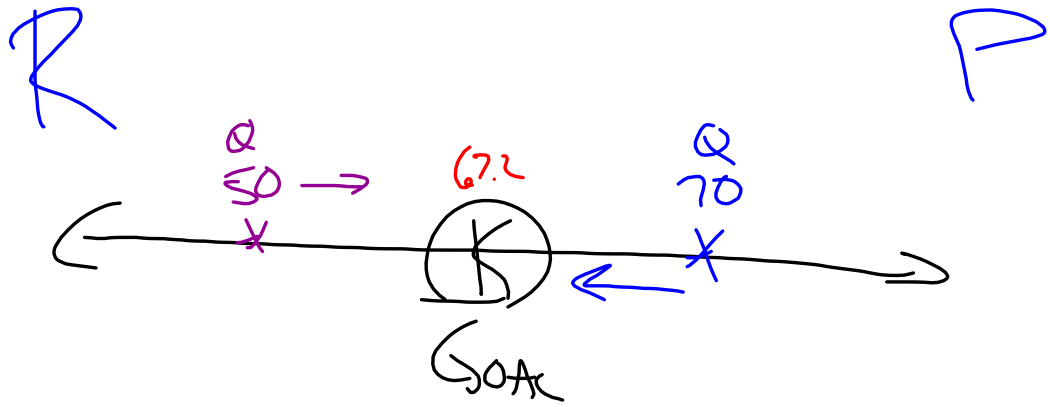
(17)

$$I_{2(g)} + Br_{2(g)} \rightleftarrows 2IBr_{(g)}$$

	I_2	Br_2	IBr
I	0.5	0.5	0
Δ (MOLE RATIO)	−0.42	−0.42	+0.84 ← MOLE RATIO
E	0.08	0.08	0.84

$$K = \frac{(IBr)^2}{(I_2)(Br_2)} \quad \frac{(0.84)^2}{(0.08)(0.08)} =$$

Feb 12-7:38 AM



Feb 12-8:24 AM

(20) $PCl_{5(g)} \rightleftharpoons PCl_{3(g)} + Cl_{2(g)}$

	PCl_5	PCl_3	Cl_2
I	1	0	0
Δ	$-x$	$+x$	$+x$
E	$1-x$	x	x

$$K_c = 0.0211 = \frac{(x)(x)}{1-x}$$

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

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

$$x^2 + 0.0211x - 0.0211 = 0$$

$$x = 0.135$$

Feb 12-8:26 AM

(22) $N_2 + 3H_2 \rightarrow 2NH_3$ (1 + 3 → 2) 472°C

$$K_c = \frac{(NH_3)^2}{(N_2)(H_2)^3} = \frac{(0.0027)^2}{(0.0402)(0.1207)^3} = 0.103 = K_c$$

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

$$= 0.103 \left[0.08206 (745) \right]^{-2}$$

$$= 2.76 \times 10^{-5}$$

Feb 12-8:31 AM

(23) $\ln \frac{K_1}{K_2} = \frac{E_a}{R}\left(\frac{1}{T_2} - \frac{1}{T_1}\right)$

$\ln \frac{5.5\times10^{-4}}{2.32\times10^{-3}} = \frac{E_a}{8.314\times10^{-3}}\left(\frac{1}{329} - \frac{1}{312}\right)$

72.26 KJ/mole

Feb 12-8:36 AM

(EC)

$\ln A_t = -Kt + \ln A_0$

$\ln(0.07) = 6.93\times10^{-3}\,yr^{-1} \times t + \ln 1$

383.73 yrs

$t_{1/2} = \frac{0.693}{K}$

$K = \frac{0.693}{t_{1/2}\ 100yrs}$

$= 6.93\times10^{-3}$

Feb 12-8:39 AM