

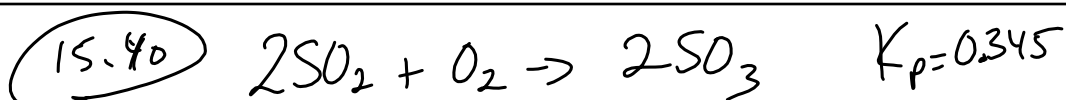


$$K = \frac{[\text{CO}][\text{Cl}_2]}{[\text{COCl}_2]} = Q \quad \leftarrow$$

Q  $\frac{(3.3 \times 10^{-6})(6.62 \times 10^{-6})}{2 \times 10^{-3}} = 1.09 \times 10^{-8} = Q$

$Q > K$   
 $\leftarrow$

Mar 2-8:01 AM



$$K = \frac{[\text{SO}_3]^2}{[\text{SO}_2]^2 [\text{O}_2]}$$

$$\frac{0.345}{1} = \frac{(\text{SO}_3)^2}{(0.135)^2 (0.455)^1}$$

$$\sqrt{(\text{SO}_3)^2} = \sqrt{0.00286}$$

$$\text{SO}_3 = 0.053487$$

0.0535

Mar 2-8:19 AM

Find the K value

$K_c = 50.5$

$$\text{H}_2(\text{g}) + \text{I}_2(\text{g}) \rightleftharpoons 2\text{HI}(\text{g})$$

	$1 - x$	$2 - x$	$+ 2x$
	$0.065$	$1.065$	$1.870$

MOLE RATIO

$$K_c = \frac{[\text{HI}]^2}{[\text{H}_2][\text{I}_2]} = \frac{(2x)^2}{(1-x)(2-x)} = \frac{50.5}{1}$$

Reaction [Initial] [change] [Equilib]  
 RICE  
 (E) (E) (E)

Reaction [Initial] [change] [Equilib]  
 RICE  
 (E) (E) (E)

Reaction [Initial] [change] [Equilib]  
 RICE  
 (E) (E) (E)

Reaction [Initial] [change] [Equilib]  
 RICE  
 (E) (E) (E)

Mar 2-8:23 AM

$$\frac{(2x)^2}{(1-x)(2-x)} = \frac{50.5}{1}$$


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$$\frac{4x^2}{2-x-2x+x^2} = \frac{50.5}{1} \quad \text{(Cross multiply)}$$


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$$4x^2 = 101 - 50.5x - 101x + 50.5x^2$$

$$-4x^2 \quad \quad \quad -4x^2$$


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$46.5x^2 - 151.5x + 101 = 0$

$ax^2 + bx + c = 0$   
 $a = +46.5$ ,  $b = -151.5$ ,  $c = +101$

$x = 2.323$   
 $x = 0.935$

(E) (E) (E)  
 $[\text{H}_2] = 1 - x = 0.065$   
 $[\text{I}_2] = 2 - x = 1.065$   
 $[\text{HI}] = 2x = 1.870$

(E) (E) (E)  
 $[\text{H}_2] = 1 - x = 0.065$   
 $[\text{I}_2] = 2 - x = 1.065$   
 $[\text{HI}] = 2x = 1.870$

Mar 2-8:30 AM

$$\text{PCl}_5(s) \rightleftharpoons \text{PCl}_3(g) + \text{Cl}_2(g)$$

I	1.66 atm		
Δ	-x	+x	+x
F	1.66-x 0.981	x 0.679	x 0.679

$K_p = \frac{(P_{\text{PCl}_3})(P_{\text{Cl}_2})}{(P_{\text{PCl}_5})} = \frac{0.47 (x)(x)}{1.66-x}$

MOLE RATIO

Mar 2-8:42 AM

$$\frac{0.47}{1} = \frac{(x)(x)}{1.66-x}$$

$$x^2 = 0.78 - 0.47x$$

$$x^2 + 0.47x - 0.78 = 0$$

$a = 1$   
 $b = +0.47$   
 $c = -0.78$

$ax^2 + bx + c = 0$

~~$x = -1.15$~~   
 $x = 0.679$

Mar 2-9:03 AM

Le Chatlier's Principle  
 A react proceeds in a direction to relieve stress  $\Rightarrow$  WANT TO BE IN EQUILIBRIUM

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IF

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Mar 2-9:10 AM

Given:  $A \rightleftharpoons B + 10J \text{ heat}$

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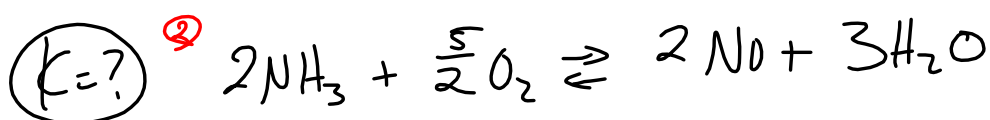
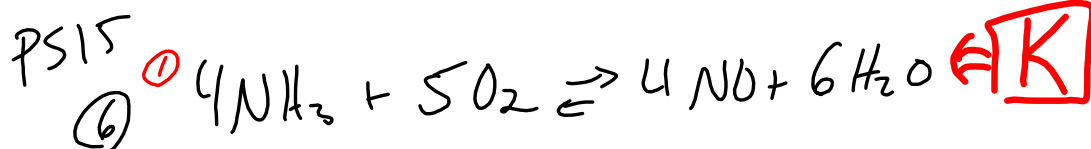
If. Remove heat Then?

Mar 2-9:19 AM

HW PS 15-1

# 1-12, 14, 15, 17, 21

Mar 2-9:25 AM



Divided eqn by 2



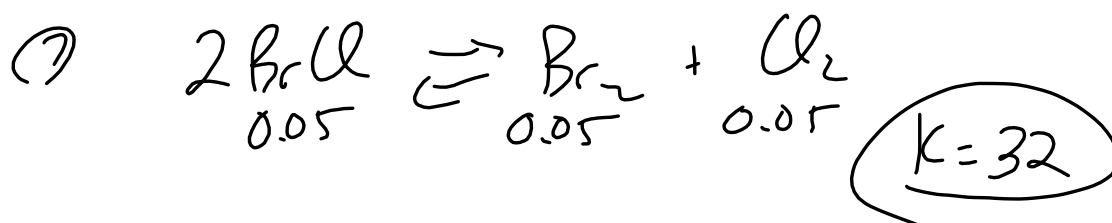
$$\frac{1}{K^{1/2}} = \frac{1}{\sqrt{K}}$$

$K^{1/2}$  or  $\sqrt{K}$

Power  
Root

$\sqrt{K}$

Mar 2-9:27 AM



$$Q = \frac{(\text{Br}_2)(\text{Cl}_2)}{(\text{BrCl})^2} = \frac{(0.05)(0.05)}{(0.05)^2} = 1 = Q$$

$$Q < K$$



Mar 2-9:30 AM