$NH_3 + H_2O \rightleftharpoons NH_4^+ + OH^-$

1. add $NH_3 \uparrow$ shift products
2. consequence $[NH_4^+] \uparrow$ and $[OH^-] \uparrow$
3. To increase $[OH^-]$ what could be added to the reaction?
   $[NH_3] \uparrow$

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1. Ksp - find solubility
   - x used

What is solubility of $AgBr$? $k_{sp} = 5.4 \times 10^{-13}$

$AgBr \rightleftharpoons Ag^+ + Br^-$

	0	0
	x	x
	x	x

$K_{sp} = \_\_x\_\_$

Common ion-

What is the solubility of $AgBr$ in a solution of 0.0010 $NaBr$? (5.4×10^{-13})

$AgBr \rightarrow Ag^+ + Br^-$

	0	0.0010
	+x	+x
	x	0.0010+x

Calculations with Ka-continued

Given – $[H_3O^+]$

– [acid]

Find – (K_a or K_b)

Example 2– Calculate K_a for a 0.15 mol/L acid-HA which has $[H_3O^+] = 0.0080$ mol/L

$HA + H_2O \rightleftharpoons H_3O^+ + A^-$

	HA		H_3O^+	A^-
I	0.15	–	0	0
C	-0.0080		+0.0080	+0.0080
E	0.142		0.0080	0.0080

$$K_a = \frac{[H_3O^+][A^-]}{[HA]}$$

$$= \frac{(0.0080)(0.0080)}{0.142}$$

$$= 4.5 \times 10^{-4}$$

Handouts – 18B, 18C

p. 850 (text) ↳ table

Calculating With % Ionization

Definition- % – "out of" a hundred

divide

$$\% \text{ ionization} = \frac{[H_3O^+]}{\text{initial } [\text{Acid}]} \times 100\%$$

Example- What is % ionization if an acid's initial concentration is 1.5 mol/L and $[H_3O^+] = 0.075$ mol/L ?

$$\% \text{ ionization} = \frac{0.075}{1.5} \times 100\% = 5.0\%$$