

pH calculations

weak acids

incomplete dissociation



$$K_a = \frac{[\text{H}^+]_{\text{eq}} [\text{A}^-]_{\text{eq}}}{[\text{HA}]_{\text{eq}}} = \frac{x^2}{[\text{HA}]_i - x}$$

$$[\text{HA}]_{\text{eq}} = [\text{HA}]_i - x$$

$$K_a \cong \frac{x^2}{[\text{HA}]_i}$$

K_a very small **assume** $x \ll [\text{HA}]_i$

if $\frac{x}{[\text{HA}]_i} \times 100 < 5\%$ approximation O.K.

$$\text{percent ionization} = \frac{x}{[\text{HA}]} \times 100\%$$

assume H^+ from HA \gg H^+ from H_2O (1×10^{-7} M)