

**Solving for pH of a Weak Base**

- Step 1:** Write the Ionization/Dissociation Reaction
- Step 2:** Write the Base Equilibrium Expression
- Step 3:** Use the I.C.E. Chart
- Step 4:** Solve for “x” using the Base Equilibrium Expression
- Step 5:** Solve for pH, pOH, and  $[\text{OH}^-]$
- Step 6:** Solve for Percent Ionization

Calculate the pH of a 0.350 M solution of methylamine,  $\text{CH}_3\text{NH}_2$ . It has a  $K_b$  of  $4.38 \times 10^{-4}$ .

**Step 1:** Write the Ionization/Dissociation Reaction

**Step 2:** Write the Base Equilibrium Expression,  $K_b$ , for the Ionization Reaction

**Step 3:** Use I.C.E charting system

	$\text{CH}_3\text{NH}_2$	$\text{CH}_3\text{NH}_3^+$	$\text{OH}^-$
Initial Concentration			
Change Concentration			
Equilibrium Concentration			

**Step 4:** Solve for “x” using the Base Equilibrium Expression,  $K_b$

**Step 5:** Solve for pH, pOH, and  $[\text{OH}^-]$

**Step 6:** Solve for Percent Ionization

**Solving for Base Equilibrium Expression,  $K_b$ , for a Weak Base**

- Step 1:** Write the Ionization/Dissociation Reaction
- Step 2:** Write the Base Equilibrium Expression
- Step 3:** Find concentration of  $[\text{OH}^-]_{\text{eq}}$  through pH
- Step 4:** Use the I.C.E. Chart
- Step 5:** Solve for Base Equilibrium Expression,  $K_b$
- Step 6:** Solve for pH, pOH, and  $[\text{OH}^-]$
- Step 7:** Solve for Percent Ionization

The pH of a 0.500 M solution of dimethylamine,  $(\text{CH}_3)_2\text{NH}$ , is 12.25. What is the  $K_b$  for the reaction?

**Step 1:** Write the Ionization/Dissociation Reaction

**Step 2:** Write the Acid Equilibrium Expression

**Step 3:** Find concentration of  $[\text{OH}^-]_{\text{eq}}$  through pH

**Step 4:** Use the I.C.E. Chart

	$(\text{CH}_3)_2\text{NH}$	$(\text{CH}_3)_2\text{NH}_2^+$	$\text{OH}^-$
Initial Concentration			
Change Concentration			
Equilibrium Concentration			

**Step 5:** Solve for Acid Equilibrium Expression,  $K_b$

**Step 6:** Solve for pH, pOH, and  $[\text{OH}^-]$

**Step 7:** Solve for Percent Ionization