



# Acids and Bases

Unit 11 Page 3

**Directions:** Identify the acid, the base, the conjugate acid, and the conjugate base in each of the equations.

Equation	Acid	Base	Conj. Acid	Conj. Base			
$\text{HCl} + \text{NH}_3 \rightarrow \text{NH}_4^+ + \text{Cl}^-$	HCl		$\text{NH}_4^+$				
$\text{OH}^- + \text{HCN} \rightarrow \text{H}_2\text{O} + \text{CN}^-$	HCN		$\text{H}_2\text{O}$				
$\text{PO}_4^{3-} + \text{HNO}_3 \rightarrow \text{NO}_3^- + \text{HPO}_4^{2-}$	$\text{HNO}_3$		$\text{HPO}_4^{2-}$				
$\text{HCO}_3^- + \text{HCl} \rightarrow \text{H}_2\text{CO}_3 + \text{Cl}^-$	HCl		$\text{H}_2\text{CO}_3$				
$\text{HCO}_3^- + \text{OH}^- \rightarrow \text{H}_2\text{O} + \text{CO}_3^{2-}$	$\text{HCO}_3^-$		$\text{H}_2\text{O}$				
$\text{NH}_4^+ + \text{H}_2\text{O} \rightleftharpoons \text{NH}_3 + \text{H}_3\text{O}^+$	$\text{NH}_4^+$		$\text{H}_3\text{O}^+$				
$\text{C}_2\text{O}_4^{2-} + \text{HC}_2\text{H}_3\text{O}_2 \rightarrow \text{HC}_2\text{O}_4^- + \text{C}_2\text{H}_3\text{O}_2^-$	$\text{HC}_2\text{H}_3\text{O}_2$		$\text{HC}_2\text{O}_4^-$				
$\text{HPO}_4^{2-} + \text{H}_2\text{O} \rightleftharpoons \text{OH}^- + \text{H}_2\text{PO}_4^-$	$\text{H}_2\text{O}$		$\text{H}_2\text{PO}_4^-$				
	$\text{HNO}_2$	$+$	$\text{H}_2\text{O}$	$\rightleftharpoons$	$\text{H}_3\text{O}^+$	$+$	$\text{NO}_2^-$
	$\text{H}_2\text{O}$	$+$	$\text{F}^-$	$\rightleftharpoons$	HF	$+$	$\text{OH}^-$
	$\text{HClO}_3$	$+$	$\text{OH}^-$	$\rightleftharpoons$	$\text{H}_2\text{O}$	$+$	$\text{ClO}_3^-$
	$\text{HSO}_4^-$	$+$	$\text{PO}_4^{3-}$	$\rightleftharpoons$	$\text{HPO}_4^{2-}$	$+$	$\text{SO}_4^{2-}$
	$\text{HCO}_2\text{H}$	$+$	$\text{OH}^-$	$\rightleftharpoons$	$\text{H}_2\text{O}$	$+$	$\text{CO}_2\text{H}^-$