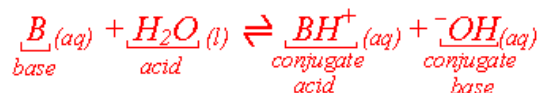


## Weak Bases vs. Strong Bases

1. What is the Brønsted-Lowry definition of a base?

A substance that accepts  $H^+$ .

2. What is the generalized equation for the reaction of a base in water?



Notice in this case the water acts as the  $H^+$  donating acid.

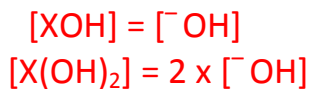
3. What is  $K_b$ ?

$K_b$  is the equilibrium constant for a base.

$$K_b = \frac{[BH^+][OH^-]}{[B]}$$

4. What are some characteristics of strong bases?

- a. Equilibrium lies so far to the right that reaction is said to go to completion.



- b. Strong bases have *very* large  $K_b$  values.
- c. Strong bases yield conjugate acids that are weaker than water. Therefore their presence has no effect on pH.

5. What are some characteristics of weak bases?

- a. Equilibrium lies far to the left.

- b. Weak bases have  $K_b \ll 1$
- c. Weak bases yield a conjugate that is a stronger acid than water. Thus, they can affect the pH of a solution.

6. How can you identify a strong base?

Strong bases are substances that have a Group 1 or 2 cation ionically bound to  $\text{OH}^-$ ,  $\text{NH}_2^-$ ,  $\text{CH}_3^-$ , etc.

Most often, in general chemistry, you will deal primarily with hydroxide bases.

7. How can you identify a weak base?

Weak bases typically contain an amine derivative ( $\text{NH}_3$ ,  $\text{CH}_3\text{NH}_2$ , etc.) or it is the conjugate base of a weak acid.