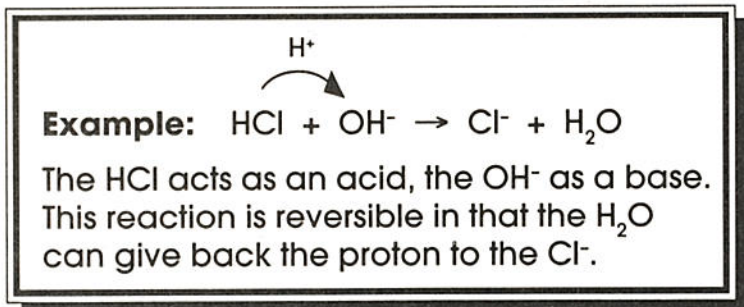


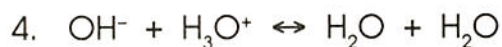
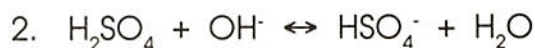
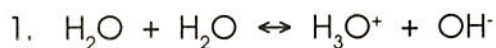
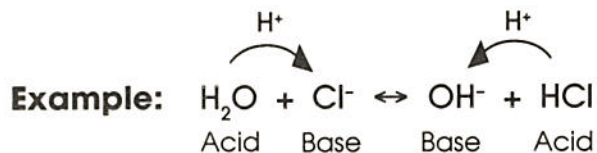
BRONSTED-LOWRY ACIDS AND BASES

Name _____

According to Bronsted-Lowry theory, an acid is a proton (H^+) donor, and a base is a proton acceptor.



Label the Bronsted-Lowry acids and bases in the following reactions and show the direction of proton transfer.



Which is a stronger base, HSO_4^- or H_2PO_4^- ? _____

Which is a weaker base, Cl^- or NO_2^- ? _____

	ACID	BASE	EQUATION
1.	H_2SO_4	HSO_4^-	$\text{H}_2\text{SO}_4 \leftrightarrow \text{H}^+ + \text{HSO}_4^-$
2.	H_3PO_4		
3.		F^-	
4.		NO_3^-	
5.	H_2PO_4^-		
6.	H_2O		
7.		SO_4^{2-}	
8.	HPO_4^{2-}		
9.	NH_4^+		
10.		H_2O	

Conjugate Pairs

Fill in the blanks in the table below.

In the exercise, Bronsted-Lowry Acids and Bases, it was shown that after an acid has given up its proton, it is capable of getting back that proton and acting as a base. Conjugate base is what is left after an acid gives up a proton. The stronger the acid, the weaker the conjugate base. The weaker the acid, the stronger the conjugate base.

CONJUGATE ACID-BASE PAIRS

Name _____

pH AND pOH

Name _____

The pH of a solution indicates how acidic or basic that solution is.

pH range of 0 - 7 acidic

7 neutral

7-14 basic

Since $[H^+][OH^-] = 10^{-14}$ at $25^\circ C$, if $[H^+]$ is known, the $[OH^-]$ can be calculated and vice versa.

$$pH = -\log [H^+]$$

$$\text{So if } [H^+] = 10^{-6} \text{ M, } pH = 6.$$

$$pOH = -\log [OH^-]$$

$$\text{So if } [OH^-] = 10^{-8} \text{ M, } pOH = 8.$$

$$\text{Together, } pH + pOH = 14.$$

Complete the following chart.

	$[H^+]$	pH	$[OH^-]$	pOH	Acidic or Basic
1.	10^{-5} M	5	10^{-9} M	9	Acidic
2.		7			
3.			10^{-4} M		
4.	10^{-2} M				
5.				11	
6.		12			
7.			10^{-5} M		
8.	10^{-11} M				
9.				13	
10.		6			

1. 0.01 M HCl
2. 0.0010 M NaOH
3. 0.050 M $\text{Ca}(\text{OH})_2$
4. 0.030 M HBr
5. 0.150 M KOH
6. 2.0 M $\text{HC}_2\text{H}_3\text{O}_2$ (Assume 5.0% dissociation.)
7. 3.0 M HF (Assume 10.0% dissociation.)
8. 0.50 M HNO_3
9. 2.50 M NH_4OH (Assume 5.00% dissociation.)
10. 5.0 M HNO_2 (Assume 1.0% dissociation.)

Calculate the pH of the solutions below.

pH AND pOH CONTINUED

Name _____