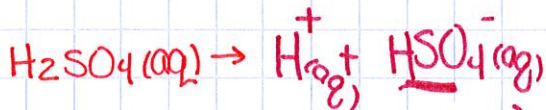


# Acids & Bases

## • Definitions

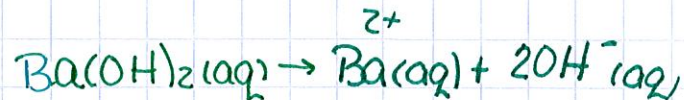
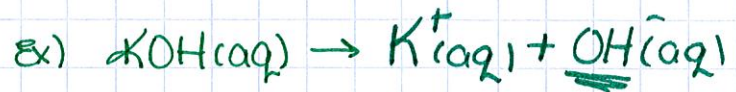
### Arrhenius Acid

substance that releases  
H<sup>+</sup> ions in solution



### Arrhenius Base

substance that releases  
OH<sup>-</sup> ions in solution



### Bronsted-Lowry Acid

substance that donates  
H<sup>+</sup> ions in solution

- All acids have a conjugate base - substance that remains after the acid has donated an H<sup>+</sup>

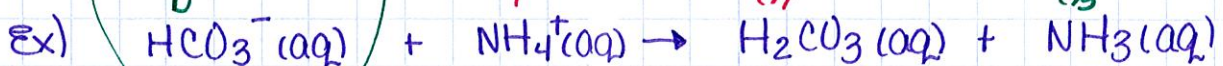
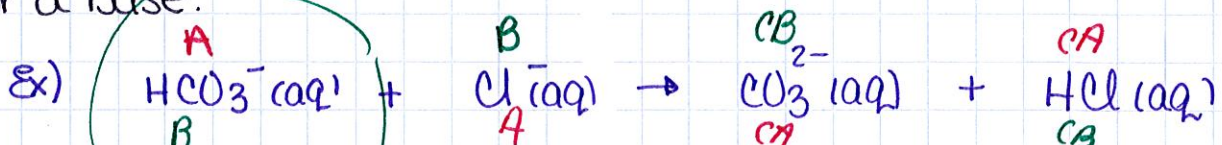
### Bronsted-Lowry Base

substance that accepts  
H<sup>+</sup> ions in solution

- All bases have a conjugate acid - substance the base becomes after accepting an H<sup>+</sup>.

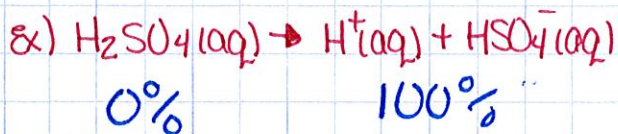


Amphoteric Substance - one that can act as either an acid or a base.



- Strength of Acids & Bases - refers to the extent the compound breaks apart into ions, not how much damage it can do.

Strong acids/bases  
break apart + (ionize)  
100% into ions.



7 Strong Acids - memorize!

- |                      |                         |
|----------------------|-------------------------|
| 1) hydrochloric acid | HCl                     |
| 2) hydrobromic acid  | HBr                     |
| 3) hydroiodic acid   | HI                      |
| 4) nitric acid       | $\text{HNO}_3$          |
| 5) chloric acid      | $\text{HClO}_3$         |
| 6) perchloric acid   | $\text{HClO}_4$         |
| 7) sulfuric acid     | $\text{H}_2\text{SO}_4$ |

8 Strong Bases - memorize!

- |                        |                          |
|------------------------|--------------------------|
| 1) lithium hydroxide   | LiOH                     |
| 2) sodium hydroxide    | NaOH                     |
| 3) potassium hydroxide | KOH                      |
| 4) rubidium hydroxide  | RbOH                     |
| 5) cesium hydroxide    | CSOH                     |
| 6) calcium hydroxide   | $\text{Ca}(\text{OH})_2$ |
| 7) strontium hydroxide | $\text{Sr}(\text{OH})_2$ |
| 8) barium hydroxide    | $\text{Ba}(\text{OH})_2$ |

• Properties

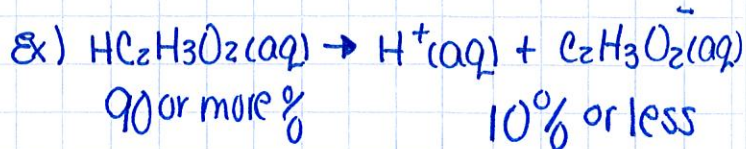
Acids

- taste sour
- electrolytes
- turn blue litmus paper red
- react w/metals to produce  $\text{H}_2(\text{g})$   
 $(\text{H}_2\text{SO}_4(\text{aq}) + \text{Mg}(\text{s}) \rightarrow \text{H}_2(\text{g}) + \text{MgSO}_4(\text{aq}))$

- react w/bases to produce a salt and water

Weak acids/bases

less than 10% breaks apart (ionizes) into ions



Bases

- taste bitter
- electrolytes
- turn red litmus paper blue
- react w/acids to produce a salt and water

