**Intro to Acids and Bases**

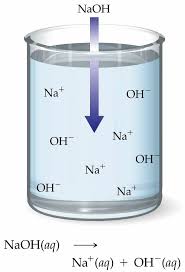
Acids

* Acids can be strong or weak \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in aqueous solutions.
* Acids (example HCl) react with certain metals to produce H2(g)
* Acids cause color changes in acid-base indicators:
  + Blue litmus paper turns \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in an acid
  + Phenolphthalein is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Acids have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ taste.
* Table \_\_\_\_\_\_\_\_\_\_\_ has a list of common acids and bases

Bases

* Bases can be strong or weak electrolytes in aqueous solutions.
* Bases cause color change in acid-base indicators.
  + \_\_\_\_\_\_\_\_\_\_\_ paper turns blue in a base.
  + Phenolphthalein is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in a base.
* Bases feel \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and taste\_\_\_\_\_\_\_\_\_\_\_\_.
* Table \_\_\_\_\_\_\_ has a list of common bases

Arrhenius Acid

* An Arrhenius acid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in aqueous solutions.
* Example: \_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The H+ in solutions attaches to H20 to form \_\_\_\_\_\_\_\_\_\_\_\_ (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Arrhenius Base

* An Arrhenius base has \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hydroxide ions) in an aqueous solution.
* Example: \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_
* Group 1 metals react with water to produce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Check Point Questions

1. Which substance can be classified as an Arrhenius acid?
   1. HCl
   2. NaCl
   3. LiOH
   4. KOH
2. Which substance can be classified as an Arrhenius base?
   1. HCl
   2. NaOH
   3. LiNO3
   4. KHCO3

1. According to the Arrhenius theory, a substance that is classified as an acid will always yield
   1. H+*(aq)*
   2. NH+4*(aq)*
   3. OH-*(aq)*
   4. CO32-*(aq)*

Bronsted-Lowry Acids and Bases

* An acid is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ proton donor).
* A base is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (proton acceptor)

HCl(g) + H2O(l) 🡨🡪 H3O+(aq) + Cl-(aq)

* HCl is an \_\_\_\_\_\_\_\_\_\_\_\_\_because it \_\_\_\_\_\_\_\_\_\_\_\_\_\_an \_\_\_\_\_\_\_\_\_ to the H2O.

NH3(aq) + H2O(l) 🡨🡪 NH4+(aq) + OH-(aq)

* NH3 is a \_\_\_\_\_\_\_\_\_\_\_\_\_ because it \_\_\_\_\_\_\_\_\_\_\_\_\_ from the H2O.
* Water can either be an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (acid ) or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( base) , water is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Check Point Questions

1. According to the Bronsted-Lowry theory, a chloride ion (Cl-), acts as a base when it combines with
   1. An OH- ion
   2. A K+ ion
   3. An H- ion
   4. An H+ ion
2. According to the Bronsted-Lowry theory, an acid is
   1. A proton donor, only
   2. A proton acceptor, only
   3. A proton donor & proton acceptor
   4. Neither a proton donor nor a proton acceptor

Conjugate Acids and bases

NH3(aq) + H2O(l) 🡨🡪 NH4+(aq) + OH-(aq)

* A conjugate \_\_\_\_\_\_\_\_\_\_ is what is remaining after the \_\_\_\_\_\_\_\_\_\_ gives up \_\_\_\_\_\_\_.
* A conjugate \_\_\_\_\_\_\_\_\_\_\_ is what is formed when a base accepts a \_\_\_\_\_\_\_\_\_\_.

Conjugate Acid-Base Pairs Practice

* For each pair label acid, base, conjugate acid, conjugate base

NH3(aq) + H2O(l) 🡨🡪 NH4+(aq) + OH-(aq)

HCl(g) + H2O(l) 🡨🡪 H3O+(aq) + Cl-(aq)

Summary

* Acids
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Bases
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_