Acid & Base, Conjugate Acid & Conjugate Base

- An *acid* donates protons (i.e., Hydrogen ions) in a reaction
- A *base* accepts protons (i.e., Hydrogen ions) in a reaction
- A *conjugate base* results from removing a single H^+ from an acid.
- A *conjugate acid* results from adding a single H^+ to a base.

Thus,

$H_2SO_4 \longrightarrow HSO_4^- + H^+$ $\quad$ HSO_4^- is the conjugate base of H_2SO_4

$H_2O + H^+ \longrightarrow H_3O^+$ $\quad$ H_3O^+ is the conjugate acid of H_2O

Concentration, pH, and pOH

Concentration of H^+ & OH^-

$[H^+] \times [OH^-] = 1 \times 10^{-14}$ ← Remember that the brackets mean "concentration of..."

In a neutral solution:

$[H^+] = 1 \times 10^{-7}$ $\quad$ $[OH^-] = 1 \times 10^{-7}$

pH & pOH

$pH = -\log [H^+]$ ← "Log" is $\log_{10}$. You *do* remember your logarithms, yes?

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

$pH + pOH = 14$

$[H^+] = 10^{-pH}$

$[OH^-] = 10^{-pOH}$

Acids	$pH < 7$	$pOH > 7$
Bases	$pH > 7$	$pOH < 7$
Neutral	$pH = 7$	$pOH = 7$