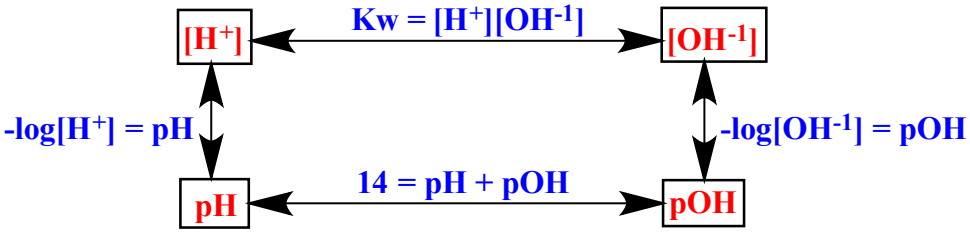
Acid/Base Video 1 Review Sheet

Description of Acid/Base Video 1, "Acid/Base Basics":

What is an acid and base, demonstrate autoionization of water to develop the pH scale, introduce Kw to explore proton and hydroxide concentrations, examine stabilities of conjugate bases to correlate acid strength, demonstrate the relationships between pH, pOH, $[H^+]$, and $[OH^-]$.



1) Given the $[OH^{-1}] = 1.21 \times 10^{-9}$ M, please calculate the pH.

2) Given a 0.10M HNO_3 solution (strong acid), please calculate pH, pOH, $[H^+]$, and $[OH^-]$

3) Given a 0.18M NaOH solution (strong Base), please calculate pH, pOH, $[H^+]$, and $[OH^-]$:

4) Please identify the acid, base, conjugate acid, and conjugate base as well as the acid-conjugate base and base-conjugate acid pairs for the following equilibrium:

$$HF_{(aq)} + H_2O_{(l)} \rightleftharpoons H_3O^+_{(aq)} + F^-_{(aq)}$$

Circle the correct underlined word(s) that makes the statement correct:

5) A **strong / weak** conjugate base is produced when a stable conjugate base is formed.

6) A(n) **stable / unstable** conjugate base is formed when a weak acid is dissolved within water.

7) A conjugate base **low / high** in energy is produced when the strong acid HCl is dissociated.

8) A **conjugate acid high in energy / conjugate base high in energy** is produced when acetic acid (a weak acid) dissociates.

TRUE or FALSE: Circle T or F

9) If the pH is equal to 4.5 then the proton concentration is less than the hydroxide concentration. **T** or **F**

10) If the pOH is equal to 2 then the solution is acidic. **T** or **F**

11) The pH of orange juice is 4. If a solution of vinegar is added with a pH of 4.5 then the pH of the final solution is 8.5. **T** or **F**

12) If the concentration of protons is equal to the concentration of hydroxide ions then the solution should have a pH of approximately 0.0. **T** or **F**

13) If the concentration of protons is less than the concentration of hydroxide ions then the solution should have a pH less than 7.0. **T** or **F**

14) If the concentration of hydroxide ions is slightly less than the concentration of hydronium ions then the solution should have a pH of approximately 6. **T** or **F**

15) When a basic solution is neutralized the pH goes down to 7.0. **T** or **F**

16) An Arrhenius acid is considered to be the proton donor and an Arrhenius base is the proton acceptor. **T** or **F**

17) By definition a weak acid is only partially dissociated due to the fact that the conjugate base is low in energy and reactive. **T** or **F**

18) The reason a strong acid is only partially dissociated is because the conjugate base is low in energy and unreactive.

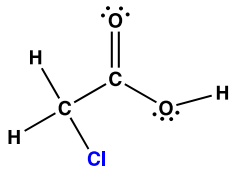
19) When a solution that contains Cyanide (CN^{-1}) reacts with liquid water the conjugate acid has the molecular formula HCN. **T** or **F**

20) Define a strong and weak acid.

21) Define a strong and weak base.

22) Which is the stronger acid? Why?

Chloroacetic Acid (CH_2ClCO_2H)



Dichloroacetic Acid ($CHCl_2CO_2H$)