

Acid-Base Equilibria

1. What is the formula for percent ionization?
2. A solution of HCl has a pH of 2.3. Calculate the pOH, $[H^+]$, and $[OH^-]$
pOH =
 $[H^+] =$
 $[OH^-] =$
3. What is the concentration of hydronium ions in a solution that has a volume of 2.50 L and 5.33 g of HCl? What is the pH of this solution?
4. Calculate the pH of a solution prepared by mixing 0.15M HF with 0.18M NaF.
(K_a of HF is 6.8×10^{-4} , $pK_a = 3.17$)
5. Calculate the pH of a solution that is 0.20M in $HCHO_2$ and 0.15M in $NaCHO_2$

6. Vinegar is a dilute solution of acetic acid ($\text{HC}_2\text{H}_3\text{O}_2$). If the concentration of $\text{HC}_2\text{H}_3\text{O}_2$ in a vinegar solution is 0.210M, calculate the percent ionization of acetic acid.
($K_a = 1.75 \times 10^{-5}$)

7. Calculate the percent ionization in a 1.0M solution of nitrous acid. ($K_a = 4.5 \times 10^{-4}$)

8. If the hydrogen ion concentration of a solution is $2.5 \times 10^{-5}\text{M}$, what is the pH of the solution?

9. What is the pOH of a solution with a pH of 8.72?

10. What is the pH of a 0.50M ammonia, NH_3 solution? The K_b of ammonia is 1.8×10^{-5} .