

1. Calculate the $[H^+]$ for a solution with $[OH^-] = 3.99 \times 10^{-5} \text{ M}$, and indicate whether the solution is acidic, basic, or neutral.
2. For the following pair of concentrations, circle the one that represents the more acidic solution.
 $[H^+] = 1.89 \times 10^{-7} \text{ M}$ or $[H^+] = 1.04 \times 10^{-8} \text{ M}$
3. Calculate the pH in each of a solution with $[H^+] = 0.010 \text{ M}$, and indicate whether the solution is acidic, basic, or neutral.
4. Calculate the hydrogen ion concentration, in moles per liter, for solutions with $\text{pH} = 12.88$
5. You have a strong acid and a weak acid of the same concentration (0.01 M).
 - a. Which one has the most H^+ ions dissolved in solution?
 - b. Which has the highest pH?

7. [15 pts] A 10.0 mL sample of acetic acid ($\text{HC}_2\text{H}_3\text{O}_2$) requires 32.55 mL of 0.223 M NaOH.
What is the concentration of the acetic acid? (Start with a balanced equation.)

8. List the four species (molecules or ions) that are present when ammonia (NH_3) dissolves in water.

9. List the three species that are present when hydrochloric acid (HCl) dissolves in water.

10. Write the equation for neutralization of the sulfuric acid with magnesium hydroxide.