

## 19-1 Practice Problems

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1. What is the concentration of  $\text{OH}^-$  ions in saturated limewater if  $[\text{H}_3\text{O}^+] = 3.98 \times 10^{-13} \text{ M}$ ? Is limewater acidic, basic, or neutral?
2. What is the concentration of  $\text{H}_3\text{O}^+$  ions in a wheat flour and water solution if  $[\text{OH}^-] = 1.0 \times 10^{-8} \text{ M}$ ? Is wheat flour and water acidic, basic, or neutral?
3. What is the concentration of  $\text{OH}^-$  ions in a potato and water solution if  $[\text{H}_3\text{O}^+] = 1.6 \times 10^{-6} \text{ M}$ ? Are potatoes and water acidic, basic, or neutral?
4. What is the concentration of  $\text{H}_3\text{O}^+$  ions in 0.1 M ammonia if  $[\text{OH}^-] = 1.26 \times 10^{-3} \text{ M}$ ? Is ammonia acidic, basic, or neutral?
5. What is the concentration of  $\text{OH}^-$  ions in butter if  $[\text{H}_3\text{O}^+] = 6.0 \times 10^{-7} \text{ M}$ ? Is butter acidic, basic, or neutral?
6. What is the concentration of  $\text{H}_3\text{O}^+$  ions in peaches if  $[\text{OH}^-] = 3.16 \times 10^{-11} \text{ M}$ ? Are peaches acidic, basic, or neutral?
7. What is the concentration of  $\text{OH}^-$  ions in 0.1 M borax if  $[\text{H}_3\text{O}^+] = 6.31 \times 10^{-10} \text{ M}$ ? Is borax acidic, basic, or neutral?
8. What is the concentration of  $\text{H}_3\text{O}^+$  ions in eggs if  $[\text{OH}^-] = 6.0 \times 10^{-7} \text{ M}$ ? Are eggs acidic, basic, or neutral?
9. What is the concentration of  $\text{OH}^-$  ions in 0.1 M bicarbonate of soda if  $[\text{H}_3\text{O}^+] = 3.98 \times 10^{-9} \text{ M}$ ? Is bicarbonate of soda acidic, basic, or neutral?
10. During the course of the day, human saliva varies between being acidic and basic. What is the concentration of  $\text{H}_3\text{O}^+$  ions in saliva if  $[\text{OH}^-] = 3.16 \times 10^{-8} \text{ M}$ ? Is this sample of saliva acidic, basic, or neutral?

**19-1 Practice Problems (continued)**

11. Analysis of a sample of maple syrup reveals that the concentration of  $\text{OH}^-$  ions is  $5.0 \times 10^{-8} \text{ M}$ . What is the pH of this syrup? Is it acidic, neutral, or basic?
12. In a sample of bananas and water, it is found that  $[\text{H}_3\text{O}^+] = 2.51 \times 10^{-5} \text{ M}$ . What is the corresponding pH value, and are the bananas and water acidic, neutral, or basic?
13.  $[\text{OH}^-] = 7.94 \times 10^{-12} \text{ M}$  in a sample of vinegar. What is the pH of the vinegar, and is it acidic, neutral, or basic?
14. A sample of human blood plasma is found to have a concentration of  $\text{H}_3\text{O}^+$  ions of  $3.72 \times 10^{-8} \text{ M}$ . What is the pH of this sample? Is it an acid, a base, or neutral?
15. In a sample of saturated magnesia, it is found that  $[\text{OH}^-] = 3.22 \times 10^{-4} \text{ M}$ . What is the pH of this sample, and is it acidic, neutral, or basic?
16. Tomatoes are found to have a hydronium ion ( $\text{H}_3\text{O}^+$ ) concentration of  $6.2 \times 10^{-5} \text{ M}$ . What is the pH of these tomatoes, and are they acidic, neutral, or basic?
17. A saturated solution of calcium carbonate has a hydroxide concentration of  $2.44 \times 10^{-4} \text{ M}$ . What is the pH of this solution, and is it acidic, neutral, or basic?
18. The hydronium concentration in a urine specimen is measured to be  $6.3 \times 10^{-6} \text{ M}$ . What is the pH of this sample, and is it acidic, neutral, or basic?
19. What is the pH of sour pickles if  $[\text{OH}^-] = 1.6 \times 10^{-10} \text{ M}$ ? Are the pickles acidic, neutral, or basic?
20. The hydroxide content of a popular soft drink is measured and found to be  $4.11 \times 10^{-9} \text{ M}$ . What is the pH of this soft drink, and is it acidic, neutral, or basic?