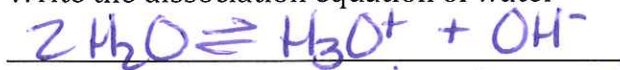


$$\begin{aligned} \text{pH} &= -\log [\text{H}_3\text{O}^+] \\ [\text{H}_3\text{O}^+] &= 10^{-\text{pH}} \\ \text{pOH} &= -\log [\text{OH}^-] \\ \text{pH} + \text{pOH} &= 14 \\ [\text{H}_3\text{O}^+][\text{OH}^-] &= 1 \times 10^{-14} \end{aligned}$$

1. Write the dissociation equation of water



2. What is the name of
- H_3O^+
- ?
- hydronium

3. What is the name of
- OH^-
- ?
- hydroxide

4. In a solution with
- $\text{pH} = 7$
- , how does the
- $[\text{H}_3\text{O}^+]$
- compare to the
- $[\text{OH}^-]$
- ?
- (neutral)

Which do you have more of? $[\text{H}_3\text{O}^+] = [\text{OH}^-]$

5. What is the factor between each pH unit (
- $\text{pH} = 1$
- and
- $\text{pH} = 2$
-)?
- 10x's

6. What is the factor between 2 pH units (
- $\text{pH} = 4$
- and
- $\text{pH} = 6$
-)?
- 100x's

7. What is the pH of a solution of 0.0023 M HBr?
- 2.64

$$\text{pH} = -\log [\text{H}_3\text{O}^+] \quad -\log(0.0023) = 2.64$$

8. What is the pH of a solution with
- 9.8×10^{-6}
- M
- H_3O^+
- ?
- 5.01

$$\text{pH} = -\log [\text{H}_3\text{O}^+] \quad -\log(9.8 \times 10^{-6}) = -\log 9.8 \text{ [EE]} - 6 = 5.01$$

9. What is the pH of a solution with 0.0023 moles of HBr in 6,830 Liter of water?
- 6.47

$$M = \frac{0.0023 \text{ mol}}{6830 \text{ L}} = 3.37 \times 10^{-7} \text{ M} \quad \text{pH} = -\log 3.37 \text{ [EE]} - 7 = 6.47$$

10. If a solution has a
- $\text{pH} = 9.2$
- , then
- $[\text{H}_3\text{O}^+] =$
- 6.3×10^{-10}
- acidic or basic?
- (pH above 7)

$$[\text{H}_3\text{O}^+] = 10^{-\text{pH}} \quad 10^x - 9.2$$

11. If a solution has a
- $\text{pH} = 6.7$
- , then
- $[\text{H}_3\text{O}^+] =$
- 2.0×10^{-7}
- acidic or basic?
- (pH 6.7 - below 7)

$$[\text{H}_3\text{O}^+] = 10^x - 6.7$$

12. If a solution has a
- $[\text{OH}^-] = 6.3 \times 10^{-9}$
- , then
- $[\text{H}_3\text{O}^+] =$
- 1.59×10^{-6}
- acidic or basic?

$$[\text{H}_3\text{O}^+][\text{OH}^-] = 1 \times 10^{-14} \quad [\text{H}_3\text{O}^+] = \frac{1 \times 10^{-14}}{6.3 \times 10^{-9}}$$

13. If a solution has a
- $[\text{H}_3\text{O}^+] = 8.1 \times 10^{-2}$
- , then
- $[\text{OH}^-] =$
- 1.23×10^{-13}
- acidic or basic?

$$[\text{H}_3\text{O}^+][\text{OH}^-] = 1 \times 10^{-14} \quad [\text{OH}^-] = \frac{1 \times 10^{-14}}{8.1 \times 10^{-2}}$$

14. If a solution has a
- $\text{pH} = 10.6$
- , then
- $\text{pOH} =$
- 3.4
- acidic or basic?

$$\text{pH} + \text{pOH} = 14 \quad 14 - 10.6 = 3.4$$

15. If a solution has a
- $\text{pOH} = 5.7$
- , then
- $\text{pH} =$
- 8.3
- acidic or basic?

$$\text{pH} + \text{pOH} = 14 \quad 14 - 5.7 = 8.3$$