

pH AND pOH

Name _____

8

The pH of a solution indicates how acidic or basic that solution is.

pH range of 0 - 7 acidic

7 neutral

7-14 basic

Since $[H^+][OH^-] = 10^{-14}$ at $25^\circ C$, if $[H^+]$ is known, the $[OH^-]$ can be calculated and vice versa.

$pH = -\log [H^+]$ So if $[H^+] = 10^{-6} M$, $pH = 6$.

$pOH = -\log [OH^-]$ So if $[OH^-] = 10^{-8} M$, $pOH = 8$.

Together, $pH + pOH = 14$.

Complete the following chart.

	$[H^+]$	pH	$[OH^-]$	pOH	Acidic or Basic
1.	$10^{-5} M$	5	$10^{-9} M$	9	Acidic
2.		7			
3.			$10^{-4} M$		
4.	$10^{-2} M$				
5.				11	
6.		12			
7.			$10^{-5} M$		
8.	$10^{-11} M$				
9.				13	
10.		6			

10) What is the pH of a 0.001 M HCl solution?

11) What is the $[H^+]$ in a solution of pH = 6?

12) What is the pH in a solution with $[H^+] = 1.0 \times 10^{-9} M$?

13) What is the pH in a solution with $[OH^-] = 1.0 \times 10^{-5} M$?

14) What is the pH of a 0.1 M solution of NaOH?

15) What is the $[OH^-]$ in a solution with a pH of 5?

16) What is the pH of a .005 M $Ba(OH)_2$ solution?

17) What is the pH of a solution with $[OH^-] = 0.001$ mole per liter?

18) If the pH of a solution is 4, what is the $[H_3O^+]$?

19) If the pH of a solution is 6, what is the $[OH^-]$?

20) What is the pH of a solution with $[H_3O^+] = 1 \times 10^{-10}$ mole per liter?