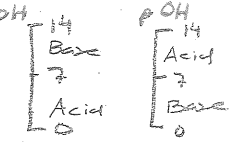


$pH + pOH = 14$
 $[H^+][OH^-] = 1.0 \times 10^{-14}$
 $pH = -\log[H^+]$
 $-pH = \log[H^+]$
 $10^{-pH} = [H^+]$
 $pOH = -\log[OH^-]$
 $-pOH = \log[OH^-]$
 $10^{-pOH} = [OH^-]$



pH

Acids and Bases WS

- Calculate the pH of the solutions, and state whether each is an acid, base, or neutral.
 - $0.0000001 M H^+$ $pH = -\log(1 \times 10^{-7}) = 7$ neutral
 - $0.00001 M OH^-$ $pOH = -\log(1 \times 10^{-5}) = 5$
 $14 - 5 = 9$ base
- Calculate the H^+ ion concentration, and state whether each is an acid, base, or neutral.
 - $pH = 6$ $[H^+] = 10^{-6}$ acid
 - $pH = 9$ $[H^+] = 10^{-9}$ base
 - $pOH = 3$ $pH = 14 - 3 = 11$ $[H^+] = 10^{-11}$ base
 - $pOH = 12$ $pH = 14 - 12 = 2$ $[H^+] = 10^{-2}$ acid
- Calculate the H^+ ion concentration, and state whether each is an acid, base, or neutral.
 - $[OH^-] = 1.51 \times 10^{-6}$ $pOH = -\log(1.51 \times 10^{-6}) = 5.82$
 $pH = 8.18$ $[H^+] = 10^{-8.18}$ base
 - $[OH^-] = 3.46 \times 10^{-10}$ $pOH = -\log(3.46 \times 10^{-10}) = 9.46$
 $pH = 4.54$ $[H^+] = 10^{-4.54}$ acid
- Calculate the OH^- ion concentration, and state whether each is an acid, base, or neutral.
 - $[H^+] = 2.80 \times 10^{-1}$ $pH = -\log(2.80 \times 10^{-1}) = .55$
 $pOH = 13.45$ $[OH^-] = 10^{-13.45}$ acid
 - $[H^+] = 7.58 \times 10^{-8}$ $pH = -\log(7.58 \times 10^{-8}) = 7.12$
 $pOH = 6.88$ $[OH^-] = 10^{-6.88}$ base
- Calculate the pH, and state whether each is an acid, base, or neutral.
 - $pOH = 6.58$ $14 - 6.58 = 7.42$ base
 - $pOH = 8.52$ $14 - 8.52 = 5.48$ acid
- Calculate the pOH, and state whether each is an acid, base, or neutral.
 - $pH = 11.56$ $14 - 11.56 = 2.44$ base
 - $pH = 2.33$ $14 - 2.33 = 11.67$ acid
- Complete the following table

$[H^+]$	pH	pOH	$[OH^-]$	Acid, base, or neutral?
$1.62 \times 10^{-9} M$	8.99	5.01	$9.77 \times 10^{-6} M$	base
$1.15 \times 10^{-9} M$	8.94	5.06	$8.71 \times 10^{-6} M$	base
$7.28 \times 10^{-3} M$	2.14	11.86	$1.38 \times 10^{-12} M$	acid
.331 M	.48	13.52	$2.99 \times 10^{-14} M$	acid
$1.61 \times 10^{-8} M$	7.794	6.206	$6.23 \times 10^{-7} M$	base
$2.75 \times 10^{-11} M$	10.56	3.44	$3.63 \times 10^{-4} M$	base
$4.61 \times 10^{-5} M$	4.34	9.66	$2.19 \times 10^{-10} M$	acid
.0224 M	1.65	12.35	$4.47 \times 10^{-13} M$	acid