

Name : _____ Date : _____



Recall that the formula to calculate pH, pOH, $[H^+]$, and $[OH^-]$ are as follows:

$$pH = -\log [H^+]$$

$$[H^+] = 10^{-pH}$$

$$pOH = -\log [OH^-]$$

$$[OH^-] = 10^{-pOH}$$

Based on the above formulas, fill in the following table.

$[H^+]$	$[OH^-]$	pH	pOH	Acid, Base, or Neutral?
1×10^{-3}				
	1×10^{-6}			
		9		
			12	
				Neutral
			9.5	
		4.7		
	2×10^{-3}			
5.0×10^{-11}				

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$$[H^+] = 10^{-pH}$$

$$pOH = -\log [OH^-]$$

$$[OH^-] = 10^{-pOH}$$

Based on the above formulas, fill in the following table.

$[H^+]$	$[OH^-]$	pH	pOH	Acid, Base, or Neutral?
1×10^{-3}	1×10^{-11}	3	11	Acid
1×10^{-8}	1×10^{-6}	8	8	Base
1×10^{-9}	1×10^{-5}	9	5	Base
1×10^{-2}	1×10^{-12}	2	12	Acid
1×10^{-7}	1×10^{-7}	7	7	Neutral
$10^{-4.5} = 3.16 \times 10^{-5}$	$10^{-9.5} = 3.16 \times 10^{-10}$	4.5	9.5	Acid
$10^{-4.7} = 1.99 \times 10^{-5}$	$10^{-9.3} = 5.01 \times 10^{-10}$	4.7	9.3	Acid
$10^{-11.3} = 5.01 \times 10^{-12}$	2×10^{-3}	11.3	2.7	Base
5.0×10^{-11}	$10^{-3.7} = 1.99 \times 10^{-4}$	10.3	3.7	Base
$10^{-4.5} = 4.67 \times 10^{-5}$	$10^{-9.65} = 2.24 \times 10^{-10}$	4.35	9.65	Acid