

**EXTRA PRACTICE: pH/pOH/[H<sup>+</sup>]/[OH<sup>-</sup>]/K<sub>w</sub>**

Name: \_\_\_\_\_

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

pH range: 0 - 7 = acidic  
 7 = neutral  
 7 - 14 = basic

Since  $[H^+][OH^-] = 1.0 \times 10^{-14}$  at 25°C, if  $[H^+]$  is known, the  $[OH^-]$  can be calculated and vice versa.

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

$$\begin{aligned} [H^+] &= 10^{-\text{pH}} \\ K_w &= [H^+][OH^-] = 1.0 \times 10^{-14} \\ \text{pH} + \text{pOH} &= 14 \end{aligned}$$

Complete the following chart &amp; show all work.

	[H <sup>+</sup> ]	pH	[OH <sup>-</sup> ]	pOH	K <sub>w</sub>	Acid or Base
1	1.0x10 <sup>-5</sup> M	5	1.0E-9M	9	1.0E-14M	A
2	1.0E-7M	7	1.0E-7M	7		Neutral
3	1.0E-10M	10	1.0x10 <sup>-4</sup> M	4		B
4	1.0x10 <sup>-2</sup> M	2	1.0E-12M	12		A
5	1.0E-3M	3	1.0E-11M	11		A
6	1.0E-12M	12	1.0E-2M	2		B
7	1.0E-9M	9	1.0x10 <sup>-5</sup> M	5		B
8	1.0x10 <sup>-11</sup> M	11	1.0E-3M	3		B
9	1.0E-1M	1	1.0E-13M	13		A
10	1.0E-6M	6	1.0E-8M	8		A