pH AND pOH

Name _____

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° 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			

pH AND pOH CONTINUED

Name _____

Calculate the pH of the solutions below.

1. 0.01 M HCl

2. 0.0010 M NaOH

3. 0.050 M $Ca(OH)_2$

4. 0.030 M HBr

5. O.150 M KOH

6. 2.0 M $HC_2H_3O_2$ (Assume 5.0% dissociation.)

7. 3.0 M HF (Assume 10.0% dissociation.)

8. 0.50 M HNO_3

9. 2.50 M NH_4OH (Assume 5.00% dissociation.)

10. 5.0 M HNO_2 (Assume 1.0% dissociation.)