EXTRA PRACTICE: pH & Concentration Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**pH = -log [H+] [H+] = 10 –pH [H+] x [OH-] = 1.0 x 10 -14**

**pOH = -log [OH-] [OH-] = 10 –pOH pH + pOH = 14**

**Part A: Table**

Use the equations above to fill out the chart below. Use appropriate units in your answer when necessary.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **[H+]** | **pH** | **Acid/Base** | **[OH-]** | **pOH** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *M* HCl | 1.00 x 10-4 *M* |  |  |  |  |
| ----------------------- |  | 11.0 |  |  |  |
| ----------------------- |  |  |  | 1.00 x 10-6 *M* |  |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *M* HCl |  |  |  |  | 12.5 |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *M* HCl |  | 2.10 |  |  |  |
| ----------------------- | 4.00 x 10-5 *M* |  |  |  |  |
| \_\_\_\_\_\_\_\_\_\_\_\_\_ *M* NaOH |  |  |  |  | 1.30 |
| ----------------------- |  |  |  | 2.30 x 10-8 *M* |  |
| ----------------------- |  | 6.70 |  |  |  |
| \_\_\_\_\_\_\_\_\_\_\_\_\_ *M* NaOH | 9.50 x 10-10 *M* |  |  |  |  |

**Part B: Calculations**

Solve the following problems by showing all work, including equations used. Use appropriate units in your answer when necessary.

1. What is the molar concentration of HNO3 in a solution that has a pH of 4.50?
2. What is the molar concentration of Ca(OH)2 in a solution that has a pOH of 3.50?
3. What is the pH of a 2.00 *M* solution of H2SO4? (Assume that both H+ protons dissociate)
4. What is the pOH of a 0.100 *M* solution of LiOH?
5. What concentration of H2SO4 has a pH of 1.00, assuming that both protons dissociate?