Name: Date: Period:

**Practice: pH Calculations-Part 1**

1. What is the pH of a solution of HCl with a hydrogen ion concentration of 5.3 x 10-2 M?
2. A student has 6.4L of HI solution. It contains 2.71 moles of H+. What is the pH of the solution?
3. What is the pH of a solution of H2SO4 with a hydrogen ion concentration of 2.63 x 10-6 M?
4. A student has 4.41L of HIO3 solution. It contains 1.45 moles of H+. What is the pH of the solution?
5. What is the pH of a solution of H3AsO4 with a hydrogen ion concentration of 6.8 x 10-5 M?
6. A student has 3.1L of H2Cr2O7 solution. It contains 2.05 moles of H+. What is the pH of the solution?
7. There are six different solutions in the chemistry lab. Their H+ concentrations are shown in the table below:

|  |  |  |
| --- | --- | --- |
| **Chemical** | **H+ Concentration** | **pH** |
| Hydrochloric Acid | 1 M |  |
| Water | 1.0 x 10-7 M |  |
| Sodium Hydroxide | 1.4 x 10-14 M |  |
| Milk | 2.51 x 10-7 M |  |
| Vinegar | 6.31 x 10-3 M |  |
| Baking Soda | 5.01 x 10-9 M |  |

1. Find the pH of each chemical.
2. Order the chemicals from most acidic to most basic.
3. Walter was making 1.3L of Potassium Hydroxide (KOH) solution. He wanted to make one with a pH of 13.2, but accidentally made a measurement mistake. After an experiment, he found that there were 2.2 x 10-13 moles of H+ in the solution. What was the actual pH? Is this stronger or weaker base than the desired pH of 13.2?
4. Beatriz decided to make five different solutions of Phosphoric Acid. The hydrogen ion concentrations are shown in the table below:

|  |  |  |
| --- | --- | --- |
| **Solution Number** | **H+ Concentration** | **pH** |
| #1 | 1.6 x 10-5 M |  |
| #2 | 4.3 x 10-2 M |  |
| #3 | 8.1 x 10-3 M |  |
| #4 | 3.9 x 10-7 M |  |
| #5 | 6.6 x 10-1 M |  |

1. Find the pH of each solution.
2. Order the solutions from most acidic to most basic.

**CHALLENGE (Extra Credit):**

1. Today we learned that the formula for pH is as follows:

pH = -log[H+]

1. Solve the formula for [H+]
2. Given that [OH-] is the hydroxide ion concentration, predict the formula to calculate pOH.
3. If a solution has a pH of 4.77, what is the hydrogen ion concentration?
4. For the solution in part (c), if the total volume was 1.56L, how many moles of H+ were in solution?