**Acid-Base Identification Lab**  Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Introduction:**   
Indicators are substances that will change colors in response to the concentration of H+ or OH- ions. There are several natural indicators, such as red cabbage juice, and several that we use in analytical chemistry such as universal indicator, phenolphthalein, and bromthymol blue. You might be familiar with specialized Hydrion Paper (used in pools) that tells the pH of solutions from pH 1-14. Today you will be using red cabbage juice and Hydrion pH paper to determine if household products are acidic, basic or neutral.

**Procedure:**

1. Obtain a well plate and rinse out each of the wells to ensure there will not be any contamination due to remaining chemicals.
2. Use Pipettes to fill a well for each of the liquids.
3. For each substance, you will need to **record the following in the data table on the back of the page**:
   1. Predict if the substance is Acidic, Basic, or Neutral.
   2. Add a few drops of Cabbage Juice a record the initial and indicated color.
   3. Use a small piece of pH paper to dip in the solution and determine the pH.

**Post-Lab Questions:**

1. Which of the liquids had the lowest pH?
2. Which of the liquids had the highest pH?
3. Which of the liquid(s) were the closest to being neutral?
4. If the pH of a sample was 3, how many times more acidic is it than a solution with a pH of 6?
5. What makes something with a pH of 1 more acidic than something with a pH of 2?
6. What causes the pH value to be different? What would need to happen to make a solution more or less acidic?
7. Fort Castillo De San Marco is located in St. Augustine, Florida. The fort was originally built using rock made from shells. The mortar used to hold the rocks together was made with ground limestone (lime) and sand. Over the years, environmental factos have caused the structure of the Fort to deteriorate. Using your knowledge of acids and bases, explain what environmental factors would affect the fort, and why would they cause this?
8. Draw a sketch of the pH scale and label where each of your tested solutions would be located:

**Data Table:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Household Product | PREDICTION (Acid, Base, Neutral) | Initial Color of Product | Initial Color of Indicator | Final Color of Indicator | pH Value | Acidic, Basic, or Neutral |
| HCl |  |  |  |  |  |  |
| Water |  |  |  |  |  |  |
| Vinegar |  |  |  |  |  |  |
| NaCl |  |  |  |  |  |  |
| Baking Soda |  |  |  |  |  |  |
| Aspirin |  |  |  |  |  |  |
| Borax |  |  |  |  |  |  |
| Soap |  |  |  |  |  |  |
| Lemon Juice |  |  |  |  |  |  |
| Starch |  |  |  |  |  |  |
| Drain Cleaner |  |  |  |  |  |  |
| Sprite |  |  |  |  |  |  |
| NaOH |  |  |  |  |  |  |

For the MOST acidic product in the table, calculate the [H+], [OH-] and pOH. Show your work.

For the MOST basic product in the table, calculate the [H+], [OH-] and pOH. Show your work.