

Names: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_  
Biology - Mr. Croft

## **pH Lab** **50 Points**

I. Problem: The pH of a solution is a measurement of how acidic or basic that solution is. An easy way to measure the pH of a solution is to use pH paper. This paper has been treated with several chemical indicators whose color varies according to pH. In this lab you will determine the pH of the following: lemon juice, drain opener, milk, tap water, vinegar, baking soda (solution), and shampoo.

II. Hypothesis:  
Which substances do you think are acids?

Which substances do you think are bases?

Which substances do you think are neutral?

III. Procedure:

*Record all results on the next page!*

Part 1:

1. Obtain a small beaker.
2. Put a few drops of a substance into the beaker.
3. Dip a fresh strip of pH paper into the substance and remove.
4. Compare the color of the wet paper with the pH color chart.
5. Wash and dry the beaker and repeat experiment with each substance.

Part 2:

1. Put 25 drops of the baking soda solution in a small beaker.
2. Add 10 drops of vinegar to the beaker.
3. Mix the two substances by gently swirling the beaker.
4. Wait for the reaction to stop and take the pH of the substance.

Part 3:

1. Put 50 drops of milk in a small beaker.
2. Add 20 drops of lemon juice to the beaker.
3. Mix the two substances by gently swirling the beaker.
4. Wait for the reaction to stop and take the pH of the substance.

Part 4:

1. Put 75 mL of water in a small beaker.
2. Add 1 drop of vinegar to the beaker, mix, and take the pH.
3. Repeat step 3 until you have added a total of 10 drops.

Part 5:

Repeat steps 1-3 of Part 4 using drain opener instead of vinegar.

IV. Results

Figure 1- Part 1:

Substance	pH
lemon juice	
drain opener	
milk	
tap water	
vinegar	
baking soda solution	
shampoo	

Part 2:

What did you observe during this reaction?

What was the pH after the reaction? \_\_\_\_\_

Part 3:

What did you observe during this reaction?

What was the pH after the reaction? \_\_\_\_\_

Figure 2- Part 4:

Part 4	
Drop #	pH
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Figure 3- Part 5:

Part 5	
Drop #	pH
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

★★★Construct one line graph for the results for Parts 4 and 5 (Figure 4).★★★

V. Conclusion (summary of experiment, analysis of data, discussion of error):

VI. Questions:

Part 1:

1. a. Which substances are acidic?  
  
b. Which substances are basic?  
  
c. Which substances are neutral?

Part 2:

2. Compare the pH of the solution in Part 2 to the pH of the baking soda and vinegar. What happened in this reaction?

Part 3:

3. Compare the pH of the solution in Part 3 to the pH of the milk and lemon juice. What happened in this reaction?

General Questions:

4. What ions in the solution caused the pH paper to change? Which solution contained the highest concentration of hydroxide ions? How do you know?

