

Name(s): _____

pH Lab: *Determining the pH of Common Household Items*



The pH of a solution is a measurement of how acidic or basic a solution is. An easy way to measure the pH of a solution is to use pH paper. This paper has been treated with chemical indicators whose color varies according to pH. Another way to measure pH is by using a pH meter. These meters work by measuring the amount of hydrogen ions in a solution.

Prelab: Understanding the pH scale

1. Examine the pH scale given to you. This allows you to measure the pH of solutions.
2. Note that the various colors (ranging from red to blue) and numbers on the scale corresponds to certain pH values.
3. Answer the following questions **before** going to the procedure.
 - a. Which numbers indicate an **acid**?
 - b. Which numbers indicate a **base**?
 - c. Which number indicates a **neutral solution**?
 - d. Which number indicates the **strongest acid**?
 - e. Which number indicates the **strongest base**?
 - f. Which number indicates the **weakest acid**?
 - g. Which number indicates the **weakest base**?
 - h. What type of ions do acids release (word and abbreviation)?
 - i. What type of ions do bases release (word and abbreviation)?
 - j. Define neutral solution:
 - k. Define pH scale:

Procedure

You **MUST** wear goggles at all times!!!

1. Write down the name of each sample in the table below.
2. Receive your pHDrion paper (12 small strips). **DO NOT** touch with your fingers.
3. Using tweezers, dip one of the small strips of pH paper into the first beaker. Pull the strip out **immediately**. You will follow the same procedure for the red and blue litmus. Please do them in order that they are labeled.
4. Count to 5 and then compare the color of the paper to the color chart.
(**Exception:** Read bleach immediately do **NOT** wait the 5 seconds.)
5. Record your data in the data table below.
6. Some stations have phenolphthalein and bromothymol blue. Please indicate the color the solution turned in the well plate. Rinse the solution down the sink with lots of water and record the color change in table under the correct column
7. Repeat for the rest of the solutions. Beaker #12 is the unknown substance.
8. Complete the table. Determine if each solution is acidic or basic and if the results matched your predictions.

Solution Name	Prediction (Acid/Base/Neutral)	pH based on paper reading (1- 14)	pH paper color	Bromothymol Blue	Phenolphthalein	Was your prediction correct?
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Post-Lab: Analysis & Conclusions

1. What could be a proper title for this investigation?
2. What did your prediction represent according to the Scientific Method?
3. What was the independent variable?
4. What was the dependent variable?
5. Of the solutions you tested, name the:
 - a. strongest acid: _____
 - b. weakest acid: _____
 - c. neutral solution: _____
 - d. strongest base: _____
 - e. weakest base: _____

Conclusion:

This section should be very detailed, telling me as much as possible about the experiment, with lots of supporting information from the lab data. It can be written on the back of this lab sheet or on separate paper.

Discuss ALL of your data. What happens when acids and bases are mixed? According to the results, which method is more accurate when taking the pH of a solution? Specifically, why? Were you surprised by the data that you found? Why or why not (which solutions were not what you expected)? What were some things that may have gone wrong in the experiment? How could you improve the experiment to make it better? Explain a situation where someone could use pH test kits in your neighborhood.