Quantitative & Qualitative Observations using pH Name _____

Date _____ Page_____

Prelab

pH is a measure of how acidic or basic a solution is. It is defined as the activity of dissolved hydrogen ions (H^+) when compared to water. Water is neutral and has a pH of 7.0. The pH scale has a range of 0-14. Acidity is when the concentration of hydrogen ions (H^+) activity is more than pure water and is represented as 0-6.9 on the pH scale. Basicity or alkalinity is when the concentration hydrogen (H^+) activity is less than pure water and is represented as 7.1 to 14 on the pH scale. See page 828 in the textbook.

Draw a diagram of the pH scale below using the above information.

Purpose: the purpose of this lab is to differentiate between quantitative and qualitative observations.

- Quantitative observations are collected using measurements or numerical information.
- Qualitative observations are collected without using numbers (shape, color, etc)
- pH testing can be conducted using both types of observations.

For qualitative observations, use red or blue litmus paper. If blue paper turns red, then the solution is acidic. If red litmus paper turns blue, then the solution is basic. To help you remember, think of the b's (changes to BLUE=BASIC)

For quantitative observations use pH Hydrion paper and compare color to the key provided with the paper to produce a number.

Problem: What type of observation is the most accurate for measuring pH of a solution?

Hypothesis: If _____, then

_____.

Helpful Research Topics:_____

Procedures:

Safety: wear goggles & closed toed shoes! Strong acids and bases will burn clothing & skin. Notify teacher of any spills. Do not touch your face.

1. Be sure to avoid splashing chemicals. Wear goggles.
2. Don't contaminate the supply of litmus/Hydrion paper by keeping them dry and in their containers. You can use small pieces by cutting them. Return unused pieces to the container with clean hands.

3. Each station has a different chemical, so be sure to record on the correct line of the data table.
4. Place a small piece of the 3 types of paper in the clean, dry Petri dish.
5. Place 1 drop of the solution on each paper using a stirring rod. Be sure to replace the stirring rod into the original solution to avoid contamination. Avoid touching chemicals with hands.
6. Record the color change for litmus and number for the hydrion on the data table.
7. Discard the used test papers in the waste beaker using forceps. No direct touch.
8. Wash Petri dish and hands with soap and water. Dry.
9. Test the next chemical using the same Petri dish until all solutions are tested.
10. Summarize the observations from the data table by writing a results paragraph on notebook paper. Staple to this lab.

Results

pH Results			
Solution	Blue Litmus	Red Litmus	Hydrion
Hydrochloric acid			
Baking soda			
Carbonated Soft drink			
Distilled water			
Vinegar			
Ammonia			
Lye-drain cleaner			
Muriatic acid			
Milk			
Seawater			
Orange juice			
Milk of magnesia			
Bleach			
Lemon juice			

Optional page-Teacher Use