Mr. Hanson's Science Class
Acid/Base Chemistry Experiments

In this lab, you will experiment and test Acids and Bases and determine the pH of the acid or the base. The pH tells us how strong/weak an acid or base is, and also whether it is harmful to living things.

1. **Lesson about the pH scale and determining what are acids/bases.**
    a. **http://www.ducksters.com/science/acids_and_bases.php**

Materials:

6 Test tubes
1 beaker
Tap water, soda water, vinegar, lemon juice, Pepsi, baking soda, ammonia, shampoo, bleach, Isopropyl alcohol, alka seltzer, distilled water.
1 test tube rack
Litmus Paper to determine pH
1 Vernier Labquest
1 Vernier pH meter
1 paper towel
Tape to label test tubes
Goggles
pH indicator Bromothymol Blue or Red Cabbage Juice
Website: http://www.funsci.com/fun3_en/acids/acids.htm

DO NOT MIX THE DROPPERS. KEEP THE DROPPER WITH THE TYPE OF ACID OR BASE OR pH INDICATOR.

First Experiment:

1. **Label 6 test tubes: tap water, soda water, vinegar, lemon juice, Pepsi, and distilled water.**
2. **Solutions are labeled in the beakers. DO NOT MIX THE DROPPERS FOR EACH FLUID. Load 3 mls of tap water, soda water, vinegar, lemon juice, Pepsi, and distilled water to each 6 test tubes and place them in the test tube rack.**

3. **Load 3 mls of red cabbage juice in each test tube. Note the color changes. Go to the website and look at the color scale and match the color with the pH number and write that number in the table for each liquid you tested.**
4. **Rinse the test tubes completely about 5 times by filling with water and emptying. Dry off the outside with paper towel (keep towel for next experiment). Place the test tubes back in the rack.**

Second Experiment:

1. **Label 6 test tubes: baking soda, ammonia, shampoo, bleach, Isopropyl alcohol, alka seltzer.**
2. **Solutions are labeled in the beakers. DO NOT MIX THE DROPPERS FOR EACH FLUID. Load 3 mls of baking soda, ammonia, shampoo, bleach, Isopropyl alcohol, alka seltzer to 5 test tubes and place them in the test tube rack.**
3. **Load 3 mls of red cabbage juice in each test tube. Note the color changes. Go to the website and look at the color scale and match the color with the pH number and write that number in the table for each liquid you tested.**
4. **Take off all the tape and rinse the test tubes completely about 5 times by filling with water and emptying. Dry off the outside with paper towel (keep towel for next experiment). Place test tubes where you found them, and put the rack away.**

Third Experiment:

Solutions are labeled in the beakers. Take a small amount of litmus paper for each of the solutions in the table and dip them in to see the color change. Determine the pH number for each liquid by using the scale on the Litmus Paper package match your litmus paper with the scale on the package. Write these pH numbers in the table. Do this for each liquid. Throw the litmus papers away when you are finished.

Fourth Experiment:

1. **There will be three Vernier Labquests set up with a pH probe attached. You will need to go to one of the stations to do the next experiment.**

2. **Using a small 50 or 100 ml beaker, fill it with 30 mls of tap water.**
3. **The pH probe will be in a large beaker with distilled water in it. Turn on the Vernier Labquest, take the pH probe out and place it in the beaker with tap water. Leave it in for 2 minutes. Write the pH number on the screen in your data table.**
4. **Place the pH probe back in the beaker of distilled water.**

Data Table - MEASURING THE pH OF SOME SUBSTANCES				
SUBSTANCES	**pH (litmus paper)**	**pH (from pH meter)**	**COLOR (red cabbage juice)**	**Acid, Base, or Neutral**
tap water				
soda water				
vinegar				
lemon juice				
pepsi				
Distilled water				
Baking soda				
ammonia				
shampoo				
bleach				
Isopropyl alcohol				
Alka seltzer				

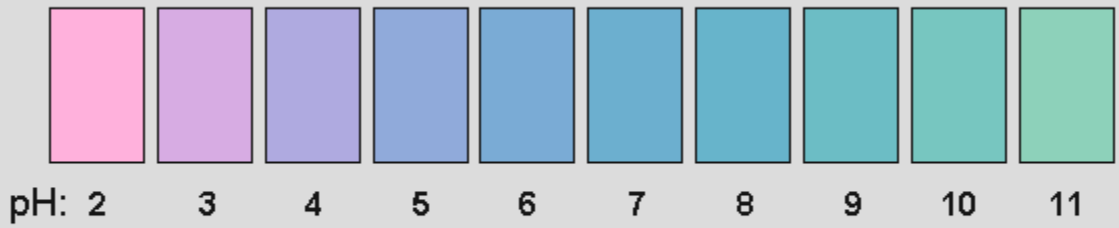

Figure 15 - Color scale of the red cabbage papers.