**Household Acids and Bases**

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**Objectives:**

1. The learners will be able to determine whether a substance dissolved

 in water will form an acid, a base or a neutral solution.

2. The learners will be able to infer the presence of acids or bases

 from evidence in the demonstration of interactions of common

 household products and an indicator.

**Apparatus Needed:**

1. Egg Cartons (one for every two students)

2. Litmus Paper (red and blue)

3. 10 Household solutions:

 a. lemon juice

 b. bleach-water

 c. water

 d. aspirin-water

 e. milk

 f. ammonia-water

 g. tea (concentrated)

 h. vinegar-water

 i. soap-water

 j. your saliva

4. 10 Eye Droppers

5. 10 Small Containers, or Clear Cups

6. Red Cabbage

7. 100 mL Water

8. 8 Test Tubes

9. Tube 1. 10 mL of Lemon Juice

10. Tube 2. 10 mL of White Vinegar

11. Tube 3. 10 mL of Boric Acid Solution

12. Tube 4. 10 mL of Water

13. Tube 5. 10 mL of Sodium Bicarbonate Solution

14. Tube 6. 10 mL of Borax Solution

15. Tube 7. 10 mL of Washing Soda Solution

16. Tube 8. 10 mL of Drain Cleaner

17. Test Tube Holder

18. Beakers, 100 and 250 mL

19. Burner

**Recommended Strategy:**

Place solutions of a-i in small cups numbered 1-10. Make a testing

board by numbering egg carton cups 1-10. Place 5 drops of each solution

in the corresponding numbered egg carton cup. Test each solution with

the red and blue litmus paper. Record your results on a chart for

comparison.

Prepare a solution of red cabbage by placing enough red cabbage to fill

a 250 mL beaker one-fourth full. Add about 100 mL of water and boil until

the solution turns deep purple. Cool. Pour off the liquid. This is the

indicator solution.

Pour 3 mL of indicator solution in each of the 8 test tubes. Add the

solutions listed in apparatus section of writing (test tube #1-8). Mix

contents in each tube with a stirring rod.

Observe the gradual color change. Determine the pH value of solutions

tested using pH paper. You might prepare some unknowns for the students

to determine the pH values. Put a chart on the blackboard for them to

record their data for class comparison.

Several other natural indicators can be used for this activity: beet

juice, carrot juice, grape juice, blueberry juice, and flowers,

including the blue iris, purple dahlia, and purple hollyhock.