

Name _____

Date _____

Chemical reactions result in the recombination of atoms to form new substances in gas, liquid or solid form.

There are signs that a chemical reaction has taken place that we can observe; the main signs are...

- Formation of a gas (see bubbling)
- Formation of liquid H₂O
- Formation of precipitate (solid forming)
- Color change
- Change in temperature due to absorption or release of energy

C. **Acid-base reaction.** Lemon juice contains citric acid and baking soda (sodium bicarbonate) is a base.

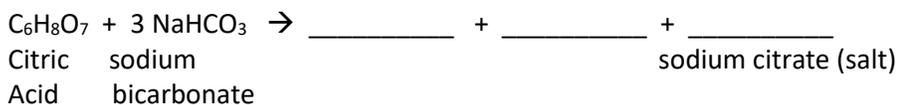
pH is a measure of the concentration of hydrogen ions – the more H⁺ ions, the more acidity.

1. Test the lemon juice and baking soda solution's pH using the litmus paper and the litmus paper pH scale. Dip ½ of the paper in the baking soda solution, compare to the pH scale. Place the other ½ in the lemon juice; compare to the pH scale.

pH of lemon juice: _____ pH of baking soda solution: _____

What changes did you observe in the litmus paper that indicates that a chemical reaction took place between the chemicals on the paper and the lemon juice and baking soda? Be specific.

2. Baking soda is an ionic compound that splits into the positive sodium ion (Na⁺) and the negative bicarbonate ion (HCO₃⁻) when dissolved in water.



C. Supplies and Directions:

- 1 Tbsp. lemon juice small cup
- 1 Tbsp. baking soda solution

What two signs of chemical reaction might you observe?

Add the lemon juice to the cup. Pour the baking soda solution into the cup. Swirl the cup gently, **and place your hand on the bottom of the flask** to test for a temperature change (may take minutes). Pour into sink/cup in trash.

Record your observations in the table:

Formation of a Gas?	Color Change?
Temperature Change?	Formation of a Solid?

Expected Results

C. Litmus tests should show about a 2.0 for lemon juice and 9.0 for the baking soda solution.

The reaction should result in bubbling; a decrease in temperature should be detected and students may note a color change to a lighter yellow.

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