Chemistry 0 Unit 3 Lesson 1 Homework
Assigned on 02/27/2021 Due date: 03/13/2021

1. Title of this week's assignment: Ageless apples.

2. Overview:
    a. Place apple slices into solutions that are acids, bases or neutral.
    b. A day later, examine the apples and can see dramatic differences in how much each of the slices browned.
    c. Explore how acidity changes reaction rates.

3. Inquiry questions:
    a. How do we know if a chemical or physical change has occurred?
    b. What is an acid and a base, and how do they affect the rate at which an apple browns?
    c. What chemical reaction causes apples to brown and how can we slow this process using our knowledge of acids and bases?

4. Materials needed:
    a. ¼ cup lemon juice
    b. 1 tbsp. baking soda
    c. ½ cup water (distilled, if possible)
    d. 1 apple
    e. 3 sealable sandwich bags (or small bowls with lids)
    f. permanent marker
    g. ¼ and ½ cup measuring spoons

5. Procedure:
    a. Using the marker, add one of the following labels to each plastic bag: "lemon juice", "baking soda" and "water".
    b. Pour ¼ cup lemon juice into the bag labeled "lemon juice".
    c. Mix ¼ cup water with 1 tbsp. baking soda in the bag labeled "baking soda".
    d. Pour ¼ cup water into the plastic bag labeled "water".

e. Prepare 6-12 evenly sliced pieces from one apple (no need to peel the apple).
f. Place 2-4 apple slices into each bag, seal, and gently shake to ensure the apple slice is completely coated in the liquid.
g. Carefully remove the apple slices from each bag and place them on top of the sealed bag they came out of, or on a labeled plate or bowl.
h. Observe immediately and check in over the next few hours or day and note any changes between the apple samples.

6. Please complete the assignment using a report which will include background research, your hypothesis, procedure, data collection and analysis and conclusion:
    a. Start to think about the inquiry questions stated above. Perform background research on these topics.
    b. Make your hypothesis before you start the experiment: What effect do you think each of the liquids will have on the apple? Draw what you think each sample might look like tomorrow.
    c. Please paste the procedure to your report prior to the start of your experiment. Record your observations of the experiment. Pictures of your apple samples can be pasted to your report.
    d. Analyze and discuss your results (data collection and analysis) using the following questions: (1). At the start of the experiment, describe each liquid being used: water, lemon juice, baking soda solution. What are the physical properties? How are they similar or different? (2). Provide a picture of the apple samples right after you take them out of each solution, show the clear label of each apple sample. (3). Describe and show the picture of the apple samples over time. Please show the exact time when you take the picture such as one hour later, three hours later, and/or one day later. What differences do you observe? (4). Do you think this is an example of a chemical or physical change? What is your evidence? (5). Which of the liquids used could help keep apples fresh for longer? Why?
    e. Provide your conclusion of the experiment in your report.