Fizz Frenzy – The Explosive Mentos and Coke Experiment

Florida State Standard:
SC.5.P.8.1 – Observe and describe that most substances exist in one of three states: solid, liquid, or gas.

Florida State Benchmark:
SC.5.P.8.2 – Identify that gases can be released from liquids and describe how the release of gas results in bubbles or foam.

Objective:
Students will understand how gas is released from carbonated beverages and how surface area impacts the release using the Mentos and Diet Coke experiment.

Materials:

- 1 bottle of Diet Coke (2-liter)
- 1 roll of Mentos (mint flavor)
- Mentos dropper or paper tube
- Outdoor space
- Safety goggles (optional)

Safety Precautions:
Conduct the experiment outdoors to ensure ample space for the eruption. Wear safety goggles to protect eyes from potential splashes. Keep a safe distance from the bottle after releasing the Mentos, as the soda can shoot up rapidly. Ensure students are aware of their surroundings to prevent accidents.

Procedures:

1. **Introduction (5 minutes):**
    - Ask students if they've seen soda bubble or fizz after being shaken and introduce the concept of carbonation.
    - Have students predict the outcome of dropping Mentos into Diet Coke.
    - Explain the science behind carbonation and gas release.
2. **Experiment (15 minutes):**
    - Lead the class outdoors to a safe, open space.
    - Demonstrate the materials and explain the experiment.
    - Open the Diet Coke bottle and place it on the ground.
    - Quickly release 5-7 Mentos into the bottle using the dropper or paper tube.
    - Step back and observe the explosive reaction.
3. **Observation (10 minutes):**
    - Have students record their observations such as the height of the foam and the speed of the reaction.

- Discuss why the reaction occurred.

4. **Generalization (10 minutes):**
   - Explain that the Mentos' rough surface creates nucleation sites that allow CO_2 to rapidly escape, causing the foam eruption.
   - Discuss real-world applications of gas release and surface area.
5. **Assessment (5 minutes):**
   - Ask students the following questions:
     1. What type of gas is released from the Diet Coke when Mentos are added?
     2. Why does Mentos cause a stronger reaction than other candies?
     3. How does surface area affect the reaction?
     4. What would happen if warm soda were used instead of cold?
     5. Why is this considered a physical reaction rather than a chemical one?

Note: Clean-up
After the experiment, ensure all students are safely distanced before cleaning up. The area should be wiped down to remove any sticky soda residue. Dispose of used Mentos wrappers and any other trash in a designated bin. Remind students to wash their hands after handling the soda.