| Lesson: Fizz Frenzy: Mentos and Diet Coke | Name: |
|---|---|
| Teacher: | Date: |

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.

A. Teacher: [Insert Name]
B. Grade Level: 5th Grade
C. Subject: STEM / Science
D. Date: [Insert Date]
E. Duration: 45 minutes
F. Lesson Focus: Understanding physical reactions by observing how gas is released from carbonated beverages and how surface area affects this process using the Mentos and Diet Coke experiment.

G. Materials:

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

H. Lesson Objectives:
By the end of the lesson, students will:

1. Demonstrate the physical reaction between Mentos and Diet Coke.
2. Understand how surface area affects gas release in carbonated liquids.
3. Make observations about the reaction and explain it using scientific reasoning.
4. Answer comprehension questions related to gas release and reactions.

I. Procedures:

1. Introduction (5 minutes)

- Ask students if they've ever seen soda fizz or bubble after shaking. Introduce carbonation and the release of carbon dioxide gas ($CO_2$).
- Have students predict what will happen when Mentos are dropped into Diet Coke.
- Explain that today they will observe a dramatic release of gas and learn the science behind it.

2. Experiment (15 minutes)

- Setup: Lead the class outdoors to a safe, open area.
- Demonstration: Show the materials and explain what will happen.
- Step-by-step guide:
    - Open the Diet Coke bottle and place it on the ground.
    - Use a Mentos dropper to quickly release 5–7 Mentos into the bottle.
    - Step back and watch the Coke erupt into a foam fountain.

3. Observation (10 minutes)

- Have students record observations such as the height of the geyser and speed of the reaction.
- Discuss why the reaction occurred.

4. Generalization (10 minutes)

- Explain that the rough surface of Mentos creates nucleation sites where $CO_2$ can escape rapidly, causing the foam eruption.
- Discuss real-world applications of gas release and surface area.

5. Assessment (5 minutes)
Comprehension questions:

1. What type of gas is released from Diet Coke when Mentos are added?
2. Why do Mentos cause a stronger reaction than other candies?
3. How does the surface area of Mentos 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 reaction?

- Provide criteria for evaluating students' responses.

Safety Notes:

- Conduct this experiment outdoors in a wide-open area.
- Wear safety goggles to protect eyes from splashes.
- Step back immediately after adding Mentos.
- Ensure students are aware of their surroundings and maintain safe distance.
- Adult supervision is required.

Differentiation / Accommodations:

- ELL students: Provide visual aids, demonstrations, and simplified language. Encourage peer discussion.

- ESE students: Allow extra time for observations, one-on-one assistance, and consider a peer buddy system.