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Forces and Motion:
Explained Using Mentos and Diet Coke

Grade Level: 3rd

North Carolina Essential Standard: 3.P.1 Understand motion and factors that affect motion

Time: 45 minutes

Background:

This activity can be used as an engaging introduction to the forces and motion science unit. Go over essential definitions before performing the experiment. Engage the students by demonstrating these definitions and asking them to explain what you are doing. These definitions can be demonstrated using objects such as paperclips or, if you are outside, a sweetgum seed. Have the students write down the definitions, so they can refer back to them later.

- **Force-** a push or pull upon an object resulting from the object's interaction with another object
- **Motion-** the movement of an object in a particular direction resulting from a force
- **Push**- exerting force to move something away
- **Pull**- exerting force to bring something closer
- **Gravity, gravitational pull**- a force of attraction between two objects; bigger objects exert more gravitational pull (e.g. earth); what goes up, must come down

Materials:

- (4) 2-liters of Diet Coke
- (2) Rolls of mint Mentos

*Quantity of supplies is dependent on the number of trials that will be conducted.

For each student:

- Pencil and paper to record observations

Experiment:

When Mentos is submerged in Diet Coke, gas (i.e. carbon dioxide) is released from the thousands of tiny pits on the surface of the Mentos. Mentos are heavy and sink quickly to the bottom of the bottle. The gas forces the soda (i.e. Diet Coke) in the bottle into **motion** (i.e. the gas **pushes** the soda out of the bottle). The soda falls to the ground due to **pull** from the earth's **gravity**.

Demonstrate this experiment once using 1 Mentos, and emphasize the definitions that were just taught. Conduct several trials using different numbers of Mentos in each bottle. Engage the students by asking them what they would like to test in the next trial. Have the students write a prediction before each trial. More Mentos should release more gas that exerts more force pushing the soda out of the bottle. Therefore, when more Mentos are used, the soda will travel higher.

* This experiment is messy and should be conducted outside. Have the students sit a good distance away from the soda.

Assessment:

To assess the students' understanding of the experiment, have them fill out a table explaining the experiment using their own words.

Section included in the table:

- Prediction: What do you think will happen?
- Supplies: What type of soda was used? How many Mentos were used?
- Procedure: How was the experiment performed?
- Observation: What happened? How high did the soda go? Did the soda go higher or lower than previous trials?
- Explanation: Have the students use their definitions to explain the observation.

Forces and Motion: Mentos and Diet Coke Experiment

	Trial 1	Trial 2
Prediction		
Supplies		
Procedure		
Observation		
Explanation		