

## Soda Eruption

**Overview:** When you combine Mentos and diet soda it creates an eruption that is not only fun, but also a great way to get students excited about science and the scientific process.

### Procedure:

- 1) Show students the materials for the lesson. Tell students they are going to combine these materials to see what happens.
- 2) Give students the following writing prompt: *What will happen when I add Mentos to soda?* Allow students to write anything they think might happen. After they have written their responses, ask them to share with the class.
- 3) Have the students work together to make tape tubes. Take a piece of tape that is long enough to fit the entire roll of candy. Have one student hold the tape, sticky side up, while another adds the candy standing up on edge to the tape. Then add another long strip of tape to the top. The Mentos should be lined up just like they were in their package, with the tape holding them together. This will make it much easier to add all the Mentos to the soda. Have them make candy tubes for all the Mentos you will be adding to the soda.
- 4) Take the students outside. Make sure to pick an open space where it is ok to get soda everywhere. Make sure you take all the materials and paper for the students to record what they see. If possible, set up a measure tape with large numbers behind where you conduct your experiment. This will allow you to write down how high your eruption goes.
- 5) Tell students that their first trial will be to add Mentos to the diet soda. One person will need to add the tube of candy and then run away as quickly as possible.
- 6) Have the other students record what they see. You can also video record this so that the students can watch it again. Ask students to write down how high the soda blasted.
- 7) Ask the students what they think would happen if they tried other types of soda (regular, caffeine free, different colors, etc). Have them record their ideas on their paper.
- 8) Repeat the same procedure for the other types of soda that you have. Have the students record their observations and compare it to the diet soda.
- 9) Have the students graph the height of each soda eruption and compare their results.

### **SCIENCE**

**5S-SI 1** The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which

**a:** distinctions are made among observations, conclusions, inferences, and predictions.

**b:** objects or events are classified and arranged according to characteristics of properties

**c:** appropriate instruments are selected and used to measure length, mass, volume, and temperature, in metric units.

- f:** independent and dependent variables are identified
  - g:** constants in an experimental situation are identified
  - h:** hypotheses are developed as cause and effect relationships
  - i:** data are collected, recorded, analyzed, and displayed using bar and basic line graphs
  - k:** data are communicated with simple graphs, pictures, written statements, and numbers.
- 5S-SI 2** The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which
- e:** independent and dependent variables are identified
  - f:** constants in an experimental situation are identified
  - g:** data are collected, recorded, analyzed, and communicated using proper graphical representations and metric measurements
  - i:** inferences are made and conclusions are drawn
- 8S-SI 1** The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigation which
- f:** one variable is manipulated over time, using many repeated trials
- 8S-SI 2** The student will demonstrate an understanding of scientific reasoning, logic, and nature of science by planning and conducting investigations in which
- f:** dependent variables, independent variables, and constants are identified
- HSS-SI 1** The student will plan and conduct investigations in which
- c:** scales, diagrams, charts, graphs, tables, imagery, models, and profiles, are constructed and interpreted.
  - e:** variables are manipulated with repeated trials

### **READING & WRITING**

- 3E-RW 2a** The student will use newly acquired vocabulary drawn from reading and other content areas.
- b:** demonstrate understanding of the meaning of newly acquired vocabulary.
- 3E-CN 1g:** The student will sequence at least two steps in a procedure or ideas/incidents in an event.
- 4E-CN 1d:** The student will interpret information presented visually and orally.
- 5E-RW 1f:** The student will demonstrate understanding of content-specific words.
- 8E-RW 1e:** The student will acquire and use content words and phrases.
- 8E-WP1a:** The student will write to convey ideas and information including facts, details, and other information
- d:** The student will use content specific vocabulary when writing about a topic.
- 8E-WP 5b:** The student will write to convey ideas and information clearly including facts, details and other information.
- c:** The student will produce writing that is appropriate for the task, purpose or audience.
- HSE-WP1b:** The student will write to convey ideas and information using clear organization and including facts, details, and other information as well as graphics and multimedia as needed.
- d:** The student will produce writing that is appropriate to a particular task,

purpose, and audience.

**HSE-RW2c:** The student will acquire and use new words and phrases.

**HSE RW3c:** The student will demonstrate knowledge of the meaning of words and phrases from reading and other content areas by using content.

**Extension Idea:**

Upon completion of this experiment, students will write a text that summarizes their experiences and findings. This can be a fun way for the students to demonstrate what they have learned. Particular attention may be given to content words, figurative language, and sequence of events. Encourage students to include illustrations, tables, graphs, and digital photographs. Texts might take the form of a PowerPoint presentation, book, journal entry, newsletter, or blog. These texts might make great additions to self-selected reading libraries.

**MATH**

**3M-MG 2c:** The student will measure length of objects using standard tools, such as rulers, yardsticks, and meter sticks.

**3M-PSPFA 1a:** The student will create picture graphs from collected measurement data.

**4M-MG 1a:** The student will identify smaller measurement units that divide a larger unit within a measurement system.

**5M-PSPFA 1a:** The student will represent and interpret data on a picture, line plot, or bar graph given a model and a graph to complete.

**6M-PSPFA 1c:** The student will answer a question related to the collected data from an experiment, given a model of data or from data collected by the student.

**HSM-FS 2a:** The student will indicate general trends on a graph or chart

**HSM-FS 3a:** The student will given data, construct a simple graph (table, line, pie, bar, or picture) and answer questions about that data.

**Materials Needed:**

- 5 rolls of Mentos
- 1 2 liter diet soda
- 4 2 liters of a variety of other sodas (regular, caffeine free, different colors, etc)
- clear tape
- measuring tape
- data collection sheet for students to write prompt responses and observations

**Instructional Setting:**

This activity should be completed outside on a relatively flat surface where soda can spill.

**Community Connections and/or Peer Interaction:**

Students can work together in small groups.

**Functional Activity/Routine:**

This activity encourages functional skills such as turn-taking, following instructions, and cleaning up afterward.

**Strategies to Collect Evidence:**

For collection of evidence, be sure that each student records a hypothesis and data individually.

**Specific Options for Differentiating this Activity:**

- Conduct the experiment on a surface that can be accessed by all students.
- Pre-make tape rolls of Mentos for students who may not be able to make them.
- Video tape the eruptions so students can watch them again to compare.
- Complete trials with diet soda and another soda at the same time so students can immediately compare their reactions.
- Allow students to use their preferred "pencil" when writing. This may include a writing utensil, keyboard, alternative pencil, or dictating to a scribe.
- Prepare, as necessary, for each student to make choices and communicate with their preferred method. This may include using augmentative communication.