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**the experiment...**

**Questions**

Does the brand/type of soda change the experiment? Does the brand/type of candy change the experiment?

**Hypothesis**

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Name \_\_\_\_\_

**Mentos and Coke! A chemical reaction experiment**

**Question:** Does sugar in regular Coke or aspartame (artificial sweetener) in Diet Coke create a larger reaction when mixed with Mentos?

**Hypothesis:** \_\_\_\_\_

**Materials:**

1. Coke (regular)
2. Diet Coke
3. 6 Mentos candies

**Experiment:**

1. Carefully place 3 Mentos candies into the regular coke.
2. Observe the reaction and make a scientific drawing.
3. Repeat the process with the diet coke.



**Scientific Drawings of the Chemical Reactions**

Regular Coke	Diet Coke

**Diet Coke & Mentos Fountain  
Instructor's Demo Notes**

**Safety and Clean-up Concerns**

Wear your safety goggles to set a good example. Coke in the eye is funny but still somewhat unpleasant. Be careful to not go outside where you can make a big mess and no one will care. It is not fun on the side that you have to clean. We will have that method of disposal up to you.

**The Lab Experiment**

Three or four pieces of Mentos candy are dropped directly into an open, 2-liter bottle of Diet Coke. The carbon dioxide gas dissolved in the Coke begins to effervesce and expand rapidly. The gas gathering at the bottom of the bottle causes the remaining Diet Coke to rise and out of the bottle.

**Vocabulary**

**Physical Change**  
A physical change can pretty much be reversed. One example is the state or shape of something is changed, it is simply a physical change. In this a piece of candy is dropped into a bottle of Diet Coke. The Coke effervesces and the gas pushes the remaining liquid out of the bottle. It is still Coke, just spread out a bit more.

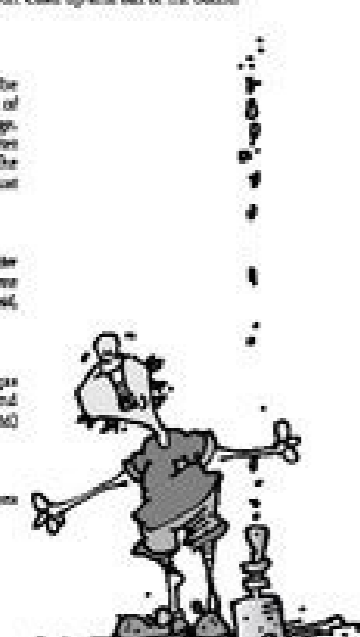
**States of Matter**  
Also known as, some choose to place of matter or, less frequently, state of aggregation. There are three commonly recognized states of matter: solid, liquid, and gas.

**Gas**  
In this demo the carbon dioxide is a gas dissolved into the Diet Coke (liquid/solution) and then is released quickly when the Mentos (solid) provides a vehicle.

**Effervescent**  
When gas forms bubbles or foam as it escapes from a liquid, it is said to be effervescent.

**Materials**

2. Mentos, Diet Coke, 2 liters
1. Ball of Mentos
1. Vernier Tube or adapter



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Scientist \_\_\_\_\_ Date \_\_\_\_\_

**Scientific Investigation  
Diet Coke and Mentos Experiment**

**Purpose/ Question:** What do you want to find out?

▪ What will happen to \_\_\_\_\_ if \_\_\_\_\_ are added to the \_\_\_\_\_

**Prediction:** What do you think the experiment will show you?

▪ A scientific prediction is a forecast about what may happen in the \_\_\_\_\_ experiment.

▪ I think the Diet Coke will \_\_\_\_\_ when Mentos are added.

**Hypothesis:** [I...then...]

▪ A hypothesis is a prediction about the relationship between variables.

▪ If Mentos are added to Diet Coke, then \_\_\_\_\_

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**Manipulated variable/Independent variable:**

▪ A manipulated variable is the part in an experiment that is changed by the experimenter.

\_\_\_\_\_

**Responding variable/Dependent variable:**

▪ A responding variable is the part in an experiment that changes because of the manipulated variable.

\_\_\_\_\_

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Coke and mentos experiment facts. Diet coke and mentos experiment results. Can you use diet coke for mentos experiment.

This article may contain affiliate links to products that may help you. The Diet Coke and Mentos experiment was a blast (literally!) and we learned a lot about nucleation. In fact, it was so much fun that I wrote up our experiment, created observation and tracking sheets, and have uploaded them all for you to use...for free! Read the experiment below or scroll alllllll the way to the bottom to get the printable version. Diet Coke and Mentos Experiment Nucleation Lesson Plan Have you ever seen pictures of a volcano erupting? Well, today we are going to make soda erupt! We are going to use soda and Mentos candy to create our geyser. By dropping an entire pack of Mentos into a 2 Liter bottle of diet soda at once, we will see the reaction of a process called nucleation. Vocabulary Words NucleationNucleation SitesEruptGeyserChemical reactionPhysical reaction Read and Watch You can read more about nucleation and nucleation sites from Steve Spangler Science. Be sure to watch the second video in from the left under the picture at the top. You might also want to watch this explanation video from Myth Busters, a show that focuses on solving science-related problems: Nucleation Experiment Experiment Supplies To do our experiment we will need: • 2 Liter bottle of diet soda • 1 roll of original Mentos• • 1 geyser tube • Tracking Sheet • Observation Sheet • Safety Goggles •You must use original Mentos, as the flavored ones have a waxy coating that hinders the reaction. Experiment Directions: Take out the Mentos and Diet Soda Tracking Sheet. Fill in the column for the diet soda’s name and your prediction as to what will happen based on what you read and watched on the websites above.This experiment is messy, so you will want to do it outside in an open area away from anything that you do not want to get sticky. You will probably want to be in old clothes too...just in case.Put on your safety goggles. Remember, safety first!Open your roll of Mentos and insert them all into the geyser tube.Open the bottle of soda and attach the geyser tube.Stand back and pull the release string on the geyser tube to release the Mentos.Snap a photo as the soda erupts. Optional: After you have experimented with one diet soda, try the experiment with different types of soda to see which ones has the most intense reaction. Mentos and Diet Coke Experiment Follow-Up Wasn’t that neat?! Now, we are going to finish up by filling out the Outcome column on the Tracking Sheet. If you experimented with more than one type of diet soda, rank them in order of which produced the most explosive eruption. Complete the Observation Sheet by drawing what happened. Label the parts of your drawing. Next, write a short (2-3 sentence) summary of what is being shown in your drawing. Optional Discussion Questions: Describe what happened in the experiment.What could you have done differently?What do you think would have happened if you used a different type of diet soda?What do you think would have happened if you only used half of the pack of Mentos?What do you think would have happened if the soda was flat? Download the Mama Teaches Mentos and Diet Soda Experiment lesson plan, tracking sheet, and observation sheet. Even your reluctant learner will get excited to try this easy science experiment where you will produce a HUGE eruption! In this classic Mentos and Soda Experiment you will mix a couple simple materials to produce a chemical reaction. This mentos in Coke project is a MUST TRY for kids of all ages from preschool, pre-k, kindergarten, 1st grade, 2nd grade, 3rd grade, and 4th graders too. Even adults love trying the coke and mentos experiment. Don't worry, we'll give you the diet coke and mentos experiment results explained so you get all the learning out of this fun summer activity for kids! Mentos and Soda Experiment Ready to try the most memorable summer science experiment? This mentos and soda experiment may not be summer themed, but because of the BIG chemical reaction, you will want to do this mentos and pop activity outside. Doing the mentos and coke science project outside allows for virtually no clean-up which makes Mom happy too! This summer science is so fun your kids will not even realize they are learning! Try this fun summer activity with preschoolers, kindergartners, grade 1, grade 2, and grade 3 students. All you need to try this simple science project are a few simple materials you may already have on hand! 2 liter bottle of soda 12 mentos mints paper index cards or construction paper tape measuring cup rain poncho or umbrella (optional) Use your paper to make a tub that fits your 12 mentos and tape it into place. Make sure the mints fit easily, but stack neatly for a quick release. Make a slit for a piece of paper you can quickly remove to drop the mentos in the soda bottle Unwrap the white mentos candy and load mentos inside your dispenser Coke and Mentos Experiment This part is optional, but makes it extra fun especially for young learners! Make your soda bottle look like a rocket. Find somewhere outside where you can launch your rocket where you have some space to not make a mess. We like to do this on the grass before it rains as the rain will clean it all up for us! mentos diet coke You have to do this step QUICKLY or you may get soda on you. Carefully open the bottle of soda and place the index card on top of the opening and your tube of mints of top of the card. You can wear a poncho if you like or have them do it in their bathing suits with sprinkler ready for your next activity to get the kids clean. LOL. Mentos and Coke Science Quickly slide out the index card so the mints drop in the soda bottle. Time to move quickly or you will be covered in soda. WOW! How cool is that? It gets really high, doesn't it! Mentos and Pop After your kids finish giggling and exclaimed with delight, pour the bottle of soda that’s left in a measuring cup. How much was left? Now try it with different sodas if you like such as diet coke, Vernors, Cherry Coke, etc. Which one cause the biggest explosion and left the least amount of soda left in the bottle? Diet Coke and Mentos Experiment Results Wondering what happens in this classic science experient? Basically, the coke and mentos explained is that soda gets it's bubbles or fizz from carbon dioxide gas that is dissolved in the soda. When you open a bottle of pop you hear the fizz and see the bubbles, right? This is especially noticeable with a new bottle of soda. If you shake up the bottle there is even more fizz and bubbles because the gas is released faster. When you add mints, the bubbles come out of the soda EVEN FASTER; so fast that it takes most of the soda out with it. This makes a truly EPIC explosion that will delight kids and adults of all ages. Observe the mint career. Can you see the tiny holes that feel chalky. The ingredients and unique texture help break up the hold soda has on the carbon dioxide. If you want to try it with another flavor you'll notice they are smooth. The waxy coating on other flavors keep them from dissolving and freeing the carbon dioxide gas in the same amazing eruption! Geysers of Fun Why do Mentos turn ordinary bottles of diet soda into geysers of fun? The answer is a little more complicated than you might think. Soda is made of sugar or artificial sweetener, flavoring, water and preservatives. The thing that makes soda bubbly is invisible carbon dioxide, which is pumped into bottles at the factory using lots and lots of pressure. If you shake a bottle or can of soda, some of the gas comes out of the solution and the bubbles cling to the inside walls of the container thanks to the tiny pits called nucleation sites. When you open the container, the bubbles quickly rise to the top, pushing the liquid out of the way, so liquid sprays everywhere. More Carbon Dioxide Observations Is there another way for the carbon dioxide to escape? Try dropping an object, like a raisin or a piece of uncooked pasta, into a glass of soda. Notice how bubbles immediately form on the surface of the object. Adding salt to soda also causes it to foam because thousands of little bubbles form on the surface of each grain of salt. This bubbling process is called nucleation. The places where the bubbles form are the nucleation sites. Why Are Mentos Special? There are two reasons Mentos work so well for this experiment. Each mint has thousands of tiny pits all over its surface. These tiny pits act as nucleation sites, which are perfect for carbon dioxide bubbles. As soon as the Mentos hit the soda, bubbles cling to the surfaces of the candies and then quickly rise to the surface of the liquid. Because Mentos are heavy and sink to the bottom of the bottle, the gas released by the Mentos pushes the soda up and out of the bottle in an incredible and amazing blast. Take It Further Measuring the Height of the Geyser To make any of these tests meaningful, you'll need to find a way to measure the height of the eruption. Try placing the soda bottle next to the wall of a brick building, after getting permission from the building's owner, of course. Measure the height of the geyser by counting the number of bricks that are wet once the geyser stops. If you want a more specific measurement, use chalk to mark off 1-foot increments before you drop the Mentos into the bottle of soda. Make comparisons, create a chart with your data and draw some conclusions. If you decide to do this experiment against a wall, be sure to thank the building's owner and to hose off the wall of the building when you are finished. Measuring the Volume of the Geyser If you want to examine the volume of the geyser, note the volume of a full bottle of soda before you drop the Mentos into it. Once the geyser stops, measure how much liquid is left inside. You could use a beaker or a graduated cylinder to measure the remaining soda in milliliters. Remember that 1 liter is equivalent to 1000 milliliters. Subtract the remaining amount of liquid from the original volume of the bottle to calculate the volume of the geyser. Then, make comparisons, create a chart with your data and draw your conclusions. How Many Mentos Work Best? Everyone wants to know how many Mentos make the highest shooting geyser. This is a great topic for a science project. You'll need lots of soda and Mentos, as well as a few friends to help record all of the data. Be sure that the soda bottles are all the same brand and type. It's also important that all of the test bottles are stored in the same place so that the liquid in each bottle is the same temperature. Remember, when you're doing an experiment, you can only change one variable. In this case, we're changing the number of Mentos dropped into each bottle, so everything else has to stay the same. Line up a row of 10 soda bottles against a brick wall. Each bottle will receive a different number of Mentos. Drop one Mentos candy into the first bottle and record the height by counting the wet bricks or by using your own scale. Drop two Mentos into the second bottle and continue increasing the number until you've completed the experiment with all 10 bottles. Of course, this could go on forever, but you'll start to see a trend in your data that shows the maximum height of the geyser. Many soda geyser-ologists believe that seven Mentos candies produce the highest shooting geyser. Using any more than seven Mentos mints is just a waste, according to these soda-soaked science enthusiasts. What do your results reveal about the effect that the number of Mentos has on the height of the geyser? The Brand Test It's time to put your favorite soda to the test in this fun experiment. Does one brand produce higher geysers? How does generic soda stack up against the name brands? Use your data from the previous test to determine the standard number of Mentos candies to use for this test. The only variable you'll change in this test is the brand of soda; everything else will remain the same. The Temperature Test What effect does temperature have on the height of the geyser? Does warm Diet Coke create a greater geyser explosion than cold Diet Coke does? The key is to keep every launch fair and to make sure the only variable is the temperature of the soda. Keep everything else the same, even the brand of soda. You'll need a thermometer to record the temperature of the soda just before you launch it so that your data are accurate. Set up three tests: warm soda, room temperature soda and cold soda. Place one bottle in the refrigerator and let it sit there overnight. Place the second bottle in a place where it will reach room temperature overnight. There are two safe ways to warm the other bottle of soda. The simplest method is to let the unopened bottle sit in the sun for several hours. You can also place the bottle of unopened soda in a bucket of warm water. Never use a stove or a microwave to heat a bottle of soda. It's time to return to your launching site. Make sure your scale is in place, whether you're measuring by counting bricks or using an alternative method. Start by opening the cold bottle and dipping the thermometer into the soda. Record the temperature. Load seven Mentos into your paper roll or your Geyser Tube and drop them into the soda and immediately record the data. Repeat the same procedure for the bottle of soda at room temperature and then again for the bottle of warm soda. It's important to use the same number of Mentos for each test and to drop them into the soda bottles the exact same way. No matter which brand of soda you tested, the warm bottle probably produced the highest shooting geyser. Warm soda tends to fizz much more than cold soda because of the solubility of gases in liquids. The warmer the liquid, the less gas can be dissolved in that liquid. The colder the liquid, the more gas can be dissolved in that liquid. As the liquid is heated, the gas within that liquid is also heated, causing the gas molecules to move faster and faster. As the molecules move faster, they diffuse out of the liquid, leaving less gas dissolved in that liquid. In colder liquids, the gas molecules move very slowly, causing them to diffuse out of the solution much more slowly, leaving more gas in the solution. This is why bottling plants pump carbon dioxide into the cans or bottles when the fluid is just above freezing, usually around 35 degrees Fahrenheit. This low temperature allows the maximum amount of carbon dioxide to dissolve into the soda, keeping the carbonation levels as high as possible. Science Fair Connection Science Fair Connection To use the Mentos Geyser for a science fair project, you'll to turn this cool science activity into a real science experiment. The secret is to turn your attention away from the spraying soda and concentrate on setting up an experiment where a single variable is isolated. Then, observe, record and report the results. To get the best results in a science experiment, you will need to standardize the test conditions as much as possible. The biggest challenge in the Mentos Geyser Experiment is finding a consistent way to drop the Mentos into the soda every time. This was the original inspiration behind the Geyser Tube. If you're not using the Geyser Tube, make sure to come up with your own method for dropping the Mentos into the soda exactly the same way each and every time. Mentos and Coke Geyser Phenomenon History As strange as it might sound, the Mentos Geyser Experiment never actually started out using Mentos chewy mints. This science demonstration was popular among chemistry teachers back in the 1980s. Instead of Mentos mints candy, however, they used a roll of Wintergreen LifeSavers and a pipe cleaner. Teachers threaded the roll of Wintergreen LifeSavers onto a pipe cleaner as an easy way to drop all of the LifeSavers into the soda at the same time. Within seconds of dropping the candies into the soda, a huge geyser would erupt from the bottle. By the end of the 1990s, however, the manufacturer of Wintergreen LifeSavers increased the size of the mints (no one was ever certain why). This made the diameter of the candy too large to fit into the mouth of the soda bottle. Science teachers started experimenting (as they like to do) with other candies and mints that would have the same effect when dropped into a bottle of soda. As luck would have it, the solution to the problem was within arm's reach of the Wintergreen LifeSavers in the candy aisle: Mentos chewy mint candies! Because Mentos mints didn't have holes in the middle like LifeSavers, getting them into the bottle was a little tricky. Everyone found their own method for quickly dropping the Mentos into the soda. Some people fashioned a tube out of paper; others used a piece of plastic tubing to load the Mentos. At the time, my solution was to load the Mentos candies into something called a "Baby Soda Bottle" — a test tube-like container that held an entire roll of Mentos perfectly. Oddly enough, this container was actually a "pre-form" or 2-liter soda bottle before it was blown up into a big bottle. That's why it's called a Baby Soda Bottle! Troubleshooting Ensued I must admit, however, that even with the Baby Soda Bottle method, the results were not very consistent. It proved challenging to get away from that bottle before it exploded. For that reason, I solicited help from our creative team at Steve Spangler Science to come up with a Geyser Tube — a better, more consistent way to drop the Mentos candies into the 2-liter bottle. Better yet, if we could trigger the drop of the Mentos from a distance, we wouldn't get as wet. Experimenting with Trigger Devices The next few months were spent building trigger devices that ranged from plastic tubes with sliding doors and magnets that held metal stoppers in place to an elaborate battery-operated switch that was triggered by a motion detector. We even played with ways to use the Geyser Tube to trigger multiple soda geysers in a method similar to a Rube Goldberg machine. The bottom line was that we needed to find a way to standardize the drop of those Mentos mints. As they say, the simplest design usually turns out to be the best and most elegant solution to the problem. The winning Geyser Tube design was a clear plastic tube with a special fitting that twisted onto any soda bottle. The trigger pin at the bottom of the tube prevented the Mentos from falling into the bottle until you pulled the string attached to the pin. The moment the pin was pulled, a slider ring resting above the pin fell into place and covered the holes where the trigger pin once was. The Mentos mints then dropped into the soda. But there was one added bonus: the restricted hole at the top of the plastic tube helped to build up more pressure in the bottle and launched the soda up to 30 feet into the air! Fortunately, the maker of Mentos (Perfetti Van Melle) also liked our Geyser Tube design. We launched the Mentos Geyser Tube toy at the New York Toy Fair in February 2007. A Television and Live Stage Phenomenon The Mentos Geyser Experiment became one of my featured demonstrations — both on television and during my live stage presentations. While I had performed variations of the Mentos Geyser Experiment on television many times from 2001 to 2004, my performance of the demo in the backyard of Denver's NBC affiliate KUSA-TV in September of 2005 proved to be the tipping point. The demo went from relative obscurity to an internet sensation! My cohort for the KUSA-TV science segment was the lovely Kim Christiansen. During the commercial break, I told Kim what was going to happen and reminded her to pull her hand out of the way of the erupting geyser and to run backward. Unfortunately, Kim got so caught up in the fun that she forgot to do both — and got soaked in Diet Coke on live television! To add insult to injury, she did it two more times. Each time, she was covered in more soda until her once-pink dress was now more Coke-colored than pink! KUSA-TV News posted that original video on their website along with my blog post titled, "News Anchor Gets Soaked!" Within a few weeks, links to the video and my blog entry numbered in the thousands. I also posted the video on a new online video-sharing site called YouTube (YouTube was only seven months old at that time). As they say, the rest is history. Within the next 12 months, over 800 Mentos Geyser Experiment-related videos were posted on YouTube, making the demo one of the most popular pop-culture science experiments in recent history. The Million Dollar Question We knew the Mentos Geyser Experiment was a popular experiment when a producer from ABC's Who Wants to Be a Millionaire called for help when writing a question. Here's the question we came up with: In an experiment popularized online, what candy creates an explosive geyser when dropped into a 2-liter Diet Coke bottle? Skittles Mint Mentos Atomic Fireballs Lemon Heads The question was asked on a special College Week episode of Who Wants to Be a Millionaire. The participant got it right for \$8,000, saying: "I saw it on TV, and I bought Mentos and a 2-liter bottle of Diet Coke. So, I'm going to go with Mentos. That's my final answer." The contestant ended up doing really well, going all the way to the \$250,000 question; however, he walked away with \$125,000. Steve Spangler Science Online Experiment Library Don't miss our other super-fun and hands-on experiments in our huge online experiment library! From after-school activities and science classroom activities to STEM club experiments, our website is one of the most trusted resources for fun, age-appropriate experiments for kids of all ages.

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