

*DebraBell*  
AIM ACADEMY



# Even More Fun With Candy Experiments



Join Aim Academy science teacher, Dr. Karen Joseph, each week for science experiments you can watch with your kids or try at home.

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# More Fun With Candy Experiments

## EXPERIMENT 1

# Candy Acid Test

### SUPPLIES NEEDED:

- Sour candy, such as Lemonheads, Nerds, Warheads, SweeTarts, etc.
- baking soda
- water
- clear bowls or cups

### EXTEND THIS ACTIVITY:

You can compare different kinds of sour candy to find out which has the most acid. Be sure to use about the same amount of candy, the same amount of water and the same amount of baking soda in each bowl. And remember to make a hypothesis first. Which type of candy do you think has the most acid? You can also try this with candy that does not have a sour taste, such as chocolates or mint life savers. What do you think will happen if there isn't any acid in the candy you test?

### TO DO:

1. Place several pieces of candy in a bowl. If you are using several different kinds of candy, be sure to use a different bowl for each type.
2. Add about  $\frac{1}{4}$  cup of warm water and allow the candy to dissolve. (If you are using hard candy, you might need to crush it first between two spoons or using a mortar and pestle.)
3. Different types of sour candy have different sour parts. Candy like Lemonheads has a sour shell. Candy like Sour Patch Kids has a sour powdery coating. After the sour part of your candy has completely dissolved, sprinkle in a spoonful of baking soda.
4. Observe for bubbles moving from the candy to the surface of the water.
5. If you have any "Super-Sour Warheads" this activity is especially fun. Just drop them into a cup of water that has a couple tablespoons of baking soda dissolved in it, and they'll begin to bubble immediately.

### EXPLANATION:

Sour taste is caused by acid, so the sour taste in candies like the ones tested in this experiment comes from weak acids in the candies.

When you mix a weak acid, like the acid in the candy, with baking soda, a reaction takes place. It's actually a two step reaction. In the first step, the atoms rearrange and form two new chemicals: a salt called sodium acetate and a new chemical called carbonic acid. But carbonic acid is very unstable, so it breaks apart quickly in what is called a decomposition reaction, producing carbon dioxide and water. The carbon dioxide does not mix with water, so it escapes in bubbles, giving you that fun bubbling effect.

After all the carbon dioxide escapes, the mixture stops bubbling and all that's left in the bowl is sodium acetate (which is a salt) and water.



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## EXPERIMENT 2

# Microwaving Peeps

### SUPPLIES NEEDED:

- Marshmallow Peeps
- a large microwave safe plate
- a microwave and an adult helper



### TO DO:

1. Put a Peep in the center of a large microwave safe plate and place in your microwave.
2. Turn the microwave on high and microwave for 30 – 60 seconds, watching as the Peep changes shape before your eyes.
3. Have your adult helper carefully remove the plate from the microwave (it will be HOT!) and watch the Peep deflate.

### EXPLANATION:

Peeps are basically marshmallows covered in sugar and formed into fun shapes. Marshmallows are made of gelatin and sugar syrup that air has been pumped into, creating little pockets of air, filled with oxygen, water and other molecules. When microwaved, the water molecules inside those air pockets heat up and turn to steam, causing the air pockets to expand. The sugar and gelatin stretch around the expanding air pockets, and the Peep gets larger. It also gets very hot! And it might turn a little brown on the inside, because, as the sugar gets hot, it may begin to caramelize. Once you take the Peep out of the microwave, it collapses and shrinks down, but it does not go back to its original shape, because, as the gelatin gets hot, it melts and loses its structure.

Once it cools, your Peep is safe to eat, but it won't be the same as it was before microwaving. Since the water was lost, it's a lot drier after heating, and it might have a different flavor, be a bit tougher and maybe a bit crunchy.

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## EXPERIMENT 3

# Mentos and Diet Coke

No series of candy experiments is complete without a diet coke and Mentos demonstration!

### SUPPLIES NEEDED:

- Mentos
- a 2-liter bottle of diet soda
- a piece of paper about 4-5 inches long (or, for a more dramatic effect, you can purchase a “geyser tube” online or in many stores.)

### TO DO:

1. Work in a wide open outdoor space because the experiment is MESSY! You might want to wear old clothes in case you get splashed!
2. Carefully open a 2 liter bottle of diet soda. (You could use regular soda, but since it contains sugar, the mess would be sticky and very hard to clean up.)
3. Set the bottle in a flat spot on the ground so that it won't tip over.
4. Roll a piece of paper into a tube just big enough to loosely hold a stack of seven Mentos. Put the stack of Mentos into the tube. Or load up the geyser tube.
5. Cover the bottom of the tube of Mentos with your finger to keep the Mentos from falling out and position the tube over the mouth of the soda bottle.
6. Get ready to run, and pull your finger out of the way so that all seven Mentos fall into the bottle at the same time.



### EXPLANATION:

Soda is carbonated, which means it has invisible carbon dioxide gas in it. That carbon dioxide can come out of the soda pretty easily, which you have experienced if you ever opened a can or bottle of soda and had it spray all over you. When the carbon dioxide comes out of the solution, it takes the liquid soda with it. Mentos candies have tiny pits on the surface that act as “nucleation sites,” which are perfect places for carbon dioxide bubbles to form. Mentos are heavy, so they sink to the bottom of the soda, so all of the possible nucleation sites are able to contact the soda. As soon as the Mentos come into contact with the soda, bubbles of carbon dioxide gas form at those nucleation sites and then very quickly rise to the surface of the liquid. Since the gas is released very quickly, it rushes out of the soda bottle, carrying all the liquid soda with it in a high pressure blast!