



Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences –particularly students of color and girls – by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at [www.projectexploration.org/stemathome](http://www.projectexploration.org/stemathome).

## In this activity, you will:

Learn about acid-base reactions and density with citrus fruit!



## Supplies Required:

- 3 oranges or 3 clementines
- 1/2 teaspoon of baking soda
- 1 bowl
- 2 clear plastic cups
- Water
- 1/2 teaspoon measuring device

## Video

Listen to [An Orange in January](https://tinyurl.com/yb7h38sm) before you begin the activity: <https://tinyurl.com/yb7h38sm>

Make an orange fizzy: <https://tinyurl.com/ya5kx3k6>

## Overview

This amazing citrus fruit contains citric acid which is an organic compound and natural preservative that gives citrus fruits, such as the orange, it's sour taste. The oranges should be ripe before picked from the trees. To be ripe is to be matured, finished growing, picked and read to eat. After the oranges are picked from the tree they are move to a packing plant—a building that has machinery and equipment for making things. Today you'll try a cool experiment working with an acid and a base. The combination of an orange (acid) and baking soda (base) makes a fizzy treat! You'll also observe the density of an orange kept whole compared to a peeled orange. One will float, one will sink, find out why! A big part of a scientist job is to experiment and observe!



## Instructions

1. Watch the video, grab an orange or clementine and peel it!
2. Grab a bowl or dish, separate the slices of orange and place in the bowl.
3. Measure and scoop 1/2 teaspoon of baking soda, ask for help, you don't want too much baking soda!
4. Take one section or slice of orange and gently dip it into the baking soda. Not too much, a little bit is a lot!
5. Take a bite. As you chew, it should start to bubble/fizz in your mouth.
6. For the density experiment, watch the video below!
7. Grab 2 clear plastic cups and fill halfway with water.
8. Peel one orange and leave it whole, drop it in a cup of water.
9. Take this other orange as it is and drop it in the water.
10. Observe both cups. What do you see?
11. Why does the unpeeled orange float and the peeled orange sink?

## Additional Resources

**Think About It!** What happened to the orange when you dipped it into the baking soda? What did you observe when you dropped the peeled and unpeeled oranges into water? Why do you think this happened?

1. Test the density of an orange: <https://tinyurl.com/ybzipmd25>
2. Why did one orange sink and the other float? <https://tinyurl.com/yauwmtz6>
3. Fun facts about oranges: <https://tinyurl.com/y8zbf6fn>
4. What are acids and bases? <https://tinyurl.com/y573hb33>

## Share It Out

Imagine being where the weather is warm and there's orange trees all around you. What are some fun facts you could share with others? What made your orange fizzy? Why was the unpeeled orange less dense, allowing it to float? Take a photo or two of your experiments and make a video discussing what you've learned. Share on social media! Use hashtags:

#OrangeReadAlong  
#ProjectExploration  
#StemAtHome

**Share via PE's website:** Students who complete STEM@home activities and share what they learned with the PE team via our website will earn points which can be traded in for cash prizes at the Explore Store. Your project number is 111. Learn more at [www.projectexploration.org/explore-store](http://www.projectexploration.org/explore-store)

### Join PE's character contest!

Design a STEM character who will lead kids through activities and be featured on our website and in our STEMbooks. Cash prizes will be awarded to the top 3 finalists. Learn more at: [www.projectexploration.org/character-contest](http://www.projectexploration.org/character-contest).



Call or text us for help: 312-772-6634

[www.projectexploration.org](http://www.projectexploration.org)