



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.

In this activity, you will:

Learn a cool science trick while also learning about the relationship between volume and density. Can you sink an object that naturally floats in water without touching it?



Supplies Required:

- Ketchup or mustard packet
- Small bowl full of water
- 2-liter plastic bottle with cap
- Water

Video

What is density? https://youtu.be/eQuW8G2QV_Q

Overview

When ketchup and mustard packets are sealed at the factory, a small bubble of air often gets trapped inside. This small bubble is enough to make the entire packet float. However, when the bottle is squeezed, the air inside the packet is compressed into a smaller space, which makes it more dense. The packet sinks to the bottom of the bottle until you release the pressure.



Instructions

1. Test to make sure your ketchup or mustard packet floats by placing it in a bowl of water. If it sinks, try another packet until you find one that floats.
2. Place a ketchup packet that floats in the bottle.
3. Fill up the bottle to the rim with water and secure the cap.
4. The packet should be floating at the top of the bottle. Grab the bottle with both hands and squeeze as hard as you can.
5. Observations What happens to the ketchup packet when you squeeze the bottle? What happens when you let go?
6. Now Try This! Add a few tablespoons of salt to the water in the bottle and try this experiment again. Does salt water change how the ketchup packet behaves?

Additional Resources

1. Facts about density: <https://youtu.be/zlkpZZW29b0>
2. Learn more about liquids!: <https://youtu.be/24Yromifc5s>

Share It Out

Share on social media: Record a video or take a picture of your activity and post the results online using the hashtags:

#DivingKetchup
#ProjectExploration
#StemAtHome

Tag a friend and challenge them to do it, too!

For more activities like this one, go to www.projectexploration.org/stemhome. If you're interested in learning more about Project Exploration and our free events, programs, and activities, please find us on social media and be sure to follow!



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



www.projectexploration.org