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 about acid-base reactions when you build this Frosty!

Supplies Required:

Sandwich-sized ziploc bag
Permanent markers
Baking soda
Vinegar
Paper towel

Video

What are acids and bases? https://tinyurl.com/y49xkn79

Overview

What happens when you mix baking soda with vinegar? A chemical reaction! A chemical reaction is when two substances are combined to form a completely new substance. Our two substances are vinegar and baking soda. When vinegar, an acid, and baking soda, a base, are combined they create tiny fizzy bubbles. These bubbles didn't exist before--they are a completely new! The bubbles contain carbon dioxide gas. This is the same gas that is released every time you exhale, or breathe out. Since the Ziploc bag is sealed, the gas has nowhere to go, and that's why the bag expands!

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Instructions

1. Assign one color to 1s and another color to 0s. Make sure these stay separate!
2. Using the Binary Code Key, string beads onto the pipe cleaner according to the code.
3. Try: SNOW, TREE, CANDLE, GIFT, and WINTER. You may need more than one pipe cleaner, which is fine! If you need more, just twist them together.
4. Shape your codes into a fun design and hang them around your house to decorate!

Additional Resources

1. Read more about binary code here: https://tinyurl.com/hkec44x
2. Learn how to code for free here: https://code.org
3. What is computer coding? https://tinyurl.com/qdflfg4

Share It Out

Share on social media: Take a photo of your coded creations and share on social media with family and friends! Use the hashtags:

#CodingOrnament
#ProjectExploration
#StemAtHome

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 complete our interest form and a staff member will be in touch with you: www.projectexploration.org/interest.