

SCIENCE FESTIVAL FACILITATOR'S GUIDE



Dancing Raisins

1. Make sure you have the materials you need.

- Plastic table cover and paper towels to wipe up spills
- Two-liter plastic bottles cut in half (one bottom half for each adult-child pair, emptied and cleaned)
- Scissors (one for each adult-student pair who will be at your station at one time)
- Pitchers of water (several)
- Baking soda (several boxes)
- Vinegar (several bottles)
- Raisins (two or three boxes). You will need five raisins for each adult and student pair. We strongly recommend using a toothpick or fork to poke a hole in the raisins before using them in this experiment.
- Measuring cups
- Disposable teaspoons
- Long-handled spoons for stirring

2. Watch this video on your smartphone:

<https://www.youtube.com/watch?v=9b-6hjXjUlo&t=2s>

3. Prepare your station.

- Cover your table with plastic to protect it from spills.
- Fill pitchers with water.
- Distribute plastic bottles, scissors, baking soda, vinegar, raisins, measuring cups, teaspoons and stirring spoons around the table for everyone to see and use.

spark. inspire. engage.



Questions to ask participants before they start:

- What do you think will happen when we mix everything on this table?
- Will anything dissolve? Explode? Change color? Melt?
- Try to wait for at least one answer, even if it is a wild guess.

Instructions:

Please read each set of instructions out loud. Make sure that you direct the correct person to complete each assigned task.

- **Student:** Pour 1 ½ cups of water into the plastic bottle.
- **Adult:** Add one heaping teaspoon of baking soda.
- **Student:**
 - Stir until the baking soda is dissolved in the water.
 - Add five raisins to the mixture in the bottle.
- **Adult:** SLOWLY add one cup of vinegar into the plastic bottle.
- **Together:** Watch what happens!

How It Works:

In the plastic bottle, the baking soda and vinegar react to make a gas (carbon dioxide). As the gas forms, it clings to the raisins in the bottle. Once enough gas sticks to a raisin, it will begin to rise to the surface, the carbon dioxide is increasing the buoyancy of the raisins temporarily. When it reaches the surface, the gas escapes into the air, and the raisin sink back down because it is denser than water. The raisin will repeat this process for several hours or until the raisin gets soggy and too heavy to rise to the surface.

Vocabulary:

Chemical reaction: A change that happens when two substances combine to make something new.

Buoyancy: The ability for an object to float in water or another fluid.

Density: Describes how much space an object or substance takes up (its volume) in relation to the amount of matter in that object or substance (its mass). If an object is heavy and compact, it has a high density. If an object is light and takes up a lot of space, it has a low density.

spark. inspire. engage.



Real-World Application:

Chemical reactions happen all around us! When plants use light to make food and oxygen, your parents light a match or you use soap to clean the dirt from your hands ... you're seeing chemistry in action.

The carbon dioxide bubbles are acting just like floaties or an innertube a child would wear in a swimming pool. The air in the floaties is less dense than water and increases the buoyancy of the child and allows them to float

spark. inspire. engage.



MATHNASIUM
The Math Learning Center

HI
Huntington
Ingalls
Industries

National
PTA
everychild. everyvoice.