

Fizzy Lemonade

Explore this activity to see how you can make a cool treat for the warm days ahead!



Materials:

- 2 Lemons
- Baking Soda
- Water
- Measuring Spoons
- 1 Bowl
- Sugar
- 2 Glasses
- Measuring Cup

Procedure:

1. Place one of your glasses into the freezer to get it cold. Leave the other glass out so it stays at room temperature.

2. Have an adult help you with this step! Boil water, then add all of the sugar to the boiling water. Stir it until it all dissolves. Wait until it cools before continuing with the experiment.

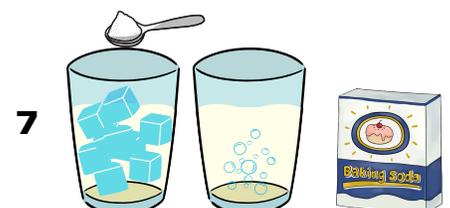
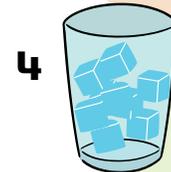
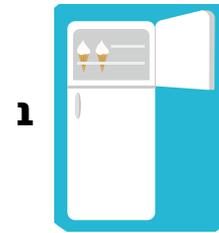
3. Squeeze your lemons into the bowl and remove the seeds.

4. Take your glass out of the freezer and add some ice inside to keep it cold.

5. Pour half of the lemon juice into your room temperature glass and the other half into the cold glass with ice.

6. Pour some of your sugar-water solution into each glass.

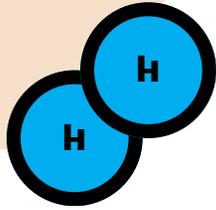
7. Add $\frac{1}{4}$ teaspoon of baking soda to each glass and stir a little bit. *What happens?*



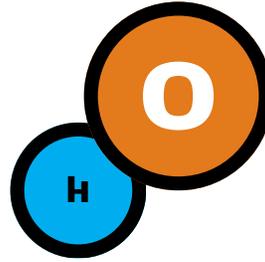
Fizzy Lemonade

WHAT'S HAPPENING?

An acid is something that has an extra hydrogen ion (H^+) and a base is something that has an extra hydroxide ion (OH^-). In this experiment, we have both!

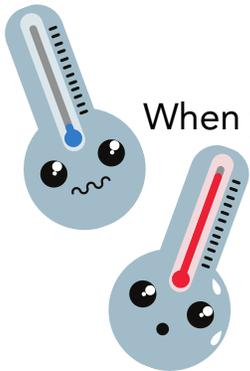


Hydrogen ion (H^+)

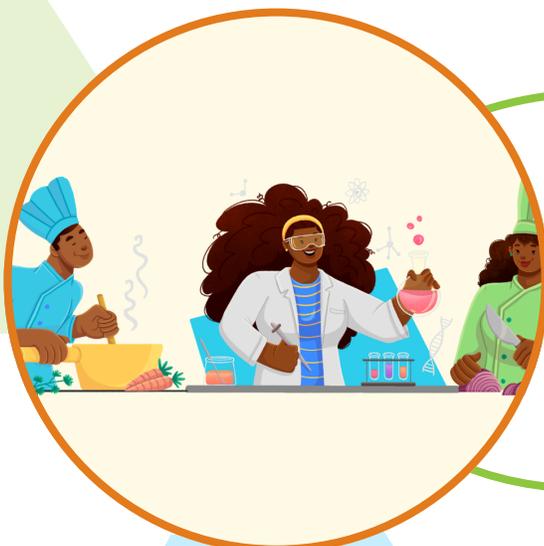


Hydroxide ion (OH^-)

Our acid is lemon juice and our base is baking soda. When acids and bases mix together, they release carbon dioxide which is trapped inside the bubbles you see when your lemonade fizzes.



When you did this experiment, did one glass fizz faster than the other? That is because temperature effects the speed of the reaction. When molecules are colder, they react slower and when they are warmer, they react faster.



DID YOU KNOW?

A **molecular gastronomist** is someone who studies the chemical and physical changes of food while cooking! If you like exploring this activity, maybe molecular gastronomy is for you!