

# Tempest in a Teacup



It's hot! It's cold! It's bubbly! You won't believe the wild chemical reactions you can create in a cup!

## 1 Get what You need.

Each pair of kids will need: baking powder  
 • baker's yeast • hydrogen peroxide • vinegar  
 • 4 plastic cups • 2 plastic spoons  
 • paper towels • pencils • data sheet  
 (see below)

## 2 Set up the experiment.

- In this activity, you'll test, observe, and record different chemical reactions.
- Get a partner. Together, consider all the possible combinations you can make using one powder and one liquid. Your ingredients are: baking powder, yeast, hydrogen peroxide, and vinegar. Write down the four possible combinations on your data sheet.

## 3 Make predictions.

What do you think will happen when these substances are combined? Signs of a chemical reaction you may observe include heat, cold, and fizzing or bubbling.

## 4 Test the first combination.

- One partner will hold a cup while the other mixes combination #1 on the data sheet. Add a spoonful of powder first, then about an inch or two of the liquid.
- Pass the cup back and forth with your partner. What do you notice? Did you see or feel any signs of a chemical reaction? Write down your observations on the data sheet.

## 5 Test, observe, and record.

- Now test the other three combinations listed on your data sheet with your partner. For each, add a spoonful of powder first, then about an inch or two of the liquid.
- Take turns adding the ingredients. Write down your observations on the data sheet.

## 6 Draw conclusions.

Review your data sheet. Which combinations produced chemical reactions? How would you describe them? Did some last longer than others?

### Chew on This!

Chemical reactions produce brand new substances. There are many clues that let you know a chemical reaction has taken place. In this activity, you witnessed changes in temperature (both hot and cold), as well as fizzing and bubbling. The fizzing and bubbling meant a gas was produced. For example, mixing yeast and hydrogen peroxide formed water and oxygen (a gas), and mixing baking powder and vinegar produced carbon dioxide gas.

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Combination #1	Combination #2	Combination #3	Combination #4
powder	liquid	powder	liquid
yeast	water	baking powder	vinegar
hydrogen peroxide	vinegar	yeast	water
baking powder	water	hydrogen peroxide	vinegar
Observations:	Observations:	Observations:	Observations:

### Data sheet

Use separate data sheet to record your observations.

### safety Tip

Keep mixtures away from clothes, eyes, and mouth. No tasting!

# Dig Deeper

**Fantastic Foam.** If you liked the fizzing and foaming in this experiment, you'll love what happens when you add a squirt of dishwashing soap to hydrogen peroxide and yeast.

**carbon capture.** The bubbling reactions in this experiment produced lots of gas, but we couldn't see it. Let's capture some! Stretch a balloon to make it flexible and put 2 teaspoons of baking powder (or baking soda) inside it. Pour about 2" of vinegar into an empty bottle. Pull the mouth of the balloon over the top of the bottle and drop the powder in the balloon into the bottle. What happens?

## Did You Know?

The yeast used in this experiment is a living creature—a single-celled fungus. When you buy it in a grocery store, it's dormant. But mix it with warm water and sugar, and it comes alive, giving off carbon dioxide gas. When you bake bread using yeast, the gas gets trapped in the dough and makes it expand and rise.



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Fold

# Fetch!

# Tempest in a Teacup

Some artistic genius I am! I've been staring at this blank canvas for hours. I need inspiration—something with passion, excitement, drama! I've got it—let's shake up my creativity with some crazy chemistry! But please, no explosions (or my owner will cut off my Chinese food supply).

## GOOO FETCH!



# Tempest in a Teacup



Lab partners: \_\_\_\_\_ and \_\_\_\_\_

Line up your cups in front of each label. Make sure your mixtures match the labels.

Combination #1	Combination #2	Combination #3	Combination #4
Powder:	Powder:	Powder:	Powder:
Liquid:	Liquid:	Liquid:	Liquid:
Did you notice? HEAT      COLD FIZZING    BUBBLING	Did you notice? HEAT      COLD FIZZING    BUBBLING	Did you notice? HEAT      COLD FIZZING    BUBBLING	Did you notice? HEAT      COLD FIZZING    BUBBLING
Chemical reaction? YES      NO	Chemical reaction? YES      NO	Chemical reaction? YES      NO	Chemical reaction? YES      NO
Observations:	Observations:	Observations:	Observations: