



# Make a Bottle Thermometer

The Odd Squad agents are experts at using science gadgets and math to solve odd problems, like when there were odd temperatures all over town. In this activity, your child will build a thermometer to show when the temperature is warmer or cooler.



## How to Make a Bottle Thermometer

The weather affects our daily lives. We need to think about the weather when we are choosing clothes to wear, activities to do, and how we can get from place to place. We might even need special tools to deal with the weather, like a snow shovel or an umbrella. In this activity, you and your child will build a weather tool - a simple thermometer that can tell you if it is warmer or cooler than when you last read it.

## The Science Behind the Fun

### Earth Science:

- Your child is learning how to use simple tools to help observe the weather.
- Your child is using simple tools to take measurements of the air temperature and comparing those temperatures over time.



## While You Play

**Meteorologists, or weather scientists, use special tools for checking the current temperature and predicting what the temperature might be later in the day or week. At home, we can use a tool called a thermometer to measure the air temperature.**

By completing this activity, your child can better understand that the air temperature changes day-to-day and can learn more about tools to track these changes. In addition, your child can develop critical thinking skills by answering questions before and after building the thermometer.

1. Questions to ask before the experiment:
  - How do we know what the temperature is outside?

2. Questions to ask after the experiment:
  - Did the liquid in the thermometer rise after being in the sun for a little while?
  - How long was the thermometer in the sun before you began to see the liquid rise?
  - Did the liquid rise slowly or quickly?
3. Questions to ask after a few days of collecting data:
  - Is the temperature warmer or cooler than the last time you took it?
  - Is the temperature warmer or cooler than days earlier in the week?
  - How can we use the thermometer to help us decide what to wear?



# Make a Bottle Thermometer

## What you'll need

- Empty glass soda bottles
- Measuring cup
- 1/2 cup water
- 1/2 cup rubbing alcohol (with adult supervision)
- Food coloring
- Clear straw
- Modeling clay
- Permanent marker

## Directions

### Step 1

Pour the water into the glass bottle.

### Step 2

Pour the rubbing alcohol into the bottle.

### Step 3

Add a few drops of food coloring. Mix by swirling the bottle around, gently.

### Step 4

Insert the straw into the bottle. In the final product, the bottom of the straw should be within the colored water, but should not touch the bottom of the bottle.

### Step 5

Secure the straw with modeling clay at the top of the bottle. Make sure not to cover the top of the straw.



1



2



3



4

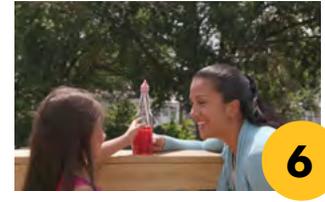


5

## Directions continued

### Step 6

Place your thermometer in the sun and wait for a little while as the liquid rises.



6

### Step 7

Use the marker to draw a line on the outside of the bottle to show where the top of the liquid is in the straw. Write the date next to that line.



7

### Step 8

Use your thermometer in the same location at the same time each day for one week. Each time you check the thermometer, mark the level of the liquid and the date with the marker. Use your data to answer the suggested questions.



8

**Extra fun:** Take the temperature at two different times per day. Is it cooler or warmer in the morning or afternoon? Together stars and make up a new constellation story.

## More ways to play

### Odd Squad

- Odd Temperatures

**Visit:** [pbskids.org/video/odd-squad/2365582525](https://pbskids.org/video/odd-squad/2365582525)



**Education**  
IOWA PBS



ODD SQUAD © 2017 The Fred Rogers Company. All rights reserved. Major funding for Odd Squad is provided by the Corporation for Public Broadcasting & the U.S. Department of Education. The contents of this document were developed under a cooperative agreement, #PRU295A100025, from the U.S. Department of Education. However, those contents do not necessarily represent the policy of the Department of Education, and you should not assume endorsement by the Federal Government. PBS KIDS and the PBS KIDS Logo are registered trademarks of Public Broadcasting Service. Used with permission. This document may be printed for personal, noncommercial purposes.