

# Water Thermometer

Build a model and explore how thermometers work to celebrate National Nurses Day!



## Materials:

- Glass bottle
- Food coloring
- Clear straw
- Clay or playdough
- Bowl with hot water
- Bowl with ice

## Build a thermometer!

1. Fill a bottle with room temperature water until it is almost full. Add a few drops of food coloring.
2. Place a clear straw in the bottle. Hold it so that the bottom of the straw does not touch the bottom of the bottle.
3. Use a bit of clay or playdough to seal the opening of the bottle and hold the straw in the center.
  - Hint: Make sure to cover the entire opening so air can't get in or out!

## Test it out!

4. Once the bottle is sealed, place it in a bowl with hot water and wait a few seconds. Watch what happens to the level of water inside the straw.
5. Remove the bottle from the bowl with hot water and place it in the bowl of ice water. What happens to the water in the straw?

## How does it work?

When the bottle is placed in the bowl of hot water, you should notice the liquid slowly rising into the straw. This is because as the water heats up, the molecules begin to move and start to expand. Real thermometers use this property of thermal expansion to help us determine the temperature of a liquid or gas. These thermometers usually have a sealed tube that contains a liquid such as alcohol or, in the case of older thermometers, a chemical called mercury. The liquid expands and slowly rises up the tube, which has markings that correspond to different temperatures in Fahrenheit or Celsius.

Why is the temperature important? Body temperature, along with pulse, blood pressure, and breathing rate, are considered vital signs and these measurements are linked to some of your body's most important functions. Nurses are responsible for so many things and monitoring these measurements is just one way that nurses help keep an eye on your health when you are sick.

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