

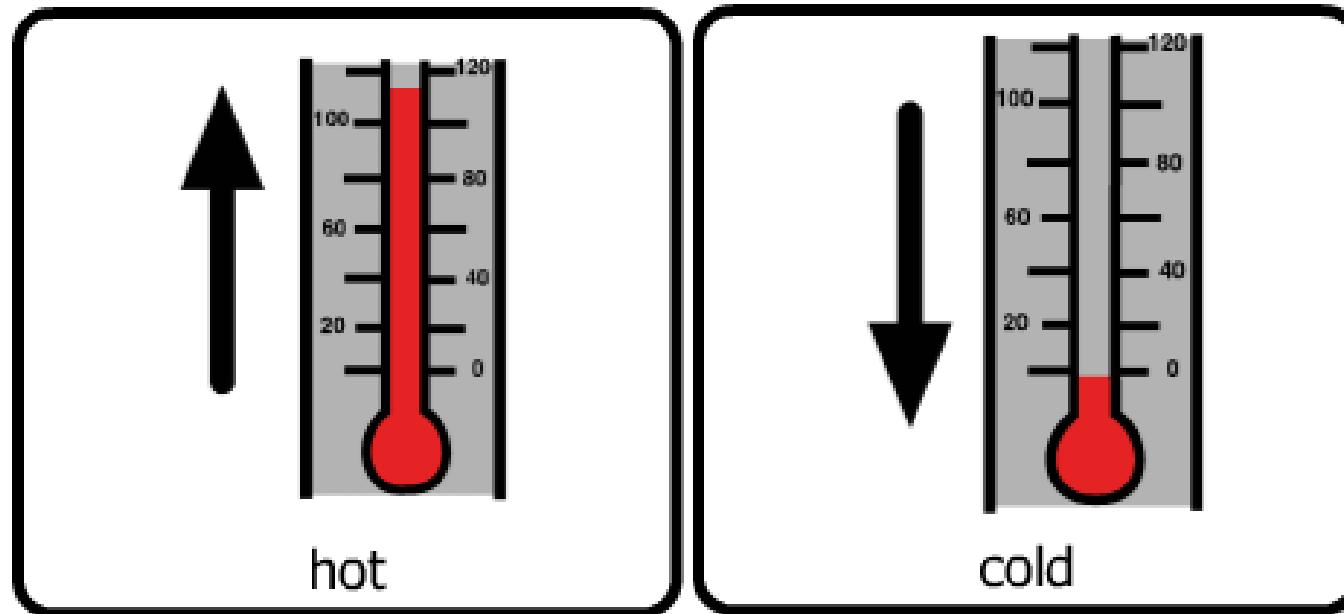
Science

Measuring Hot and Cold

Today we will be using a thermometer to learn about hot and cold temperatures. Here are pictures of what we will be doing.



The vocabulary for today's lesson is....



having a high degree of heat
or a high temperature.

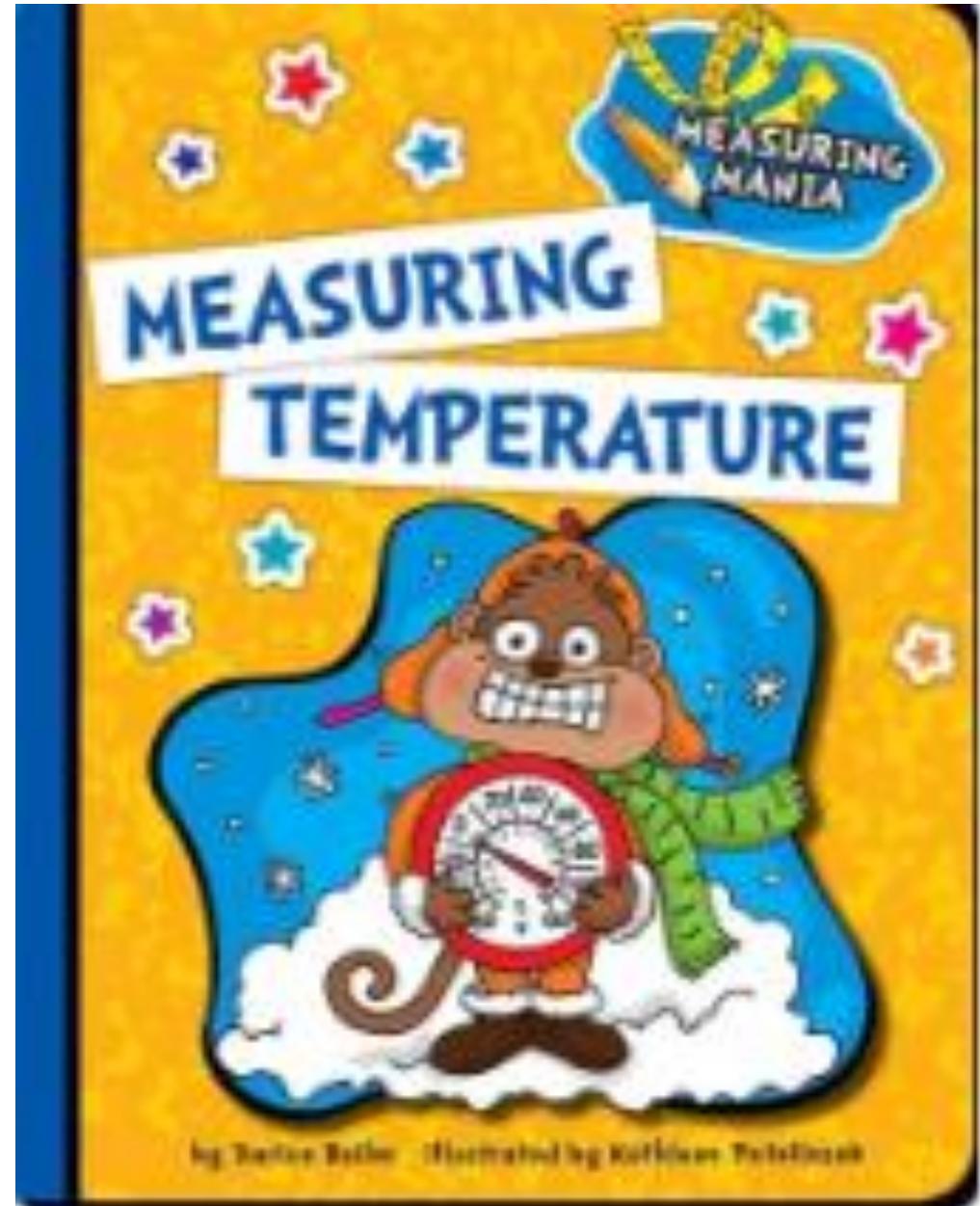
of or at a low or relatively
low temperature,

Materials needed.

- 2 Empty water bottles with a wide mouth(VOSS)
- Food coloring red and blue
- Water
- 2 Thermometers (Amazon)



First, let's read a story.



What Is Temperature?



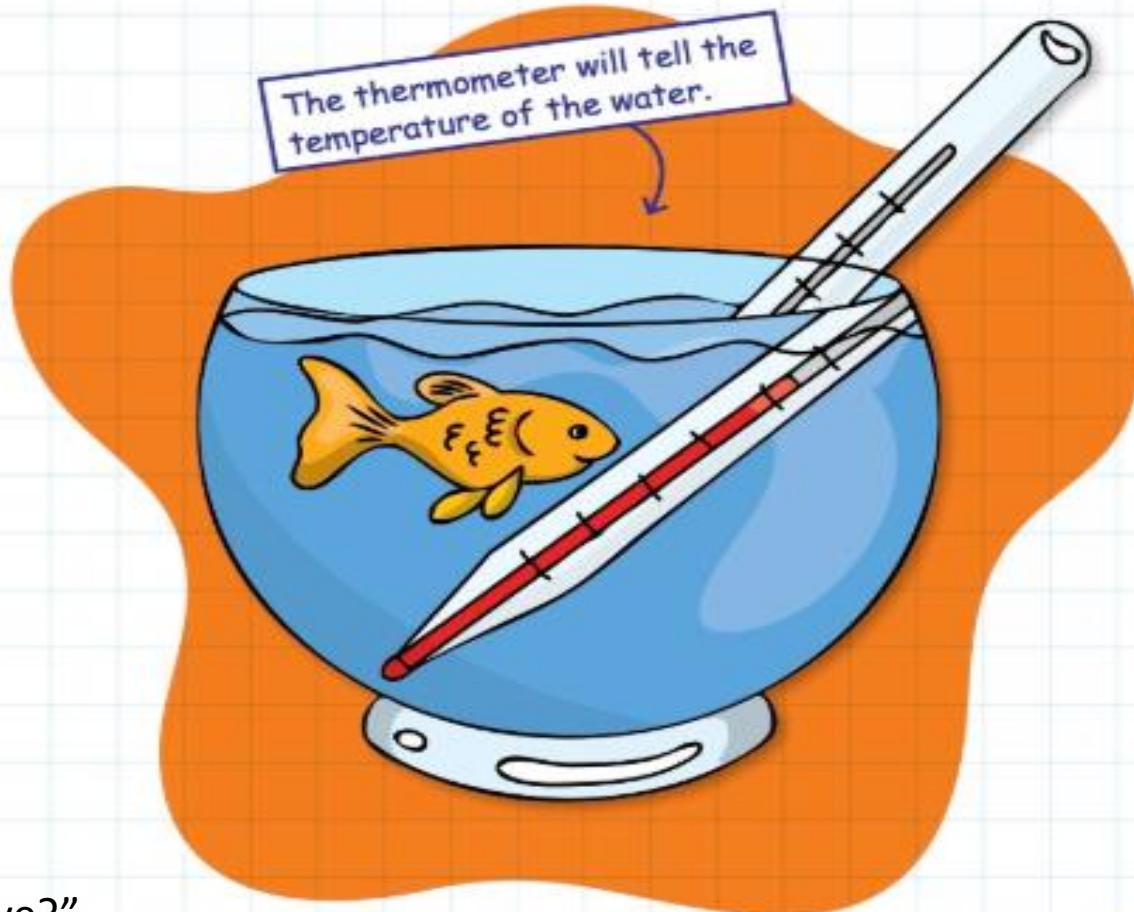
Ask a pet shop what temperature
your fish's water should be.

It's your birthday. A friend gave you a fish tank.
It has an orange fish. Make sure the water isn't
too hot or cold!

Ask, "Where does the fish live?"

You can dip a finger in the water and see.
But you'd only be guessing the **temperature**.

You need a **thermometer**! This tool measures
temperature.



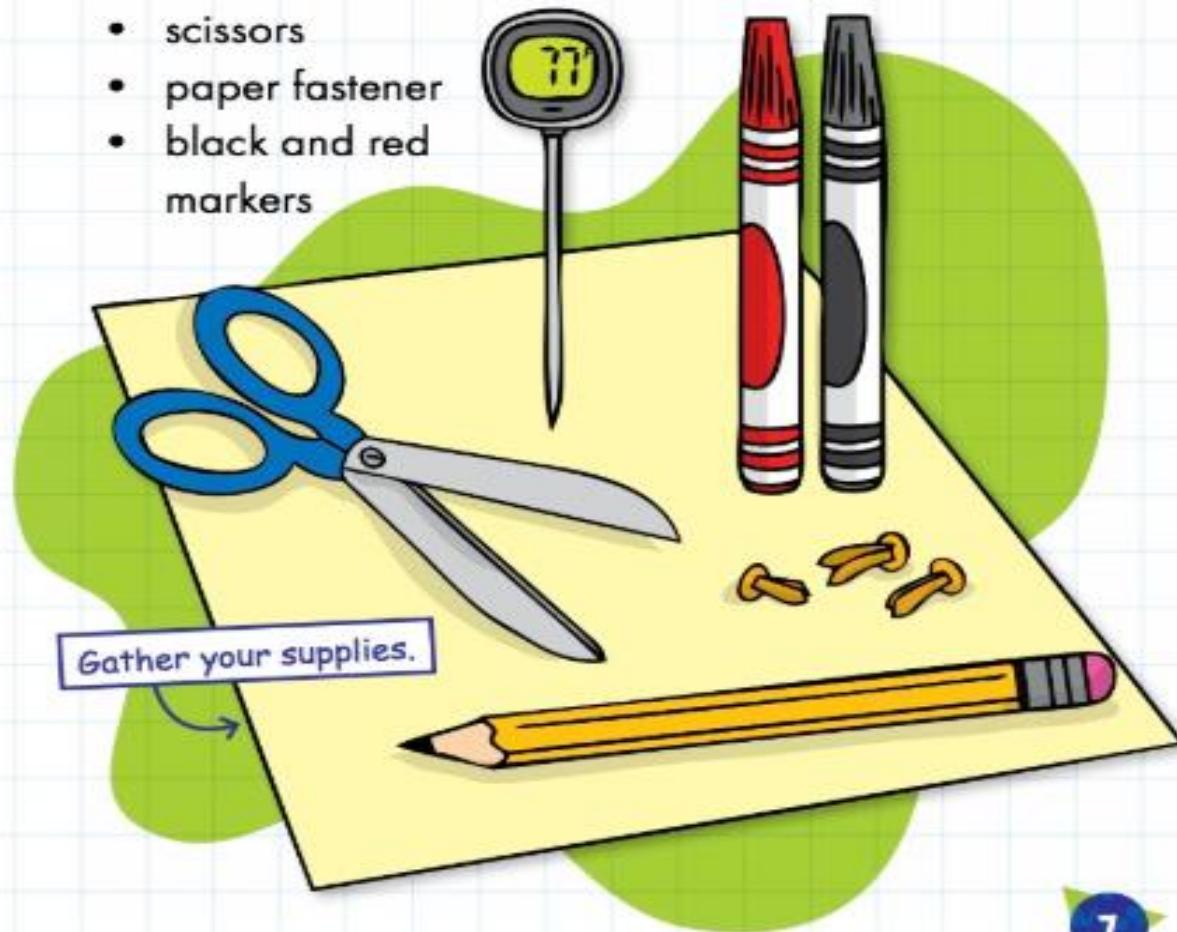


Temperature is how hot things are. The word *thermometer* means to measure heat.

You can measure the temperature outside.
You can check it in a glass of milk. Let's measure temperature!

To do the activities in this book, you will need:

- instant-read thermometer (Note: You can find one at a grocery or hardware store.)
- pencil
- piece of heavy paper
- scissors
- paper fastener
- black and red markers



A Measure of Degrees

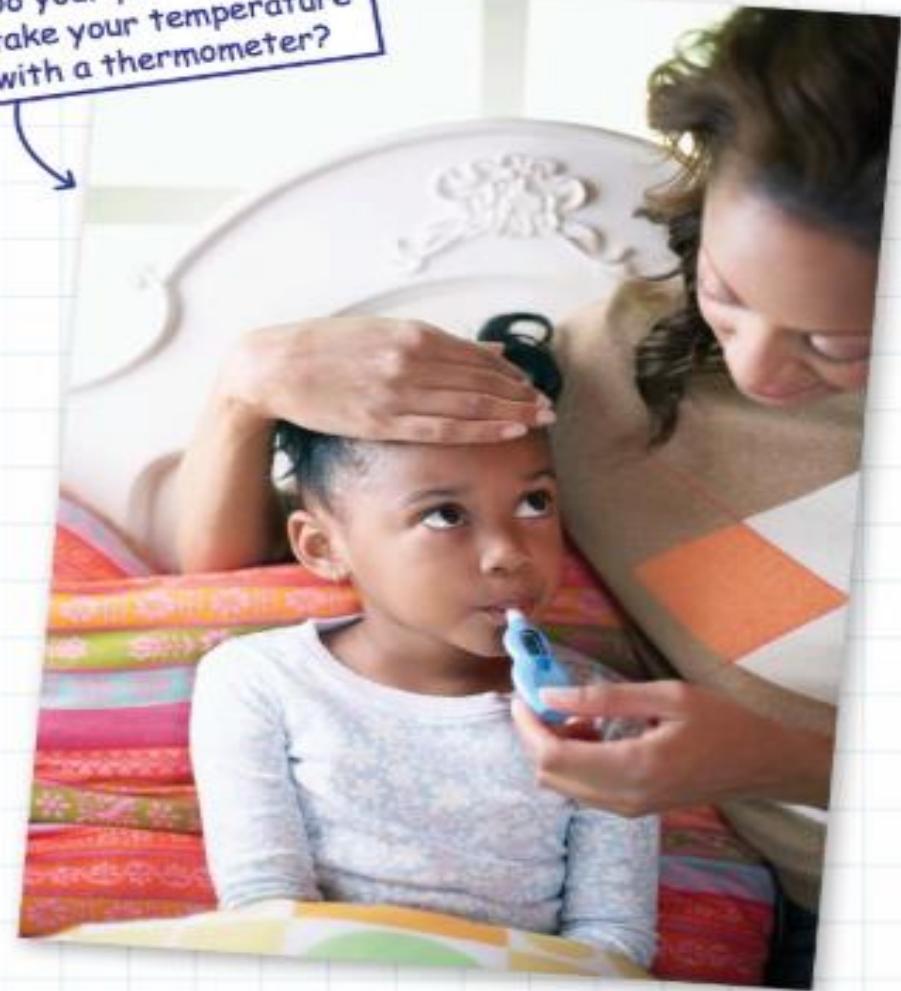


The candy thermometer clips on the pan.
It shows how hot the food in the pan is.

There are many kinds of thermometers. Ivy is making fudge. She uses a candy thermometer. These are usually glass. They have colored liquid inside. The liquid rises as the fudge gets hotter. The thermometer shows when the fudge is the right temperature.

Use a **digital** thermometer when you are sick. It beeps and shows you your temperature!

Do your parents ever take your temperature with a thermometer?



Thermometers measure heat in **degrees**. A degree is a **unit** for measuring heat.

Numbers go from low to high. A frosty glass of milk has a low number, or temperature. Hot chocolate has a higher temperature.



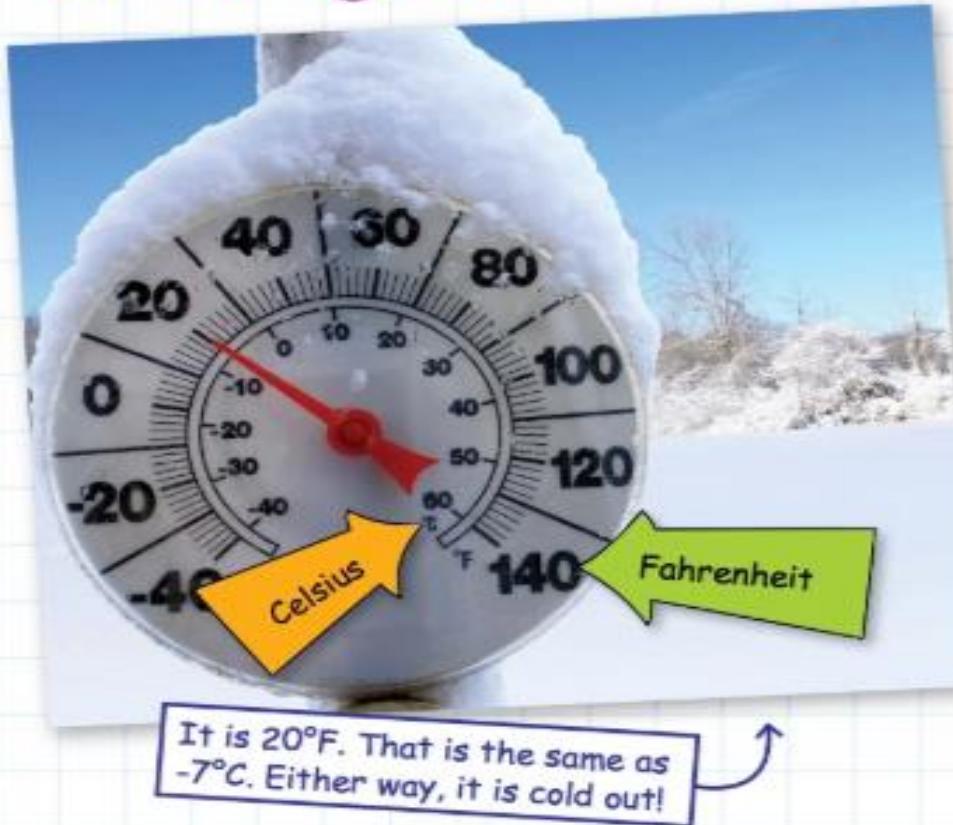
Make a Pretend Thermometer!

INSTRUCTIONS:

1. Trace around a small plate on the heavy paper.
2. Cut out the circle.
3. Count from 0 to 220 by 20s and write the numbers around the circle. Use the black marker. Mark off the numbers like in the picture.
4. Add three tick marks between each number. Each tick mark is 5 degrees. The tick marks count degrees by 5s.
5. Draw an arrow on the leftover paper. Cut out the arrow. Color it red.
6. Take out the paper fastener. Fasten the arrow in the middle of your thermometer.

To get a copy of this activity, visit
www.cherrylakepublishing.com/activities.

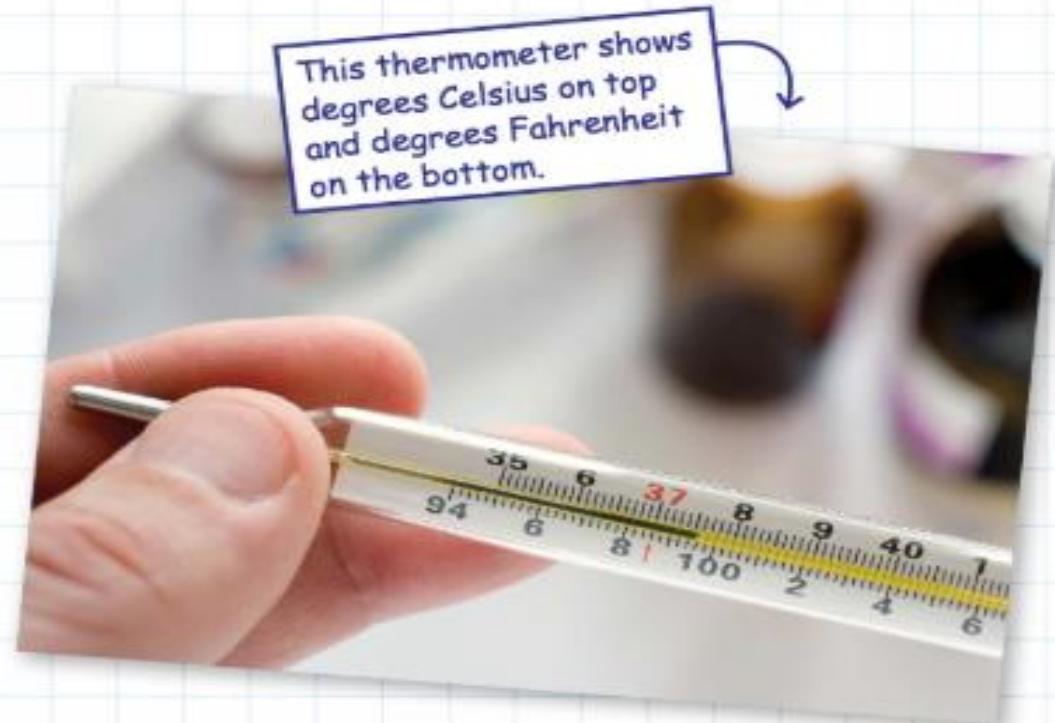
Two Ways to Measure



Many thermometers have two sets of numbers. They measure two different ways. One set says °F. The other says °C.

The circle means "degrees." The F stands for degrees **Fahrenheit**. Fahrenheit is a **scale** in the **U.S. customary system**. People in the United States usually use this system.

The C stands for degrees **Celsius**. Celsius is a scale in the **metric system**. People in many other countries use this system. Scientists do, too!



Ivy and Max are on a scavenger hunt. They are hunting for thermometers around the house!

Ivy finds one outside the kitchen window. It is a weather thermometer. It shows how hot it is outside.

Max finds a **thermostat** on the wall. That shows the temperature of the room.



ACTIVITY



Practice Measuring Temperature

1. Pour a glass of milk. Stick your instant-read thermometer in the glass. Does your thermometer measure in Fahrenheit, Celsius, or both?
2. Wait 1 minute. What is the milk's temperature? Take your paper thermometer from the first activity. The paper thermometer shows degrees Fahrenheit. Move the arrow to show the milk's temperature.
3. Next, scoop ice cream into a bowl. Poke the thermometer into the ice cream. What happens to the temperature? Move the arrow on your paper thermometer.
4. Now ask an adult to make you a cup of hot chocolate. Stick the thermometer in the hot chocolate. What happens now? Move the arrow on your paper thermometer.
5. Enjoy your milk, ice cream, and hot chocolate!



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Boiling and Freezing



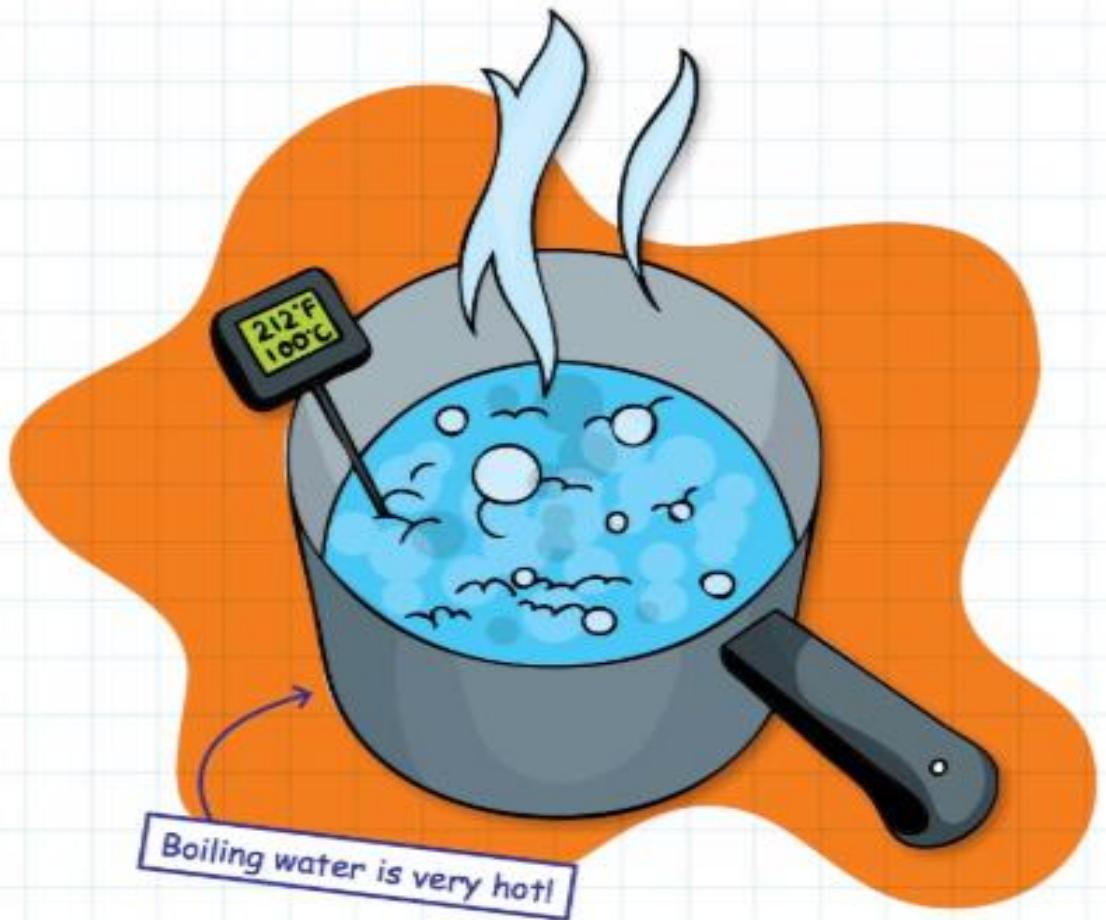
Water boiling on the
stove is very hot.

At what temperature does water freeze and turn to ice? At what temperature does water boil? Time to experiment and see!

Ivy drops some ice cubes into a cup. Max's mom boils a pot of water on the stove.

Ivy pokes her instant-read thermometer into the ice. The thermometer drops. It falls to 30 degrees Fahrenheit. Water turns to ice at 32 degrees Fahrenheit. That is the same as 0 degrees Celsius.





Max's mom puts on a mitt. She sticks the thermometer in the pan. The numbers climb higher. The thermometer reads 212 degrees Fahrenheit. That's the same as 100 degrees Celsius. Water boils at that temperature.

ACTIVITY



Guess the Temperature!

INSTRUCTIONS:

1. Pour a glass of cold water from the faucet.
2. What do you think the temperature will be? Is it higher than 32 degrees Fahrenheit or lower? Why?
3. Now measure the temperature with your instant-read thermometer. How close was your guess?
4. Fill up the bathtub with warm water. What do you think the temperature will be? Is it higher than 212 degrees Fahrenheit or lower? Why?
5. Now measure it. How close was your guess?

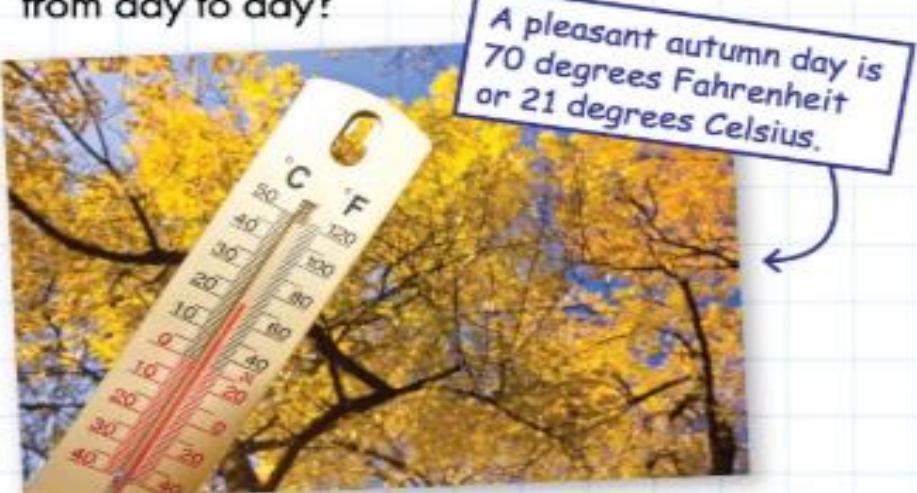
To get a copy of this activity, visit
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You Can Measure Temperature

Now you know how to use a thermometer! You can read one, too. Here are some more fun ways to measure temperature:

- Write down the temperature at the same time each day. Track it for a week, a month, or a year! Which day was the warmest? Which month was the coldest? How did the temperature change from day to day?



- Bake a batch of cookies with an adult. Read the recipe. Find out at what temperature they need to bake. With an adult, set the oven to the right temperature.
- Measure the snow's temperature when it snows. Measure a puddle of water when it rains. Measure the temperature of the dirt in the ground. Measure something left on a hot sidewalk. What else can you think of to measure? Have fun!

The
End

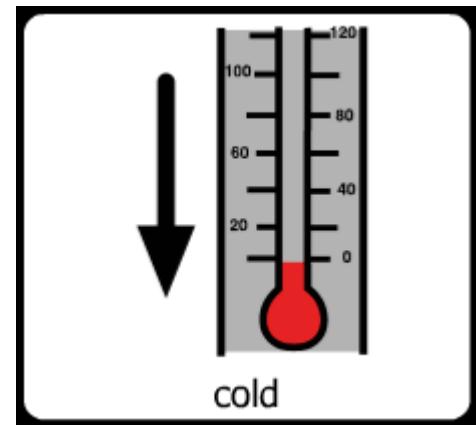
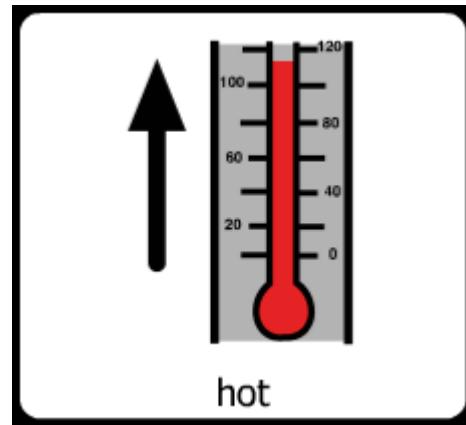
The steps for today's activity are...

- Take two empty water bottles
- Fill one with cold water.
- Fill one with hot tap water.
- Have the students feel the outside of the bottle for temperatures.

The steps for today's activity continued...

- Place several drops of blue food coloring in the cold water and several drops of the red food coloring in the hot water.
- Squeeze the amount of drops into the bottles at the same time.
- Have students take the temperature reading of the water in the bottles.
- Watch closely.

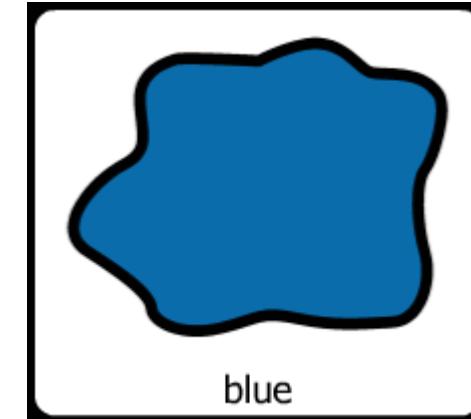
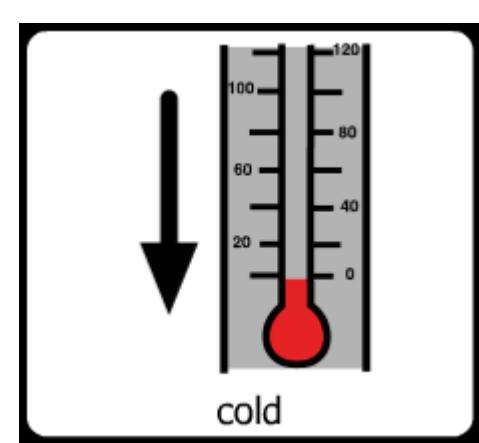
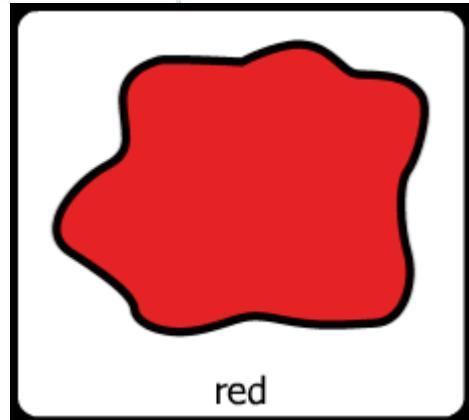
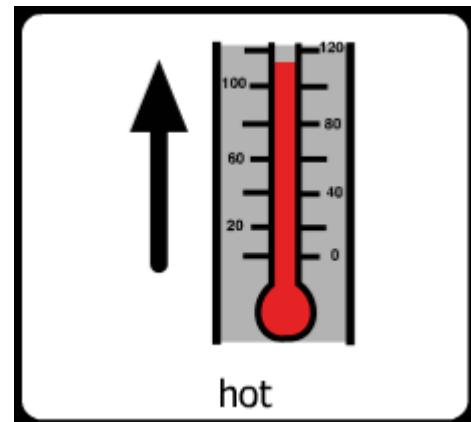
Steps 1,2,3-Fill two bottles with water.



Step 4- Have students feel the temperature of the water in the bottles



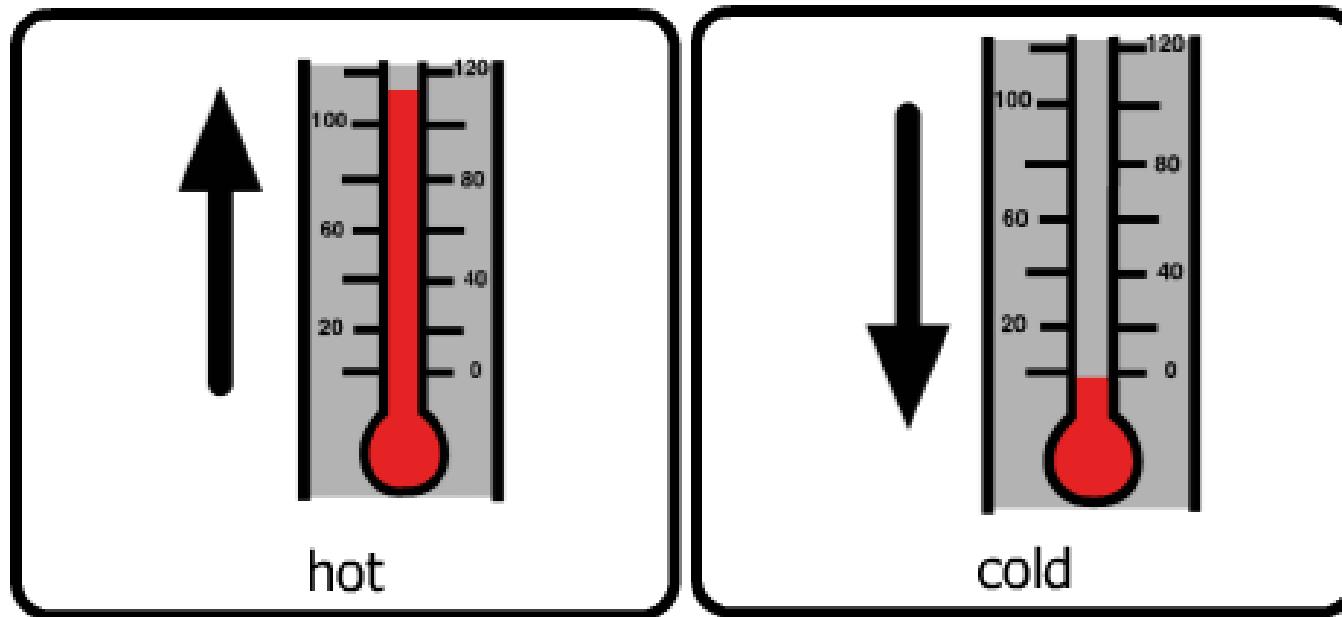
Step 5- Add 10 drops of food coloring to each.



Step 5- Place thermometers in bottles to measure temperatures. Record on the next slide.

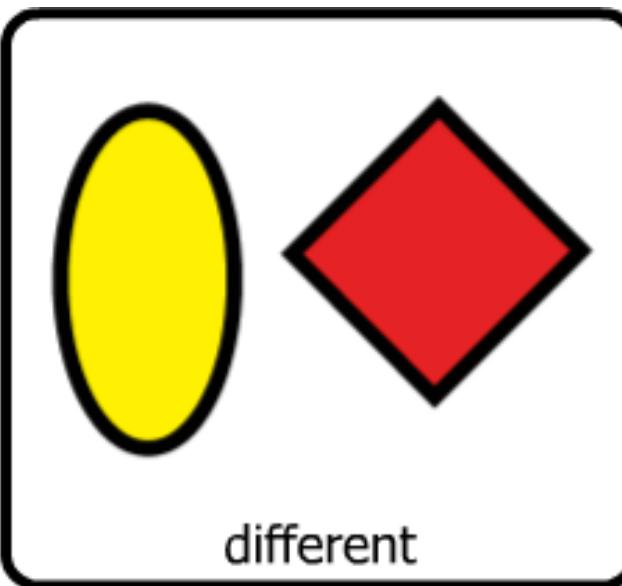
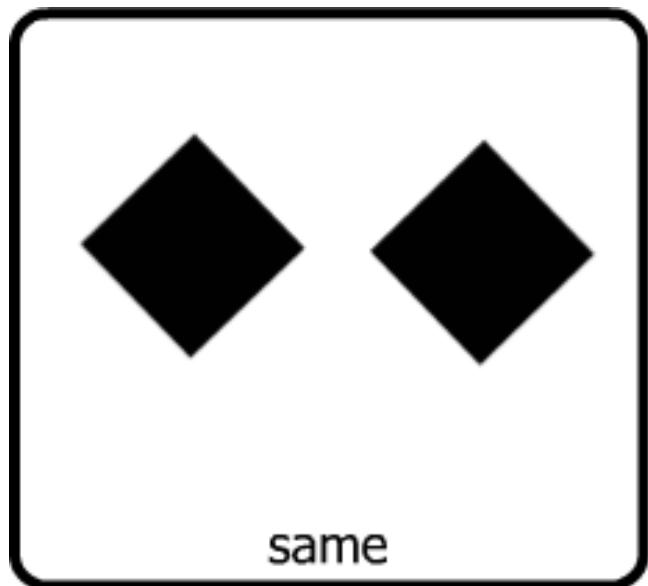


What is the temperature?



Question?

Are the temperatures of the water the same or different?

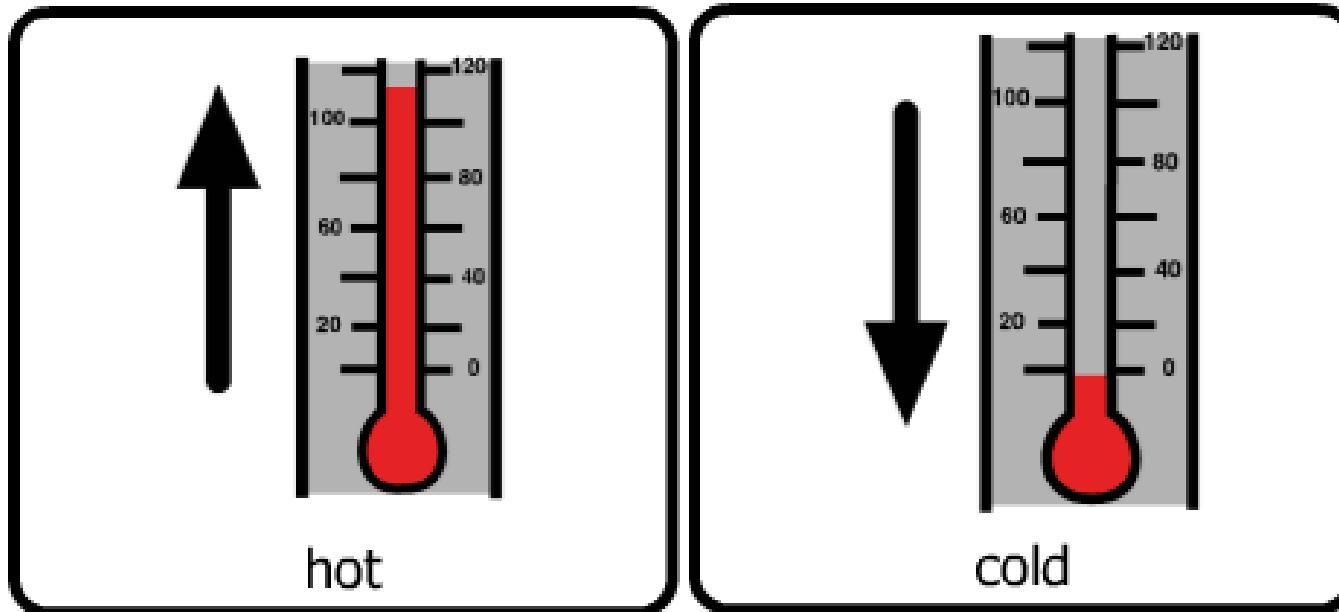


Have the students feel the temperature of the bottles.

Quiz Question

*HINT

Which temperature was higher?

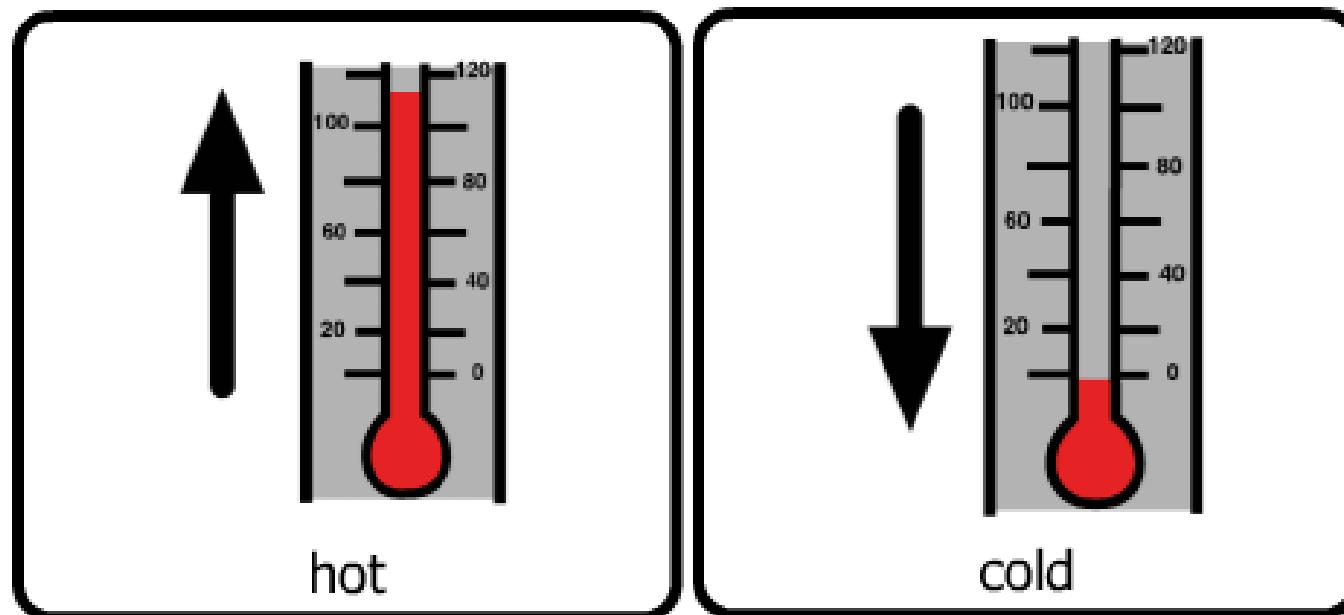


Quiz Question

*HINT



Which temperature was lower?



We are ALL DONE!

- Teacher says “_____ is All Done! Time for _____!”
- Teacher says “Everyone check schedule!”
- Teacher changes the classroom schedule.
- Paras will assist individual students with checking schedules.

