

From Liquid to Gas

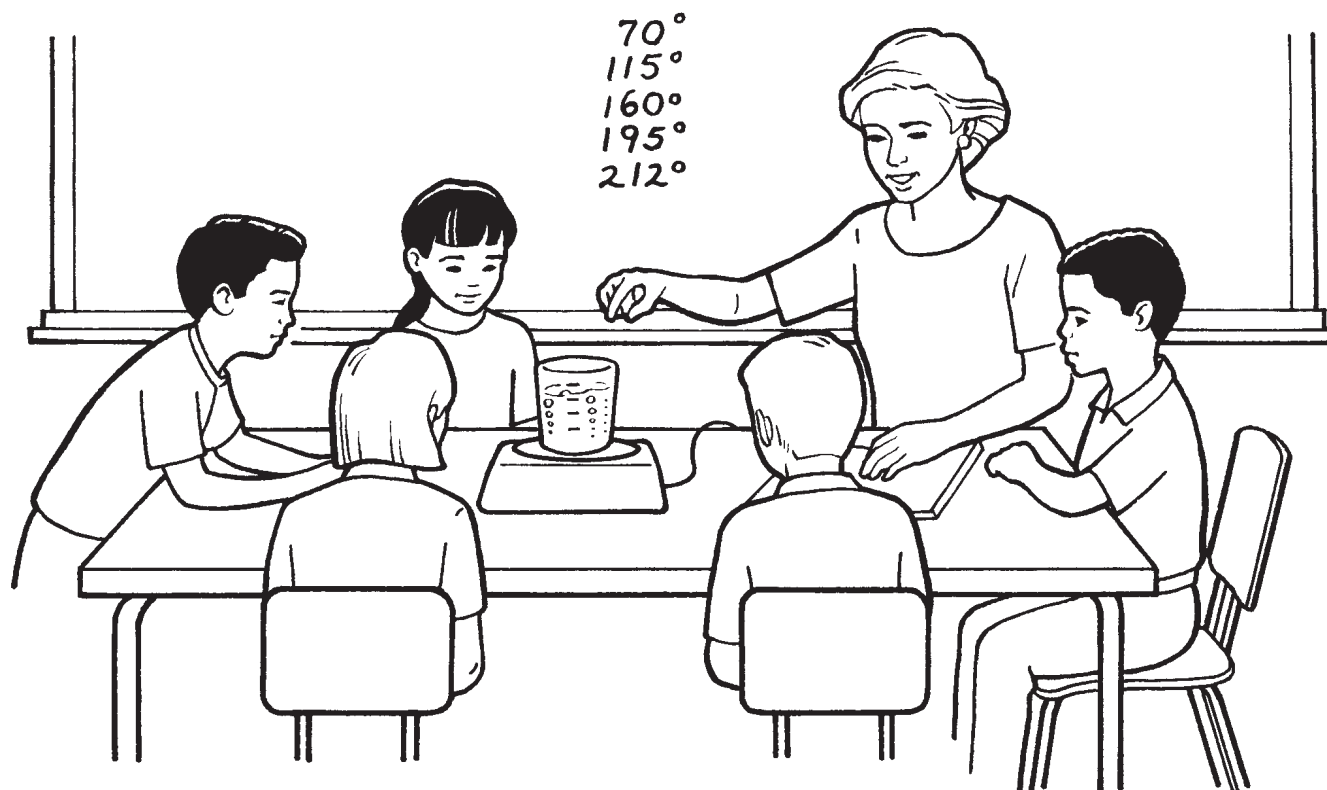
Overview: *Students will observe water change into vapor (gas).*

Materials

- hot plate
- dark food coloring
- cups of water used in previous lesson
- heat-proof clear glass container
- large cooking thermometer used in making candy
- permanent black marker
- What Happened to the Water? Data Sheet (page 25)

Lesson Preparation

- Mark the glass container off in $\frac{1}{2}$ inch (1 cm) intervals with the permanent marker.
- Arrange the classroom so the students will be able to observe this demonstration. Place the hot plate on the table and arrange seating for the students around the table at a safe distance.
- Set the hot plate on its lowest setting and turn it on to preheat it.





From Liquid to Gas *(cont.)*

Activity

1. Review what the students observed as they watched their ice cubes melt in the previous activity. Ask them to tell you why their ice melted. (*The ice melted because it was too warm.*) Ask them what they think will happen if you pour the water from their melted ice cubes into the glass container and then set it on the hot plate.
2. Give each student a cup of water and let him or her pour it into the glass container. Add a drop of dark food coloring to make the water visible. Have the students notice where the water level is on the container. Use the marker and place the #1 next to the marker at the top of the water level. Number the other marks to the bottom of the container beginning with #2, etc.
3. Put the thermometer into the water and have the students look at the level of the liquid in the thermometer. Write the temperature on the board. Continue to write the temperature on the board as the water heats up and begins to boil.
4. Place the container on the hot plate and turn up the heat. Have the students observe what is happening. Leave the thermometer in the water. As they observe, ask them questions such as those below.
 - What do you see in the water? (*Bubbles will begin to form as it gets hotter.*)
 - Is the water getting warmer? How do you know? (*The thermometer liquid is rising.*)
 - Do you see anything in the container other than water? (*Steam will begin to appear.*)
5. As the water begins to boil, point out that the bubbles are bigger and that the water is in motion. Show the steam rising from the water. Have students note the water level. Ask them where they think the steam is coming from and where it is going. (*The steam is coming from the water, and it is going into the air.*)
6. Continue to record the temperature of the water (*it should level off once it begins to boil*), and point out the level of the water as it drops. Stop the demonstration before the container boils dry. Remove the container from the hot plate and place it on a pot holder on the table.

Closure

- Ask the students what they think will happen to the rest of the water in the container. (*It will evaporate, turn to gas, and become part of the atmosphere.*)
- Discuss what they observed, being sure they understand that the water turned to gas when it was heated.
- Distribute the What Happened to the Water? Data Sheet for students to complete. Permit them to discuss this with other students as they work on the data sheet.




From Liquid to Gas *(cont.)*

What Happened to the Water? Data Sheet

Name: _____ Date: _____

Draw four pictures to show what happened to the water as you watched it being heated.

1



2



3



4



Write about what you saw happen to the water as it was heated.

