LESSON 53 ACTIVITY

Absolute Zero Kelvin Scale

Name _____

Date _____ Period _____

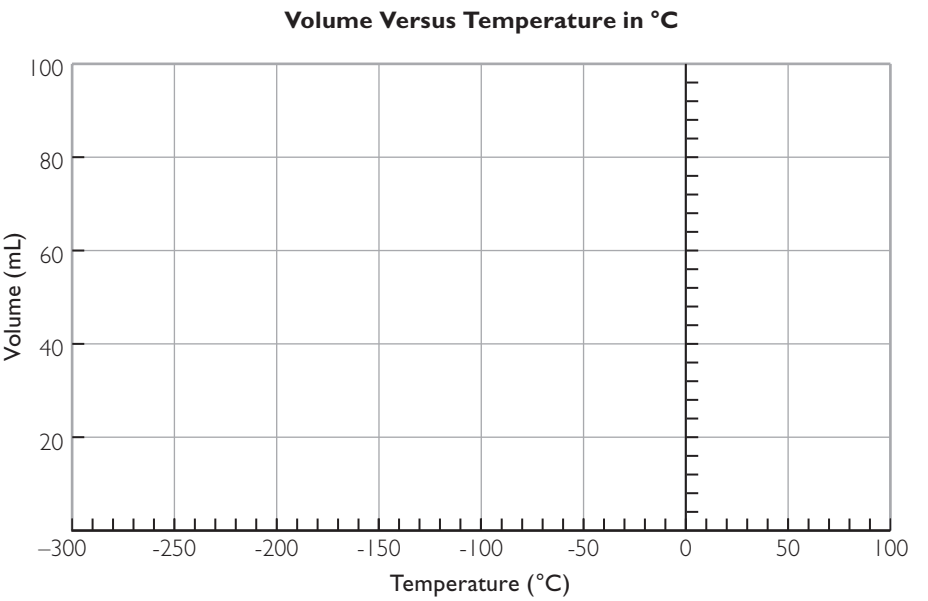
Purpose

To introduce the Kelvin temperature scale and a model describing the motion of gas particles.

Part 1: The Kelvin Scale

1. The volume of a sample of gas was measured at several temperatures. The data are given in the table. Plot the data points on the graph.

Temperature	Volume
10.0 °C	50 mL
50.0 °C	57 mL
100.0 °C	66 mL



2. Draw the best straight line you can through the points on the graph.

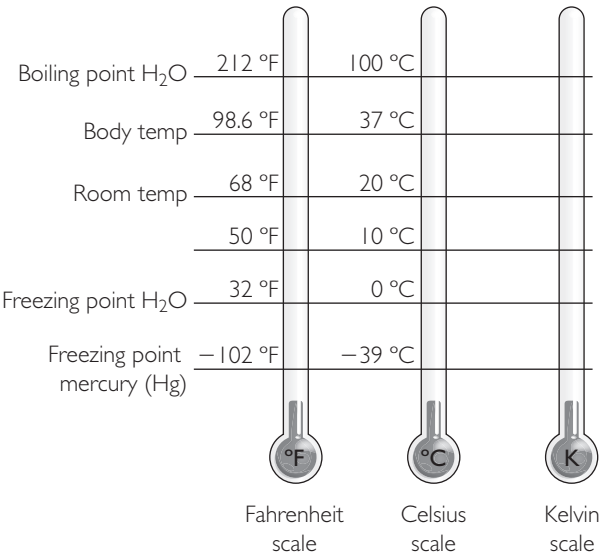
3. Use the graph to find the temperature if the volume of this gas decreases to zero.

4. Do you think the temperature can keep dropping indefinitely? Explain your reasoning.

5. Compare the Fahrenheit, Celsius, and Kelvin thermometers on the next page. Fill in the temperatures in Kelvin that correspond to the temperatures on the Fahrenheit and Celsius thermometers.

6. Zero Kelvin (0 K) is also called **absolute zero.** What is absolute zero equal to in degrees Celsius? in degrees Fahrenheit?

7. Mark where you would put 0 °F and 0 K on the thermometers.



Part 2: Computer Activity

1. Observe the gas particles computer simulation. List at least four features of the model. Example: The particles are in constant motion.

2. What causes the gas particles to change direction in the model?

3. What do you notice about the speeds of the particles in the model?

4. What do you observe when the temperature changes in the model?

5. Making Sense How can you use the motions of the gas particles to explain why gases expand on heating and contract on cooling?

6. If You Finish Early Which is denser, air at 10 °C or air at 4 °C? Explain your reasoning.