

Heating Curve Diagram Lab

The purpose of this lab is to:

Materials:

Two 250 mL beakers
Hot Plate
Digital thermometer
Black dye
Ice



Procedure:

- Plug in the hot plate.
- Put 200 mL of cold tap water and a large scoop of ice into a beaker.
- Stir the ice water and wait for the temperature to get as low as possible. Take the temperature of the water now and record this as the temperature at time zero.
- Begin heating the water with the hot plate and taking the temperature every 30 seconds while you are heating the water. Stir the water with the thermometer and take the temperature in the middle of the volume of water for each reading. Make sure the thermometer isn't touching the glass!
- After the water begins to boil rapidly, continue taking the temperatures at 30 second intervals for 5 more minutes.
- At the end of the 5 minutes, shut off your hot plate. Use a hot mitt to place your hot beaker on the desk. Set next to this beaker the second 250 mL beaker full of cold tap water. Carefully add a drop of black dye to each beaker. Record your observations.
- Using graph paper make a graph of temperature (Y-axis) vs. time (X-axis).

*GLUE THIS PART DOWN TO
YOUR NOTEBOOK*

DATA TABLE:

TIME (MIN)	TEMP (°C)	TIME (MIN)	TEMP (°C)
0		11	
0.5		11.5	
1.0		12	
1.5		12.5	
2		13	
2.5		13.5	
3		14	
3.5		14.5	
4		15	
4.5		15.5	
5		16	
5.5		16.5	
6		17	
6.5		17.5	
7		18	
7.5		18.5	
8		19	
8.5		19.5	
9		20	
9.5		20.5	
10		21	
10.5		21.5	

OBSERVATIONS:**QUESTIONS:**

1. From your observations and the graph you have made, determine the temperature at which the water boiled.

2. How did you determine water's boiling point? Check your graph.
3. The hot plate is much hotter than 200°C. Does the water temperature keep going up?
4. Is the temperature of the water still going up once the boiling point is reached?
5. Are you still adding heat at the boiling point?
6. Is the temperature a measure of heat gained or of something else?
7. In which beaker did the dye spread out faster? Why?
8. Consider your answer to #7. What does temperature actually measure?
9. If you collected all the steam from your boiling water, after all the water boiled away, would the steam's temperature go up? (Consider your graph when answering this question.)