Chemistry Lab

#13 = Boiling Point of Salt Water

Name: _____

Period: _____ Date: _____

Part 1 = Introduction and Setup

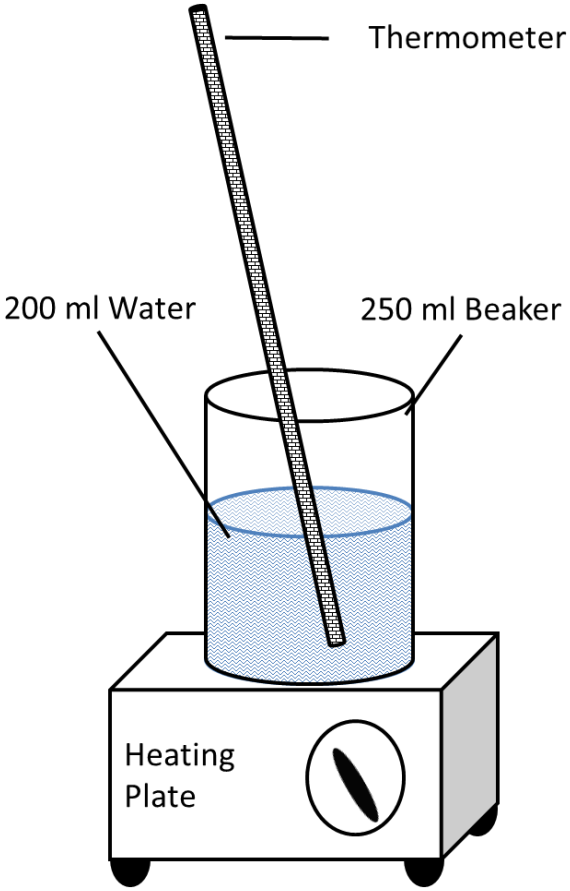
INTRODUCTION:

In this lab, salt will be added to a quantity of water and the solution will be placed on a heating plate and brought to a boil. Temperature measurements will be recorded every 30 seconds. Using the information from the temperature measurements, the mass of salt added will be calculated as well as a prediction of what the freezing point of the solution would be.

PURPOSE:

The purpose of this lab activity is to demonstrate knowledge of colligative properties and the math required to calculate changes in the colligative properties.

LAB SETUP



PART B

EXPERIMENTAL PROCEDURE

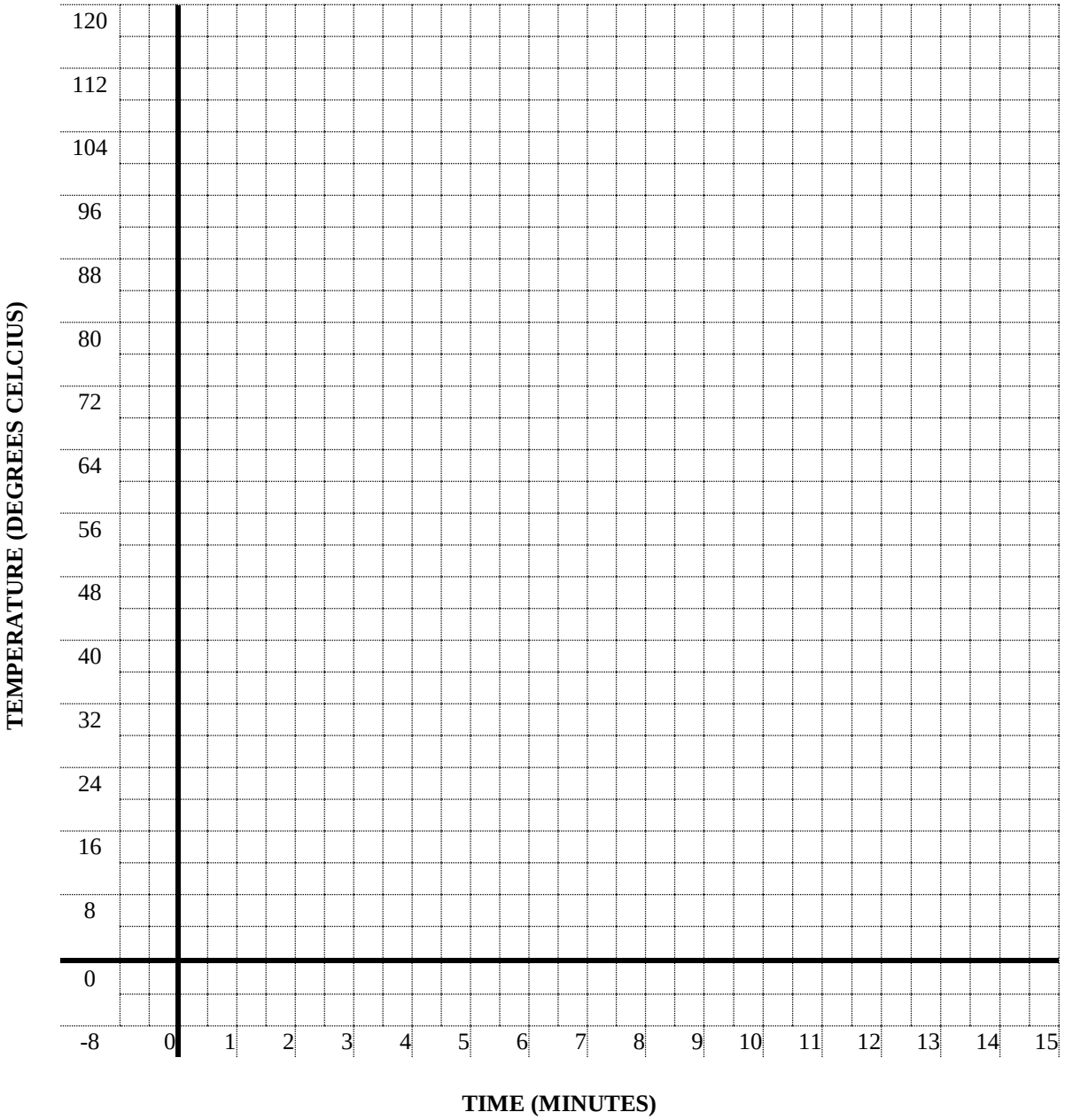
1. Place 200 ml of solution in the 250 ml beaker.
2. Turn the heating plate on high heat
3. Measure the beginning temperature
4. Place the beaker on the heating plate
5. Record the temperature every 30 seconds
6. Stop after 15 minutes worth of measurements

Boiling Point Measurements			
Time (min)	**Temp. (°C)**	**Time (min)**	**Temp. (°C)**
0.0		8.0	
0.5		8.5	
1.0		9.0	
1.5		9.5	
2.0		10.0	
2.5		10.5	
3.0		11.0	
3.5		11.5	
4.0		12.0	
4.5		12.5	
5.0		13.0	
5.5		13.5	
6.0		14.0	
6.5		14.5	
7.0		15.0	
7.5		End	

Part 2 = Graph and Change in Boiling Point

1) Use the data from the last lab to draw the boiling graph for pure water.

2) Use the data from above to draw the boiling graph for the solution.



3) Calculate the change in boiling point (ΔT_b) based on the two graphs

Part 3 = Analysis

4) Using ΔT_b, calculate the mass of sodium chloride that was added to the solution. Remember that salt splits into two particles in solution!

5) Assuming that the same solution was placed in a freezer, what temperature, in degrees Celsius, would the solution freeze at?

6) What temperature is this in Fahrenheit?

7) What temperature is this in Kelvin?

8) If you had added the same amount of glucose to the water instead of salt, what would be the difference in boiling point and freezing point of the solution? Why is it different and why is it different by that specific amount?