Name _____ Period _____

Crystallization of a Supersaturated Sucrose Solution

Data Analysis: Answer in complete sentences that include the question.

1. Describe the mixture before cooking.

2. What is the solubility of sugar in water at room temperature (about 23°C)?

3. Describe what you saw as the solution began to heat.

4. At about what temperature was all of the solute dissolved?

5. What do you think would happen if you heated the mixture only to 100ªC? To 190ªC?

6. Water boils at 100ªC. When it reaches that temperature, it turns to steam but the temperature does not increase. This solution contains water, yet its temperature rose to 160ªC. How could you explain this?

7. At what point in the procedure was the solution supersaturated?

8. Why was it necessary to cool the solution before adding the extract or flavoring oil?
(hint: think about the nature of the ingredients in the flavoring.)

9. What evidence do you have that the solution was supersaturated? That it crystallized?

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10. What techniques did you use to dissolve the sucrose?

11. Was the solution was unsaturated, saturated, or supersaturated at each stage listed below? Explain.

Before cooking:

At 70°C:

At 100°C:

At 149C:

12. What factors affected the AMOUNT of sucrose that could be dissolved in the water?

13. What factors affected the RATE at which the sucrose dissolved?

14. What was the mass percent sugar in the initial mixture?

15. Estimate the mass percent sugar in the final product. Explain.

16. How many moles of sucrose ($C_{12}H_{22}O_{11}$) did your product contain? Show work, with conversion factors.