



Temperature's Effect on the Rate of Dissolving

Name _____

Class _____

Problem

How does the temperature of water affect the dissolving time of a sugar cube?

Hypothesis

Before testing, complete the following table to rank the effect water temperature will have on dissolving a sugar cube (1 = fastest).

| Water Temperature (°C) | Predicted Rank for Dissolving Sugar Cube (Fastest to Slowest) |
|------------------------|---|
| 5° | |
| 25° | |
| 35° | |

As the temperature of the water _____, the dissolving time of the sugar cube _____.

Experimental Design

1. Independent Variable: _____
2. Treatments: _____

3. Dependent Variable: _____
4. Constants: _____
5. Control: _____

Data Collection

1. After you dissolve all three sugar cubes, use the scatter plot to fill in the times on the table below.

| Temperature (°C) | Dissolving Time (sec) |
|------------------|-----------------------|
| 5° | |
| 25° | |
| 35° | |



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2. Draw and label the graph of your data below or print it on the computer and attach it to this page.



Data Analysis

1. Compare the actual results from the table and graph to your prediction. Discuss any surprises or differences you find.

2. What is the slope of the linear regression line? _____
What does this value represent? _____

3. What is the y-intercept of the linear regression line? _____
What does this value represent? Is this a realistic value? Why or why not?

4. Use the arrow keys to move along the regression line. At what temperature does the sugar cube dissolve in 10 seconds? _____
70 seconds? _____

5. Use the arrow keys to move along the regression line. If the water is 45o C, how long will it take for the sugar cube to dissolve? _____

At what temperature will the sugar cube dissolve in one second? _____

Conclusion

As the temperature of the water _____, the dissolving time of the sugar cube _____.