Part 1: The Investigation

You will be analyzing, evaluating, and making inferences from investigation data. You will write out the answers to questions about the data. Use the investigation described below to answer the questions that follow.

Trypsin is an enzyme produced by the pancreas that breaks down or hydrolyses proteins during digestion. A student designs an experiment to test the effects of temperature on enzyme function using trypsin and casein, a protein contained in milk. The hydrolysis rate of the enzyme will be tested at four temperatures ranging from 0°C to 60°C. For each temperature, the enzyme is added to the cloudy solution containing the casein, and the timer is started. When the solution becomes clear, the hydrolysis is assumed to be complete, and the time is recorded. The test tubes containing the protein and enzyme are kept in an ice or water bath at a specified temperature, except for the test tube which is the ambient or room temperature. The student’s hypothesis: If the temperature of a solution is increased, the hydrolysis rate of the enzyme will increase.

The data collected during the investigation is shown below:

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°C</td>
<td>9.56 min</td>
</tr>
<tr>
<td>22°C</td>
<td>4.31 min</td>
</tr>
<tr>
<td>40°C</td>
<td>1.78 min</td>
</tr>
<tr>
<td>60°C</td>
<td>6.28 min</td>
</tr>
</tbody>
</table>

Part 2: Analyzing Data

1. What is the best way to analyze this data?
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________

2. What is the best way to visually represent this data?
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
Part 3: Evaluating Data: Use the information from the previous page to complete the graph below. Be sure to include a title, label the X and Y axes, and answer the questions that follow:
1. What trends can be observed based on data shown on the graph?

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2. What inferences can be made based on trends shown by the data?

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3. Can the results of a temperature increase higher than 60°C be predicted from the investigative data?

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4. Does the collected data support the hypothesis? Explain.

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