Lab: Area Investigation

1. Using exactly 20 toothpicks or paper clips, construct as many different rectangles as possible using **ALL** 20 toothpicks/clips each time. Record the following data for each rectangle as you are working.

<table>
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<tr>
<th>Length</th>
<th>Width</th>
<th>Perimeter</th>
<th>Area</th>
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2. On the grid, plot your data information pertaining to the area in relation to the length of one side. Place the **length** on the x-axis and the **area** on the y-axis. Label your axes.

3. Think about the relationship between the values in this experiment. If the length is referred to as \( x \), how would you express the width? ________________

   How would you express the area? ________________

   With these thoughts in mind, write an equation that will produce the graph of the area.

   \[ y = \]

4. Using your graphing calculator, graph your equation. Transfer your graph to the grid above.

5. What is the size of the rectangle of largest area? ________________ Smallest area? ________________

6. What did you discover about the perimeter of the rectangle in this experiment?