Name:

**5.1 Graphing Parabolas**

My brother is building a dog pen attached to his house. He has 80 feet of fence and is going to use the house as one side. See diagram.

House

Dog

Pen

*x*

1.) Label the missing sides of the dog pen in terms of *x*. Do not use another variable *y*, instead use the length of fence and *x*. (Hint: try different values for *x* and figure out the length of the missing side. Continue this until a pattern develops and then write the formula.)

2.) Use the area formula of a rectangle to write a function for the area of the dog pen.

3.) What is the domain for *x*?

4.) Make a table for the area function.

5.) Graph the function for the area of the dog pen.

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6.) Look at the graph to find the following

Maximum Area:

Dimensions of pen with maximum area:

7.) Look at the graph. The area is zero at two different times. What value is *x* when the area is zero? What would the pen look like at each time?