

**Quiz****Name**

Consider a rectangle with fixed area  $A$  and variable sides  $x$  and  $y$ . Let  $p$  be the perimeter of the rectangle. What values of  $x$  and  $y$  provide the smallest possible  $p$ ? Answer this question by doing the following:

1. Determine  $p$  as a function of a single variable.
2. Compute the derivative of  $p$ , determine the numbers for which it is zero and not defined, and the ranges of numbers for which it is positive and negative.
3. Answer the question about the smallest  $p$  and justify your conclusion by making use of your analysis in part 2.