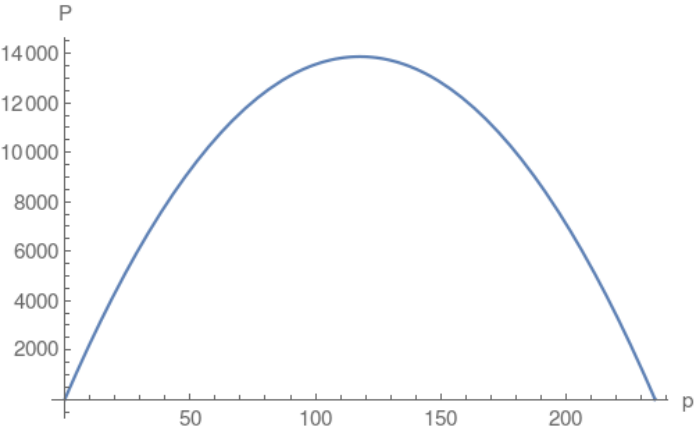
2.

2. Perimeter of rectangle $= 2(p+a) = 471$ where a is the length of the other edge of rectangle. Area of the rectangle is $= p \times a$.
Use perimeter equation
and solve for $a = \frac{471-2p}{2}$

Then reformulate the area $P = p \times a = \frac{471\,p}{2} - p^2$ which turns out to be a quadratic Parabola:



Compute the vertex $\frac{471}{4}$ and then plug the vertex into the area which will compute the maximum area.