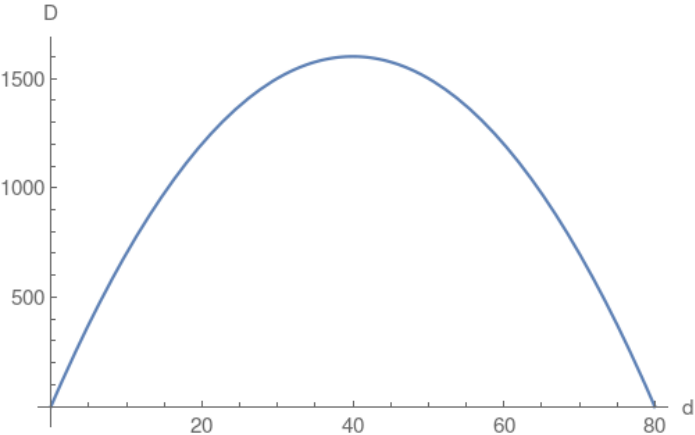
2.

2. Perimeter of rectangle $= 2(d+a) = 160$ where a is the length of the other edge of rectangle. Area of the rectangle is $= d \times a$.
Use perimeter equation
and solve for $a = \frac{160-2d}{2}$

Then reformulate the area $D = d \times a = 80\,d - d^2$ which turns out to be a quadratic Parabola:



Compute the vertex $\frac{160}{4}$ and then plug the vertex into the area which will compute the maximum area.