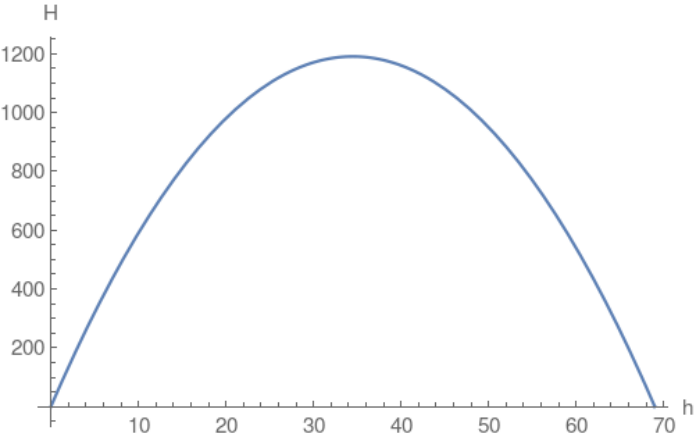
2.

2. Perimeter of rectangle $= 2(h+a) = 138$ where a is the length of the other edge of rectangle. Area of the rectangle is $= h \times a$.
Use perimeter equation
and solve for $a = \frac{138-2h}{2}$

Then reformulate the area $H = h \times a = 69\,h - h^2$ which turns out to be a quadratic Parabola:



Compute the vertex $\frac{138}{4}$ and then plug the vertex into the area which will compute the maximum area.