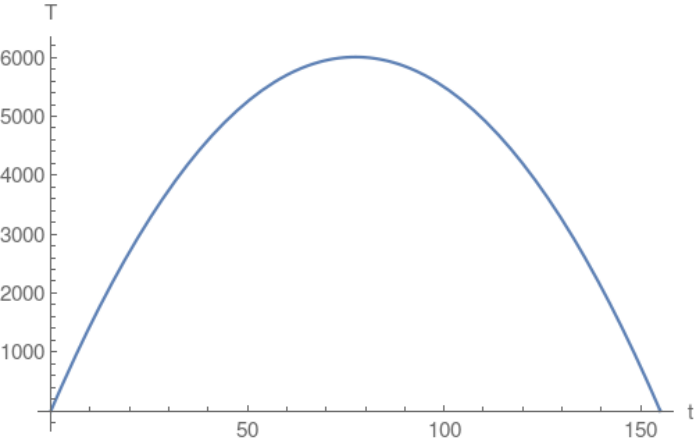
2.

2. Perimeter of rectangle = $2(t+a)=310$ where a is the length of the other edge of rectangle. Area of the rectangle is = $t \times a$.
Use perimeter equation
and solve for $a = \frac{310-2t}{2}$

Then reformulate the area $T = t \times a = 155\,t - t^2$ which turns out to be a quadratic Parabola:



Compute the vertex $\frac{310}{4}$ and then plug the vertex into the area which will compute the maximum area.