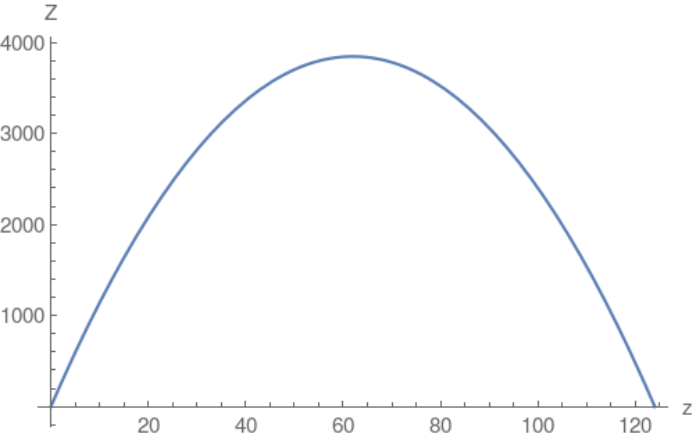
2.

2. Perimeter of rectangle = $2(z+a)=248$ where a is the length of the other edge of rectangle. Area of the rectangle is = $z \times a$.
Use perimeter equation
and solve for a= $\frac{248-2z}{2}$

Then reformulate the area Z= $z \times a = 124\,z - z^2$ which turns out to be a quadratic Parabola:



Compute the vertex $\frac{248}{4}$ and then plug the vertex into the area which will compute the maximum area.