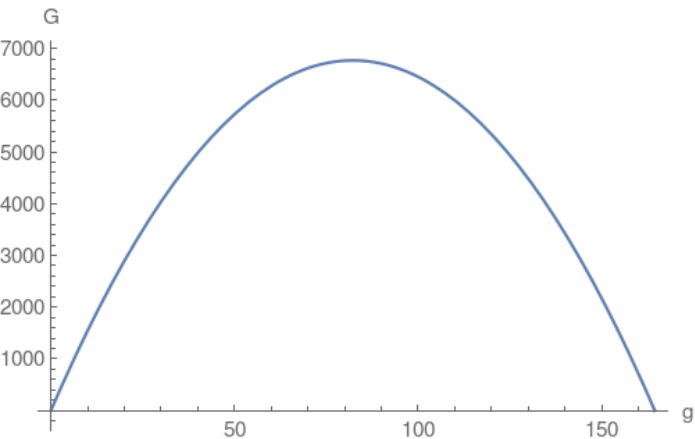
1.

1. Perimeter of rectangle $= 2(g+a) = 329$ where a is the length of the other edge of rectangle. Area of the rectangle is $= g \times a$.
Use perimeter equation
and solve for $a = \frac{329-2g}{2}$

Then reformulate the area $G = g \times a = \frac{329\,g}{2} - g^2$ which turns out to be a quadratic Parabola:



Compute the vertex $\frac{329}{4}$ and then plug the vertex into the area which will compute the maximum area.