

1.

1. There are 3 sides to fence, two sides with length b and one side with length a :

$$a+b+b=2084 \implies a=2084-2b$$

Now find the area:

$$\text{area}=a \times b = (1-2b)b = 2084b - 2b^2$$

Notice the Parabolic function, find the vertex:

$$\text{vertex} = (521 \text{ yd}, 542882 \text{ yd}^2)$$

Square the unit for vertex's vertical coordinate since it is a quadratic.