3.

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

$a + b + b = 4369 \implies a = 4369 - 2b$

Now solve for the area:

$area = a \times b = (l - 2b) b = 4369\,b - 2\,b^2$

Notice the Parabolic formula, solve for the vertex:

$vertex = (\frac{4369}{4}$ yards $, \frac{19\,088\,161}{8}$ yards^2 $)$

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