3.

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

$a + b + b = 3345 \implies a = 3345 - 2b$

Now solve for the area:

$\text{area} = a \times b = (l - 2b)b = 3345\,b - 2\,b^2$

Notice the Parabolic equation, solve for the vertex:

$\text{vertex} = (\frac{3345}{4}\ \text{yd}\ ,\ \frac{11\,189\,025}{8}\ \text{yd}^2\ )$

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