2.

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

$a + b + b = 4696 \implies a = 4696 - 2b$

Now find the area:

$\text{area} = a \times b = (l - 2b)b = 4696\,b - 2\,b^2$

Notice the Parabolic function, find the vertex:

$\text{vertex} = (1174\ \text{yd}\ ,\ 2\,756\,552\ \text{yd}^2\ )$

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