2.

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

$a+b+b=3118 \implies a=3118-2b$

Now find the area:

$area=a\times b=(l-2b)b= 3118\,b - 2\,b^2$

Notice the Parabolic formula, find the vertex:

$vertex= (\frac{1559}{2}$ ft , $\frac{2\,430\,481}{2}$ ft^2)

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