1.

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

$a+b+b=3733 \implies a=3733-2b$

Now solve for the area:

$area=a\times b=(l-2b)\,b=\ 3733\,b-2\,b^2$

Notice the Parabolic function, solve for the vertex:

$vertex=\ (\frac{3733}{4}\ ft\ ,\ \frac{13\,935\,289}{8}\ ft^2\ )$

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