1.

1. Since the fences enclose a rectangular plot without one side, two sides have length b and one side has length a:

$a+b+b=4707 \implies a=4707-2b$

the area:

$area=a \times b=(l-2b)b= 4707\,b - 2\,b^2$

Note that the formula is for parabola. Now find the vertex:

$vertex= (\frac{4707}{4}$ yards , $\frac{22\,155\,849}{8}$ yards^2)

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