1.

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

$a + b + b = 1387 \implies a = 1387 - 2b$

Now find the area:

$\text{area} = a \times b = (l - 2b)b = 1387\,b - 2\,b^2$

Notice the Parabolic formula, find the vertex:

$\text{vertex} = (\frac{1387}{4} \text{ feet }, \frac{1923769}{8} \text{ feet}^2)$

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