

4.

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

$$a+b+b=1777 \Rightarrow a=1777-2b$$

Now find the area:

$$\text{area}=a \times b = (1777-2b)b = 1777b - 2b^2$$

Notice the Parabolic formula, find the vertex:

$$\text{vertex} = \left(\frac{1777}{4} \text{ feet}, \frac{3157729}{8} \text{ feet}^2 \right)$$

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