

4.

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

$$a+b+b=4580 \implies a=4580-2b$$

Now compute the area:

$$\text{area}=a \times b = (4580-2b)b = 4580b - 2b^2$$

Notice the Parabolic equation, compute the vertex:

$$\text{vertex} = (1145 \text{ ft}, 2622050 \text{ ft}^2)$$

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