4.

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

$a+b+b=4938 \implies a=4938-2b$

the area:

$\text{area}=a\times b=(l-2b)\,b=\ 4938\,b-2\,b^2$

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

$\text{vertex}=\ \left(\frac{2469}{2}\ \text{yards}\ ,\ \frac{6\,095\,961}{2}\ \text{yards}^2\ \right)$

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