4.

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

$a + b + b = 2524 \implies a = 2524 - 2b$

Now find the area:

$area = a \times b = (l - 2b)b = 2524\,b - 2\,b^2$

Notice the Parabolic equation, find the vertex:

$vertex = (631 \text{ meters}, 796322 \text{ meters}^2)$

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