

Re: Can someone show me the working for this please

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- *From:* Driveby <x@xxxxxxxxxx>
 - *Date:* Wed, 29 Aug 2007 13:02:45 -0400
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On Wed, 29 Aug 2007 14:31:51 -0000, Dougsd1r <dougsdir@xxxxxxxxxx> wrote:

A rectangular based area is fenced using 40m of fencing

Taking x metres for its length, show that the area of the rectangle, $A \text{ m}^2$, can be written

$A = 100 - (x - 10)^2$. What is the maximum floor area, and the corresponding length and breadth.

I know the answer is $A=100\text{m}^2$, length = 10m, breadth = 10m

This question is in relation to questions on quadratic function $f(x) = ax^2+bx+c$ i have been doing

TIA

Let the rectangle have perimeter P , length x , and width y . Then

$$P = 2x + 2y, \text{ so } P/2 = x + y, \text{ and } (P/2 - x) = y$$

The area is

$$A = xy = x (P/2 - x)$$

$$A = -x^2 + P/2 x$$

By completing the square, show that

$$A = P^2/16 - (x - P/4)^2$$

The area A will be maximum when x equals what particular value?

For any rectangle with fixed perimeter P , what shape has maximum area?

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