

### PROBLEM SOLVING

A farmer has a rectangular garden plot surrounded by 200 ft of fence. Find the length and width of the garden if its area is 2400 square feet.

Solution:

Let  $x$  = width  
and  $y$  = length

Then, because he has 200 ft of fencing, this must be less than or equal to the perimeter:

$$2(x+y) = 200$$

$$x+y = 100$$

Solving for  $x$ :

$$x+y = 100$$

$$x = 100-y$$

Area:

$$xy = 2400$$

substitute  $x=100-y$ :

$$xy = 2400$$

$$(100-y)y = 2400$$

$$100y - y^2 = 2400$$

$$0 = y^2 - 100y + 2400$$

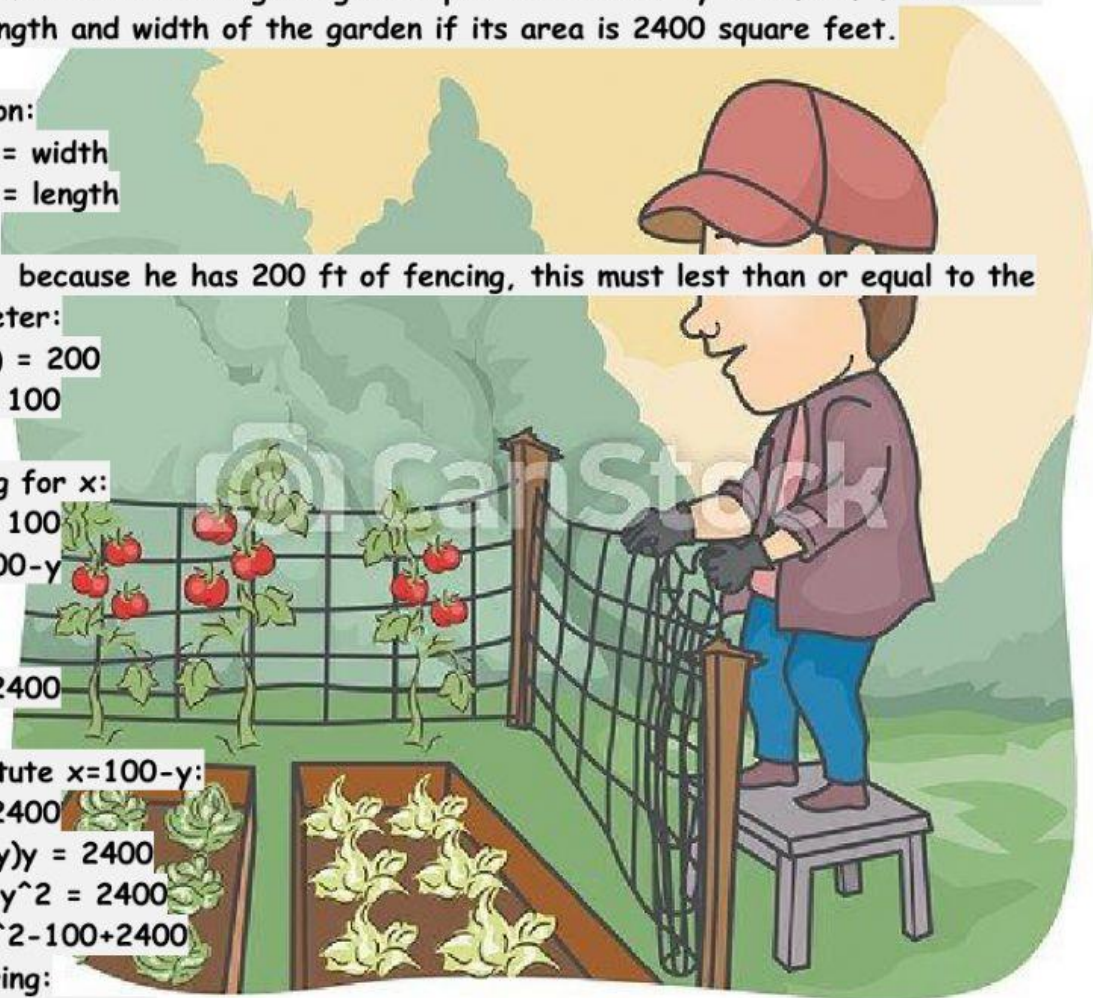
factoring:

$$0 = (y-40)(y-60)$$

$$y = \{60, 40\}$$

length 60 feet

width 40 feet



## TASK: "FINDING PLOT DIMENSIONS"

A garden lot will be undergoing a renovation by changing its dimensions. The garden lot is originally a square lot, it will be renovated into a rectangular lot whose length is twice the original, but the width is four meters less than the original. If the renovated garden will still have the same area as the original, what is the measure of the original lot? What is the measure of the lot after renovation?

Process Questions:

1. Sketch the diagram to represent the situation.
2. What will be your equation?

3. What are the dimensions of the square and rectangular lot?

The dimensions of the garden plot are:

LENGTH:

WIDTH: