$$(x+4)^2 - y^2 = (x+4-y)(x+4+y)$$

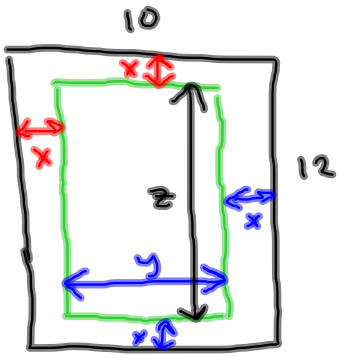
$$a^2 - b^2 = (a-b)(a+b)$$

$$((x+4)-y)^2 = (x+4)^2 - 2(x+4)(y) + y^2$$

$$(a-b)^2 = a^2 - 2ab + b^2$$

$$(a-b)(a-b) = a^2 - ab - ab + b^2 = a^2 - 2ab + b^2$$

Let x = the width of the frame (in feet)



Area of frame = ?

= Area of whole − Area of inside

$= (10)(12) - (y)(z)$

$y = 10 - 2x$

$z = 12 - 2x$

$(10-2x)(12-2x)$

$= 120 - 20x - 24x + 4x^2$

$= 120 - 44x + 4x^2$

$= 4x^2 - 44x + 120$

$= 120 - (10-2x)(12-2x)$ ft ft

$= 120 - (4x^2 - 44x + 120)$

$= 120 - 4x^2 + 44x - 120$

$= -4x^2 + 44x = 104$

Solve for x.

That is the amount he can cover.

$-4x^2 + 44x = 104$

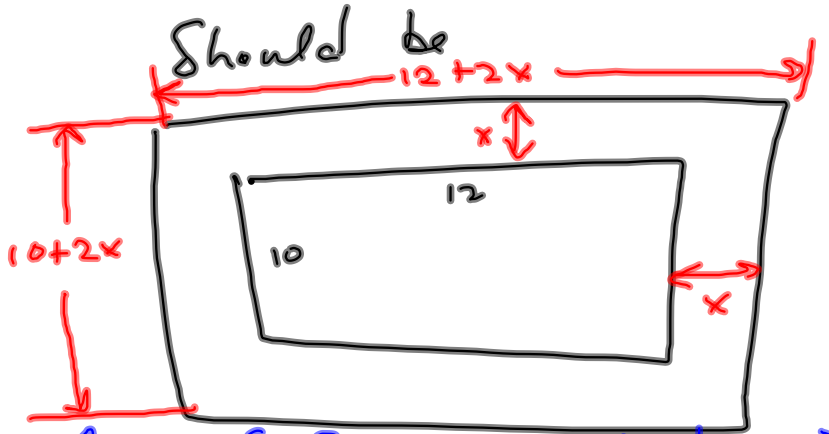
$-4x^2 + 44x - 104 = 0$

$-4(x^2 - 11x + 26) = 0$

$x^2 - 11x + 26 = 0$

$(x \quad)(x \quad) = 0$

Sucks that it doesn't factor. This should factor, b/c it's MAT 099 & we haven't done quadratic formula, yet.



Area of frame = Outside − inside

$(10+2x)(12+2x) - 120$ SET 104

$\vdots$

$4x^2 + 44x - 104 = 0$

$4(x^2 + 11x - 26) = 0$

$x^2 + 11x - 26 = 0$ FACTORS of -26 that add up to +11 : 13, -2

$x^2 + 13x - 2x - 26 = 0$

$x(x+13) - 2(x+13) = 0$

$(x+13)(x-2) = 0$

$x = -13$ OR $\boxed{x = 2}$

Check: $(12+2(2))(10+2(2)) - 120$

$= (16)(14) - 120$

$= 224 - 120 = 104$ ✓

What screwed me up was trying to put the frame INSIDE. The word "around" should've told me the frame was OUTSIDE.

$$(5x-(2y+1))^2 = (5x)^2 - 2(5x)(2y+1) + (2y+1)^2$$

$$(a-b)^2 = a^2 - 2ab + b^2$$
$$(a+b)^2 = a^2 + 2ab + b^2$$

$$= 5^2x^2 - 10x(2y+1) + (2y)^2 + 2(2y)(1) + 1^2$$

Ivan

$$= 25x^2 - 20xy - 10x + 4y^2 + 4y + 1$$

$$(5x - (2y+1))^2 = (5x)^2 - 2(5x)(2y+1) + (2y+1)^2$$