10.12

différence $\ominus$ La différence

$$x^2 - x = 182$$

le carré — le nombre

$$x^2 - x - 182 = 0$$

$$1x^2 - 1x - 182 = 0$$

$a = 1 \quad b = -1 \quad c = -182$

$$\Delta = (-1)^2 - 4 \cdot 1 \cdot (-182)$$

$$= 1 + 728 = 729 = 27^2$$

$\Delta = b^2 - 4ac$

$x_1 = \frac{-b + \sqrt{\Delta}}{2a}$

$x_2 = \frac{-b - \sqrt{\Delta}}{2a}$

$(-1)^2 = (-1) \cdot (-1)$

$= 1$

$$x_1 = \frac{-(-1) + \sqrt{729}}{2} = 14$$ ✓

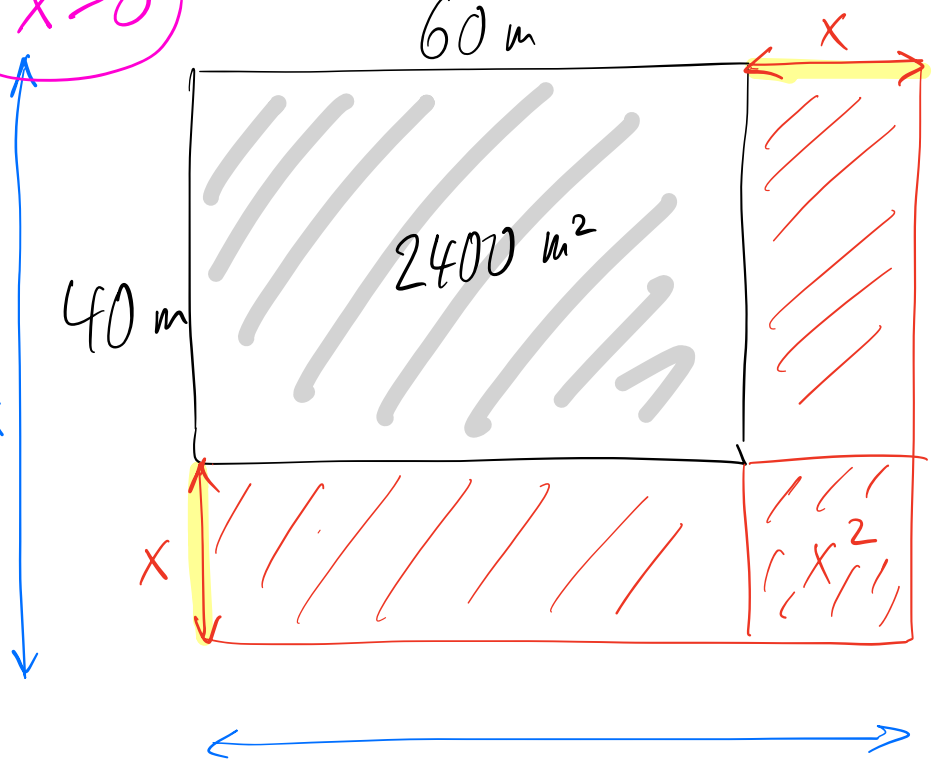
$$x_2 = \frac{-(-1) - \sqrt{729}}{2} = \frac{-26}{2} = -13$$ ✓

$$14^2 - 14 = 182$$

$$(-13)^2 - (-13) = 182$$

10.16

$x > 0$



$40 \cdot 60$

2400 m²

$$(40+x)(60+x) = 2 \cdot 40 \cdot 60$$

nouvelle surface — le double

$$2400 + 40x + 60x + x^2 = 4800$$

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

$a = 1 \quad b = 100 \quad c = -2400$

$\Delta = 10000 + 9600$

$= 19600$

$-4 \cdot 1 \cdot (-2400)$

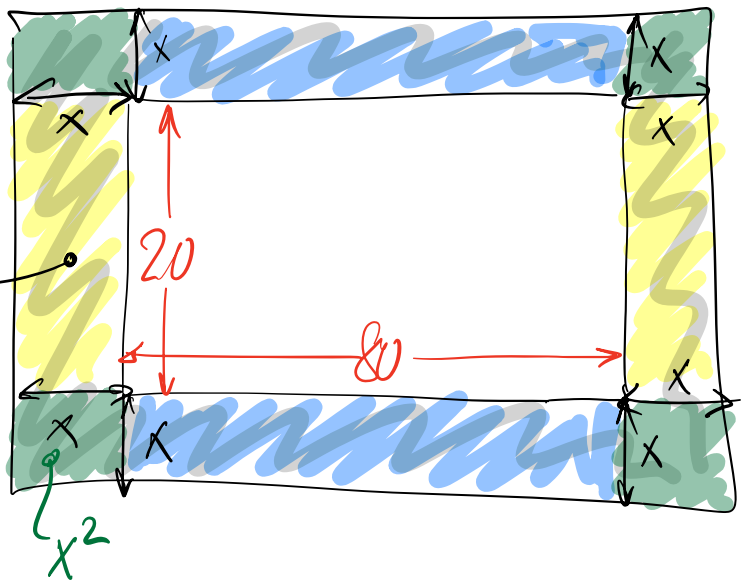
$$x_1 = \frac{-100 + 140}{2} = \frac{40}{2} = 20$$

$$x_2 = \frac{-200-140}{2} = -\frac{240}{2} = -120 < 0$$

Il faut augmenter chaque dimension de 20 m.

10.17

$(20+2x)(80+2x) - 20 \cdot 80 = 636$



636 m²

$4x^2 + 20x + 20x + 80x + 80x = 636$

$4x^2 + 200x - 636 = 0$

$\div 4$

$x^2 + 50x - 159 = 0$

$\Delta = 50^2 - 4 \cdot 1 \cdot (-159)$

$= 2500 + 636$

$= 3136 = 56^2$

$4x^2 + 200x - 636 = 0$

$\Delta = 200^2 - 4 \cdot 4 \cdot (-636)$

$x_1 = \frac{-200 + \sqrt{\Delta}}{8}$

$$x = \frac{-50 \pm 56}{2} = \begin{cases} 3 \\ -58 \end{cases}$$

La bande de terre mesure 3 m de large.