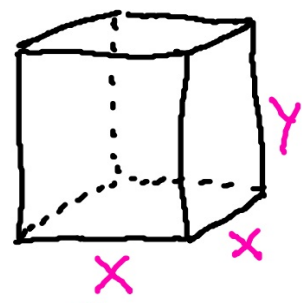


5.2) HWK Probs.

(Bot) (Sides) (top)

①



$$SA = x^2 + 4xy + x^2$$

$$C = 47(x^2) + 47(4xy) + 40(x^2)$$

$$C = 87x^2 + 188xy$$

$$C = 87x^2 + 188x\left(\frac{2100}{x^2}\right)$$

$$C = 87x^2 + 394,800x^{-1}$$

$$C' = 174x - 394,800x^{-2} = 0$$

$$174x = \frac{394,800}{x^2}$$

$$174x^3 = 394,800$$

$$x^3 = 2268.966$$

$$x = 13.140$$

$$y = 12.163$$

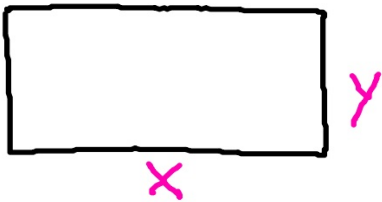
$$V = x^2 y$$

$$2100 = x^2 y$$

$$\frac{2100}{x^2} = y$$

13.14ft x 13.14ft x 12.163ft

②



$$P = 2x + 2y$$

$$C = 4(2x) + 6(2y)$$

$$15,000 = 8x + 12y$$

$$\frac{15000 - 12y}{8} = x$$

$$1875 - 1.5y = x$$

$$A = x \cdot y$$

$$A = (1875 - 1.5y)y$$

$$A = 1875y - 1.5y^2$$

$$A' = 1875 - 3y = 0$$

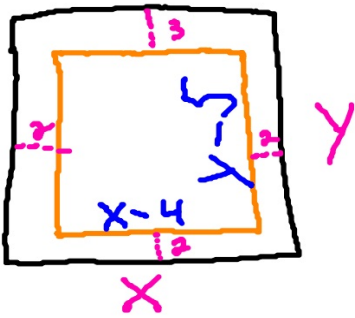
$$1875 = 3y$$

$$y = 625$$

$$x = 937.5$$

$$937.5 \text{ ft} \times 625 \text{ ft}$$

(3)



$$A = x \cdot y$$

$$125 = x \cdot y$$

$$\frac{125}{y} = x$$

10 in x 12.5 in

$$A = (x-4)(y-5)$$

$$A = \left(\frac{125}{y} - 4\right)(y-5)$$

$$A = 125 - \frac{625}{y} - 4y + 20$$

$$A = 145 - 625y^{-1} - 4y$$

$$A' = \frac{625}{y^2} - 4 = 0 \quad y^2 = \frac{625}{4}$$

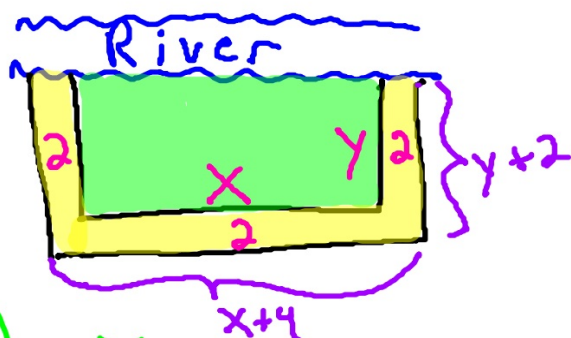
$$\frac{625}{y^2} = 4$$

$$625 = 4y^2$$

$$y = 12.5$$

$$x = 10$$

④



$$A = x \cdot y$$

$$800 = xy$$

$$\frac{800}{y} = x$$

$$44\text{m} \times 22\text{m}$$

$$A = (x+4)(y+2)$$

$$A = \left(\frac{800}{y} + 4\right)(y+2)$$

$$A = 800 + \frac{1600}{y} + 4y + 8$$

$$A = 808 + 1600y^{-1} + 4y$$

$$A' = -\frac{1600}{y^2} + 4 = 0$$

$$\frac{1600}{y^2} = 4$$

$$1600 = 4y^2$$

$$y^2 = 400$$

$$y = 20$$

$$x = 40$$