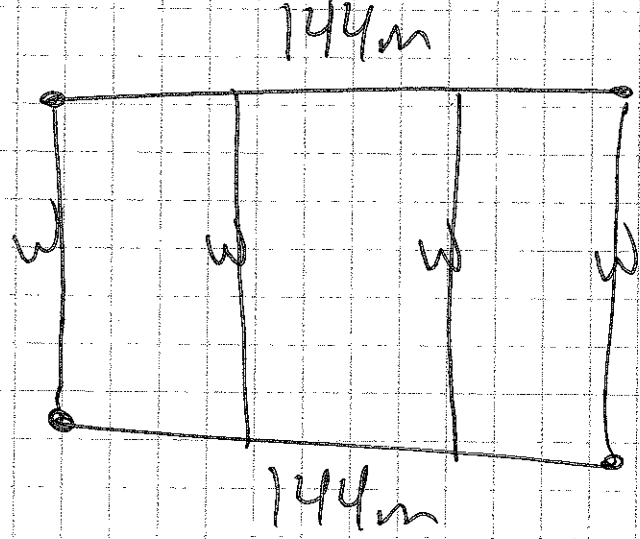
8.1 p433 #11 9d

Step 1 $\$3600 \div \$6.25/m$

$= 576m$

Step 2 $\frac{576}{4} = 144m$. optimal outside top side length.



Step 3 $4w + 2(144) = 576$

$4w + 288 = 576$

$4w = 576 - 288$

$4w = 288$

$w = \frac{288}{4} = 72m$ optimal width.

Step 4: $72 \times 144 = \underline{10368m^2}$

Step 5 The largest area is $\underline{10368m^2}$

Step 6 Check.

$w = 71$ and $w = 73$

Let $w = 71$

$4(71) + 2l = 576$

$284 + 2l = 576$

$2l = 576 - 284$

$2l = 292$

$l = 146$

$\therefore A = 71 \times 146 = 10366\ m^2$

Let $w = 73$

$4(73) + 2l = 576$

$292 + 2l = 576$

$2l = 576 - 292$

$2l = 284$

$l = 142$

$\therefore A = 73(142) = 10366\ m^2$

Step 7: $\therefore$ $10368\ m^2$ is the largest area, with dimensions 72×144 m.