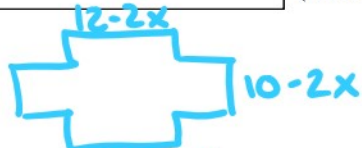
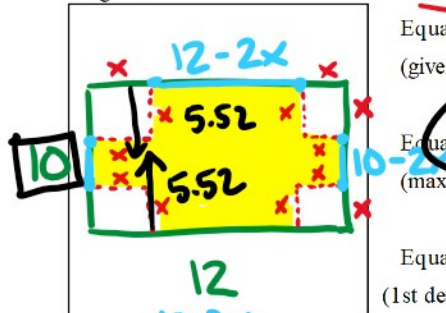


Four Corners Notes

Wednesday, June 12, 2019 7:14 AM

A company wants to make an open box from a 10 inch by 12 inch piece of metal by cutting squares from each corner and turning up the sides. Find the dimensions and the volume of the largest box that can be made.

Diagram:



Length: 8.38

12-2x
12-2(1.81)

Width: 6.38

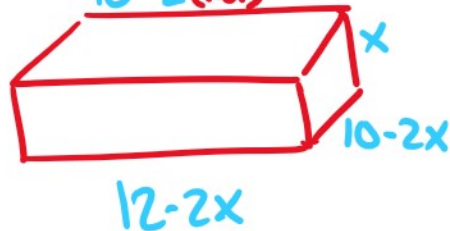
10-2x
10-2(1.81)

Height: 1.81

x

Volume: 96.77

l.w.h



Equation A:

(given info)

Equation A:

(new version)

Equation B:

(max/min)

Equation B:

(new version)

$$V' = 12x^2 - 88x + 120 = 0$$

(1st derivative)

$$4(3x^2 - 22x + 30) = 0$$

\uparrow \uparrow \uparrow
 a b c

$$V = 4x^3 - 44x^2 + 120x$$

$$x = \frac{22 \pm \sqrt{(-22)^2 - 4(3)(30)}}{2(3)}$$

$$x = \frac{22 \pm \sqrt{124}}{6}$$

$$x = \frac{22 + \sqrt{124}}{6}$$

$$x = \frac{22 - \sqrt{124}}{6}$$

~~$$x = 5.52$$~~

$$x = 1.81$$