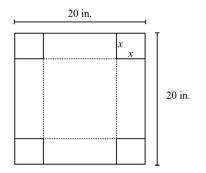
## Nick Egbert MA 158 Examples for 8/26

**Example 1.** The function  $C(x) = x^2 - 6x + 39$  models the cost, in hundreds of dollars, to produce x thousand Everlasting Gobstoppers. Find the cost to produce 128,000 Everlasting Gobstoppers.

## Nick Egbert

**Example 2.** A box is to be constructed from a square piece of cardboard measuring 20 inches by 20 inches by cutting out squares from each corner of length x.

- (a) Find an equation for the volume V of the box in terms of x.
- (b) Find an equation for the surface area S of the box in terms of x.



**Example 3.** A field along a river is to be fenced in using 1250 feet of fencing, where no fencing is to be used along the side with the river. (The fenced-in area is rectangular.)

- (a) Express the length l of the enclosed field as a function of its width w (where l is parallel to the river).
- (b) Express the area A of the enclosed field as a function of the width of the fencing.

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**Example 4.** A closed tin can is to hold  $350 \text{ cm}^3$ . If the cost of the material to make the top and bottom costs \$0.75 per square centimeter and the cost to make the side is \$0.55 per square centimeter, find a function to represent the cost C of producing a can in terms of the radius r of the can.

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**Example 5.** An animal pen with an area of 400 ft<sup>2</sup> is to be evenly subdivided into 12 sections as shown below. Express the total length L of fencing needed as a function of x.

