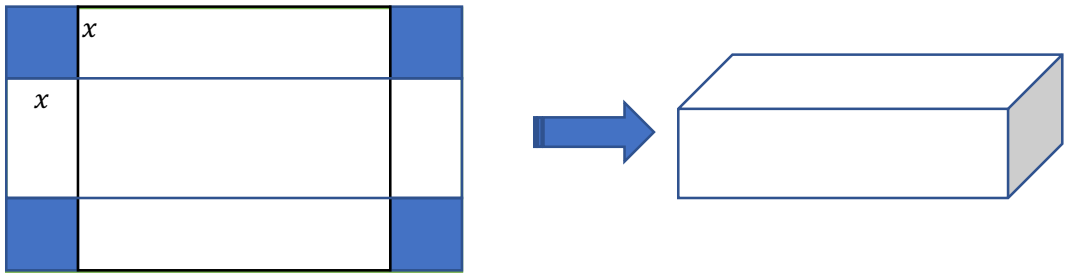
Calculus

Name: *Date:*

Make the Best Box

We need to make a box with an open top out of a 12x18 sheet of material by removing congruent squares from each corner. Furthermore, we would like to maximize the volume.

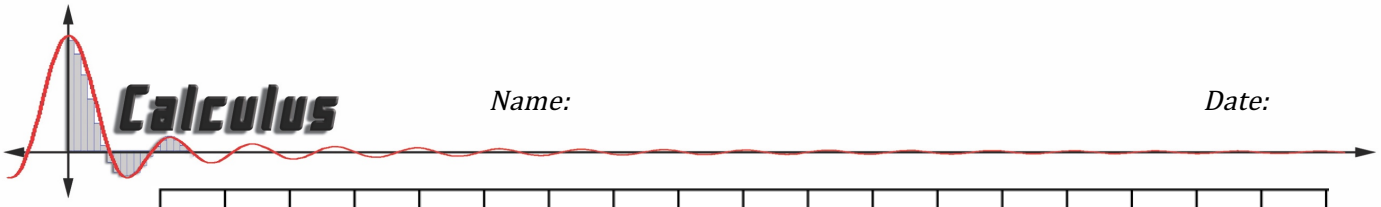


1. Begin by making your best guess, and building a box that you think will have the greatest volume.
2. Now, write functions for the surface area and the volume of the box in terms of x.

3. Now use the derivative of the volume function to find the *exact* value of x that will maximize the volume.

4. What is the exact surface area of the final box?

5. Extra challenge… what is the exact volume of the final box?



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