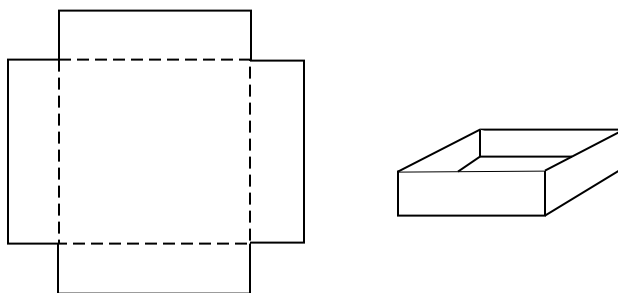


## Math 75B Worksheet — Optimization

A box is to be made from a 12-inch by 12-inch piece of cardboard by cutting notches and folding, as shown.



1. Label each edge of the flat cardboard in terms of a single variable. For example,  $x$  might be the length of a side of the notch.
2. What is the volume of the box created in terms of  $x$ ?
3. What should  $x$  be in order to maximize the volume?
4. What is the maximum volume of the box?