

## Chapter 6 Lab Activity 1: Build a Box

**Problem Statement:** Create a box that has a base with an area of 448 cm from a piece of card stock measuring 24 centimeters by 36 centimeters by cutting congruent squares from the corners of the card stock and folding up the sides.

**Material:** Card Stock, Ruler, Tape, Scissors

### Procedure

1. Sketch a diagram on a piece of card stock that measures 24 centimeters by 36 centimeters.
  - a. Draw congruent squares in each corner.
  - b. Label the lengths of the sides of the squares as  $x$ .
2. Write expressions to represent the width and the length of the base being created.
3. Write a polynomial to represent the area of the base of the box.
4. Write an equation to solve for  $x$ .
  - a. Determine the dimensions of the squares to cut from the corners of the card stock. Explain your answer.
5. What are the dimensions of the box you are creating?
6. Cut the squares from the card stock. Tape the upturned sides together to form a box.
7. Measure the dimensions of the box that you created.
  - a. Verify that they match the dimensions in Step 5.
8. Show that the area of the original piece of card stock minus the four squares is equal to the surface area of the box that was created.
9. Create another box that has a base area of 220 square centimeters.
  - a. What are the dimensions of this box?

