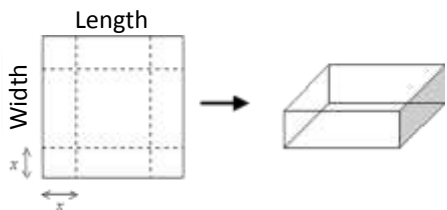


If you cut an x -cm square out of each corner of a 40 cm by 28 cm piece of paper and fold it to make an open-top box (that is, without a lid), what is the volume of the box?



1. Complete the table for various sizes of x -cm squares.
2. What value of x results in the largest volume? _____
What is this volume? _____
3. Create a scatter plot on your graphing calculator and sketch this graph on the axes provided: label axes and scale, and bold the point of max volume.
4. Write a generalized formula for each column of the table in terms of x .
5. Write a generalized function for volume, $V(x)$.

$V(x) =$ _____

6. Type $V(x)$ above into Y1 and graph, set graph type to -0.
7. Use the CUBIC regression function to find a function for volume (record coefficients to 3 decimal places). Type into Y2 on calculator and graph. Write the function below.

$y =$ _____

8. What do you notice?

9. Use the 2nd CALC MAX function to find the max. What is the max point, write as (x,y) ? _____

What are the dimensions of the largest volume box?

Height = _____, Length = _____, Width = _____

x-cm square cut out L1=	Volume of Box(cm ³) L2=	Length of Box (cm) L3=	Width of Box (cm) L4=
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
x			

Record Window Settings

$x \in [\text{min}, \text{max}, \text{scale}]$

$y \in [\text{min}, \text{max}, \text{scale}]$

Integer Max Volume:

(,)

Real Max Volume:

(,)

