

Group students into pairs: give each pair **5 sheets of graph paper, Building Boxes sheet, scissors, transparent tape** (students may need to share the scissors and tape), and **one inch wooden cubes**.

Tell students that they are going to be designers for a box company. First they need to make all their paper the same size. Direct everyone to trim sheets to a 9 squares by 11 squares rectangle.

Go over the second row, "grid paper" on their Building Boxes chart.

MATERIALS:

- Building Boxes sheet
- Graph paper
- Scissors
- Transparent tape
- 1 inch wooden cubes

	Unit of measure	length	width	height	volume	Square cut out	Surface area
Grid paper	squares	11	9	0	0	0	99
Box 1	squares	9	7	1	63	4	95
Box 2	squares	7	5	2	70	16	83
Box 3	squares	5	3	3	45	36	63
Box 4	squares	3	1	4	12	64	35
Box 5	squares						



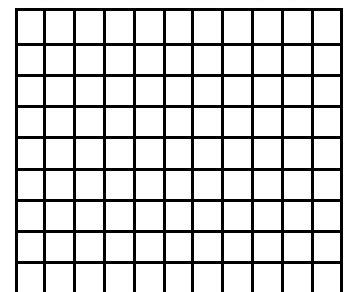
Box 1

Take one sheet of the 9 x 11 grid paper and cut one square out of each corner.

Fold up the first column, the first row, the 11th column and the 9th row. Tape corners together to create a box.

Have the students put wooden cubes into the box and see how many cubes fill up the box

Fill out the grid.

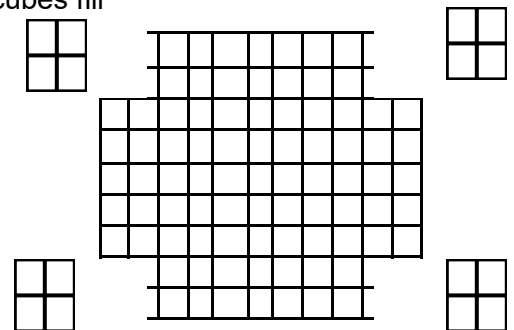


Box 2

Take a new sheet of 9 x 11 grid paper and cut a 2 x 2 square from each corner. Fold up the edges and create a new box.

Use wooden cubes to help figure out the box volume.

Continue the pattern of cutting out squares from corners to create the boxes.



Building Boxes

As a box designer, you will be creating boxes that can be made from 9 x 11 paper. These boxes **do not** have lids. Use grid paper, scissors, and tape to create these boxes. For determining volume, you may use cubes.

	Length	Width	Height (number of layers of cubes)	Volume (number of cubes needed to fill box)	Square cut out (total number of square cut from rectangle)	Surface area (number of squares left in)
Grid paper						
Box 1						
Box 2						
Box 3						
Box 4						
Box 5						

Describe all the patterns that you can identify from your chart.