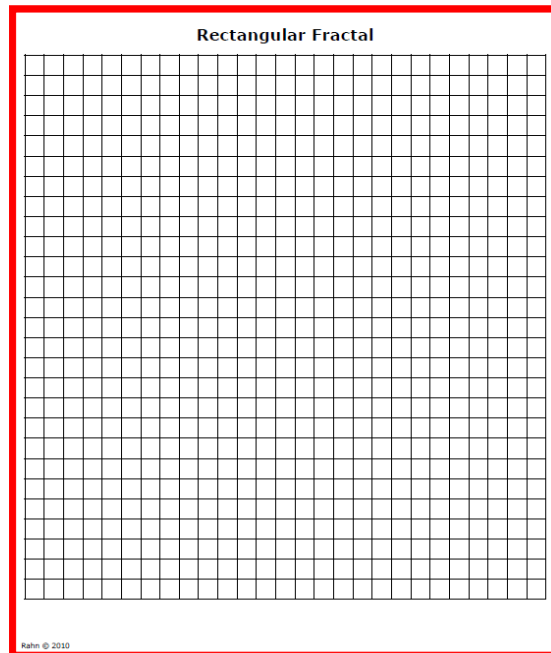


# Loosing Area in a Fractal

In this investigation you will look for patterns in area of a rectangular fractal.



To create a fractal we will begin with a 27 x 27 rectangle. This is stage 0.

To create stage 1 draw two vertical lines and two horizontal lines to subdivide the shape into 9 equal parts. Shade any one of the parts (each person may choose a different part).

To create stage 2 draw two vertical lines and two horizontal lines in each of the remaining rectangles to subdivide the rectangle into 9 equal parts. Shade the same one part of each of these rectangles (as you did in the stage 1).

To create stage 2 draw two vertical lines and two horizontal lines in each of the remaining rectangles to subdivide the rectangle into 9 equal parts. Shade the same one part of each of these rectangles.

Use the ratio to predict the area of stage 4.

Rewrite each total unshaded area using the constant multiplier.

If  $x$  is the stage number write an expression for the unshaded area in stage  $x$ .

Create a graph for this equation.

Check the calculator table to see that it contains the same values as your table.

What does the graph tell you about the area of the rectangular fractal?