

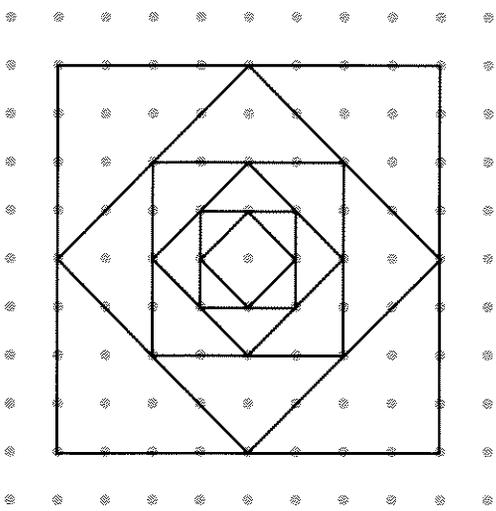
11.A Nested Squares

You will need:

geoboard 

and/or dot paper 

- Using your geoboard or dot paper, make an 8-by-8 square. Calculate its area and perimeter.
- Now make a square that is nested in the original square, like in the diagram. Its vertices should be the midpoints of the sides of the original square. Find its area and perimeter.



- Continue the process, making smaller and smaller nested squares. As you work, extend and complete a table like the following one up to Square #5. When the numbers involve square roots, write them in simple radical form.

Square #	Area	Side	Perimeter
1	64	8	32

- Look for a pattern in each of the columns. Describe the patterns for the
 - areas;
 - sides;
 - perimeters.
- Use the pattern you found in problem 4. For the 10th nested square, find
 - the area;
 - the side;
 - the perimeter.
-  Repeat problem 5 for the n^{th} nested square.
- For the first ten squares, what is the sum of:
 - the areas;
 - the sides;
 - the perimeters.
-  Repeat problem 7 for the first n squares.
-  With larger and larger values of n , the sums get closer and closer to a certain number. What is that number for:
 - the areas?
 - the sides?
 - the perimeters?

10. Report Write a report on nested squares.