6 - 6
Fractals and
Self - Similarity

Sierpinski Triangle Activity

1. Draw an equilateral triangle with side lengths of 16 units (17 dots).

2. Connect the midpoints of the sides to form another triangle. Shade the center triangle.

3. Repeat Step 2 (for all unshaded triangles).

How many unshaded regions do you have at each stage?

Stage 0:

Stage 1:

Stage 2:

Stage 3:

Stage 4:

What is the perimeter of a nonshaded triangle at each stage?

Stage 0:

Stage 1:

Stage 2:

Stage 3:

Stage 4:

If you continue the process indefinitely, describe what will happen to the perimeter of each nonshaded triangle?

fractal: a geometric figure created using iteration

iteration: repeating the same procedure over and over

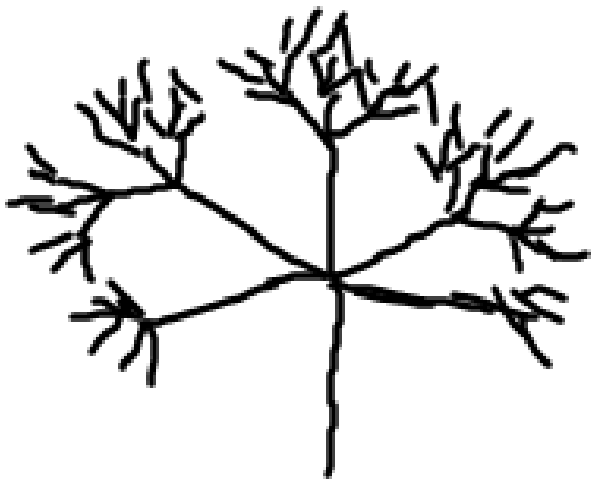
Fractals are <u>self-similar</u>:

smaller and smaller details

have the same characteristics

as the original

Fractals in real-life:



tree

Now you are going to make your own fractal!

**pick a rule to repeat over and over
**must have at least 4 stages (0 - 3)
**make it colorful (by stage or at the end)
**must be mathematically accurate
**plan ahead so that it fits on your paper

15 points, due on Friday

Homework:

Fractal Assignment
(due Friday)