Fill-in Fractal

Fractals help us study and understand important scientific concepts in physics, biology, and geology, such as the structure of freezing water, the pattern of brainwaves, or the way bacteria grow. Their formulas have made possible many scientific breakthroughs. Wireless cell phone antennas use a fractal pattern to pick up a wider range of signals.

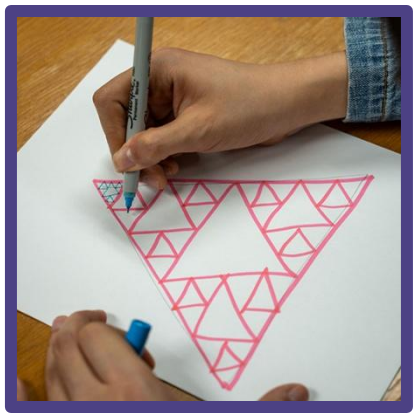
One classic example of a fractal is known as the Sierpiński triangle, which containsan infinite number of smaller triangles inside it in a repeating pattern. You can draw one for yourself!

Materials

- A sheet of paper
- Pencil and/or pen in different colors
- Ruler

Instructions

1. Draw an equilateral triangle
2. Draw a point in the middle of each of the three sides of the triangle & then connect those points to form a new triangle.
3. Repeat Step Two for the outer three triangles, drawing a point in the middle of each of the sides &connecting the points to form a new triangle.
4. Each time we repeat step 2 is called an iteration, or how many times we've repeated the same operation. We now have a big triangle in the middle pointing down, and 3 smaller ones pointing down. If we continue to repeat step 2, however, we would draw a point in the middle of each side of the 9 triangles pointing up and



connect those points to form new triangles, repeating the process for each of the newly created triangles that are pointing up. If you want to stop here, color each of the triangles pointing up black, and leave the triangles pointing down white.

5. Challenge: How many iterations can you do?