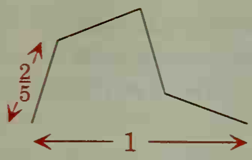
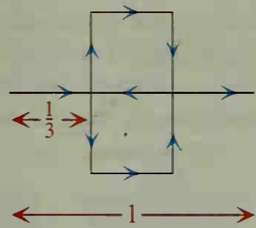
4.



5.

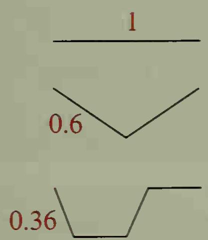


6. Look at the data for the Sierpiński gasket. As the pre-fractal level increases, describe what happens to each of the following.
a. edge length **b.** number of edges **c.** sum of the lengths

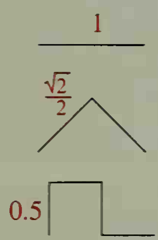
7. Look at the data for the Cantor set. As the pre-fractal level increases, describe what happens to each of the following.
a. edge length **b.** number of edges **c.** sum of the lengths

8. A variety of interesting fractals can be generated by applying a generator first one way, then another. The level 2 pre-fractals below were created by applying the generator to itself first right side up, then upside down. For each set of pre-fractals below, draw the next level.

a.



b.



9. Assume that the initiator for the construction of the Cantor set is the segment $\overline{AB}$ where $A = (0, 0)$ and $B = (1, 0)$. The generator then consists of the segments $\overline{AC}$ and $\overline{DB}$ where $C = (\frac{1}{3}, 0)$ and $D = (\frac{2}{3}, 0)$. The endpoints of every pre-fractal are included in the Cantor set. So $(0, 0)$, $(\frac{1}{3}, 0)$, $(\frac{2}{3}, 0)$, and $(1, 0)$ all belong to the Cantor set. Construct the next two pre-fractals, and find 12 more endpoints belonging to the Cantor set.

10. An alternate way to construct the Sierpiński gasket is to start with a solid triangle and delete the mid-triangle, then delete the mid-triangles of the resulting triangles, and so on. Construct a table and show that the resulting fractal is indeed the Sierpiński gasket. Add an area column to your data table and show that the resulting sequence of pre-fractals have areas that approach zero.