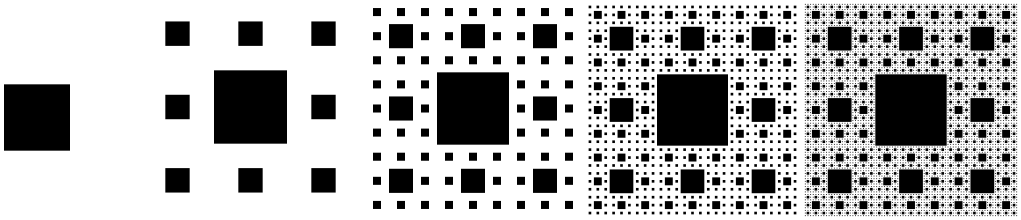
Recursion Programming Project (10 points)

Complete problem 1, 2 or 3 below. When done, submit your project in a zipped folder to Edmodo with the folder named LastnameRecursion.

Look on Edmodo for the drawingPanel file and the framework file for the SCarpet.java and KSnowflake.java programs. Do not change the main method and do not change the method header for the recursive method.

1. The Sierpinski carpet is a fractal that is defined as follows: The construction of the Sierpinski carpet begins with a square. The square is cut into nine congruent subsquares in a 3-by-3 grid, with the central subsquare removed. The same process is then applied recursively to the eight other subsquares. Figure 12.7 shows the first few iterations of the carpet. Write a program to draw the carpet on a DrawingPanel recursively.

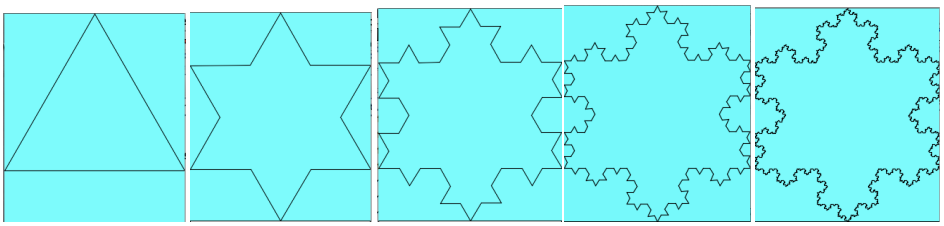
   See sample output below for levels 1 through 5.



2. The Koch snowflake is a fractal that is created by starting with a line segment, then recursively altering it as follows:
   a. Divide the line segment into three segments of equal length.
   b. Draw an equilateral triangle that has the middle segment from step 1 as its base.
   c. Remove the line segment that is the base of the triangle from step 2.

   Write a program to draw the Koch snowflake on a DrawingPanel recursively.

   See sample output below for levels 1 through 5.



3. Complete 4 additional **exercises** from your Building Java Programs textbook Chapter 12 Recursion, **selecting from #3, 4, 7, 9, 11, 12, 13, 14**. Include a main method with calls to the recursive methods using the example information provided in the exercises. Exercises start on page 768.