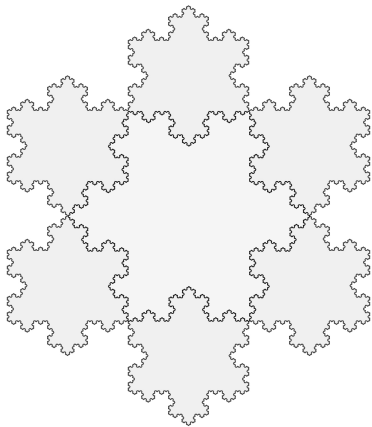
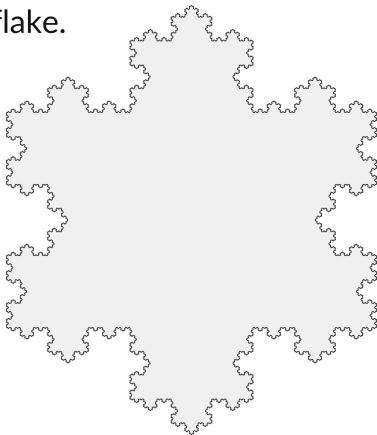


# Koch Snowflakes

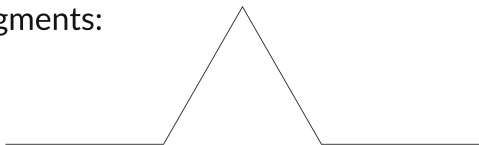


You have before you a set of tiles of varying sizes, each of which is a Koch snowflake.

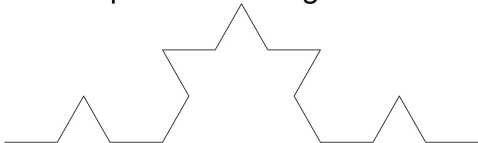


Koch snowflakes were first described by the Swedish mathematician Helge von Koch in 1904. They are one of the earliest examples of fractals. And they are fun to play with!

You can draw an edge of a Koch snowflake in the following fashion. Begin with this edge made of 4 segments:

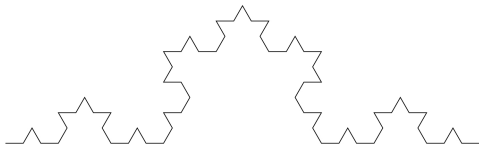


Now, replace each segment with smaller copies of the original:



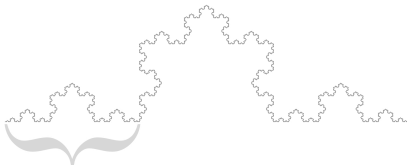
How many edges do you have now?

Replace each segment again with replicas of the original edge:

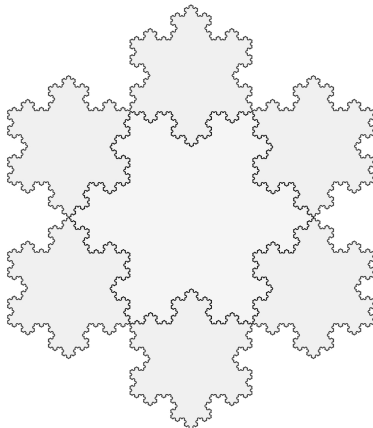


Now how many edges are there?  
Replace them again with still smaller  
copies. Keep doing that, infinitely  
many times. Or until your pencil isn't  
sharp enough to see the difference.

Being a fractal, the Koch snowflake  
has a self-similar edge. If you magnify  
one edge of a snowflake 3 times, it  
looks like the edge you just magnified!



You can tile a Koch snowflake with 7 other Koch snowflakes.



# explore

Can you tile the plane with snowflakes of the same size?

Can you tile the plane with snowflakes using exactly two sizes? three sizes?

If you use two sizes, how much bigger is the larger tile?



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