The Elusive 13 Piece Complete Set Puzzle

For G4G13 I designed a complete set puzzle consisting of 13 pieces. Such sets are rare; in fact, I found only one.

To find all regular polygons of a particular order and using a specified set of edges, I wrote a PERL program. This program enumerates all regular polygons of order N using M different edge types. By specifying how each edge type transforms when a polygon is flipped, the program will also determine all unique polygons if flipping is permitted.

The set that has cardinality 13 is the one that uses polygons of order 6 and two edge types that do not change when flipped. I.e. edge type A is identical to a flipped edge type A and edge type B is identical to a flipped edge type B.

For the physical copies, edge type A can be interpreted as slot and edge type B as a tab. The adjacent image shows the 13 pieces.

Besides the challenges on this sheet, I expect that you can also play domino-like games with this set. Designing the exact rules for such games is a challenge I'll leave to you.

More information and solutions can be found at
http://www.buttonius.com/G4G13/

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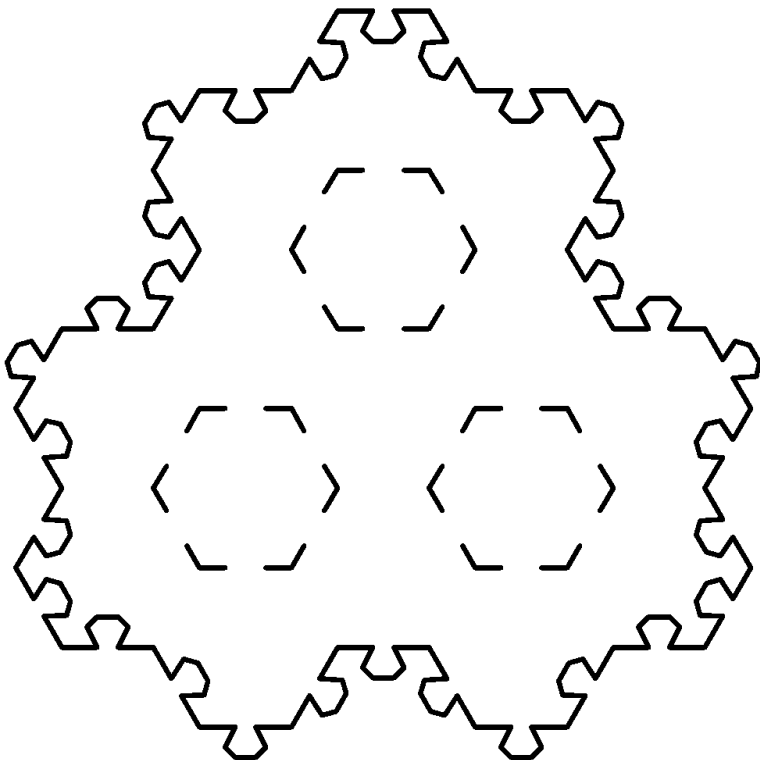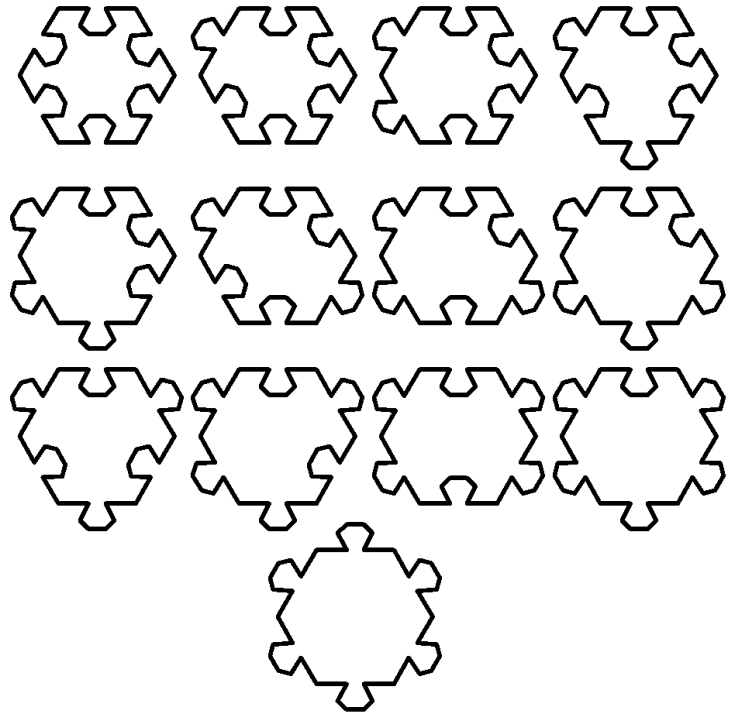
In this challenge outline there are three holes indicated with dashed hexagons. The tab configuration around these holes is not prescribed. This challenge has 560 solutions.
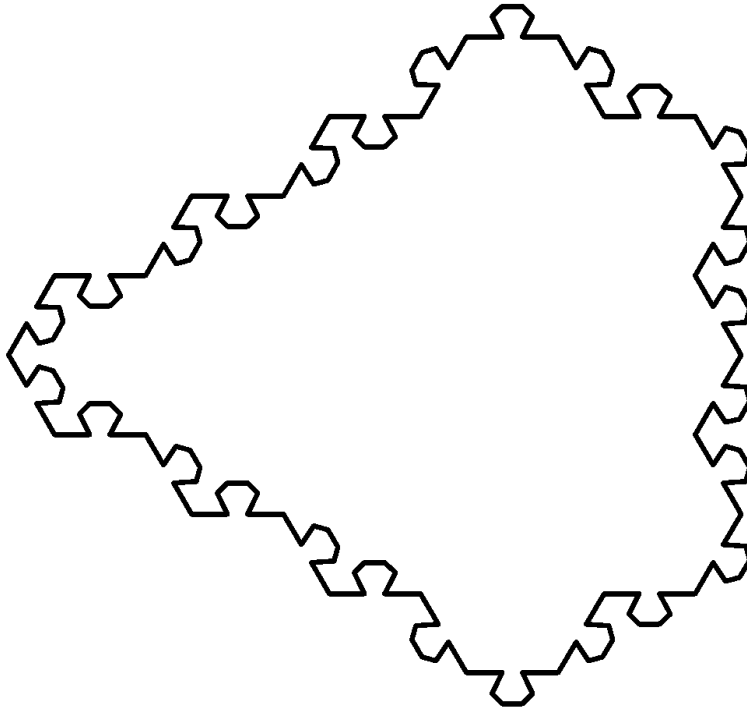
If you want to make it harder, add the constraint that the three holes must be congruent. This results in 12 solutions.
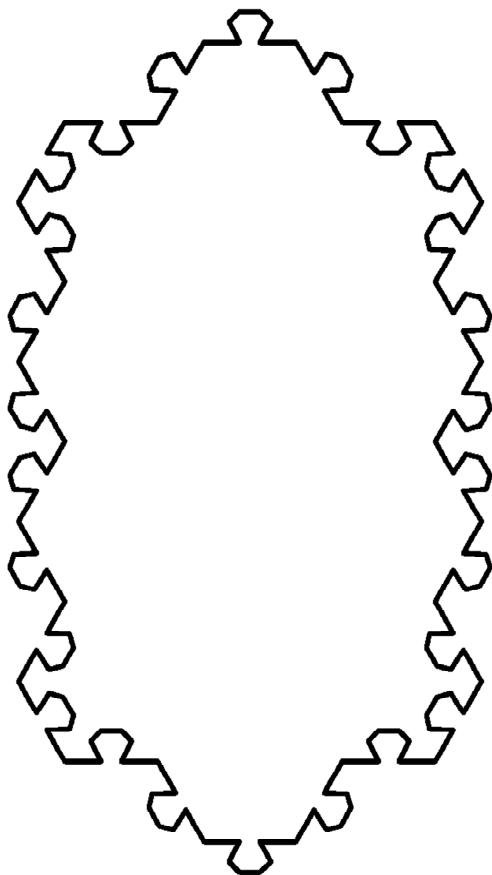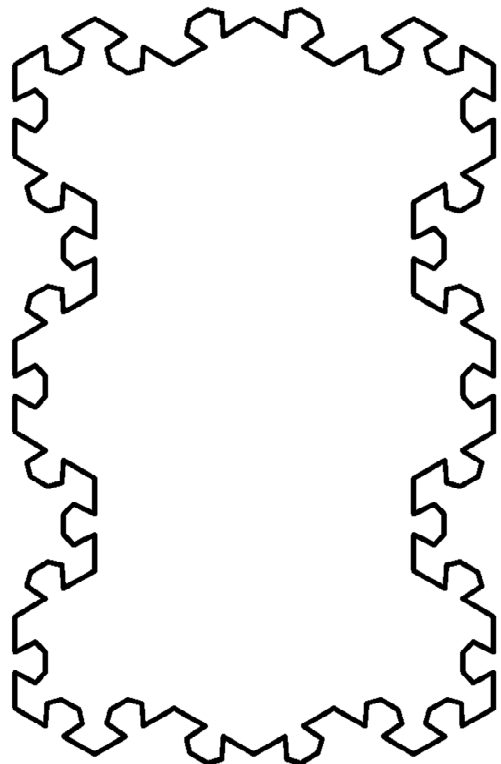
GATHERING 4
GARDNER 13

More challenges

Use the 13 pieces to make a shape with each of these outlines. Beware, there is a catch with these challenges …

4740 solutions

4108 solutions

5 solutions