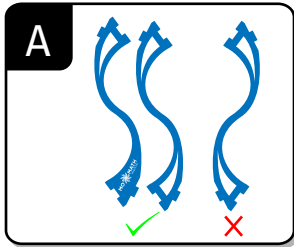
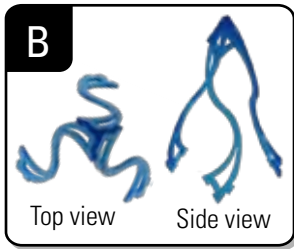


# Frabjous Puzzle/Sculpture Assembly Instructions

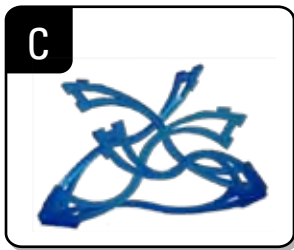
These laser-cut parts snap together to make an intricate mathematical sculpture. It is a challenging puzzle to assemble them, so do not expect to finish in just a few minutes. You will have to use all your pattern-finding and puzzle-solving skills along the way. But when complete, you will have a beautiful sculpture to display. *Please note this puzzle is recommended for ages 16 and up.*



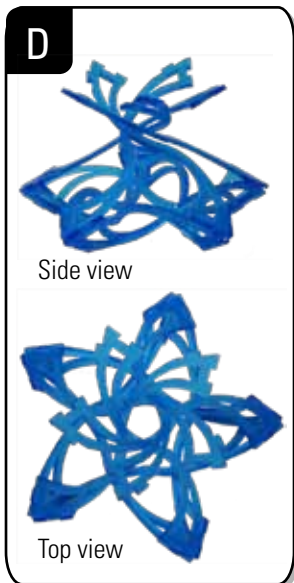
- **TASK:** Arrange 30 pieces flat on the table so they look S-shaped and the MoMath logo (on the piece which has the logo) is face up.
- **OBSERVE:** The side which is up will be the outside face of each piece as it is added to the growing sculpture.
- **HINT:** During assembly, don't press the pieces tightly together, so it's easy to remove them if you make a mistake. A small flat bladed screwdriver can aid in disassembly.



- **TASK:** Start with the MoMath logo piece (with the logo facing outward so you will be sure to have the correct handedness), and join two more pieces to it to make a three-cycle corner.
- **OBSERVE:** Each corner is identical, with three parts locked into a cycle.
- **HINT:** The three-way cycle is much stronger than the single joint you get when you put just two pieces together. So a good assembly strategy is that whenever you put two pieces together, let your next step be to add the third piece to that corner.



- **TASK:** Choose a free end and add two more pieces to it to make another corner cycle.
- **OBSERVE:** When adding each new piece, observe how it weaves among the existing pieces.
- **IMPORTANT:** The slender parts of the pieces do not touch; only the corner joints touch. If you find pieces touching, confirm all pieces were installed in "S" orientation.



- **TASK:** Add pairs of pieces to two more open ends, and a fifth piece to connect those to get to this natural intermediate stage of 10 pieces.
- **OBSERVE:** There is a star of five pieces at the bottom and five more rise up from them to make a vortex of loose ends.
- **IMPORTANT:** When viewing the vortex from the top, each piece should be on top of the next when traveling around in a clockwise order. This ordering is critical to the success of the rest of the puzzle.

From this point, photos would not be useful, so you will have to solve the puzzle yourself. You'll know when you are done. After the thirtieth piece is inserted, there are no more free ends. Check that no parts are touching in the interior, all vortex pieces are properly ordered, then tighten each joint.

- **HINT:** As you continue, the available openings for adding new pieces are smaller and smaller, making it difficult to maneuver the end of each piece through the center. There is a simple trick at this point which works because of the shape of the S: First visualize where you want the next piece to be, but then turn the piece over so it looks like a backwards "S," weave it through, get it into rough position, then twist it right-side-up again back to the "S" orientation, and connect it.

If you get stuck, check out the assembly video at: <http://momath.org/frabjous>