

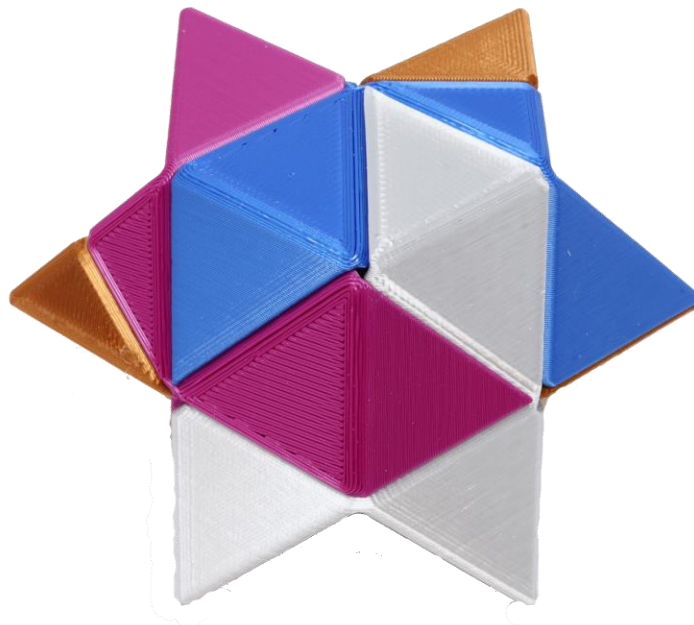
# FRANKENSTAR

**Designer:** George Bell

**Classification:** 3D Assembly

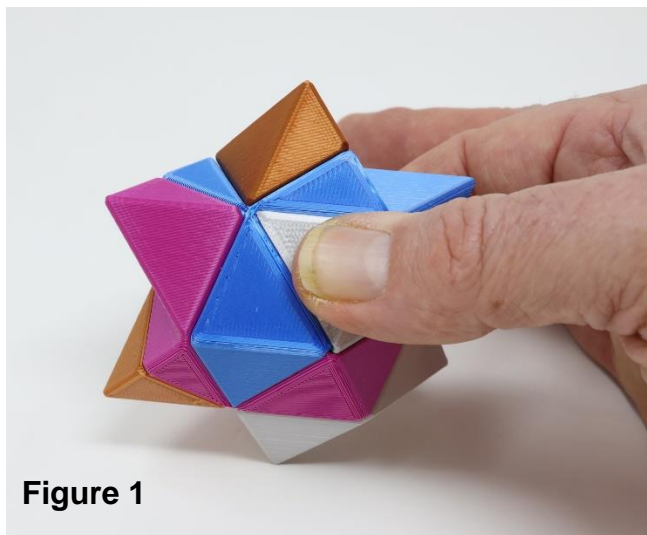
**Goal:** Assemble or disassemble the four pieces into a star shape.

**Extra credit:** Find all assemblies

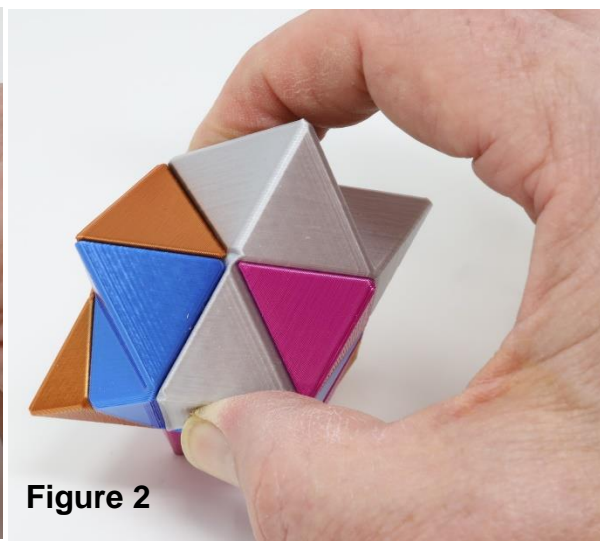


## Disassembly:

Difficulty depends on how tight the puzzle is. Basically, all four pieces need to move directly away from the center simultaneously. Spinning doesn't work unless the puzzle is loose.



**Figure 1**



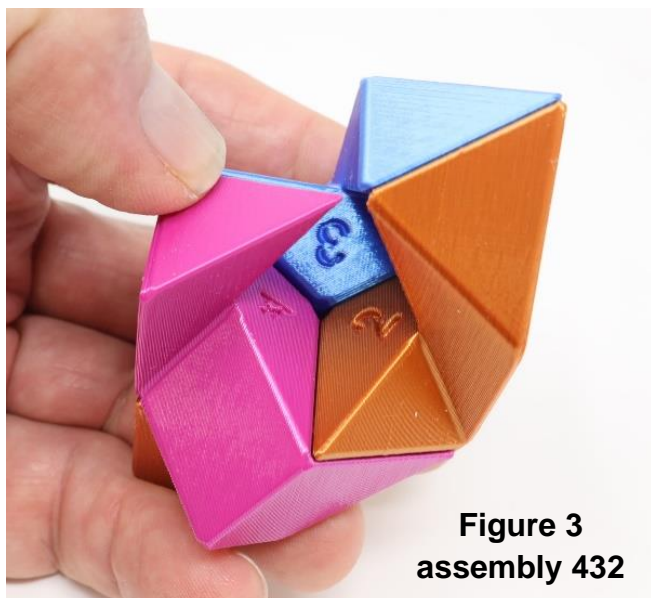
**Figure 2**

Since the pieces are different colors, they are easy to identify. Note that only piece #1 can be grabbed firmly in the center by opposite faces as shown in Figures 1 and 2. In Figures 1 and 2 this piece is silver. Note the color of piece #1 in your puzzle.

Operate over a table or lap so the pieces do not break when it comes apart. Grasp #1 firmly as shown above, and then with your other hand grab one of the other pieces and pull both away from the center. The other pieces are most efficiently gripped using a three fingered grasp. Keep grabbing #1 and with your other hand alternate over the other three pieces. Eventually, it should fly apart.

If it still won't come apart, try this with two people (one hand grabbing each piece).

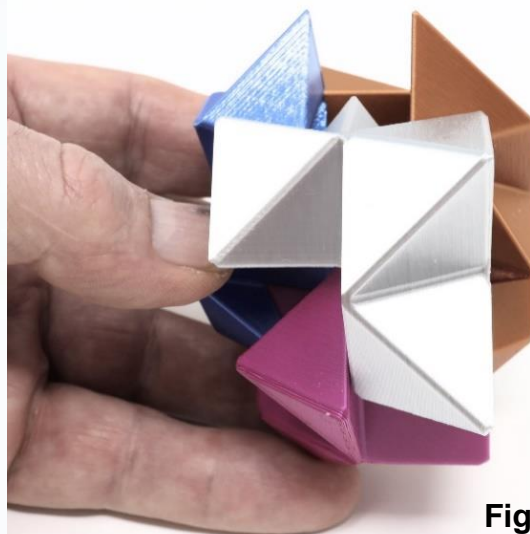
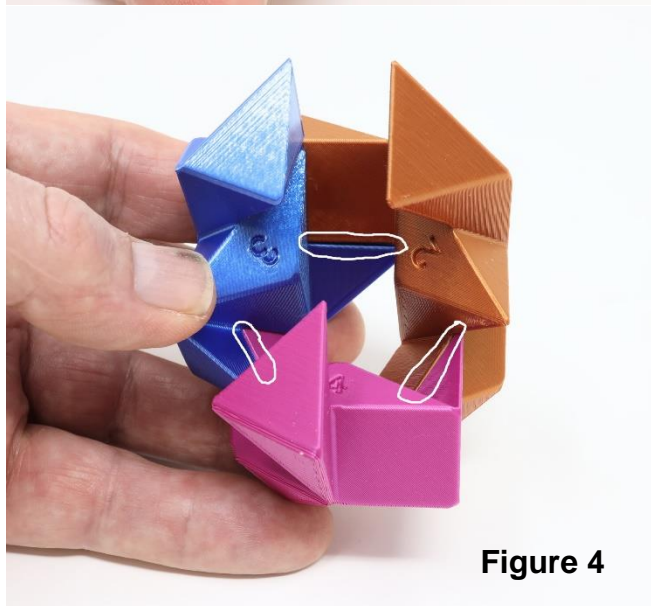
## Assembly:



Start with piece #4, then add #3 and #2 to form **assembly 432** (Figure 3). To add #2, you will need to move #4 and #3 apart, like in Figure 4. Add #2 and move the three pieces together at the same time.

Note that the three numbers face upward and are visible. This is by design so that this position can be quickly identified.

Next, move the three pieces apart as far as they will go before falling apart (Figure 4). Observe the three edges (circled in white in Figure 4) to make sure they are aligned. The edges should be parallel and close together.



Finally, add piece #1 from above (Figure 5), and align its three edges. The puzzle should then slide together smoothly. If this doesn't seem to be working, it is usually best to start over at **assembly 432**. Do not force the pieces together or you may break a piece.

## Extra Credit:

We can think of each piece as having three connectors, each is either R or L. A connector can only connect with another of the same type. Pieces #3 and #4 have all R and pieces #1 and #2 have two R and one L. Thus, pieces #1 and #2 must be connected via their L's.

A total of 9 assemblies are possible! All can be constructed starting from something similar to **assembly 432**, except pieces 4 and 3 may be swapped or rotated by 120 degrees.