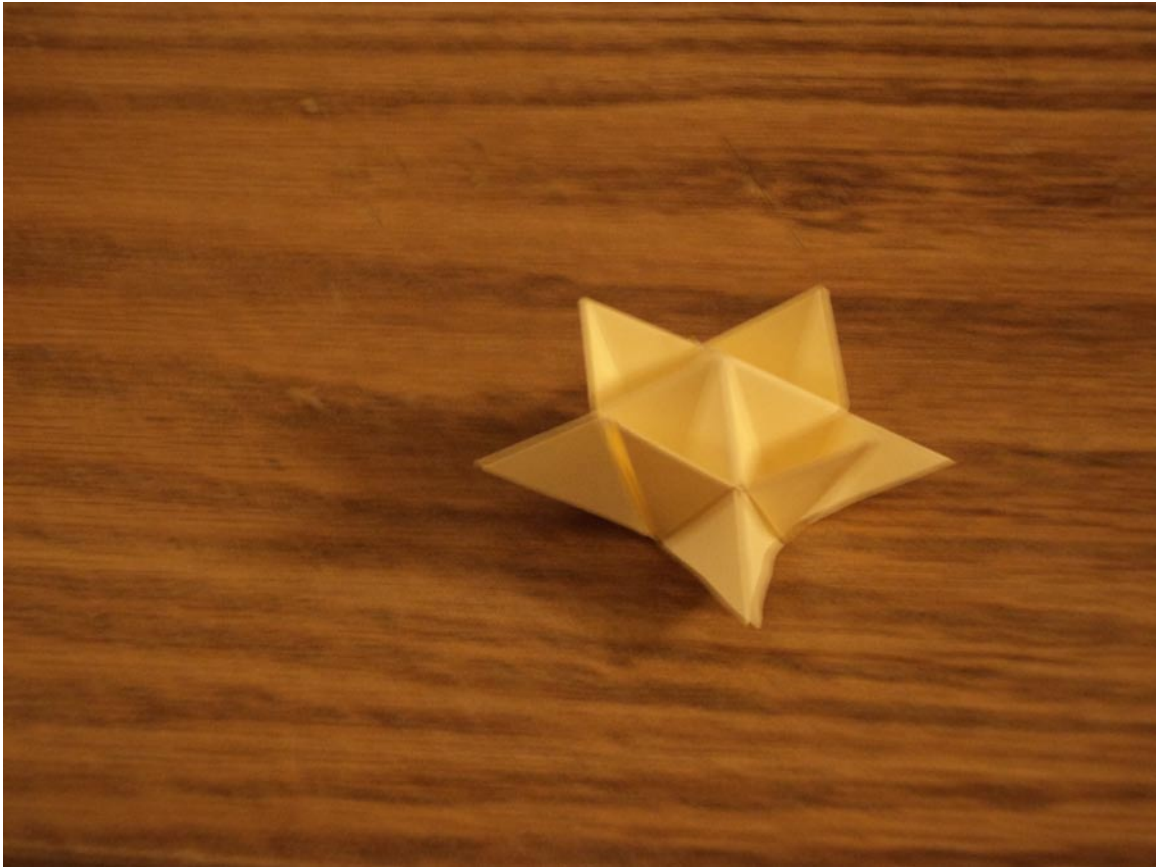
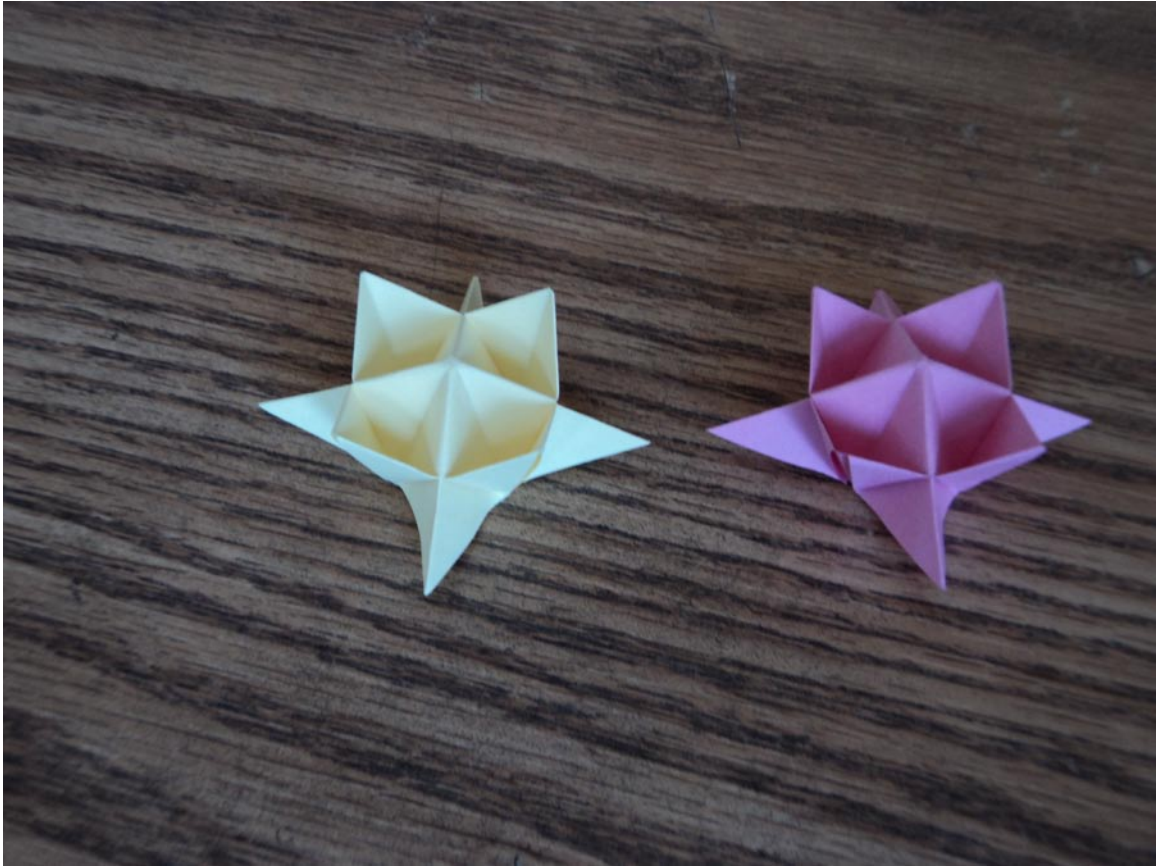


SPIKE BALL HEAVEN



This is a Super-Fortune-Teller, the basic Spike Ball Module. Twelve are needed for the 12-piece ball; 24 are needed for the 24-piece Super Spike Ball, and 54 are needed for the 54-piece Super Duper Spike Ball.

The assembly of the Spike Balls will be shown first, followed by folding instructions for the Super-Fortune-Teller.



To connect the yellow module to the purple module, insert the yellow tab, pointing to the right, inside the purple tab, pointing to the left. The next picture shows a view looking up at the inside with the yellow tab partially inserted into the purple tab.



Now turn both modules over to see the connection on the outside.



After the yellow tab has been inserted into the purple tab, the purple tab gets inserted into the yellow module, into the space above the yellow tab. To complete the connection push the modules together until both tabs are hidden inside.

.



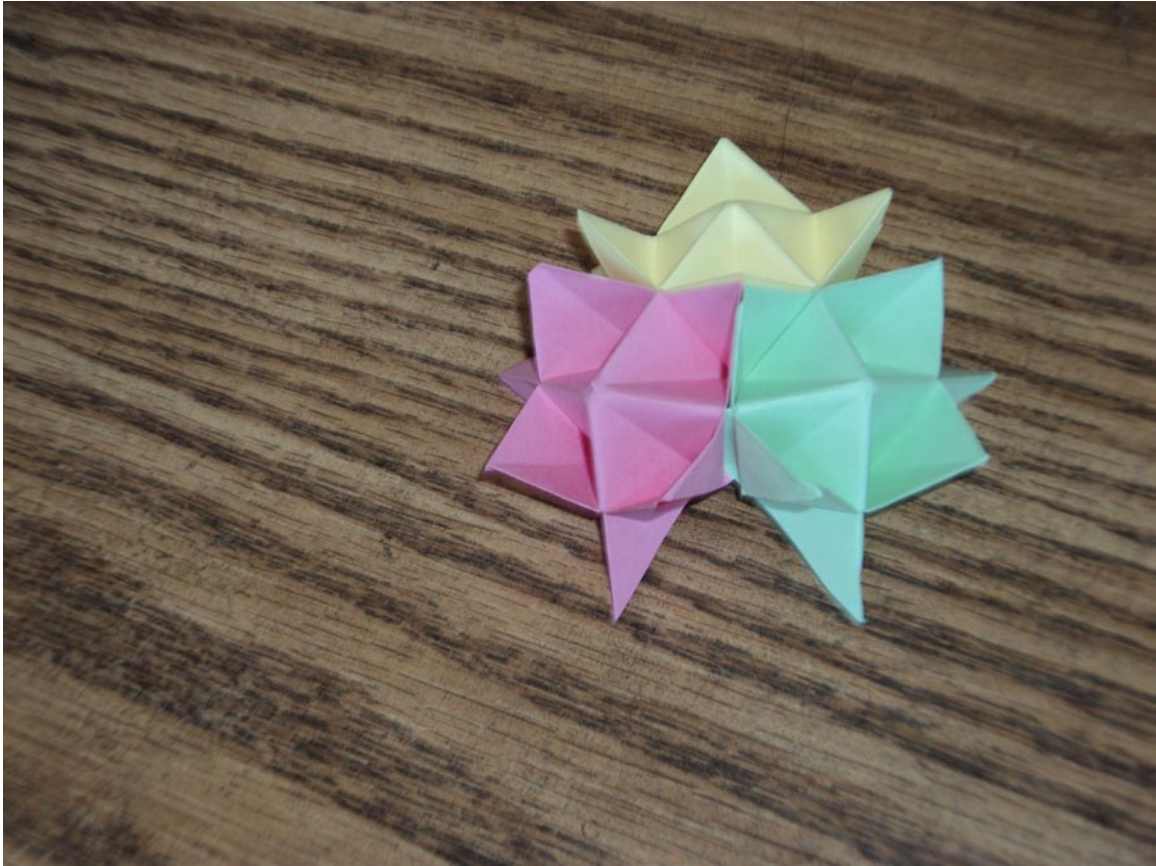
Turn the modules over to see the finished connection on the inside.



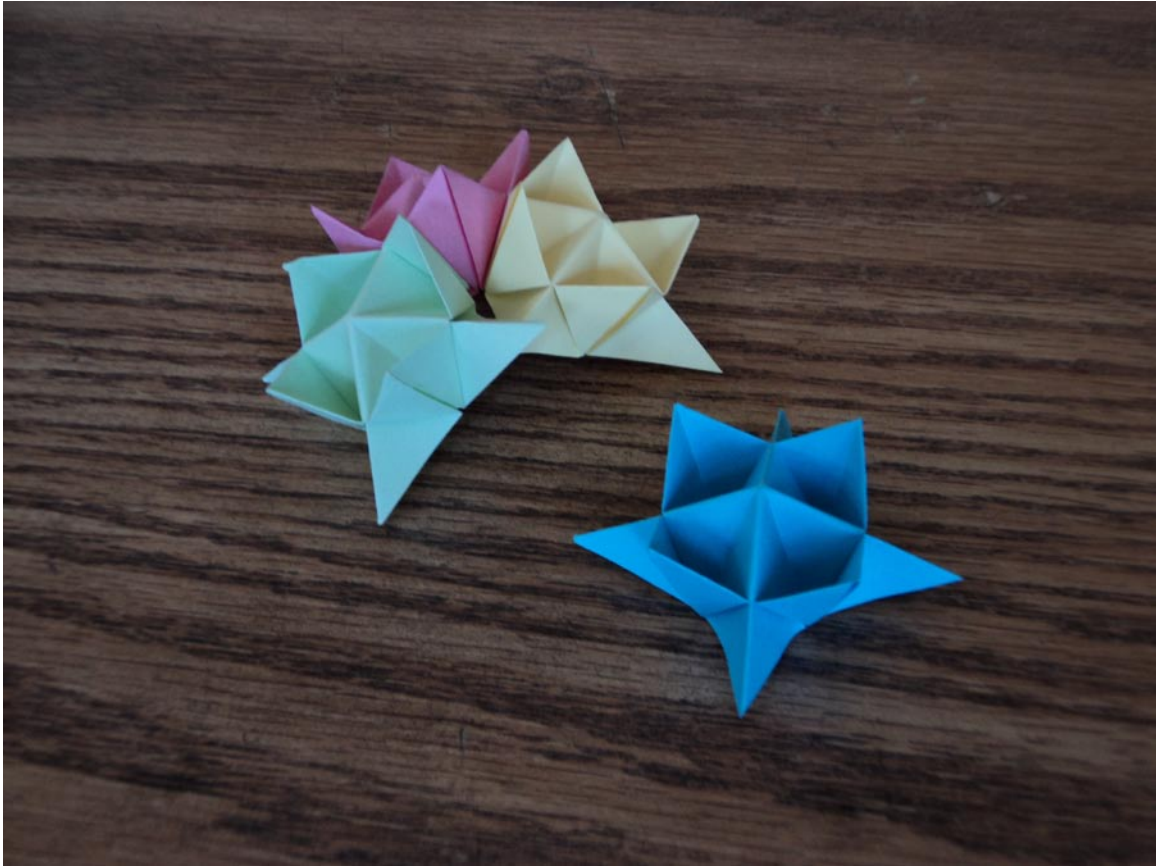
With the connection complete, the tip of the yellow tab touches the center of the purple tab. Turn the assembly over back to the outside.



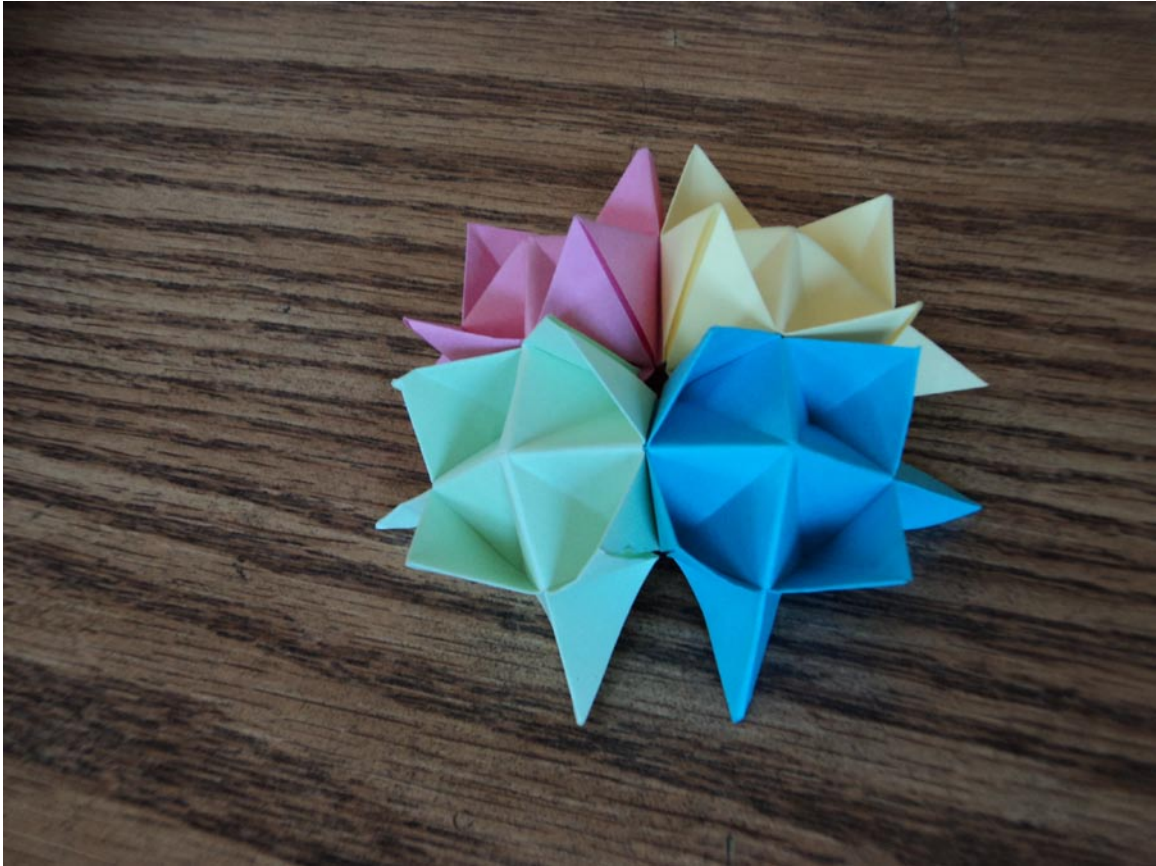
The green module will now be added to the assembly of the purple and yellow modules to make a 3-piece connection. Connect one green tab to a purple tab and an adjacent green tab to the closest yellow tab.



This completes a three-piece connection. The next step shows how to make a 4-piece connection.



The third piece, green, is connected to just one end of the two-piece connection, purple. Then the fourth piece, blue, connects one tab to a green tab, and an adjacent blue tab connects to a yellow tab.



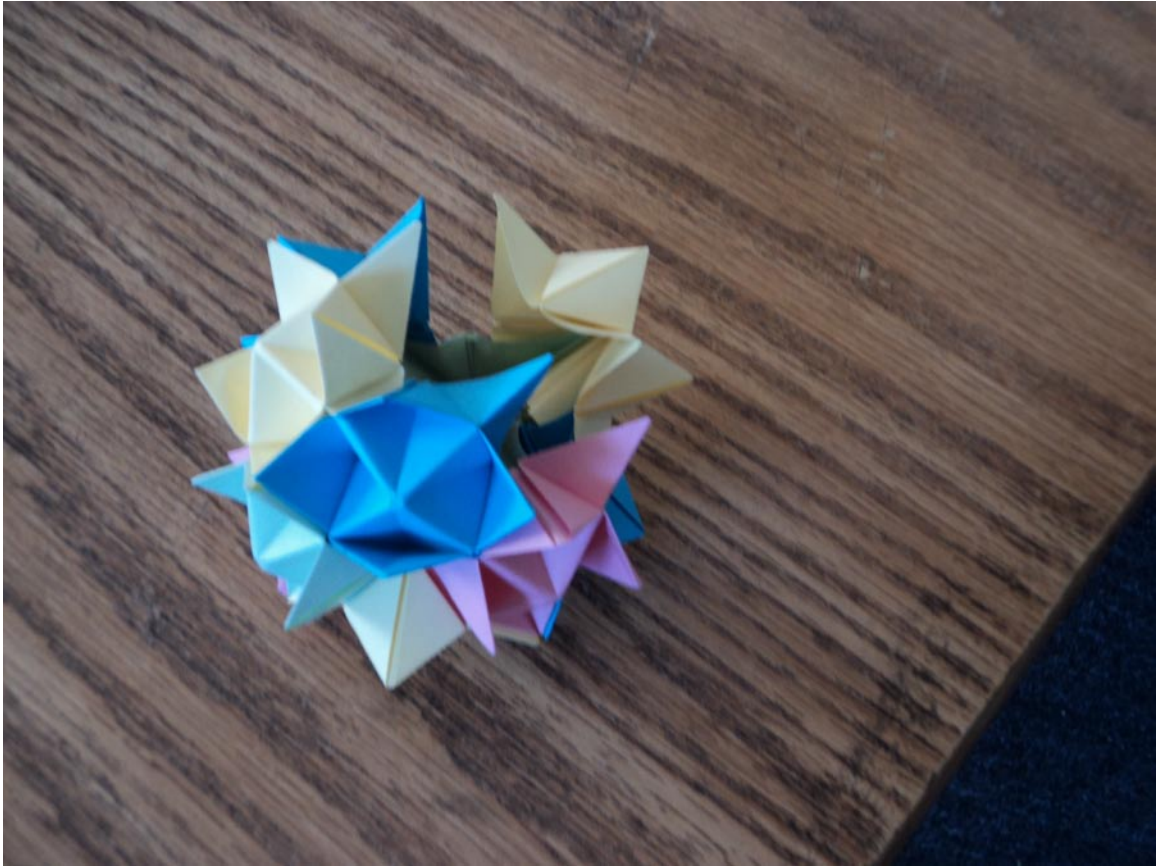
This completes a 4-piece connection. This is the first step in making a 12-piece Spike Ball. The rules for making a 12-piece ball are: every 4-piece connection is surrounded by 3-piece connections, and every 3-piece connection is surrounded by 4-piece connections.



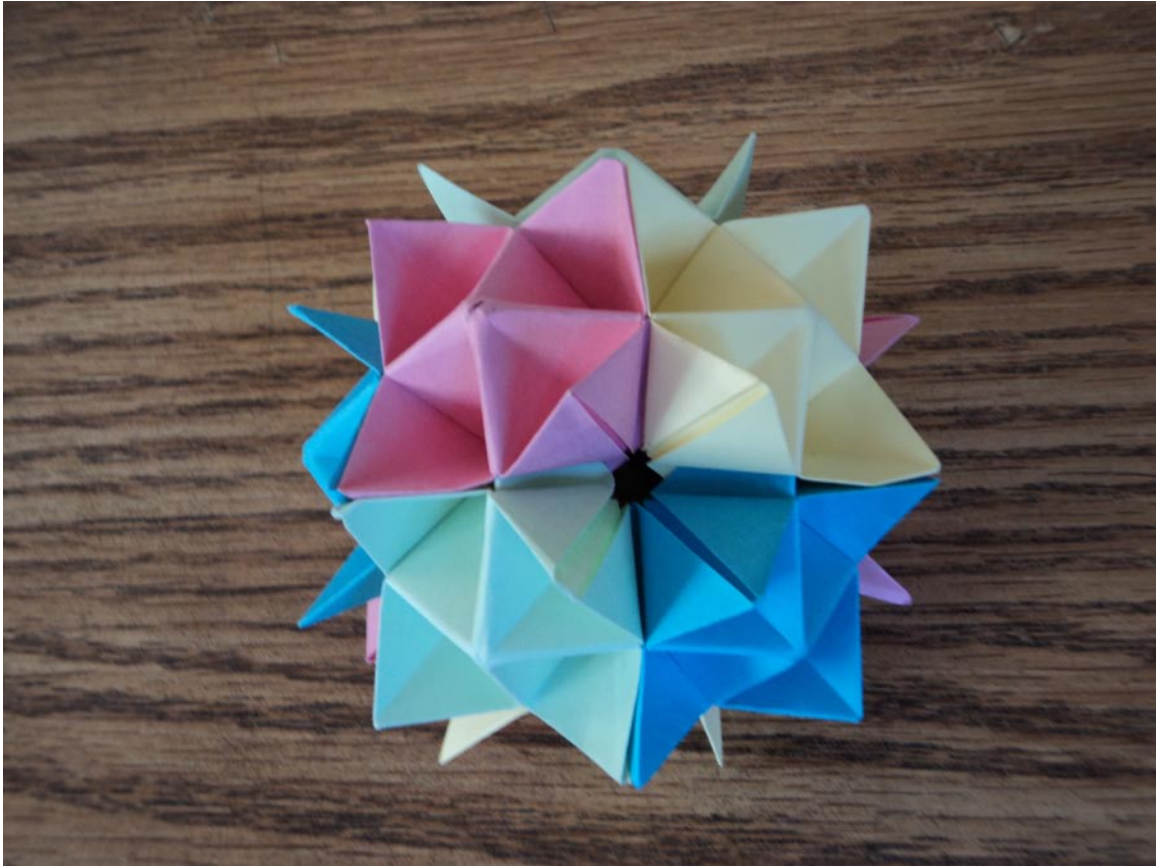
A fifth piece has been added to make a 3-piece connection on one side of the 4-piece connection.



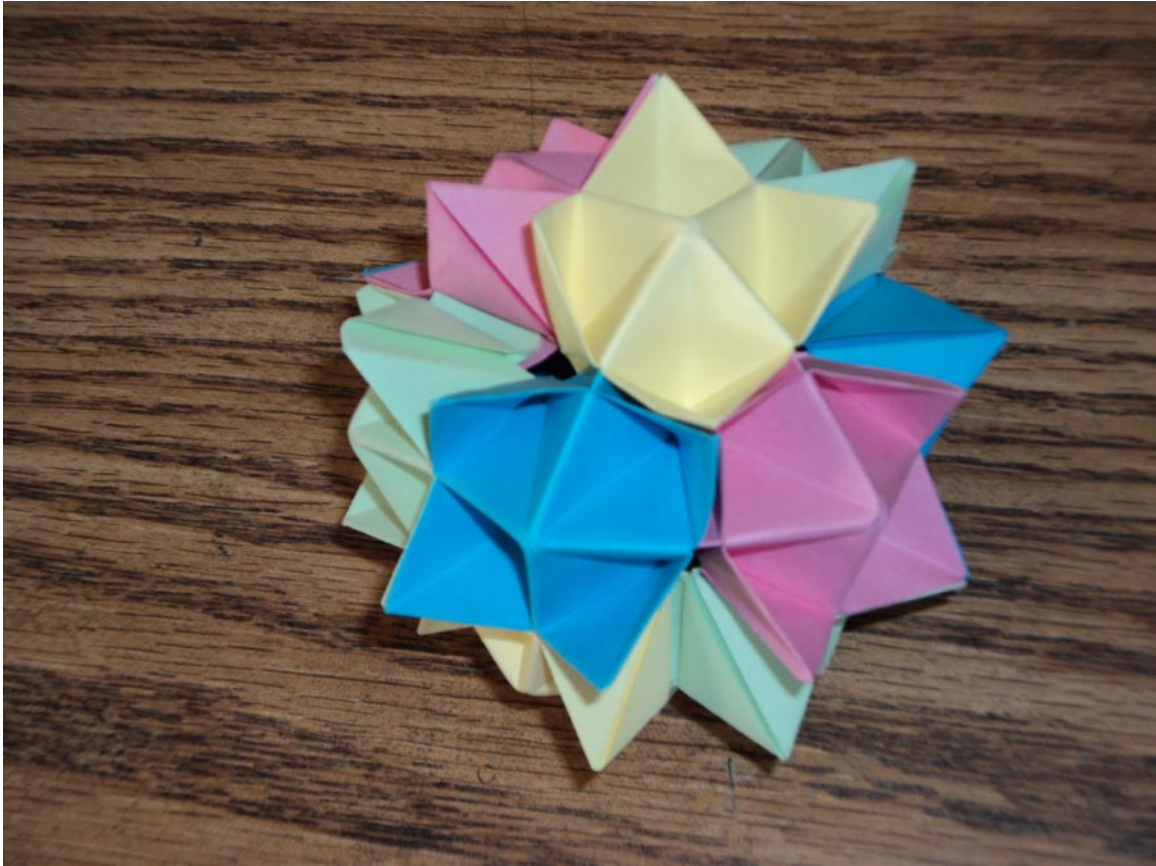
Three more modules have been added to make a 3-piece connection on each side of the 4-piece connection.



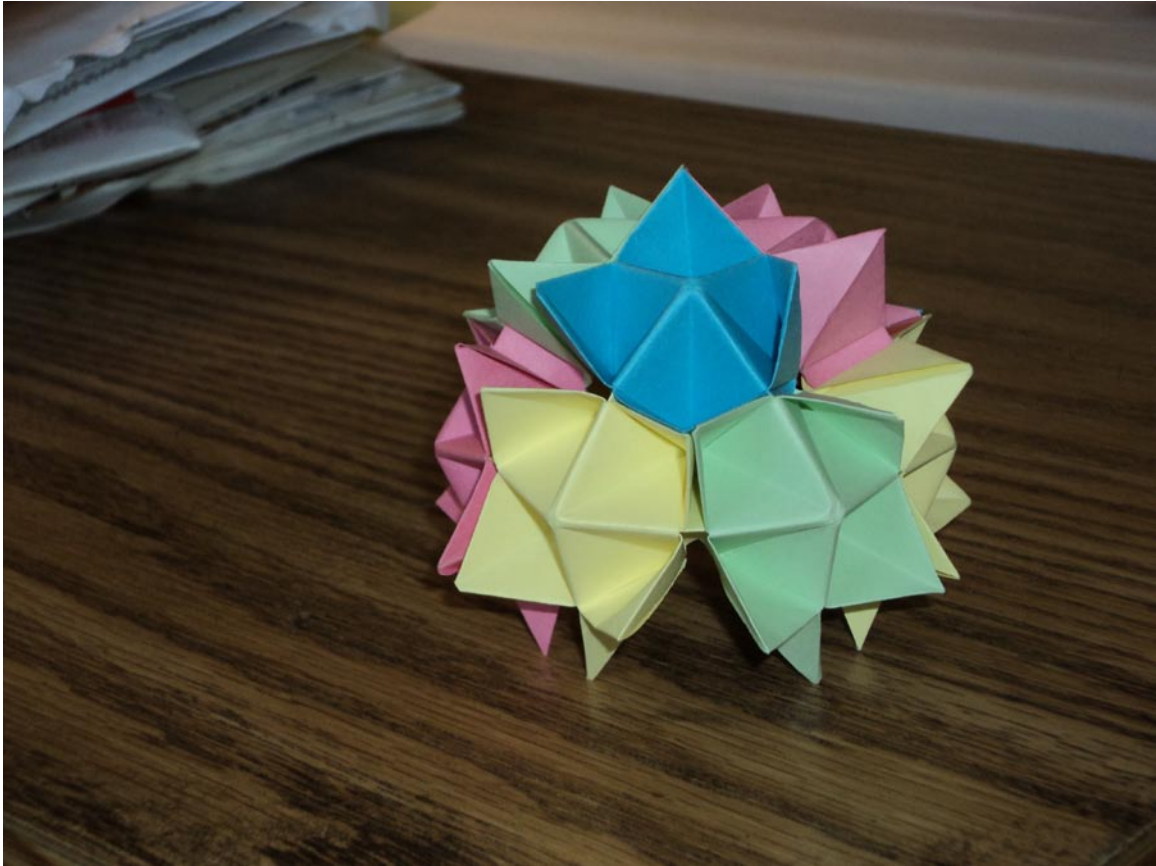
The remainder of the 12-piece ball is finished as follows: when you start working on an incomplete face, check to see what it's already connected to: if it's connected to a 3-sided face, then the new face is 4-sided; if it's connected to a 4-sided face, then the new face is 3-sided. These rules are valid only for 12-piece balls.



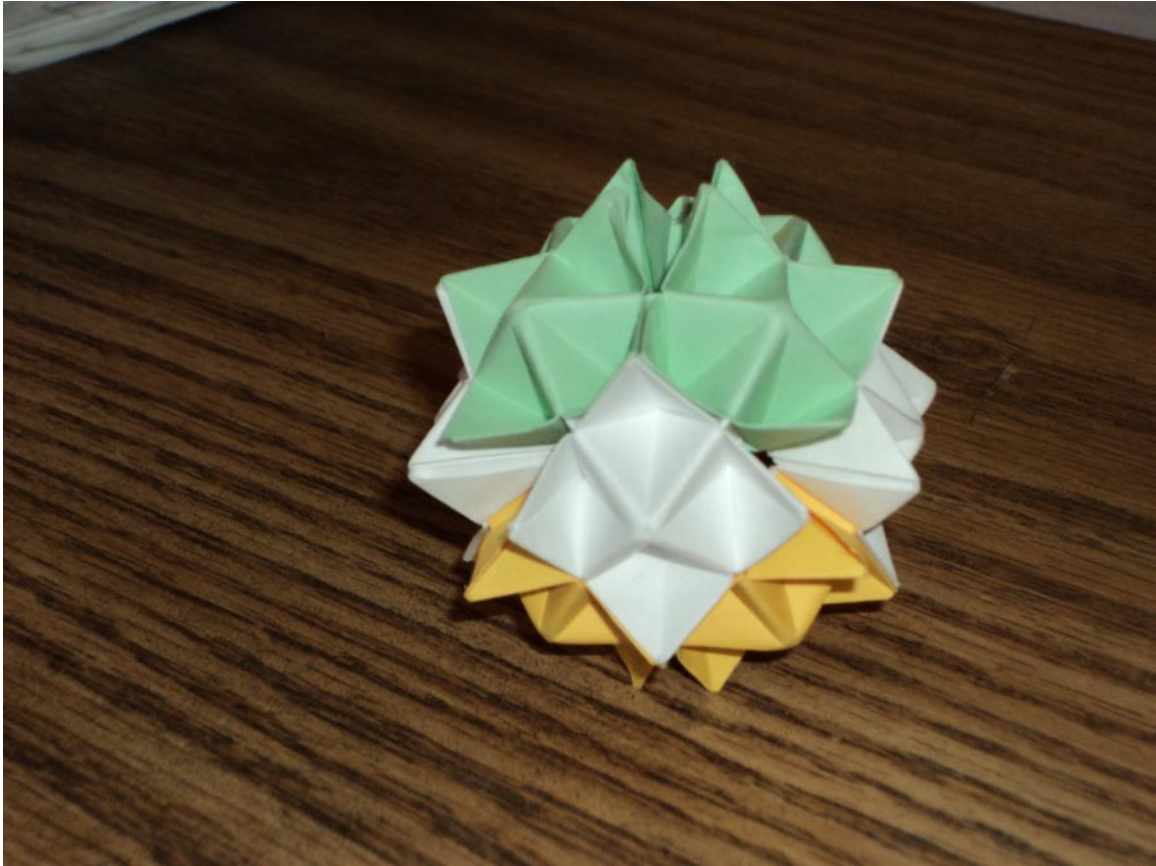
This is a completed 12-piece ball, using four colors.



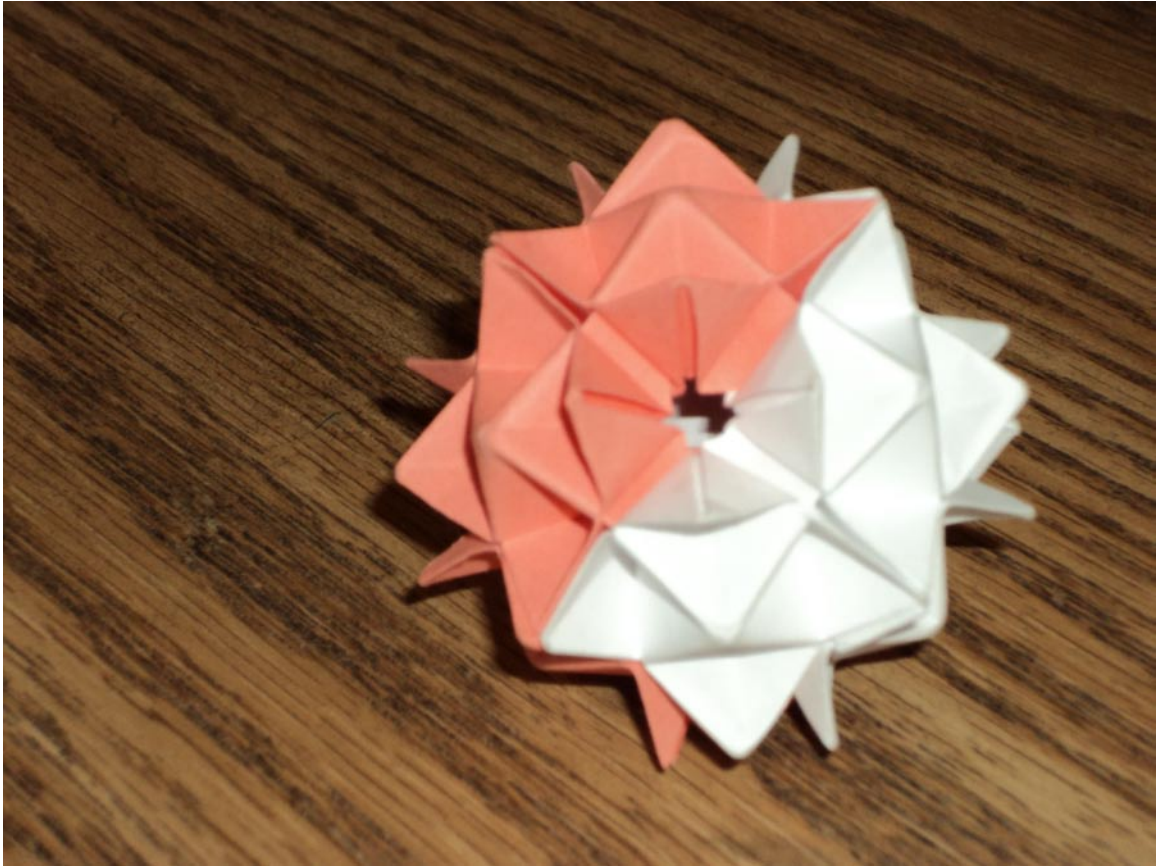
Another view of a four-color 12-piece ball. To make a gazebo from a 12-piece ball, remove one 3-piece connection. The gazebo can rest on the six unmated tabs.



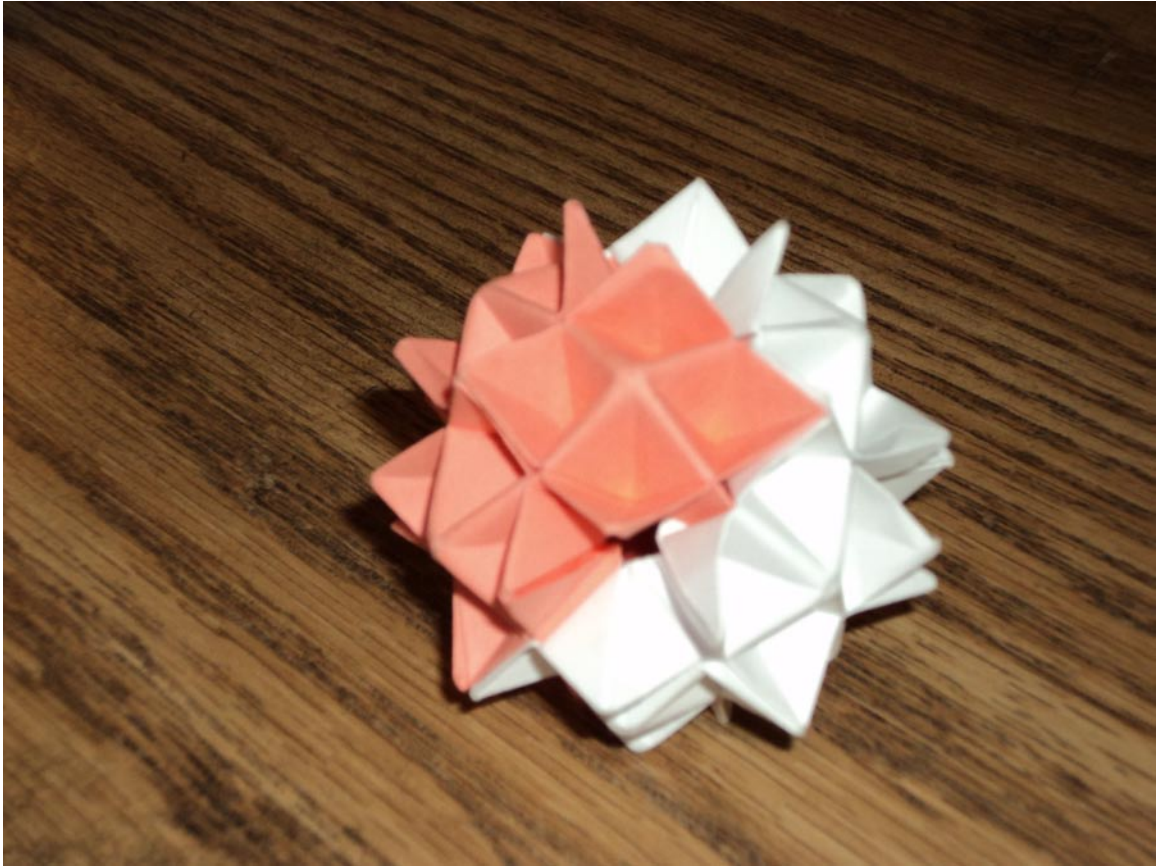
This is a gazebo made by removing a 3-piece connection from a 12-piece ball



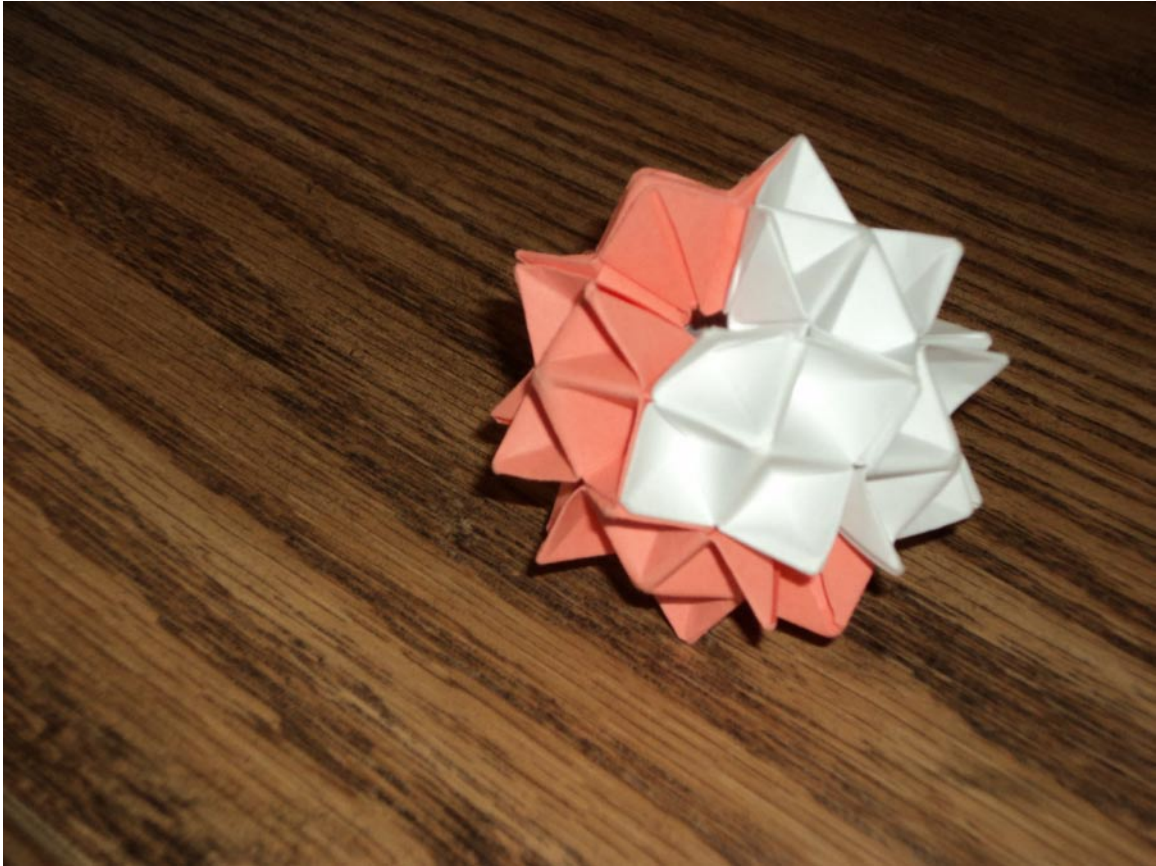
A 3-color 12-piece ball can be made as shown. One color makes a 4-piece connection at the north pole, green, and a second color makes a 4-piece connection at the south pole, yellow. The third color is four modules around the equator, Each equator module makes a 3-piece connection with both the north pole and south pole. The equator modules are separated from each other by a 4-sided space.



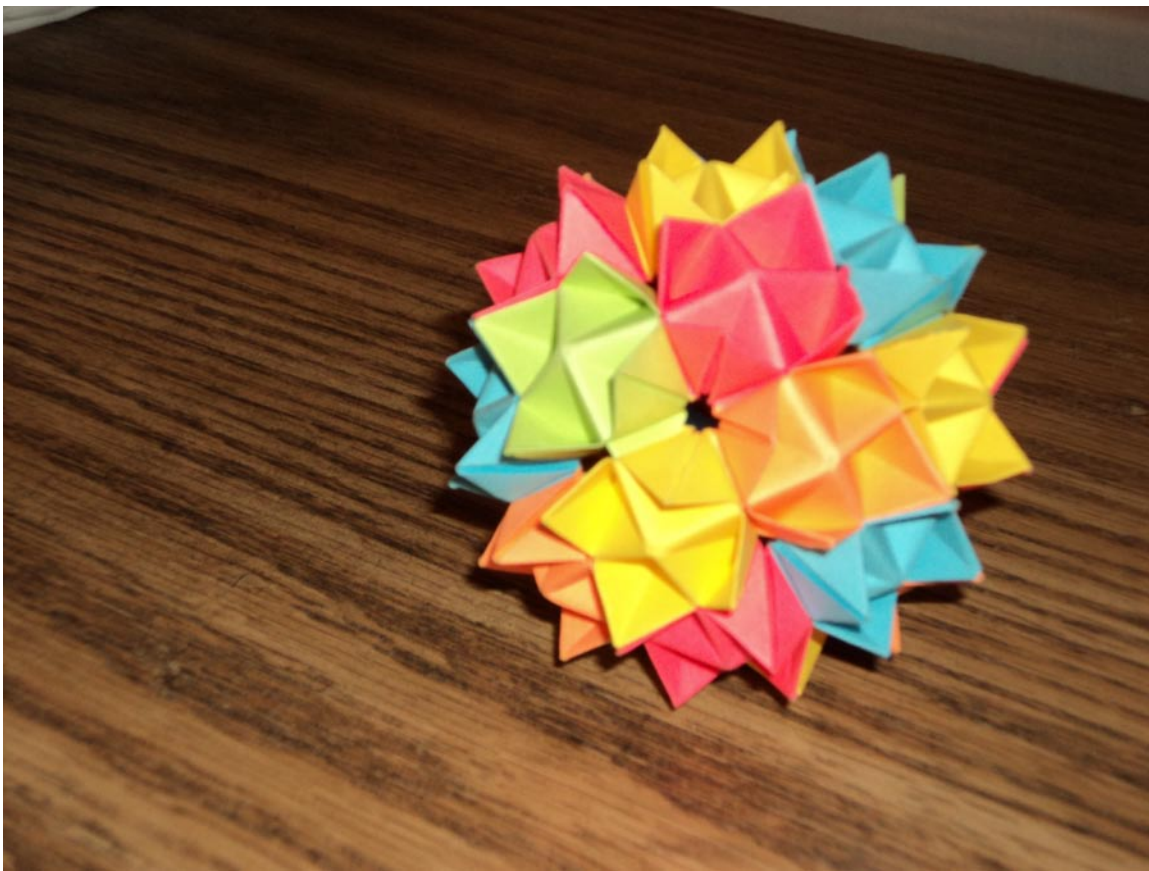
Two colors can form a yin-yang pattern on a 12-piece ball, in which each colored area surrounds the other. Two other views of this ball follow.



This view shows how the white area surrounds the orange area.



This view shows how the orange area surrounds the white area on a 2-color yin-yang 12-piece ball. Each color is made of a four-piece connection, with two more pieces of the same color each forming a 3-piece connection on opposite sides of the 4-piece connection. After you make one colored area, just finish the 12-piece ball with the other color.



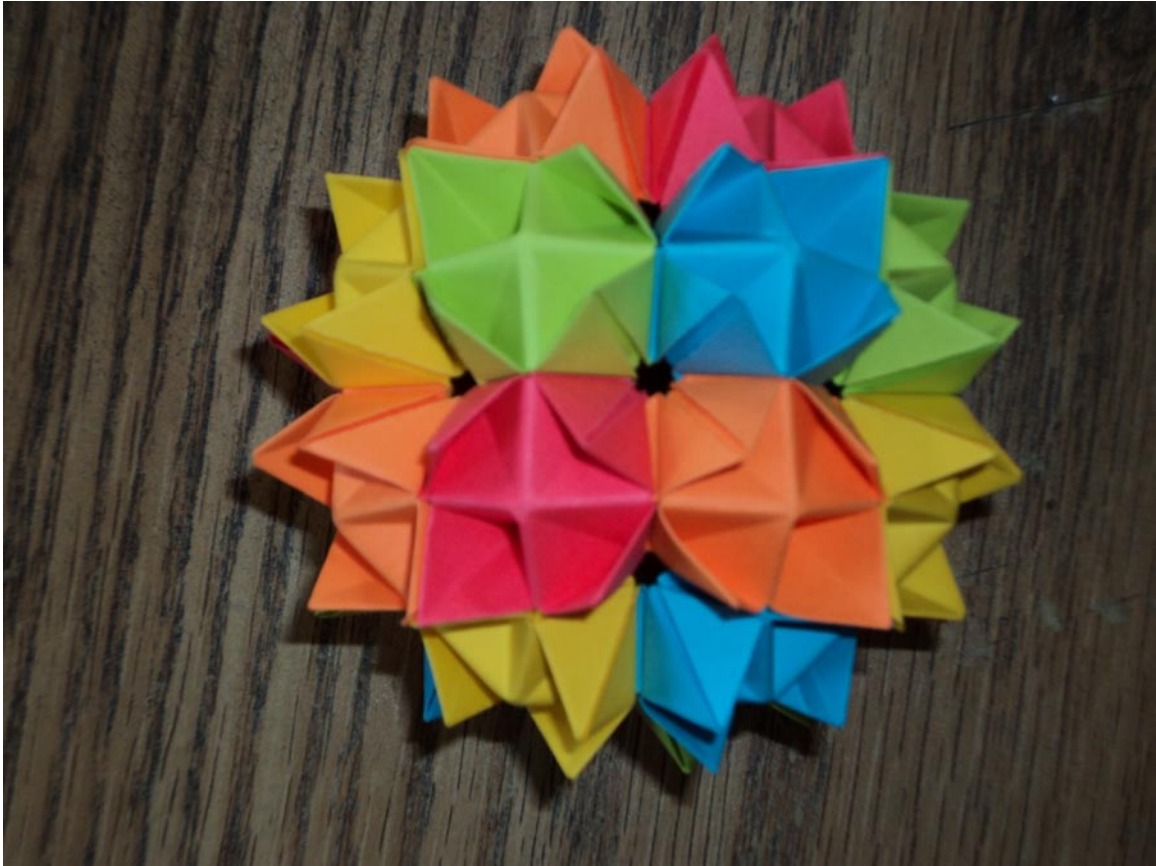
This is a 24-piece Super Spike Ball. There are eight 3-piece connections. Each 3-piece connection is separated from the nearest 3-piece connection by a 4-sided space.



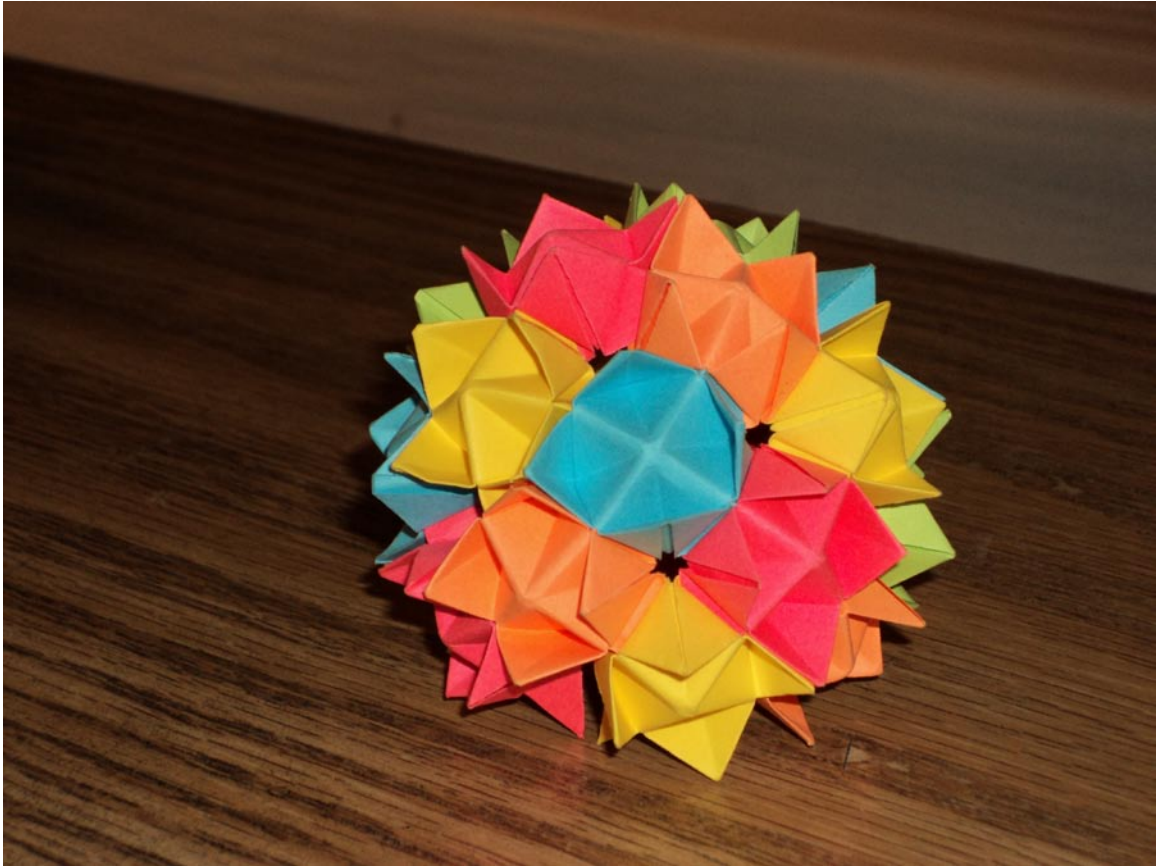
This is another view of the 24-piece ball looking directly at a 3-piece connection.



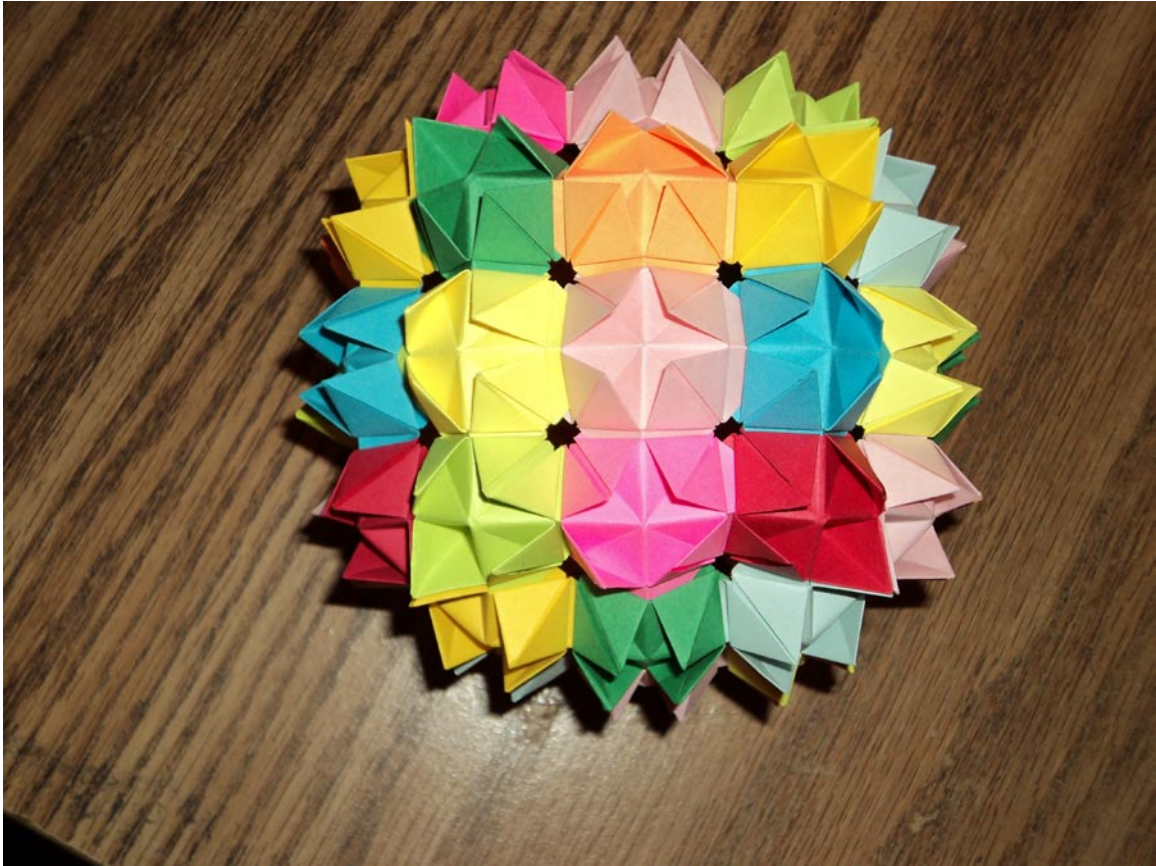
This is another view of the 24-piece ball.



This view of the 24-piece ball looks directly at a 4-piece connection and shows four 3-piece connections.



This is a 24-piece ball used as a gazebo, with a 3-piece connection removed, resting on the space left by the missing 3-piece assembly.



This is a 54-piece Super Duper Spike Ball containing eight 3-piece connections. There are two 4-sided spaces between the nearest 3-piece connections. All other connections are 4-sided.



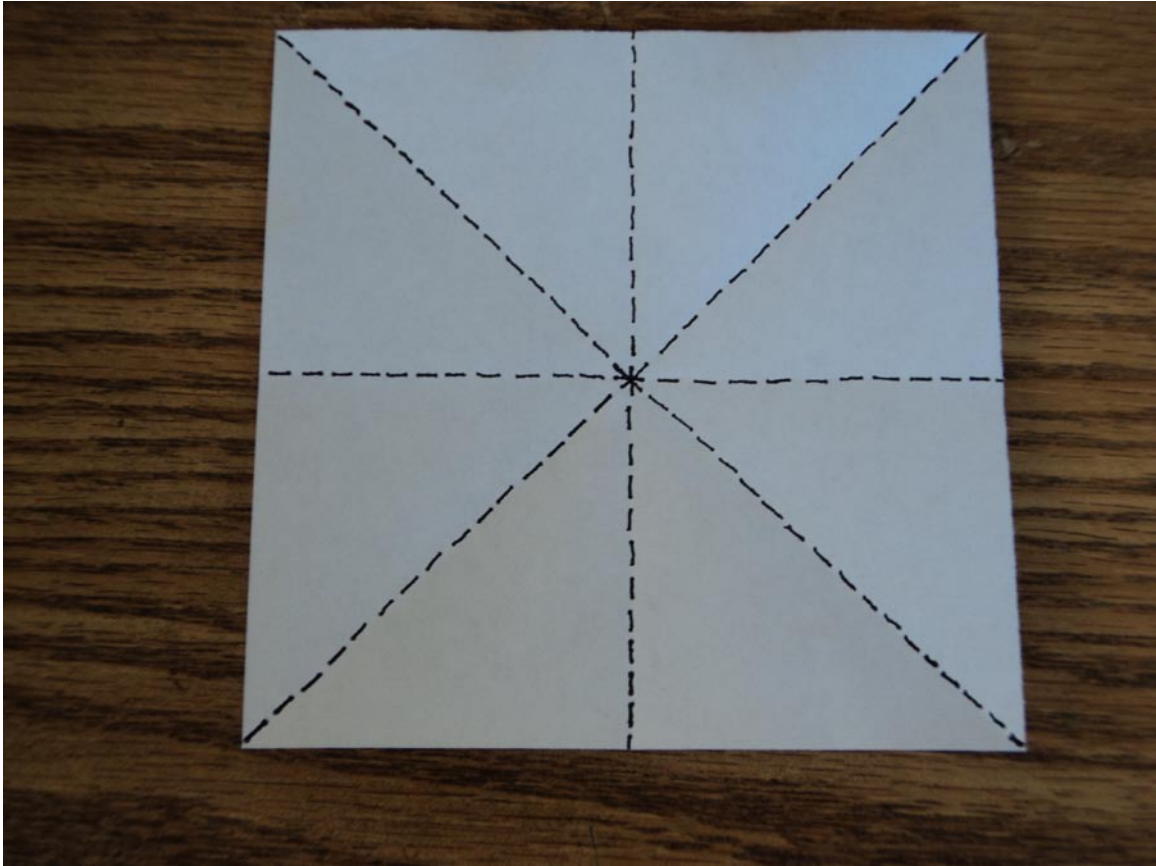
This is another view of the 54piece ball.



This is a 54-piece ball looking directly at a 3-piece connection.



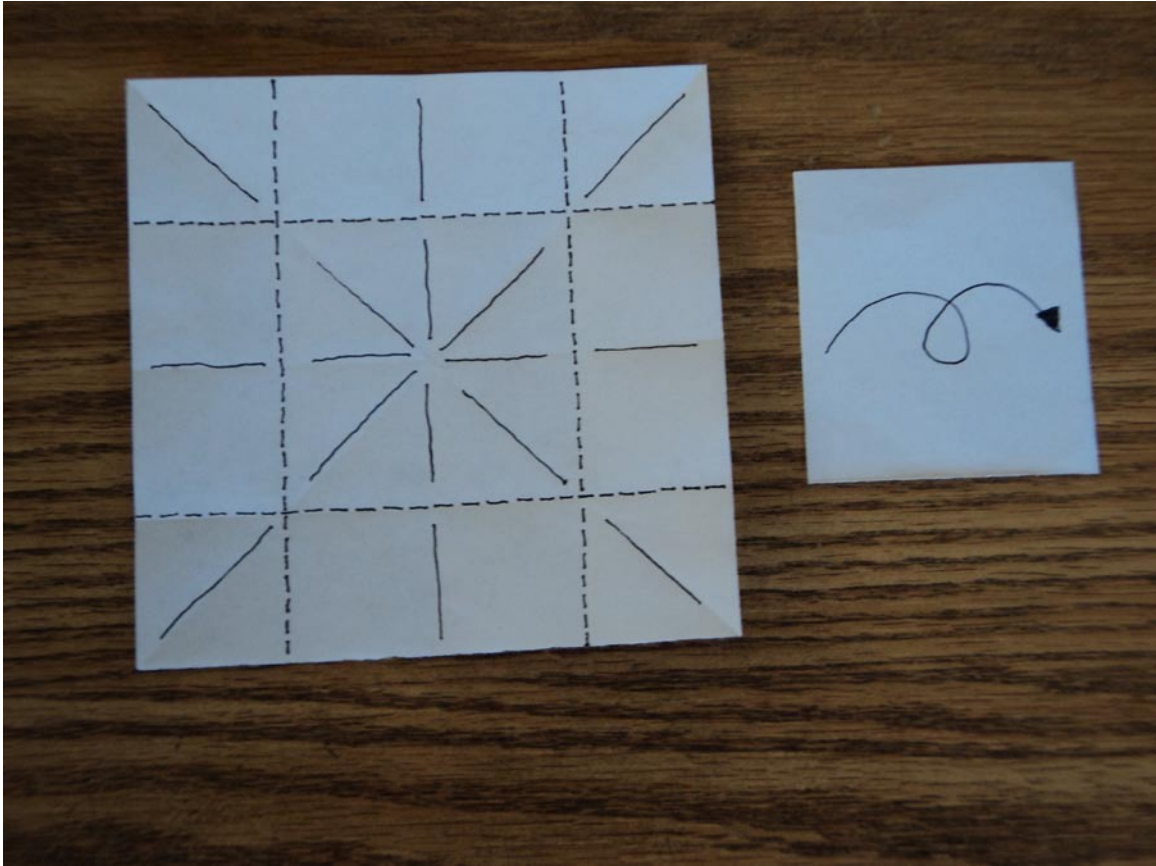
This is a 54-piece ball used as a gazebo, with a 3-piece connection removed, resting on the space where the 3-piece connection was located



FOLDING INSTRUCTIONS FOR THE SUPER-FORTUNE-TELLER MODULE

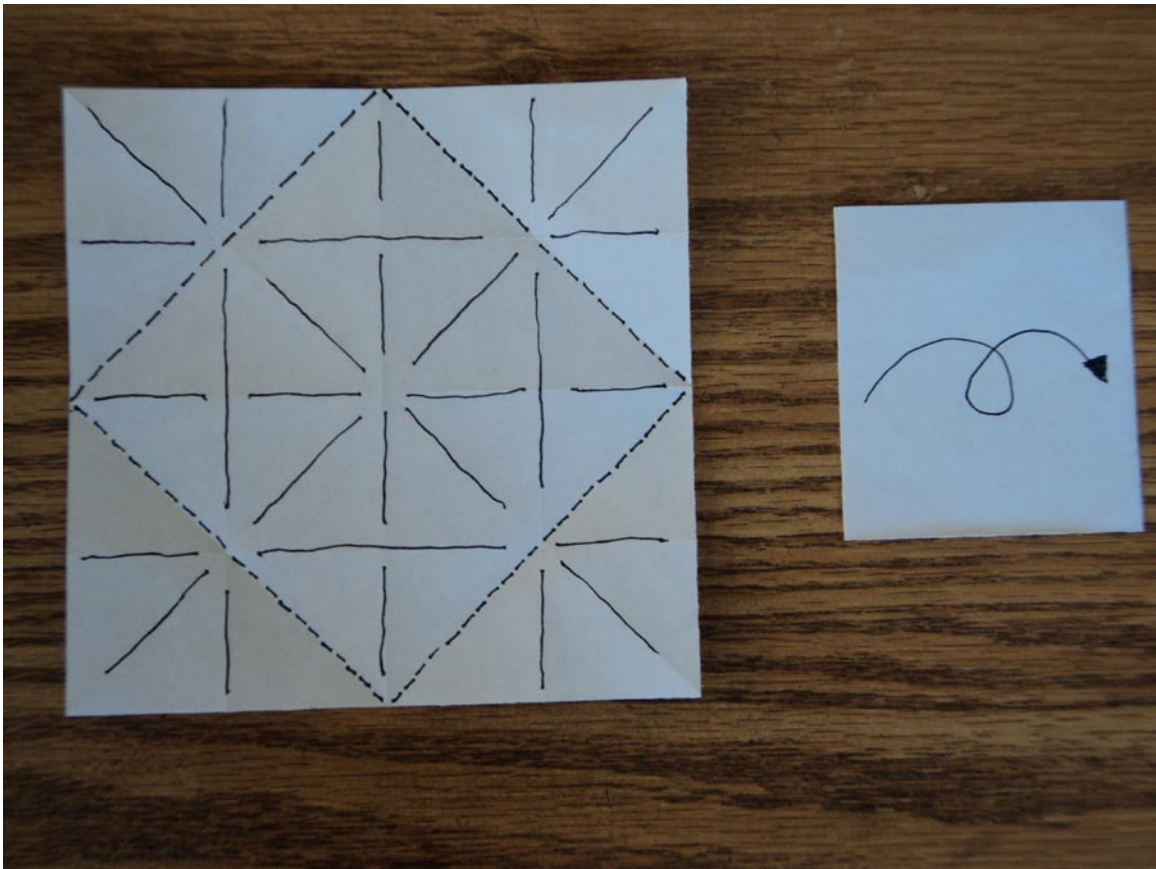
Color side up.

Valley diagonals and horizontal and vertical book folds.



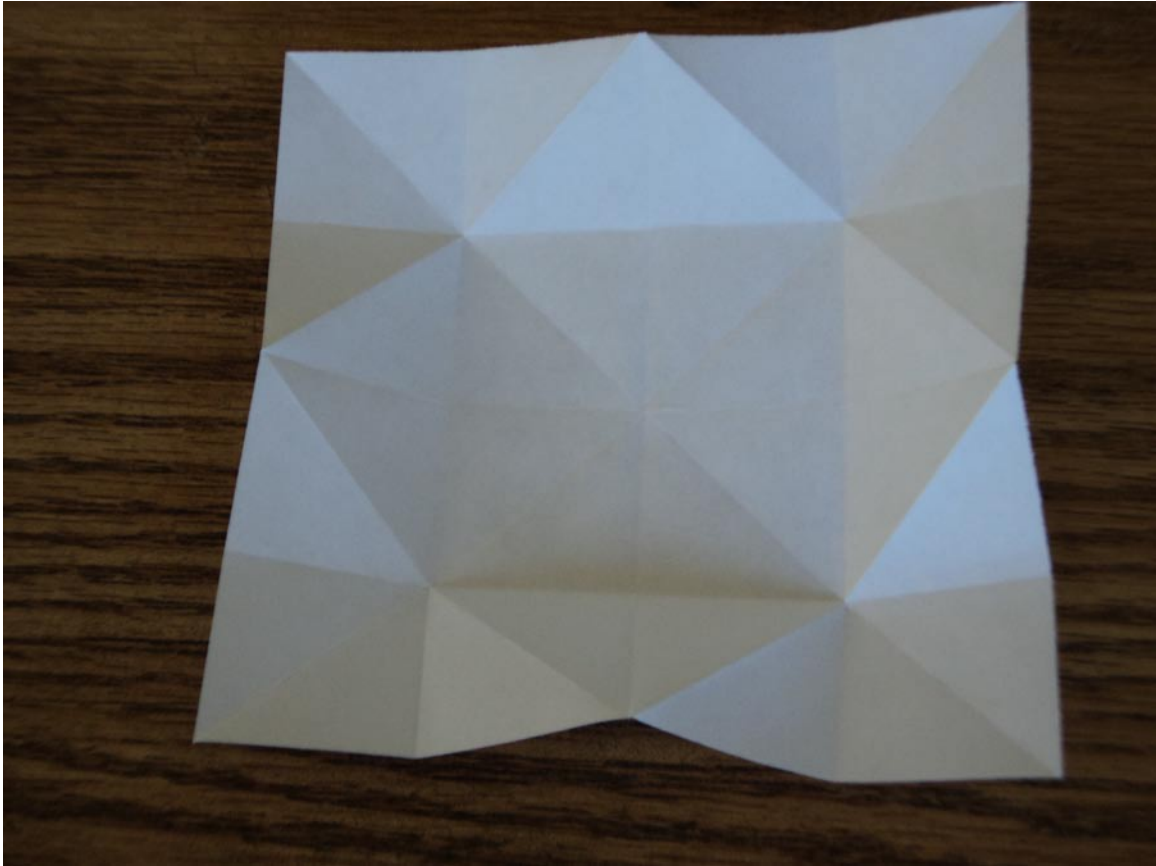
Valley crease two cupboard door folds, one horizontal and one vertical.

Then turn over.



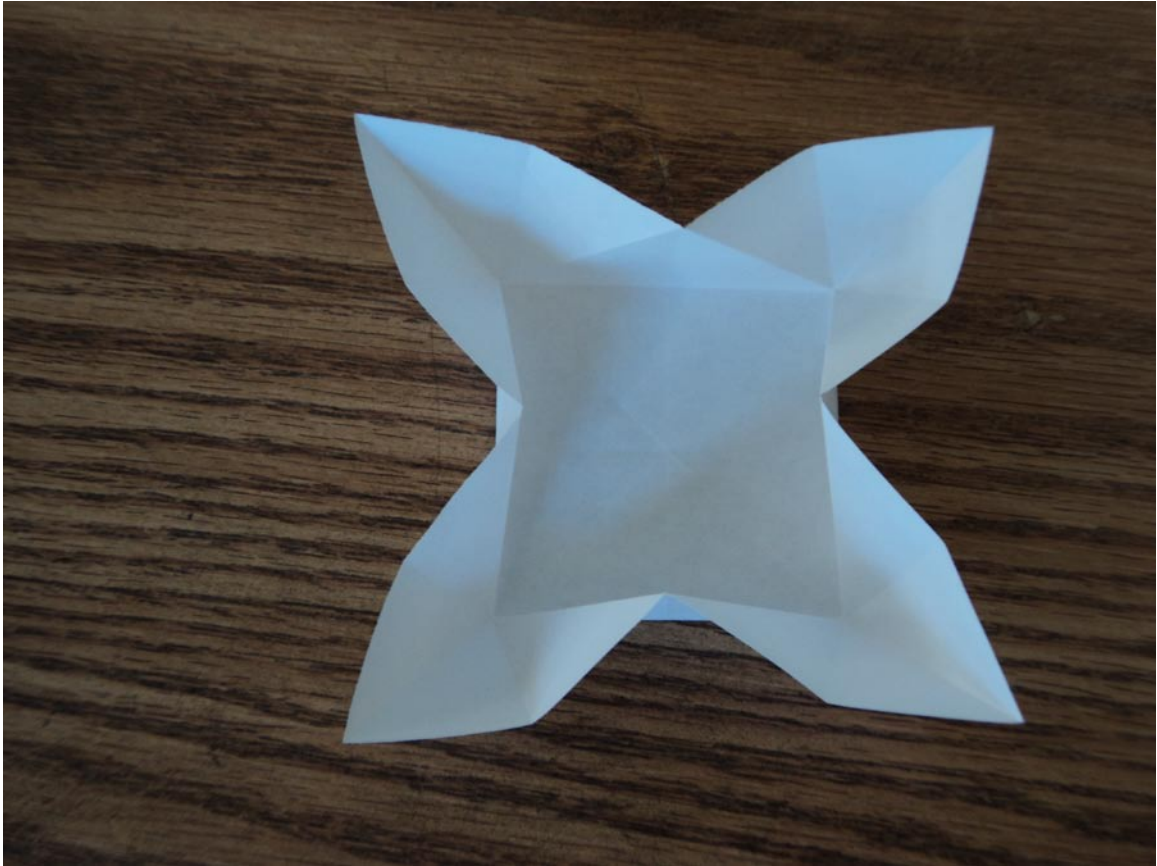
Fold each corner to the center and unfold.

Then turn over.

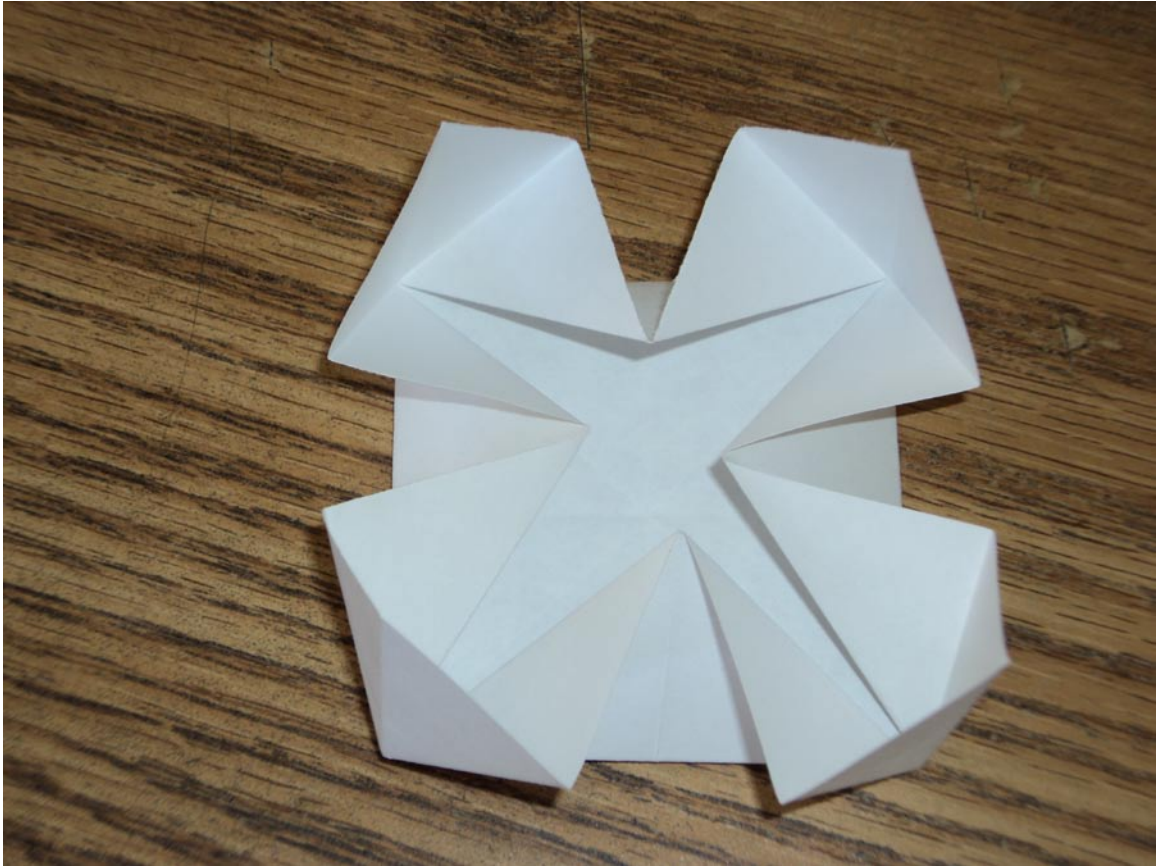


Start collapsing along existing creases

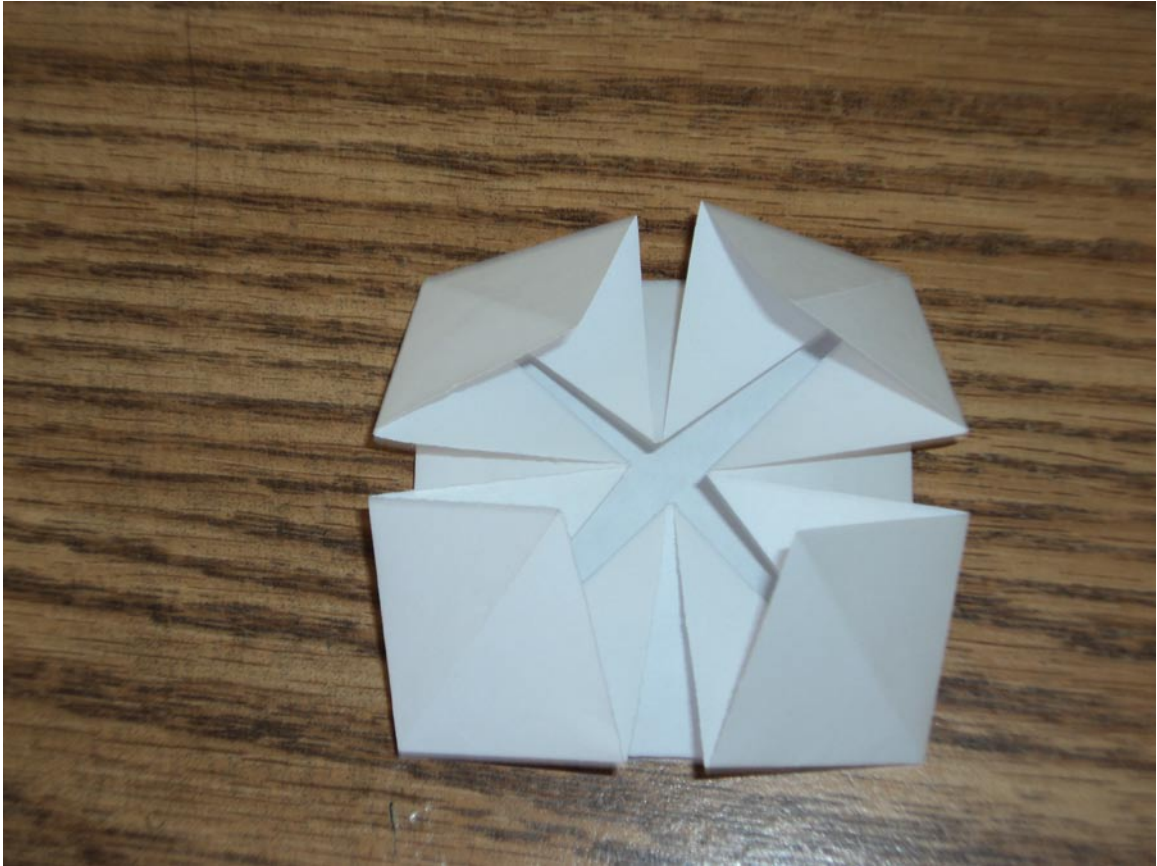
All four sides and all four corners will end up at the center.



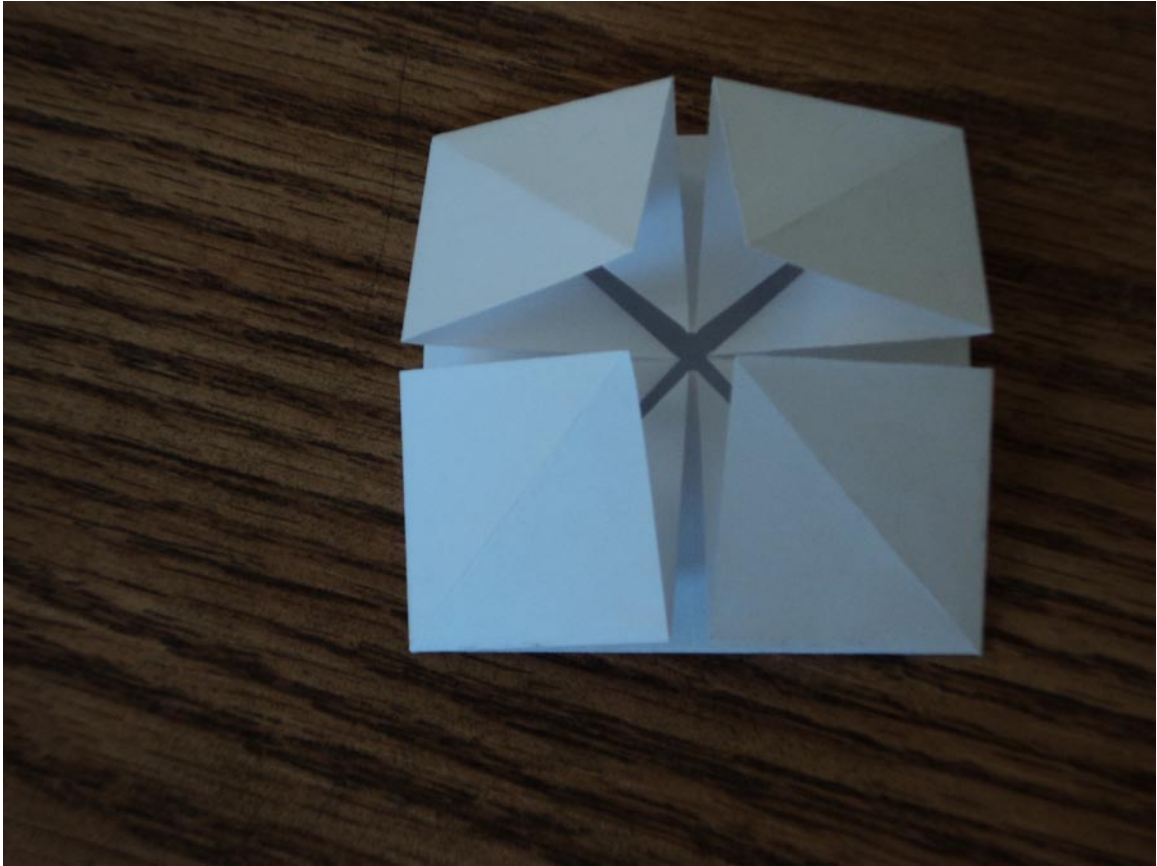
Keep going.



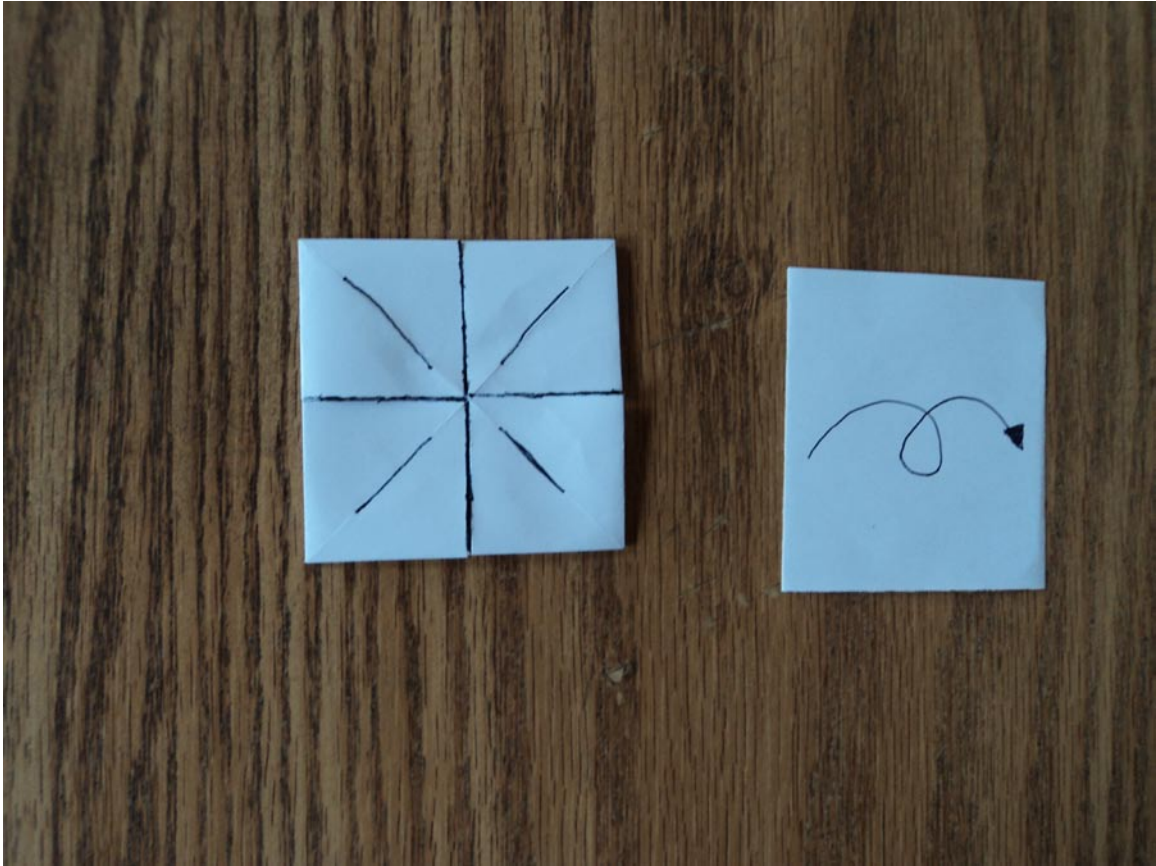
Keep going.



Keep going.



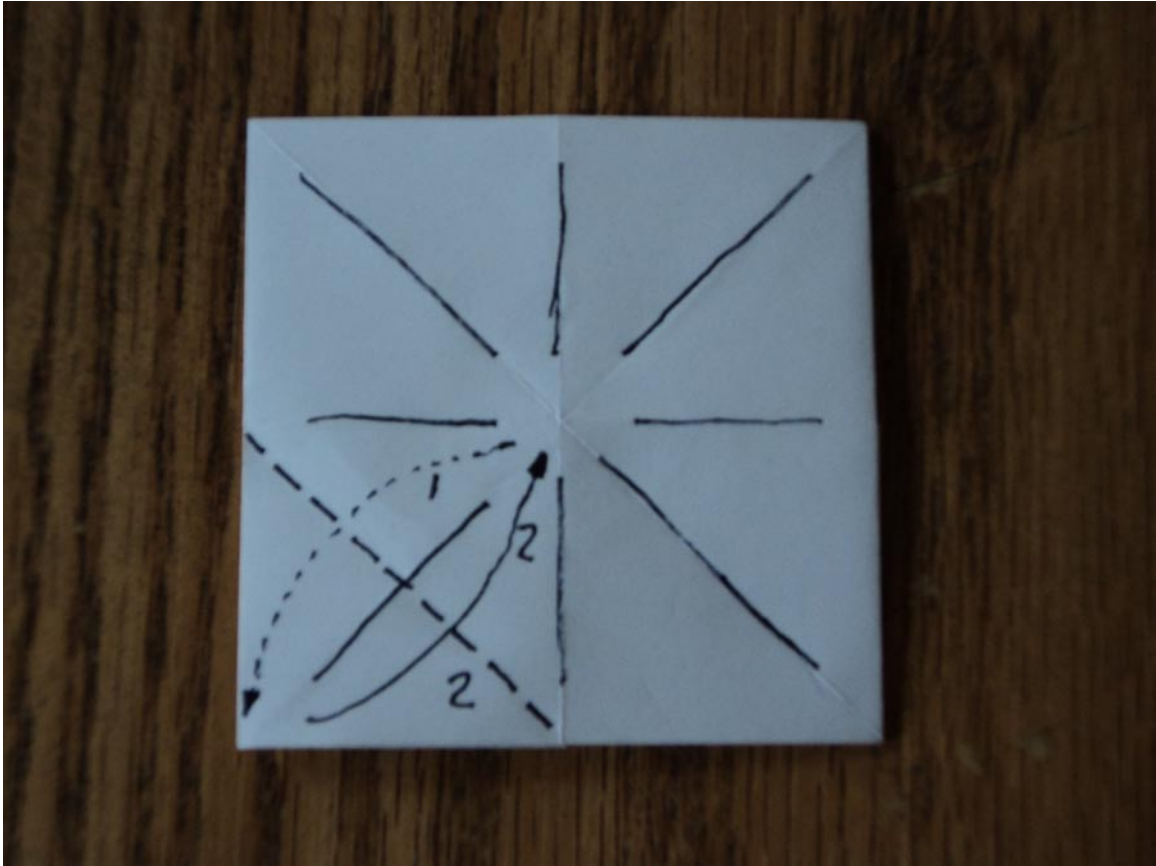
Keep going.



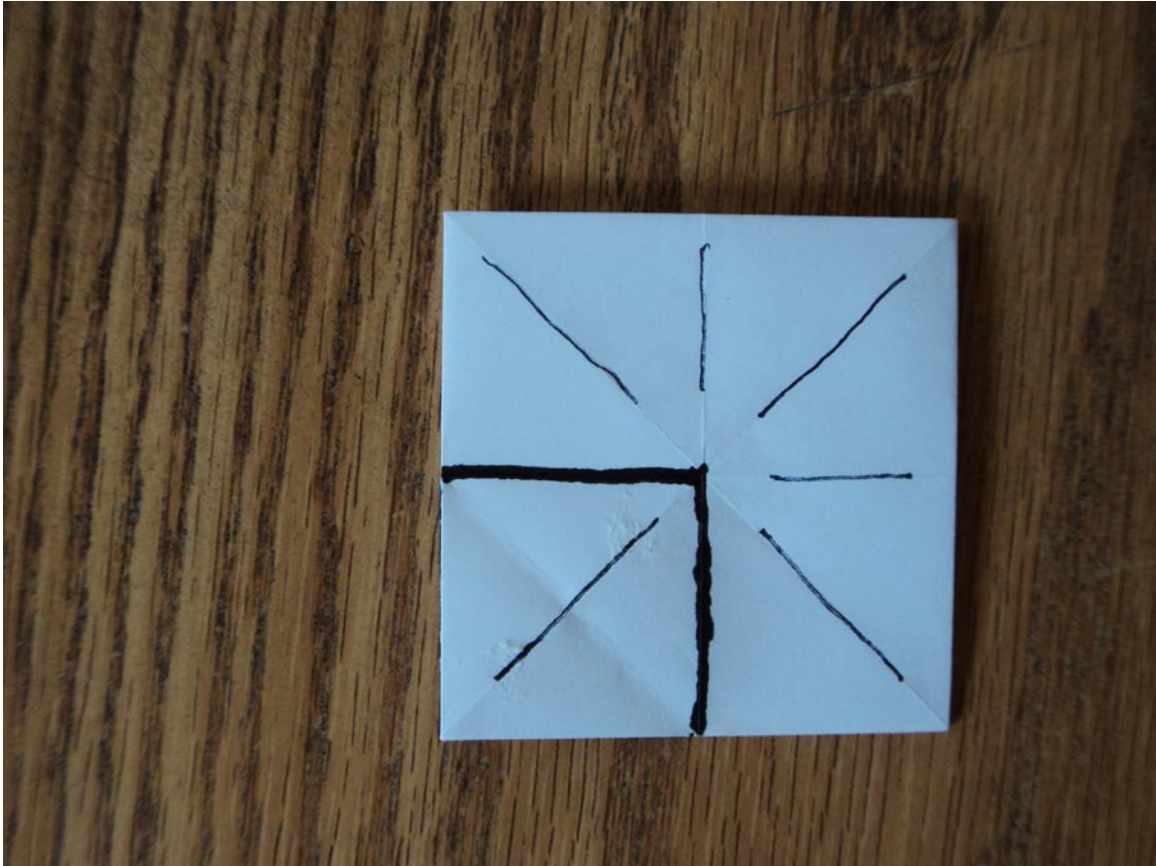
Module is flat.

Note that the original four corners of the starting square are at the center.

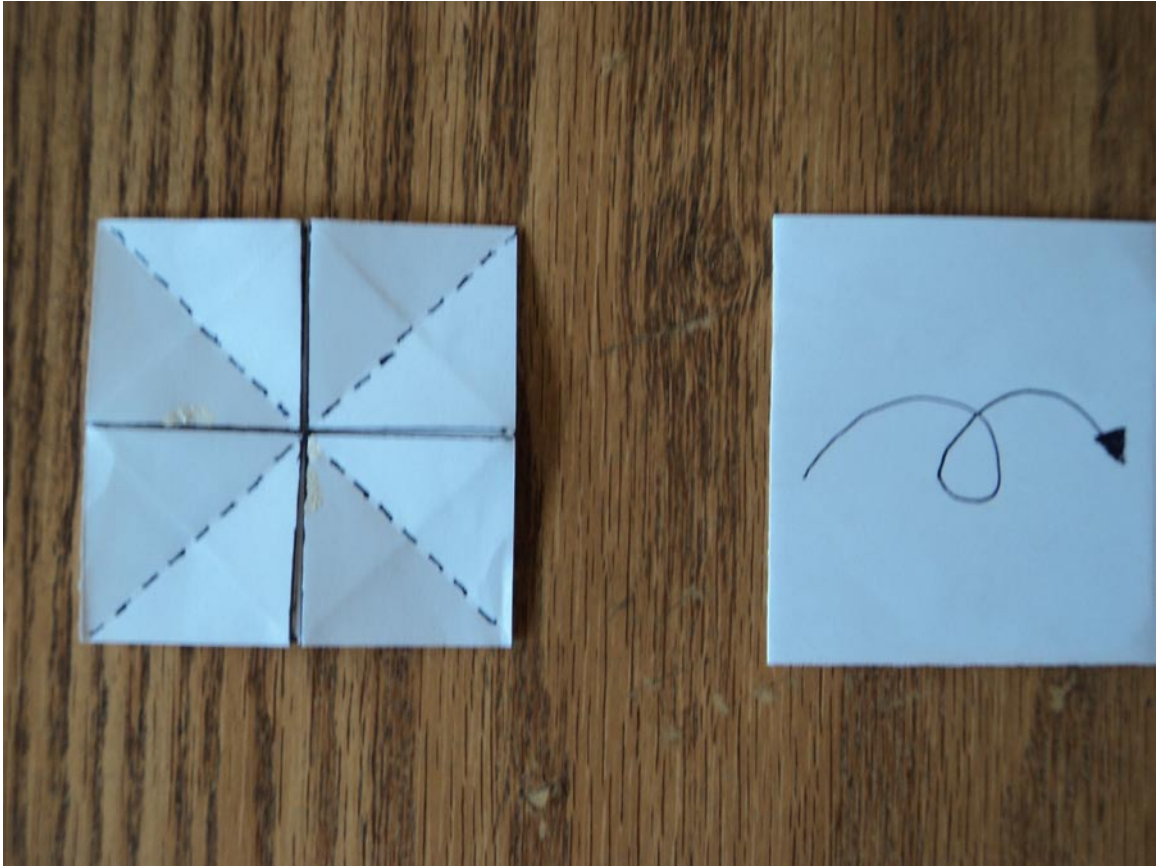
Turn over.



1. First let one corner on the bottom swing out.
2. Then fold outside corner on the top layer to the center.

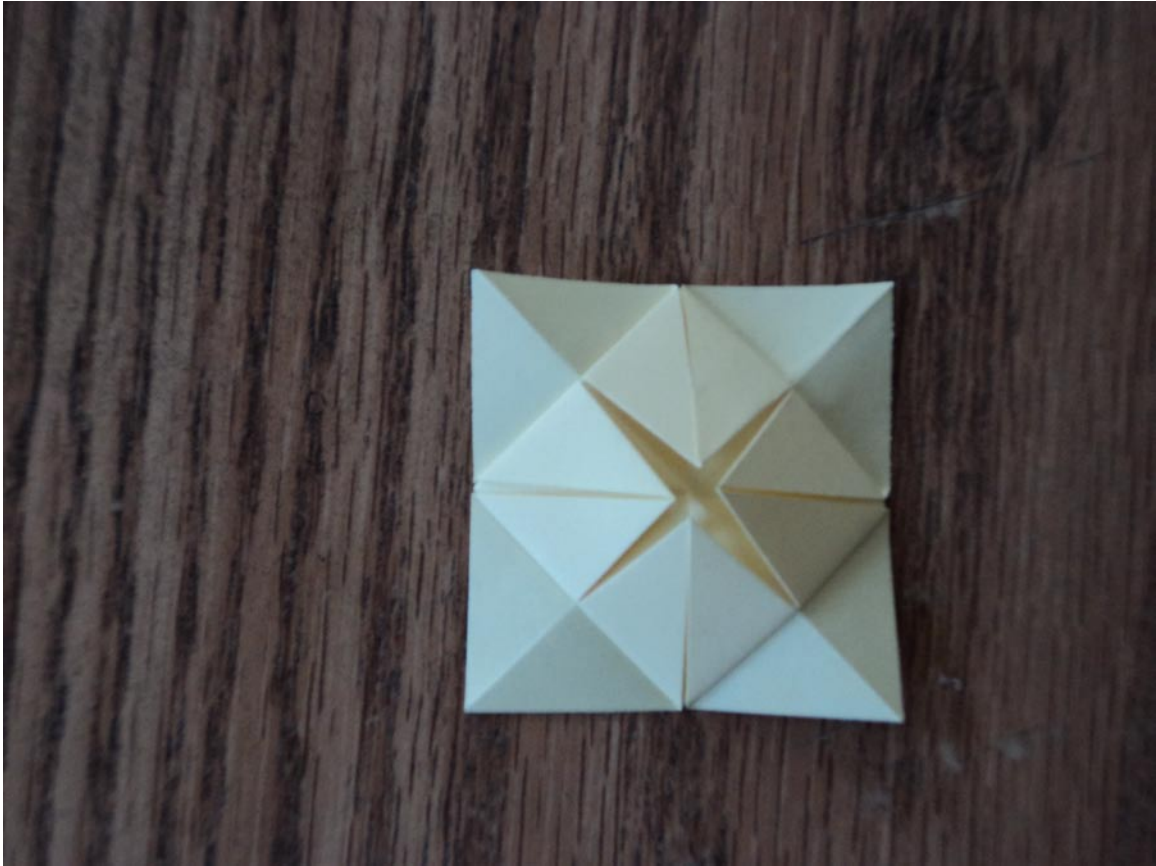


Repeat the instructions of the previous step on the other three corners.



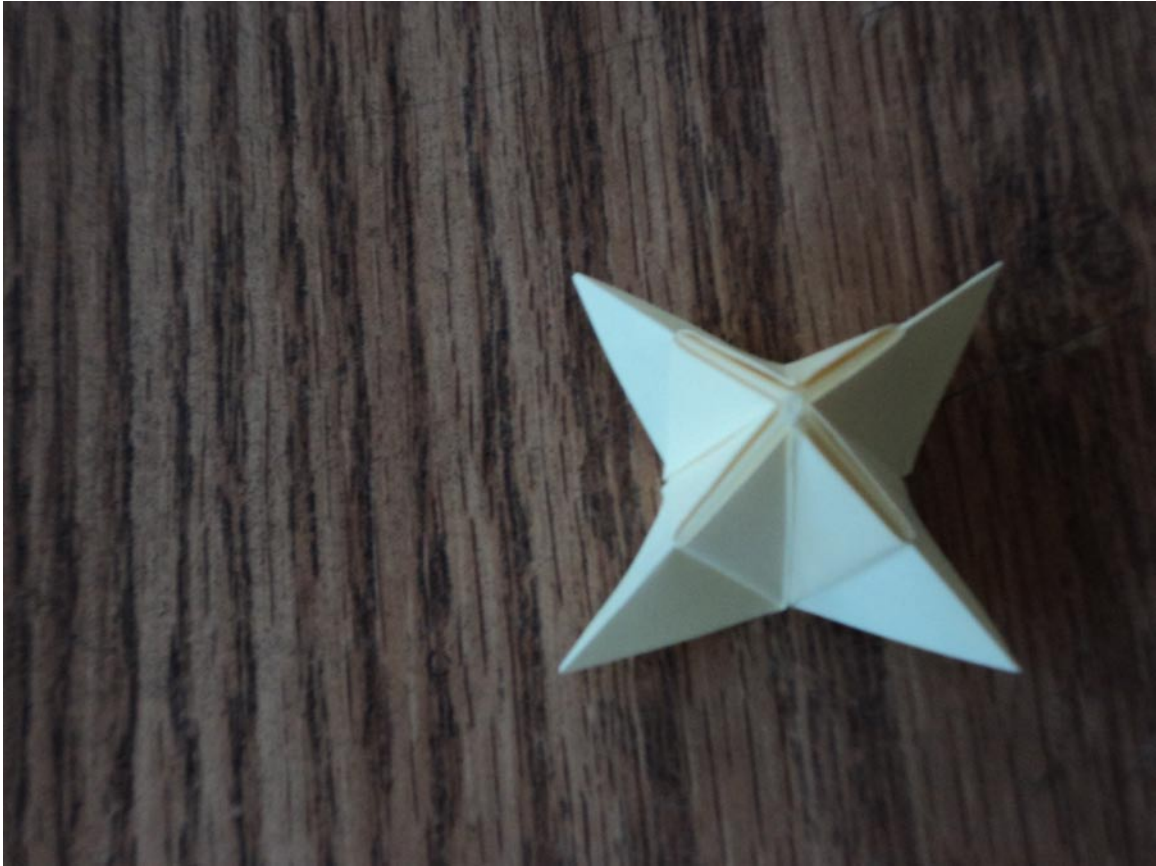
Valley crease both diagonals on the existing creases.

Then turn over.



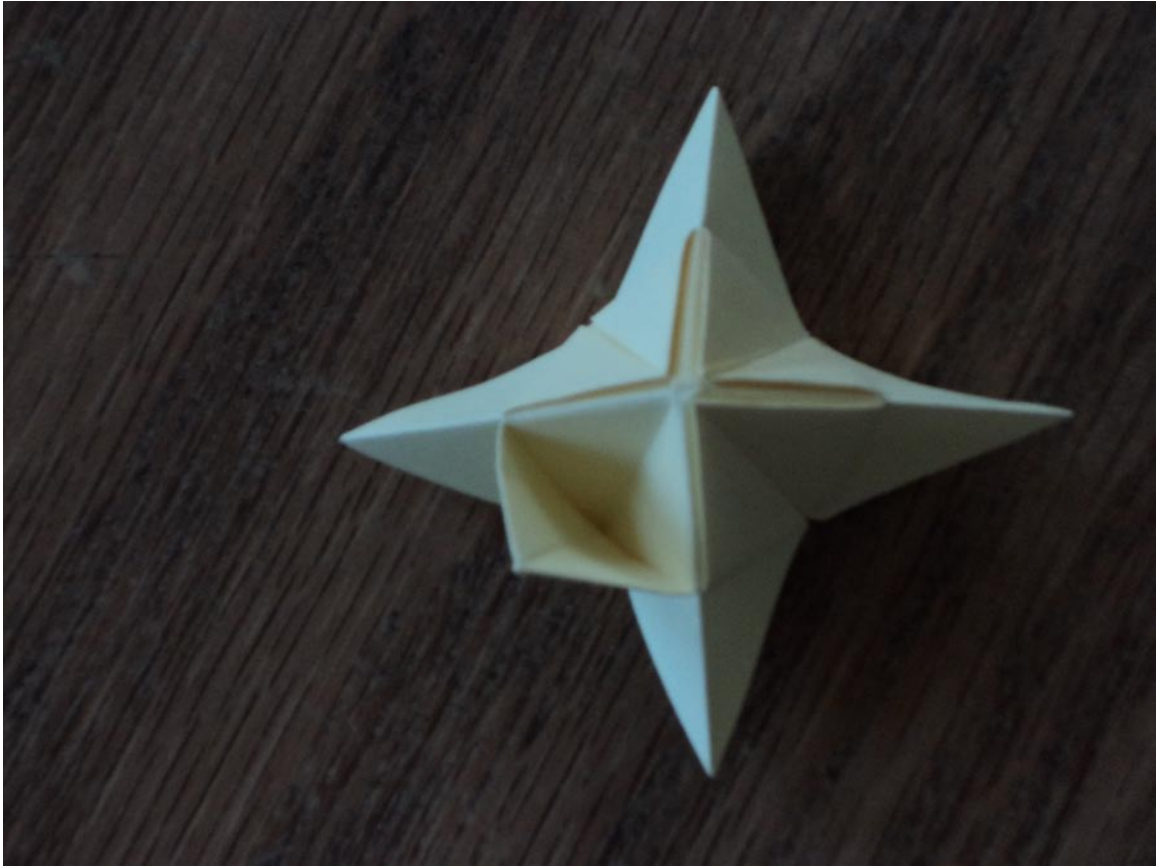
Start creasing mountains on the creases made as valleys on the back.

Push in the sides to start forming a waterbomb base.

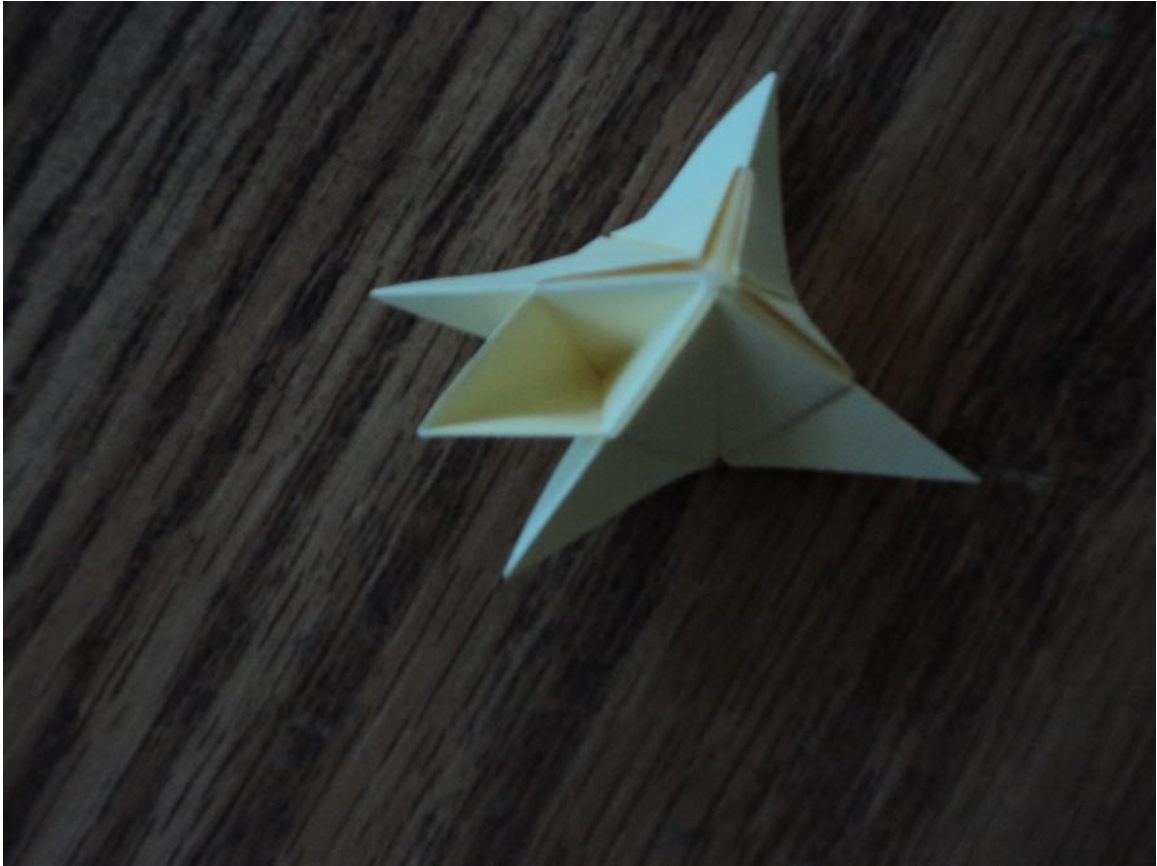


Form a waterbomb base.

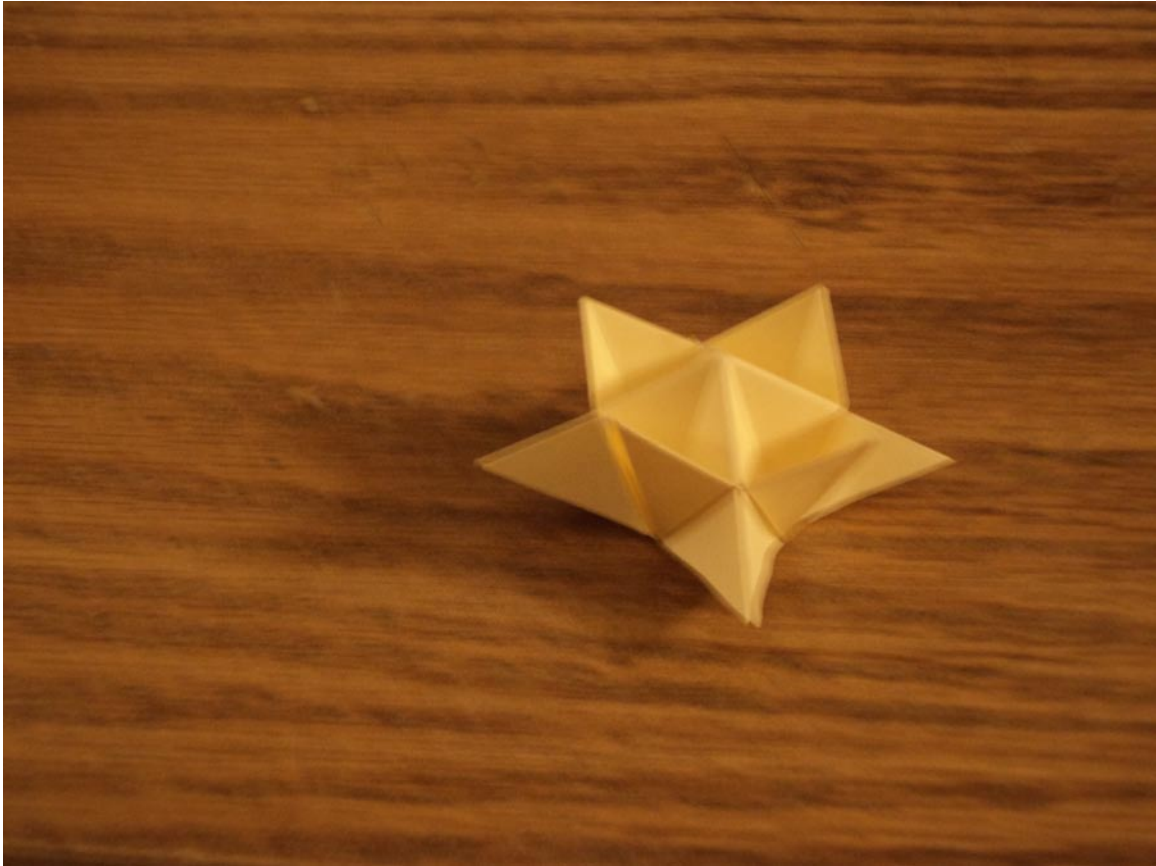
Note the four points on the top near the center



Pull out one of the points near the center, which opens a pocket.

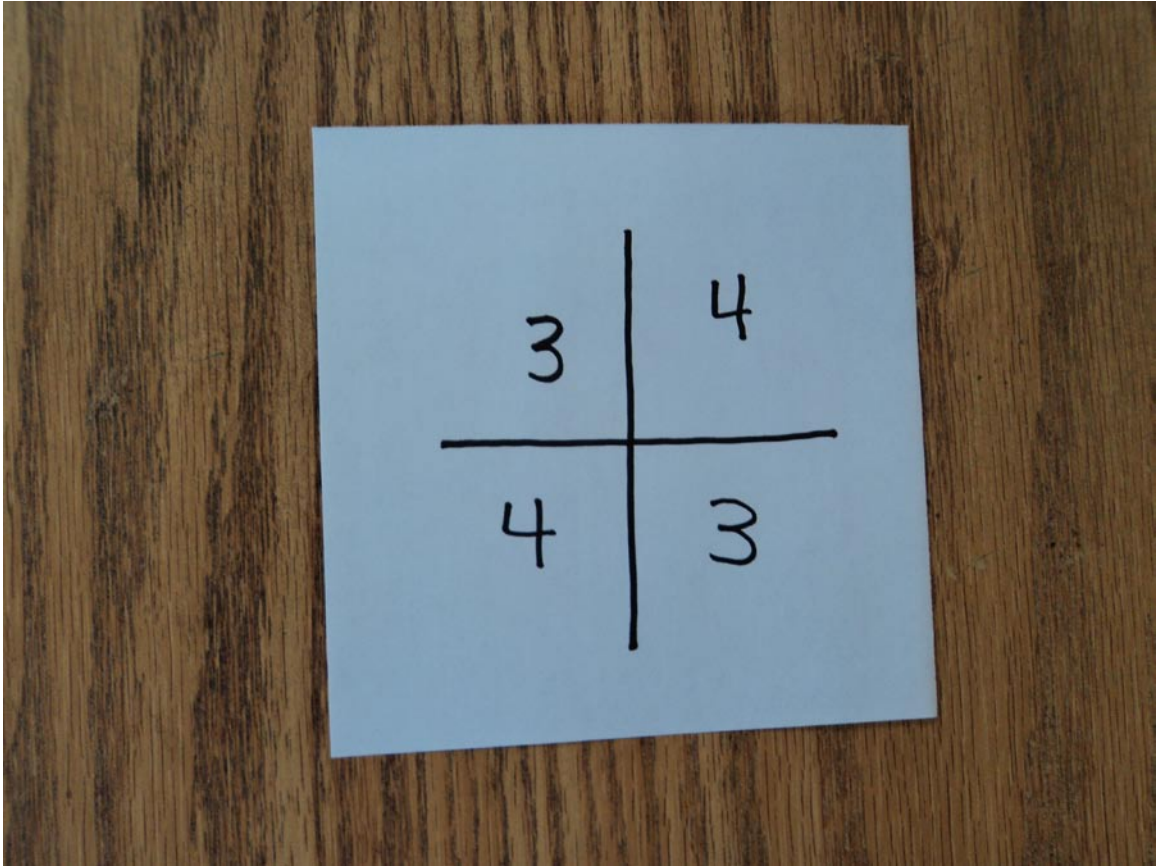


Squeeze the pocket so it opens as wide as it can.



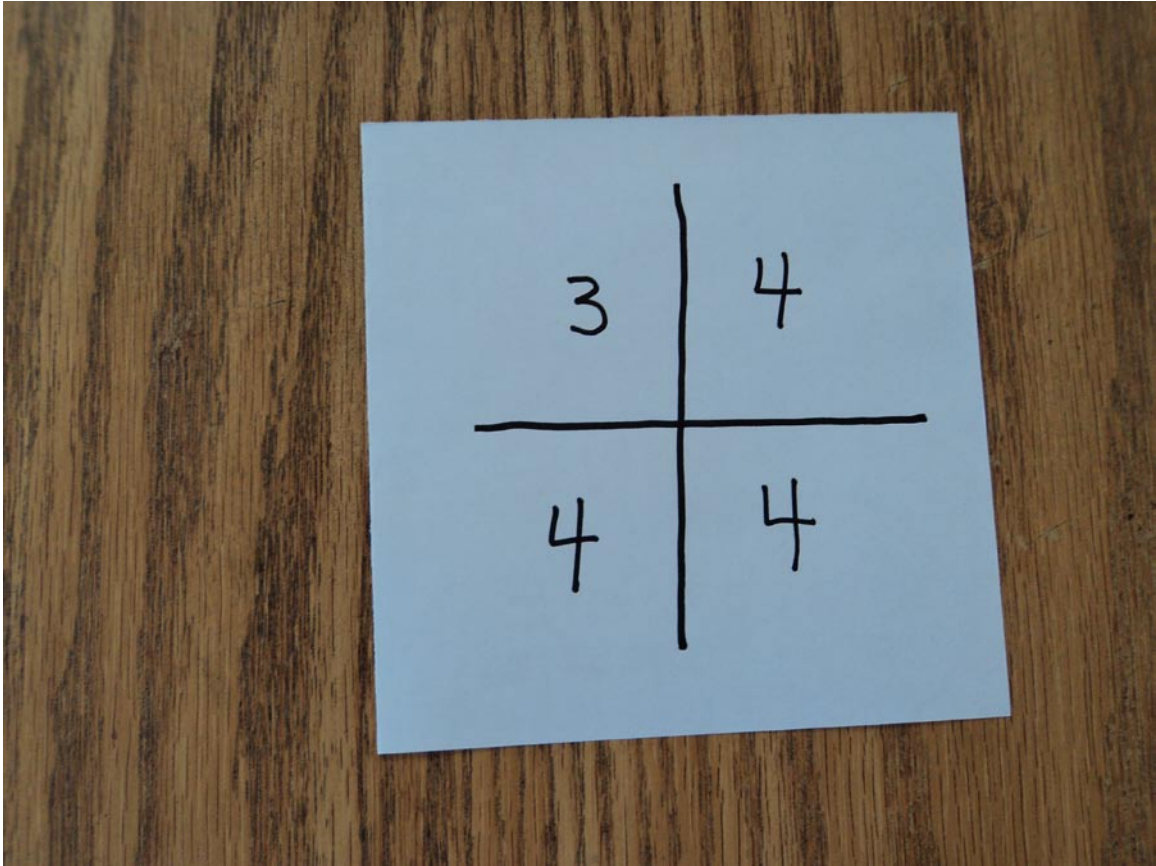
Repeat on the other three points at the center.

This completes the Super-Fortune-Teller module.



This is a schematic diagram of the module for the 12-piece ball.

Each module is part of two 3-piece connections, opposite each other, and two 4-piece connections opposite each other.



This is a schematic diagram of the module for the 24-piece ball,

Each module is part of one 3-piece connection and three 4-piece connections.

DIAMETER OF THE FINISHED BALLS

12-piece Spike Ball: Side of square used to fold the modules.

24-piece Super Spike Ball: $1.4 \times$ side of square used to fold the modules.

54-piece Super Duper Spike Ball: $1.73 \times$ side of square used to fold the modules

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