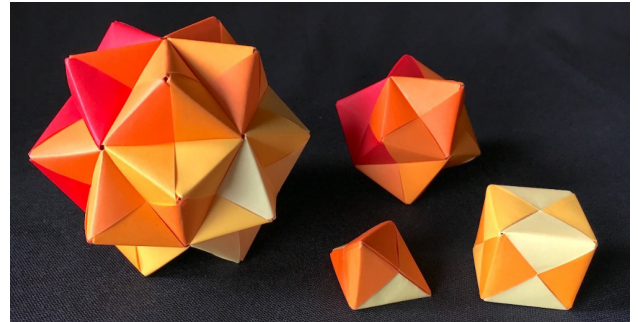


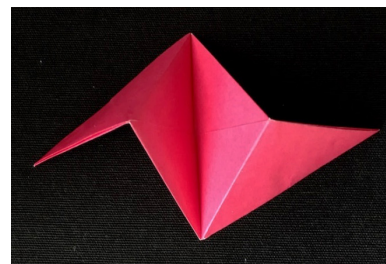
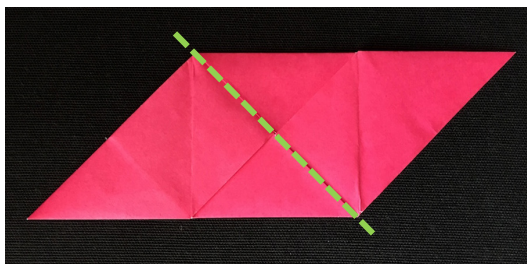
Making an Origami Sonobe Octahedron

Now that you have made a Sonobe unit and a Sonobe cube, you are ready to construct a more complicated polyhedron. (We highly recommend building a cube before attempting to construct other polyhedra.) This handout will show you how to assemble twelve units into a small triakis octahedron. You can find instructions for making some other polyhedra online.

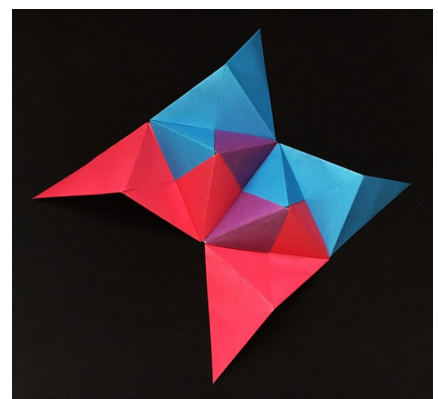
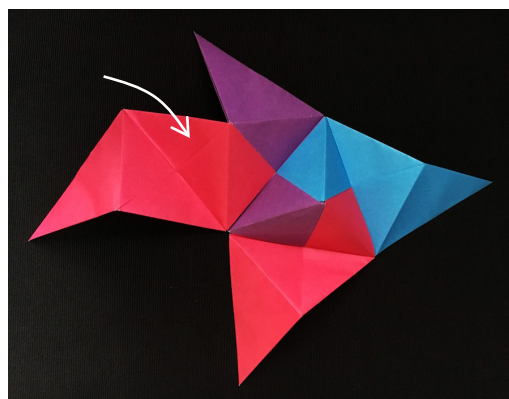
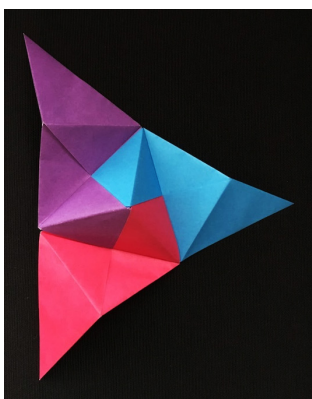
To make the triakis octahedron, you can use any colour combination you like. In this example we use twelve units in three colours (four units of each colour).



1. Fold twelve Sonobe units (see the *Making an Origami Sonobe Unit* handout for instructions). Make an extra fold in each Sonobe unit by placing the unit with the side containing the X facing up and folding along the dotted line shown in the leftmost image below.

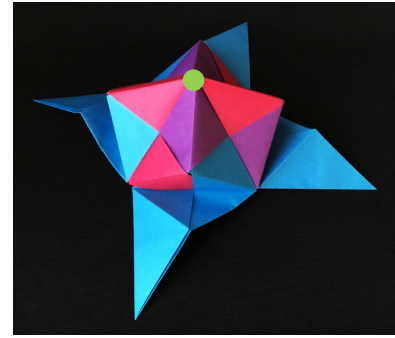
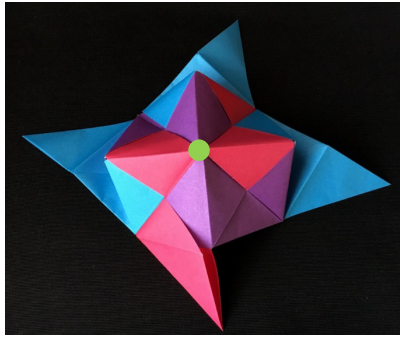
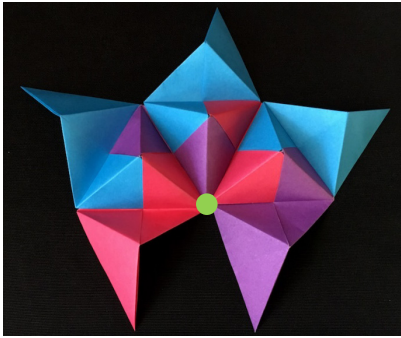


2. Assemble three units (one of each colour) as described in Step 2 of the *Making an Origami Sonobe Cube* handout to create a single corner, or *pyramid*, with three flaps (below, left). We are going to make more pyramids using these three flaps. Each new pyramid will also contain all three colours.

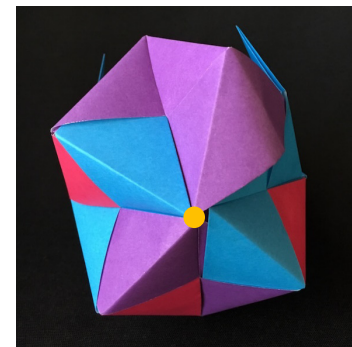
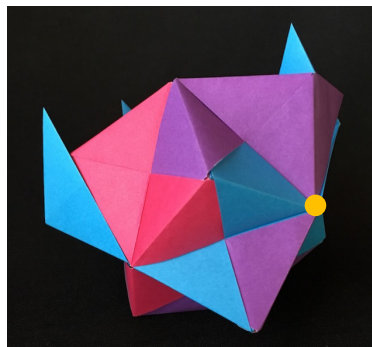
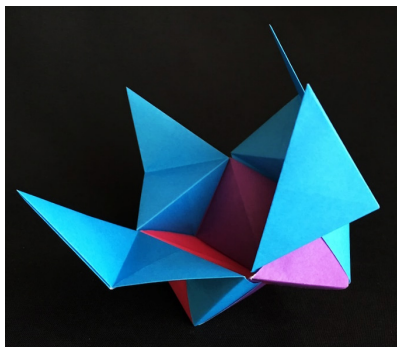


3. To make a second pyramid of three colours, choose a flap. We chose the purple flap, so we will add one new pink unit and one new blue unit to our construction. To add the new pink unit, insert a flap of the pink unit into the pocket of the chosen purple unit (above, centre). To add the new blue unit, insert a flap of the blue unit into the pocket of the new pink unit (shown by the white arrow above). Finally, complete the pyramid by inserting the purple flap into the nearest pocket of the new blue unit. You should now have two pyramids next to each other with four flaps (above, right).

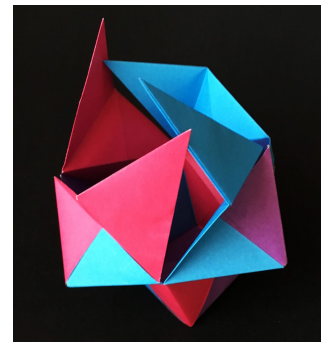
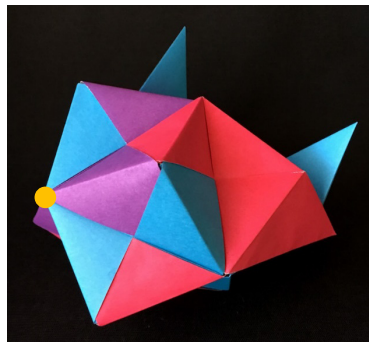
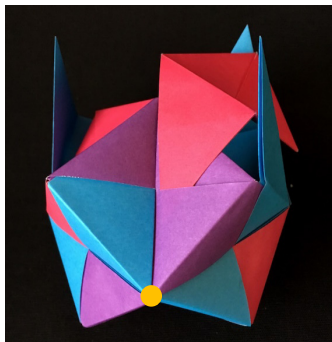
4. Choose one of the four flaps (we chose the pink flap on the right) and repeat Step 3 to create a third pyramid. Notice that the three pyramids curve around a central point (shown in green below, left).



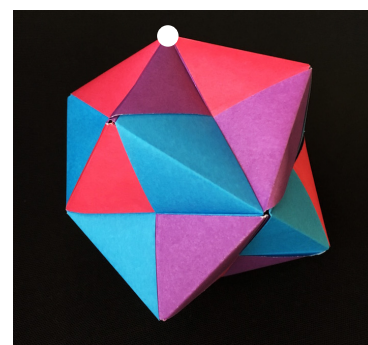
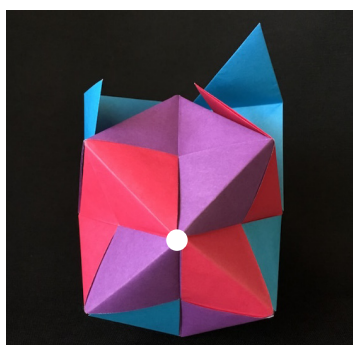
5. Insert the purple flap on the right of the green dot into the pocket of the pink unit on the left (above, left and centre). Insert a new blue unit and create another pyramid from these pink and purple units (above, right). You now have a group of four pyramids arranged around the central point.
6. **Flip the construction over** so that all of the blue flaps are pointing upwards (below, left).



7. Using a blue flap, create a pyramid of three colours as in Step 3 (above, centre). It has two flaps, one purple and one pink (above, centre). Tuck the purple flap into the pocket of the blue unit next to it (above, right). You have a new group of four pyramids around a new (orange) central point.



8. Create another pyramid by connecting a new pink unit to the purple and blue units at the top of the group of four (above, left and centre). **Rotate** so that the opening is facing upwards (above, right).



9. Connect a new purple unit to both pink units to make a group of four around a central (white) point (above, left). Tuck all remaining flaps into their nearest pockets (above, centre). You are finished!