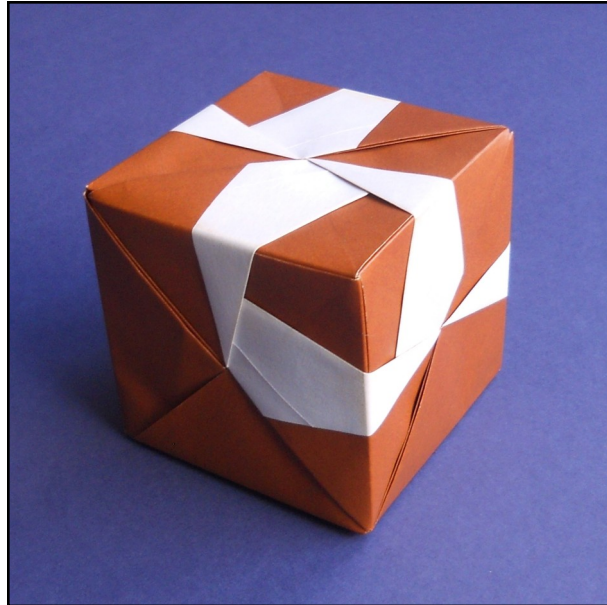


6-part Eccentric Sonobe Flash Motif Cubes

Eccentric Cubes are cubes which have a different pattern on each of their six faces. There are many ways to achieve this but one of the most interesting is to use three sets of two Sonobe modules, two of which are plain and the other four of which carry a contrast pattern, two of them symmetrically and two asymmetrically.



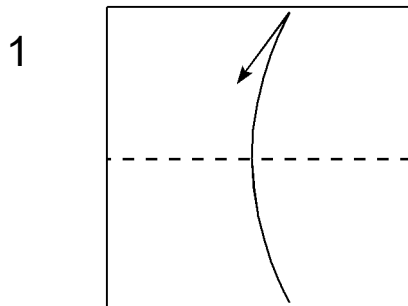
The contrast pattern motif that I chose to use when folding the modules is a very simple and well known Sonobe variation that I call the Sonobe flash motif. I do not know for certain who first came up with this variation but it may well have been Kunihiko Kasahara. Other contrast pattern motifs will work equally well provided the motif extends across the boundary between the central square area of the module and the flaps so that it is shared between two faces.

This set of six modules will go together to form a symmetrically patterned cube, in fact three such cubes are possible, but the interest of this set of modules lies mainly in the possibilities for eccentricity.

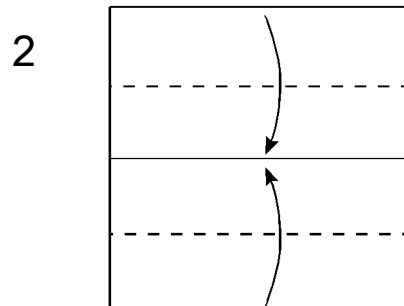
When I investigated this, in 2001, I initially imagined that it would only be possible to combine the modules to create an eccentric cube in two or three different ways, but the solutions just kept on coming and it was quickly apparent that the total number of solutions would be difficult to determine by trial and error alone. I am grateful to Ian Harrison for his help with the analysis that finally showed that the total number of possible solutions is fourteen, a result I did not expect and that I still find somewhat surprising.

Folding and configuring the modules

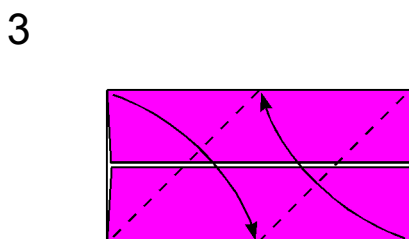
You will need six squares of irogami in a single strong colour. Begin with your paper white side up.



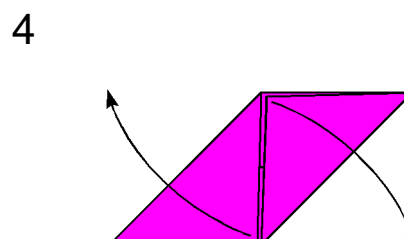
1. Fold in half downwards, then unfold.



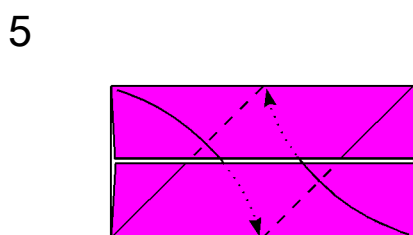
2. Fold the top and bottom edges into the centre.



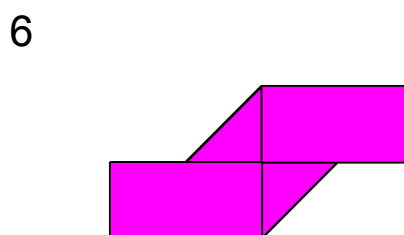
3. Fold the left edge onto the bottom edge and the right edge onto the top edge.



4. Open out the folds made in step 3.

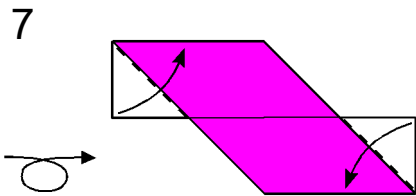


5. Remake the folds made in step 3 but this time tuck the flaps underneath the front layers as you do so.

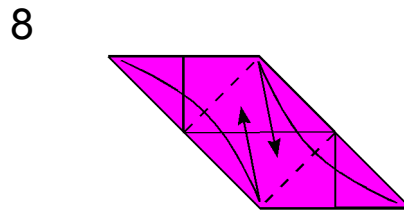


6. The result should look like this. Fold all six modules to this stage.

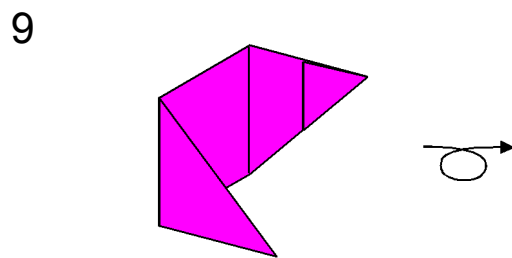
Finishing the two plain modules



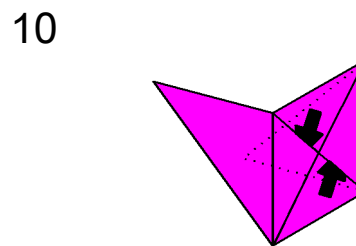
7. Turn over sideways then fold the two white triangular flaps away inside the layers using the existing creases.



8. Fold the left and right corners inwards as shown, then unfold to right angles.

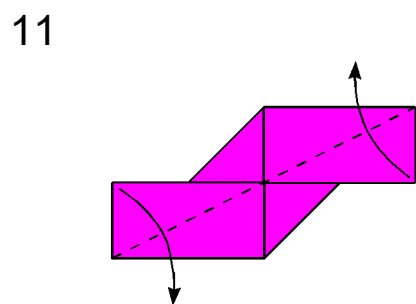


9. The result should look like this. Turn over sideways.

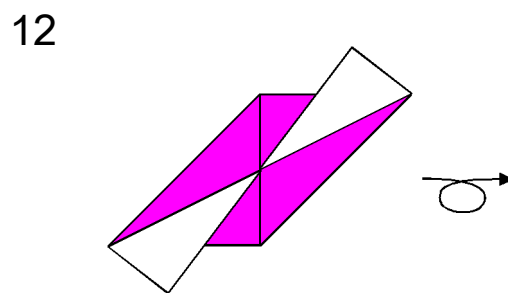


10. This is the finished plain module. Make two.

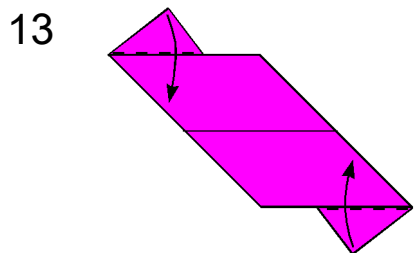
Finishing the symmetric flash motif modules



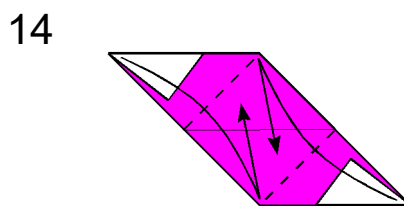
11. Begin with step 6. Fold the front flaps diagonally outwards as shown.



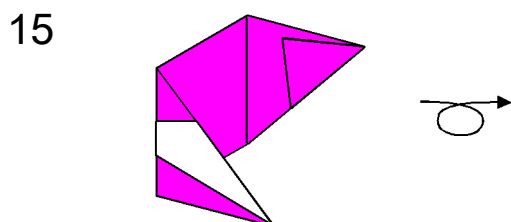
12. Turn over sideways.



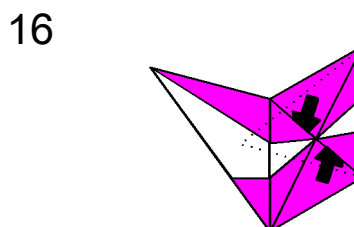
13. Fold the top and bottom corners inwards in front of the other layers like this.



14. Fold the right and left corners inwards as shown then open out at right angles.

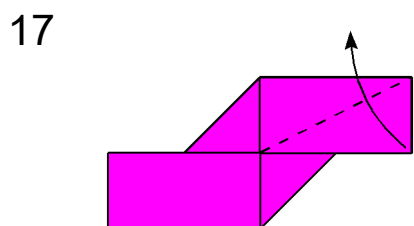


15. This is the result. Turn over sideways.

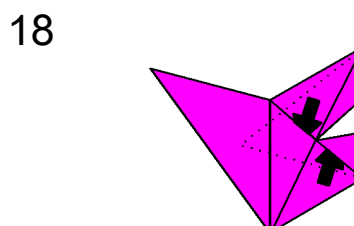


16. The symmetric flash motif module is finished. Make two.

Finishing the asymmetric flash motif modules

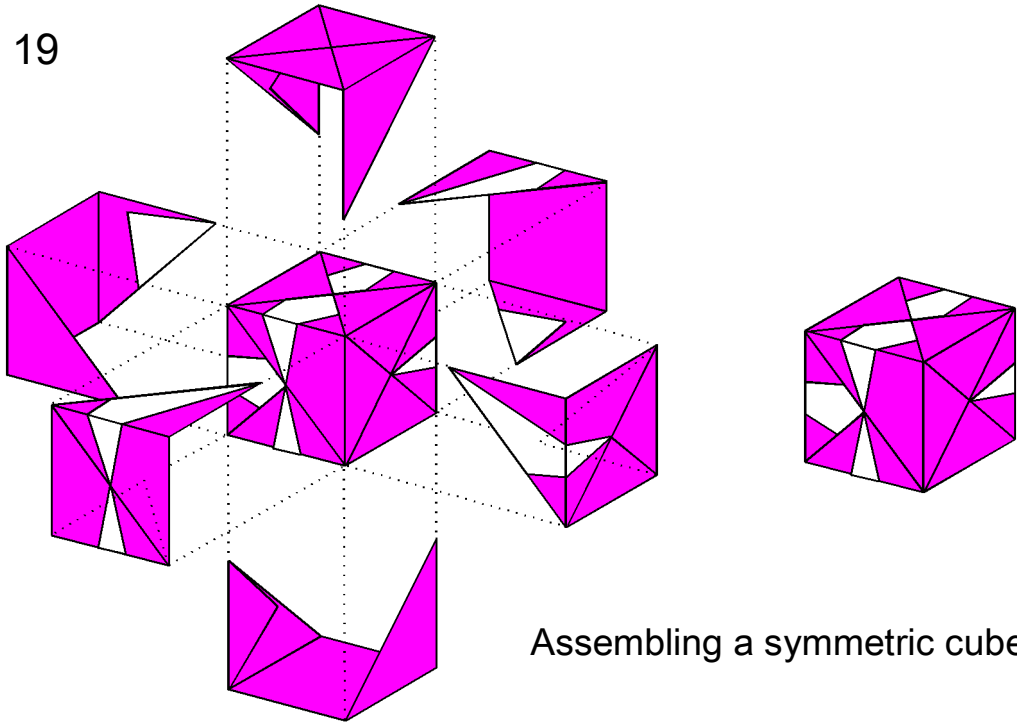


17. The asymmetric flash motif modules are made in the same way as the symmetric modules except that the contrast motif is only created on one half of the module.



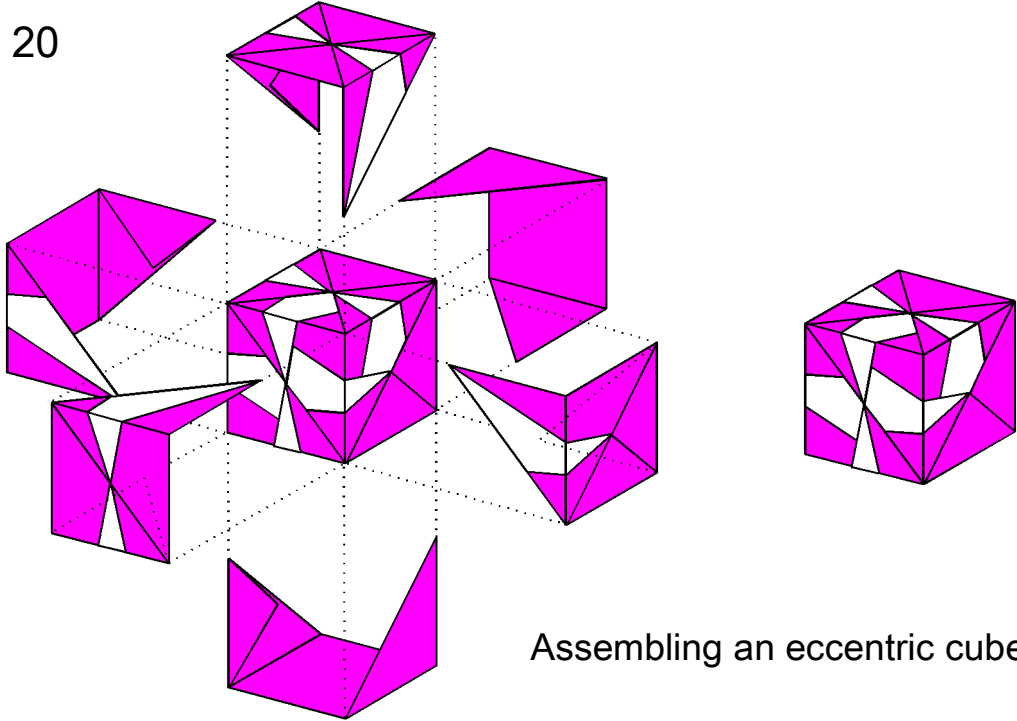
18. The finished module will look like this. Make two.

19



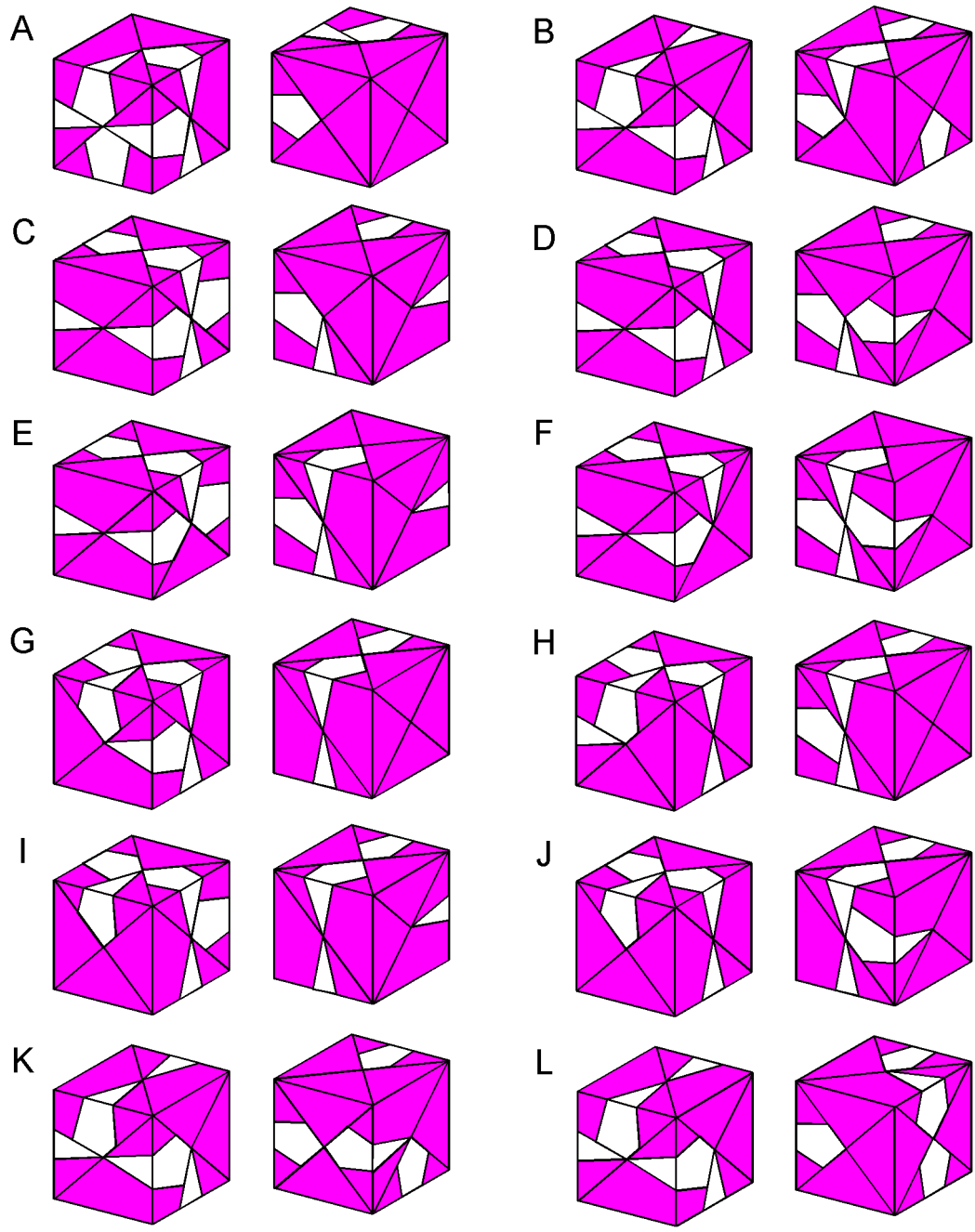
Assembling a symmetric cube

20

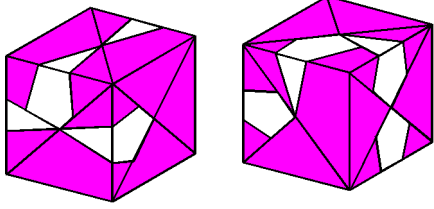


Assembling an eccentric cube

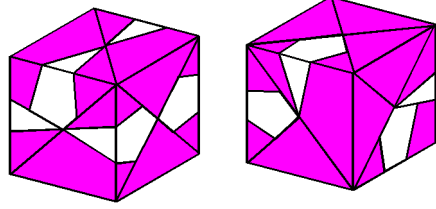
Here are the fourteen 6-part Eccentric Sonobe Flash Motif Cubes. Each cube is shown from the back as well as from the front. The right hand picture of each pair shows the cube after it has been rotated forwards through 180 degrees.



M



N



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