MATHIGON ORIGAMI

# 5 INTERLOCKING TETRAHEDRA

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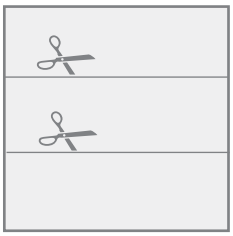
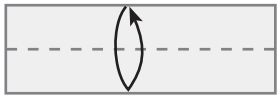
This model consists of the interlocking frames of five tetrahedra. It is one of the most difficult models on Mathigon.org, but also the most impressive.

Every tetrahedron is made out of six strips of paper with dimensions in the ratio 1:3. These can be created by cutting a square into three parts. We recommend that you use different colours for every tetrahedron, which means you need two squares in each of five colours.



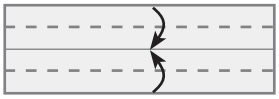
Once you have created all 5 × 6 = 30 strips, they each need to be folded as follows:

1



Fold along centre, then unfold.

2



Fold both edges towards centre, don't open.

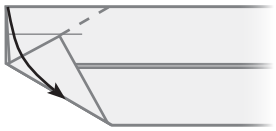
3

Fold both edges towards centre again, unfold.

4

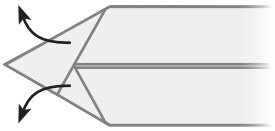
Fold bottom corner onto line in centre of top half.

5



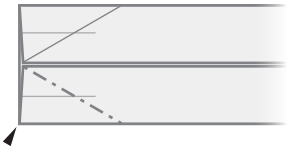
Repeat for top corner.

6



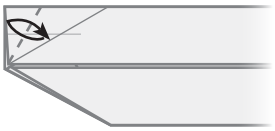
Unfold.

7



Fold bottom corner inwards.

8



Fold top corner as shown.

9

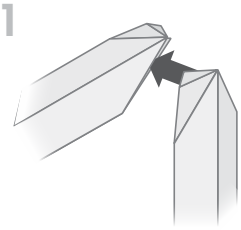
Rotate unit and repeat steps 3 to 8 at opposite end.

10

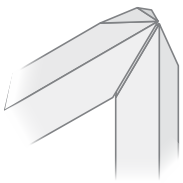
Fold entire unit along its centre.

Each of these 30 units will form the edge of one tetrahedron. At every vertex, three units link together:

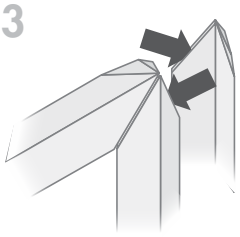
11



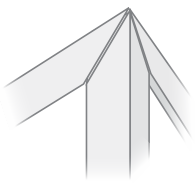
12



13

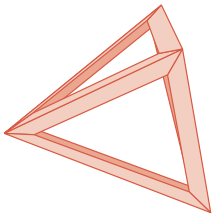


14



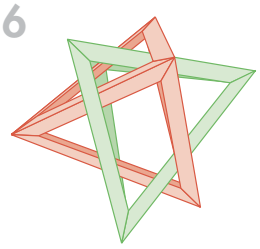
Now start connecting all units colour by colour, to form the five interlocking tetrahedra.

15

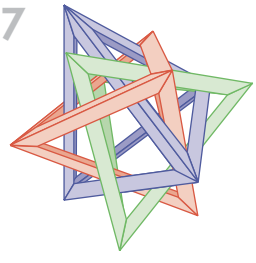


Connect all 6 units in any one colour to make the first tetrahedron.

16

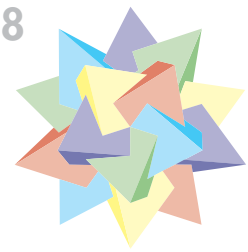


17



For the second and third tetrahedra, first create one corner ('tripod') and interlink it with the existing shape. Then lock it in place using the remaining three edges of that colour.

18



Add the fourth and fifth Tetrahedra in a similar way.