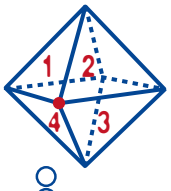
Caught in the Nets

You need ☑ regular polygon shapes

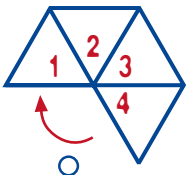
Activity

Mila has built models of the Platonic solids, using polygon shapes. Now she wants to draw nets of the shapes. First she tries an octahedron.

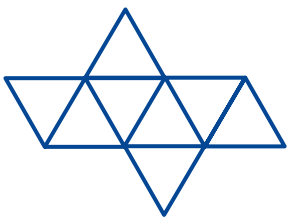
She notices that there are four triangles around each vertex (corner).



So she knows that half the net for an octahedron will look like this:



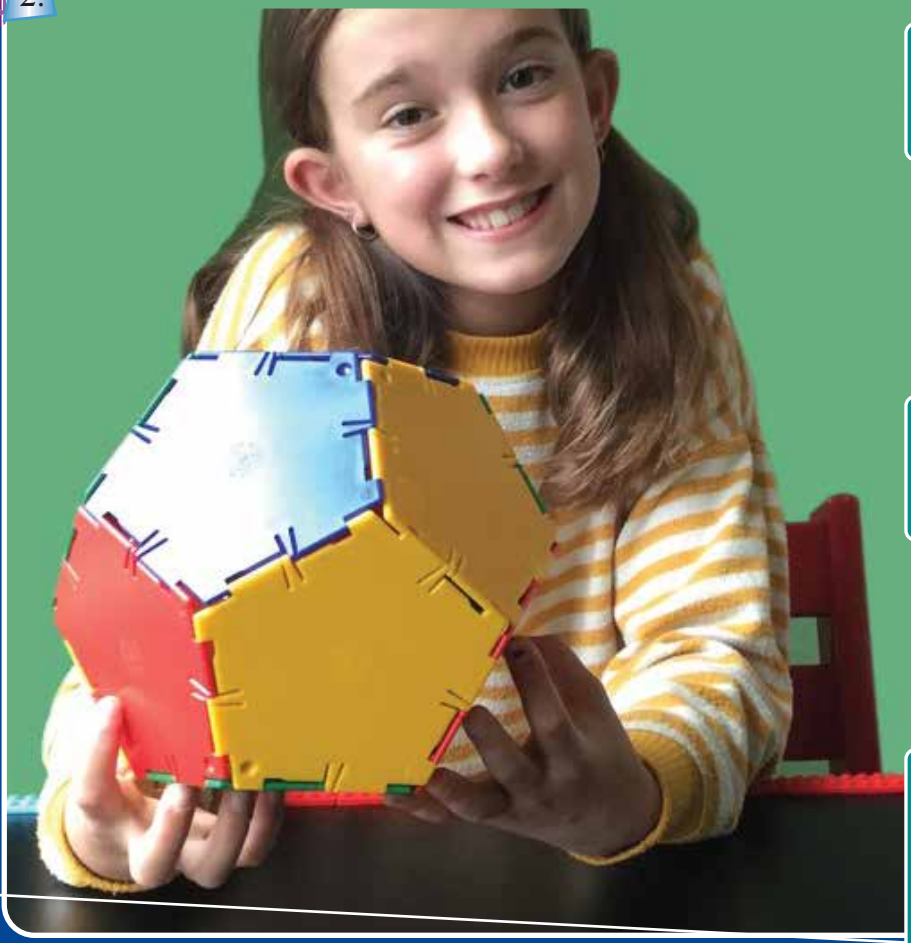
1. a. Mila thinks that this net will fold to make an octahedron.



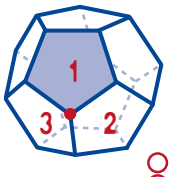
Is she right? How do you know?

b. What other nets for an octahedron can you find?

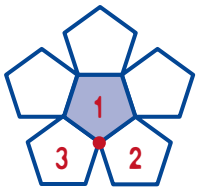
2. Mila wonders if the same idea will work with a dodecahedron.



a. She notices that there are three pentagons around each vertex.



She thinks that this net should make half a dodecahedron.



Is she right? How do you know?

b. Use Mila's idea to draw the whole net for a dodecahedron.
Build the solid with polygon shapes to check.

3. Mila thinks the icosahedron looks difficult. It is made from 20 triangles, so she thinks it would be easier to find half or a quarter of the icosahedron first.

a. Draw the net to make an icosahedron.

b. What symmetry can you find in the net pattern?

4. Here is a complex polyhedron. It is called an icosidodecahedron. Look at the shapes that are around each vertex.
Use this information to build the icosidodecahedron.