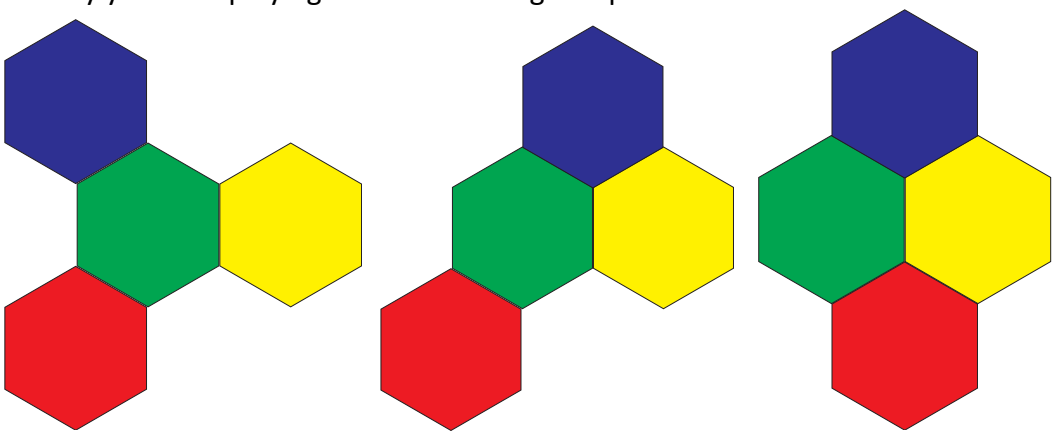
Solve a Simple Puzzle

You have 4 regular hexagons of the same size (print this pdf file and cut 4 hexagons). Arrange them in such a way that every 2 of them have a common edge.

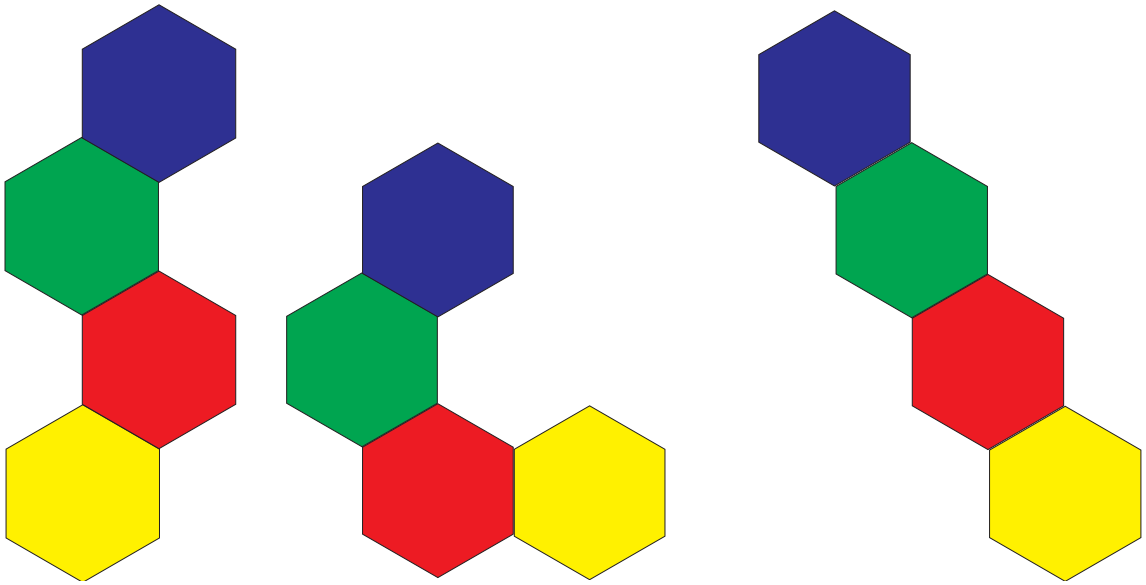
Please take a break, solve the puzzle and come back to read more, OR accept an even greater challenge and solve the puzzle mentally. How did you do it?

Initially you start playing with the 4 hexagonal pieces:



You try out a few configurations like the ones above. You are getting closer as you advance from left to right, obtaining 3, 4 and 5 pairs of common edges. But you realize that the solution has to have 6 pairs of common edges: blue-red, blue-green, blue-yellow, red-green, red-yellow and green-yellow. The closer configuration seems to be the one on the right with 5 pairs of common edges. However, you cannot find a simple way to improve this solution. So, you decide to track back to the first configuration, and you have an AHA moment: Why does the solution has to be planar? And now everything is easy.

We are not going to spoil your AHA moment by disclosing the solution, but we can give you some hints: take the first configuration and connect its edges using clear adhesive tape. This configuration can lead to the solution; the other two cannot. What other configurations could help you solve this puzzle?



Configuration S Configuration C Configuration D

Please do not read this paragraph and do not look at the following pictures. But you already realized that you have to arrange the 4 hexagons in the 3 dimensional space, resembling the Archimedean body obtained from a regular tetrahedron by cutting corners such that the part of its faces that remains in the middle is a regular hexagon. The following pictures explain this process in details.