

Puzzle
Imaginary Cube
- Triangular Antiprismoid -

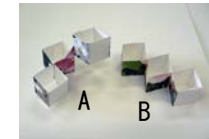
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Red :Cut lines.
Green:Mountain crease at 90 degrees.
Gray :Valley crease at 90 degrees.



1. Fold the six components. 2. Connect three B.



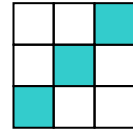
3. Connect three A.  4. Combine 2 and 3.
5. Complete!



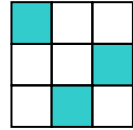


This shape is one of the two ways of cutting a cube into $3 \times 3 \times 3$ small cubes and selecting 9 of them so that no overlapping occurs from all the three surface directions.

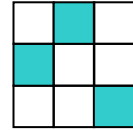
One can apply this procedure to the 9 cubes to obtain 81 cubes, and repeat it infinitely to obtain the triangular antiprismoid fractal, which has three square projections. Its convex hull is a triangular antiprismoid, which also has six square projections.



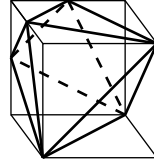
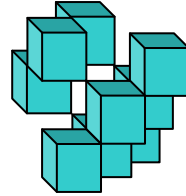
Lower



Middle



Upper



Triangular antiprismoid and the 1st level approximation of the triangular antiprismoid fractal.

Reference: Hideki Tsuki, Does it look square? Hexagonal Bipyramids, Triangular Antiprismoids, and their Fractals, in Proc. of Bridges Donostia, Tarquin publications, pp277-186,2007.