

## Hexagonal face icosidodecahedral cubes

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<http://homepage.mac.com/whitby/>

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<http://web.me.com/whitby/Octahedron/Welcome.html>

### References

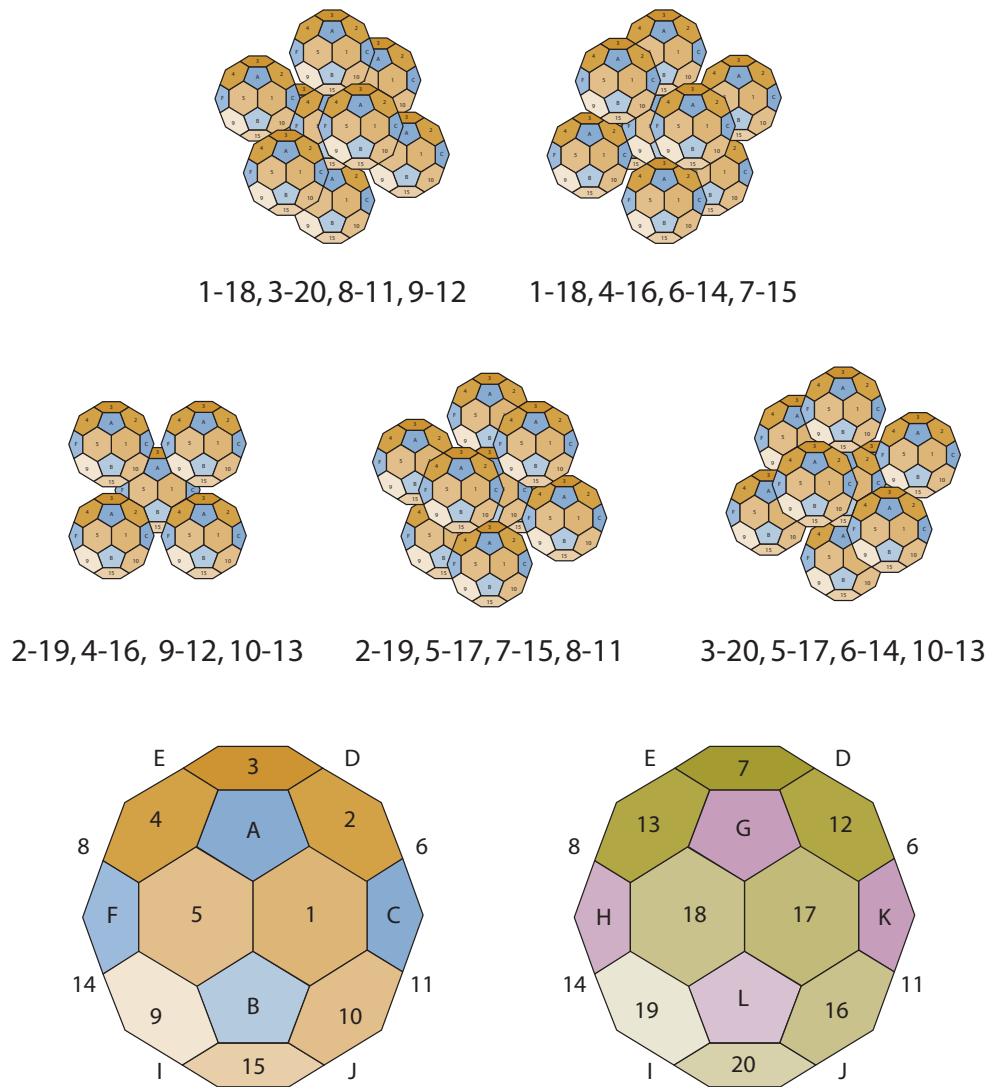
#### 1. **Hexicosidec.pdf**

The file shows forms produced by joins between the hexagonal faces of hexagonal face icosidodecahedra.

<http://homepage.mac.com/whitby/BiologicalViruses/FileSharing98.html>

### Introduction

This file shows how hexagonal face icosidodecahedra can join hexagonal face to hexagonal face to produce five differently oriented cubes with a common centroid. It follows that thirty square prisms can radiate from the same centroid—one for each of the six faces of each of the five cubes.



**Fig. 1 Cubes of hexagonal face icosidodecahedra**

The figure shows five ways in which eight hexagonal face dodecahedra can join to a centroidal hexagonal face dodecahedron so that the centroids of the outer icosidodecahedra are at the vertexes of a cube. Each cube has a different orientation. The cubes are identified by the four diagonals established by the centroids of their diametrically opposite icosidodecahedra. The 1-18 diagonal exists between the centroid of the icosidodecahedron which is joined to the 1-face of the centroidal icosidodecahedron and the icosidodecahedron which is joined to the 18-face of the centroidal icosidodecahedron. The enlarged views of the icosidodecahedron at the bottom show the numbers of the upper outer faces (left) and the lower outer faces (right).

Each diagonal is used by two different cubes. There are ten hexagonal face diameters. There are four diagonals per cube. Five cubes require twenty diagonals. Sharing provides the additional diagonals.