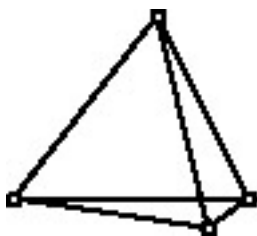


Regular Polyhedra with Doweling Rods

Activity 6

Four Tetrahedra

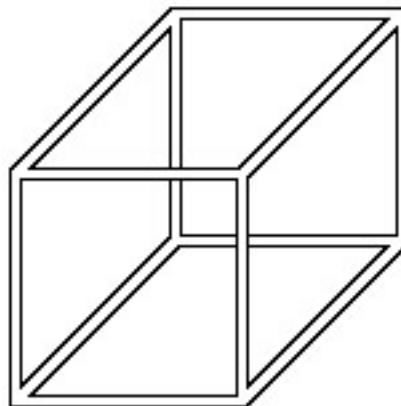
Work in four teams of two or three people. Build a tetrahedron per team (four triangular faces, three edges meeting at each vertex). One or two persons can easily build the tetrahedron. You will need 6 rods and 4 connectors. Notice that the tetrahedron is pretty stable. Explore the rotations of the tetrahedron. Rotate 120° around an axis that goes from the top vertex to the center of the opposite face. Rotate the tetrahedron 180° by holding two opposite edges by their midpoints.



The Cube

Work in one team with three or four people. Build a cube (six square faces, three edges meeting at each vertex). It is better if at least two people participate in building the cube. You will need 12 rods, and 8 connectors. Notice that the cube is not stable at all. It can even collapse flat. When it lies flat on the floor it resembles some of the cubes drawn in textbooks.

Discuss why the cube is not stable.
In order to make it stable (keeping flexible joints) is to triangulate.
Discuss where triangulating is used in buildings, bridges, power towers, etc.



The Octahedron

Work in one team with three or four people. Build an octahedron (eight triangular faces, four edges meeting at each vertex). You will need 12 rods, and 6 connectors. Notice that the octahedron is very stable also.

Explore the rotations of the octahedron.
Rotate 90° around an axis that goes from one vertex to its opposite vertex.

