

Polyhedra and Coordinates

Let's apply our knowledge of coordinates, distance, and parametric equations of lines, to find coordinates of interesting polyhedra. In each case below it is described what kinds of regular polygons meet together at each vertex in a certain convex polyhedron. First, physically construct the solid. Second, imagine that the object is sitting in a three-dimensional coordinate system, and determine "nice" coordinates for each of its vertices.

1. 444: square-square-square
2. 333: triangle-triangle-triangle
3. 3333: triangle-triangle-triangle-triangle
4. 3434: triangle-square-triangle-square
5. 366: triangle-hexagon-hexagon
6. 466: square-hexagon-hexagon
7. 344: triangle-square-square
8. 544: pentagon-square-square
9. 3335: triangle-triangle-triangle-pentagon
10. 33333: triangle-triangle-triangle-triangle-triangle. I will provide some hints on finding coordinates of this and the following polyhedra.
11. 555: pentagon-pentagon-pentagon
12. 3535: triangle-pentagon-triangle-pentagon
13. 566: pentagon-hexagon-hexagon