Solids Construction

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While searching for some recreational mathematics for my own children to work on this summer, I found some constructions that I thought they (and other elementary or junior high school children) would enjoy—a mobile using the five Platonic Solids and other "space" figures made from regular polygons. Although these solids can be constructed in many ways, I will demonstrate the simplest.

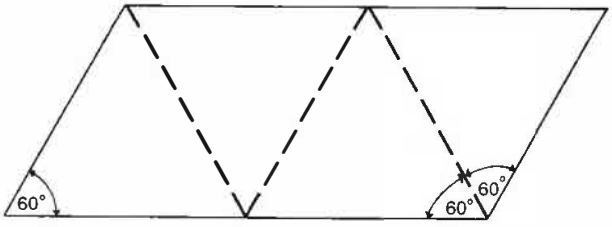
The solids can be made with heavy construction paper and tape. They can then be strung up as a mobile or used as a display.

Through this exercise, Grades 5 to 7 students will learn to use a ruler and protractor correctly. They will learn new terminology such as equilateral triangle, regular pentagon, regular hexagon, and of course, the names of all the new solids they construct. A good idea is to have them label each of the sides of the solid with the solid's name before taping the sides together. You may also informally define the congruent regular polygons of which the solids are made and have them count the number of faces, edges and vertices on each solid. Have them try to guess formula relationships between what they have found.

Vertices + Faces = Edges + 2

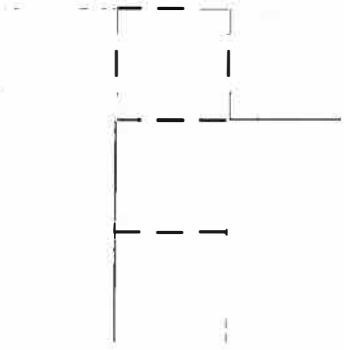
The five regular polyhedrons and their constructions are as follows:

1. Tetrahedron

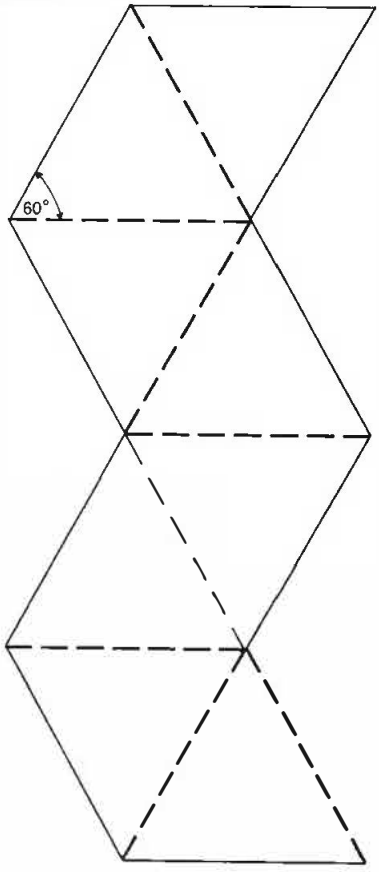


Fold on dotted lines.

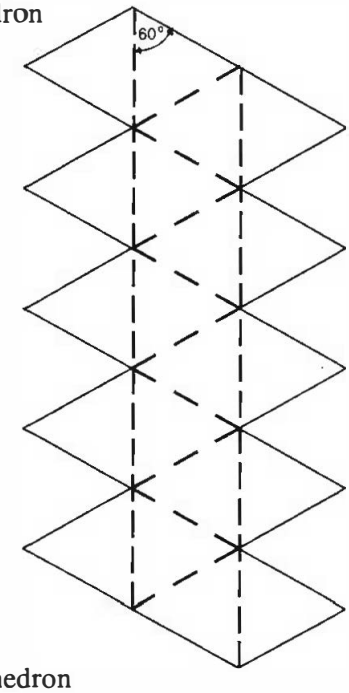
2. Hexahedron (cube)



3. Octahedron

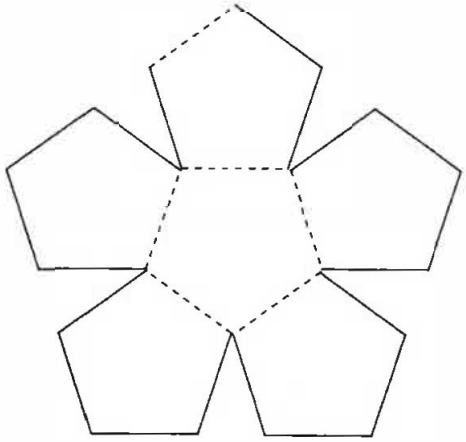


4. Icosahedron



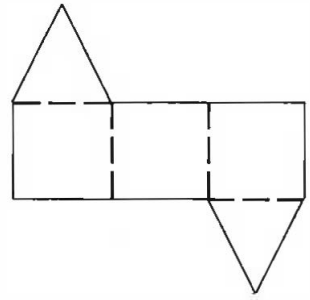
5. Dodecahedron

Make two of these figures. Attach the second one along the outside dotted lines here.

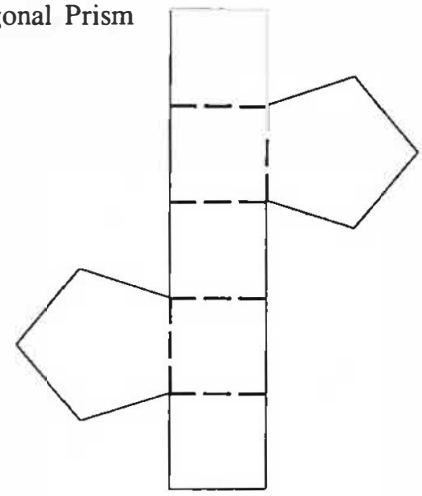


Each face of a regular polyhedron is a regular polygon that is congruent to every other face. The following are polyhedrons that are not regular:

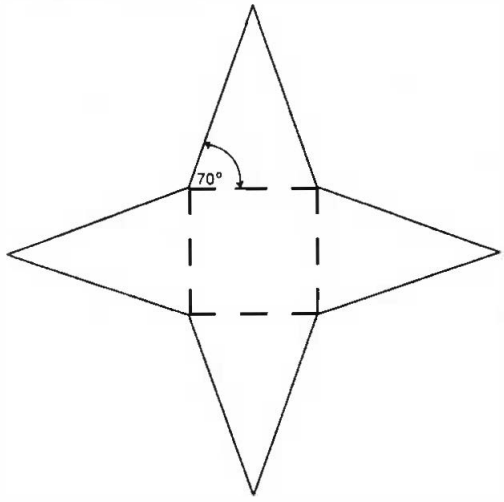
1. Triangular Prism



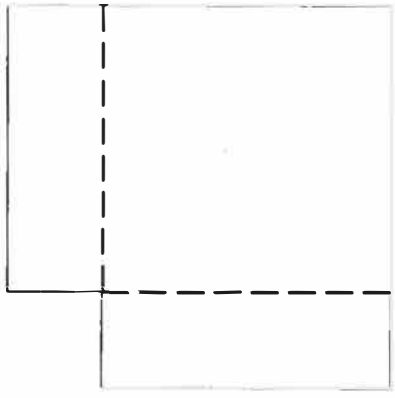
2. Pentagonal Prism



3. Rectangular Pyramid

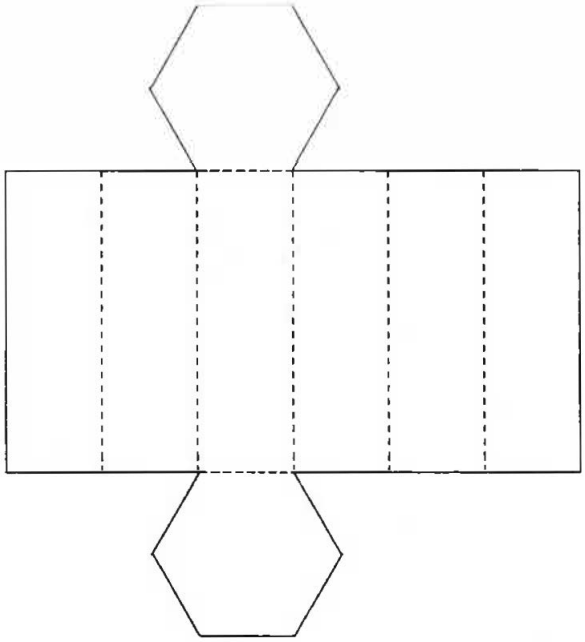


4. Rectangular Prism



Make two of these.

5. Hexagonal Prism



Each angle at 120°, each side same length.

6. Octahedron
Make two of these.