1. **It's nice to be regular.** A polygon is regular if all sides are the same length and all angles have equal measure. Here are regular polygons with 3, 4, 5, 6, 7, and 8 sides. (Note that the regular 7-gon is particularly hard to draw.)

Here are some polygons that aren't regular.

2. **Keeping it Platonic.** A solid is regular if all faces are identical regular polygons meeting at the same number of edges at each vertex.

5. **The eye of the beholder.** The solid on the left is a tetrahedron viewed by looking down on a vertex. The middle solid is a cube viewed by looking straight down at a face. The perspective here is skewed, because the face closer to you should actually look larger than the face farther away.) The third solid is an octahedron viewed by looking directly at a vertex.


16. **Cube slices.** Slicing off a vertex generates a triangle, because the cutting plane intersects three sides of the cube. If we continue making parallel cuts, that triangle will get larger until additional sides intersect the cutting plane. At this point, the slices will look like triangles with one or more vertices cut off. If the cuts generate growing equilateral triangles, then when we are halfway through the cube, the slice will be a hexagon. Depending on where we cut, we can get a wide variety of 3-, 4-, 5-, and 6-sided shapes.

Note: check out the CD Rom in your kits to practice slicing all the Platonic solids with planes.