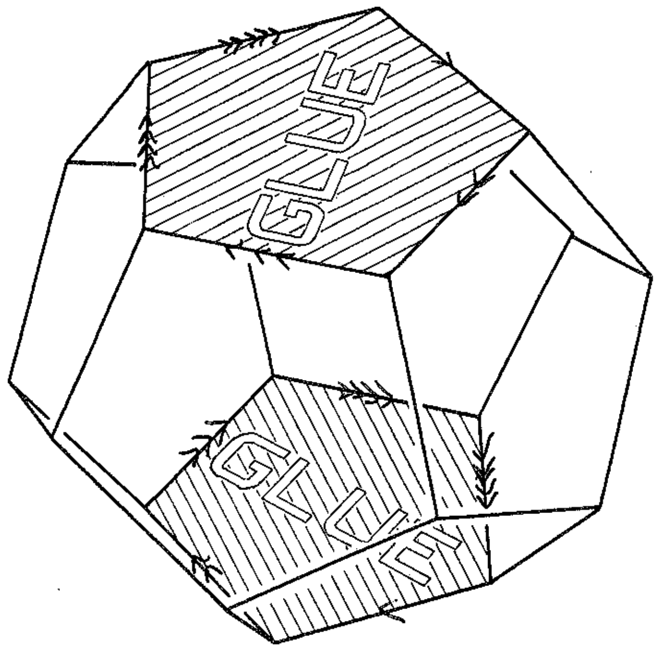

Figure 16.1 In the Seifert–Weber space every face of the dodecahedron is glued to the opposite face with a three-tenths clockwise turn. [A technical point: You might think that gluing the top to the bottom with a clockwise turn would be the same as gluing the bottom to the top with a counterclockwise turn, but this is not the case. Study the figure and you will see that gluing the top to the bottom with a clockwise turn (as viewed from above) works out the same as gluing the bottom to the top with a clockwise turn (as viewed from below). Thus the description of the Seifert–Weber space is self-consistent.]

ber space made from the appropriate dodecahedron has a homogeneous hyperbolic geometry.

The *Poincaré dodecahedral space* consists of a dodecahedron whose opposite faces are glued with one-tenth turns (Figure 16.3). This three-manifold fails to

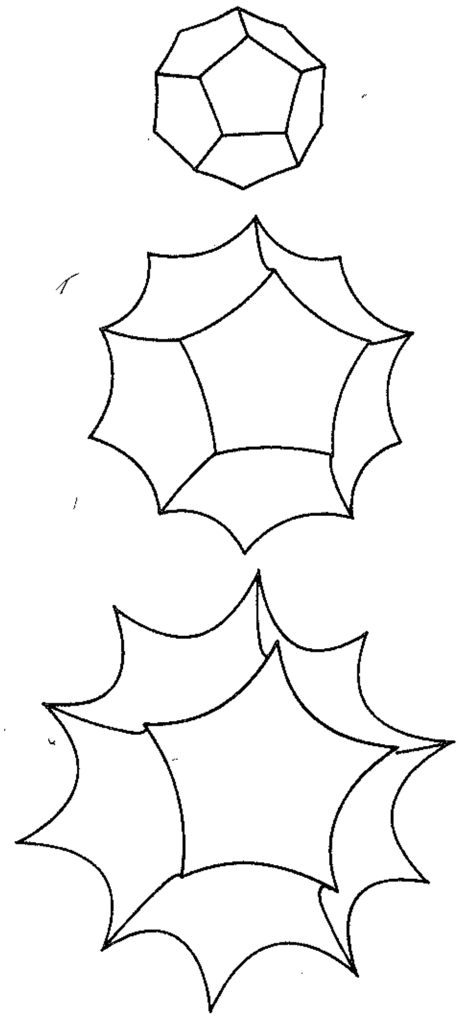

Figure 16.2 Let a dodecahedron expand in hyperbolic space until its corners are the right size to all fit together at a single point. The angles shown here are accurate, but in hyperbolic space itself the dodecahedron's faces do not bend inward.