Directions for Assembling the
Pyramid Volume Principle Demonstrator

On the following page is a master with two ten-sided polygons (10-gons) that, when cut out and glued or taped, will each become a half-pyramid.

1. Make three copies of the master.

2. Cut out the six 10-gons from your copies, two for each copy. Do not cut triangles apart from each other or from the rectangle.

3. Fold along all eight heavy lines. The result will be rectangle ABCD and eight triangles, still attached.

4. Glue or tape as indicated. The four triangles marked "glue?" should be hidden inside the half-pyramids. **You now have six half-pyramids.**

5. Attach two half pyramids together by gluing or taping triangle CDX to triangle $C'D'X'$, with corners C, D, and X meeting C', D', and X' respectively. You now have one complete pyramid.

6. Attach (actually, hinge) two more half-pyramids together with a piece of tape along edge $CC' - XX'$. The tape will act as a hinge. The hinge will hold better if the taping is nearly as long as the edge. For best results, tape both outside and inside the pyramid.

7. Attach this new "hinged" pyramid to the first complete pyramid with a hinge of tape, joining corner A of the first "solid" pyramid to corner A' of the second "hinged" pyramid, and corner B of the first to corner B' of the second.

8. Hinge the last two half-pyramids together on edge $DD' - XX'$ as step 6.

9. Hinge this pyramid to the first, matching A' to B' and B' to A'.

This solid can be arranged as three congruent square pyramids, or as a single square prism with volume equal to the sum of the volumes of the three pyramids. A principle of pyramid volume is thus demonstrated: the volume of a pyramid is equal to one-third of the volume of a prism with equal base area and height.