Directions: Get in groups of three. You need scissors and a metric ruler. Cut out the square and the four right triangles. Measure each side of the square and each side of the triangles to the nearest centimeter. Write the measurements down next to all of the segments, on both sides of the cut out figures so that no matter how the pieces are put together, inside or out, you can see the length of the segments. Check that the measurements are consistent with the Pythagorean theorem.

Now lay the square on the table and tape the four triangles to it in such a way that they will be able to be folded up to create a pyramid. Begin by putting the two smaller triangles next to adjacent sides of the square. Arrange the triangles so that when they are folded up, segments that are the same length will be alongside each other. The apex of the pyramid will be directly above one of the vertices of the square. Tape it together as neatly as you can. Using masking tape on what will be the inside of pyramid works well. Attach it to one face, crease the tape and fold it back, and then lay the adjoining face on top of it. You will have to struggle a bit, probably working on the outside of the pyramid, to get the apex taped together.

After each member of the group has made their own pyramid, find a way to place the three together in space to create a cube. What does this imply about the volume of the pyramid? Calculate the surface area of the pyramid. Suppose that you wanted to create a similar construction, but that you wanted the square base to have 10 cm sides. What would the length of the sides be for the four triangles?