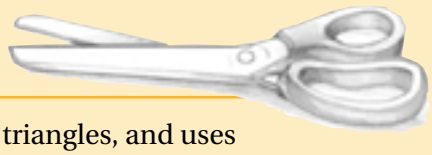
Activity #5: *Square the Legs*



Objective 14: Geometry and Spatial Sense

This activity reviews area computations for rectangles and triangles, and uses the Pythagorean theorem.

Description: Students will create a physical example of why a triangle has half the area of a rectangle with the same length and width. Students will also discover the Pythagorean theorem.

Note: To work out details such as appropriate dimensions for the rectangle, it is recommended that the teacher try this activity before assigning it to the class.

▶ *Directions*

1. Distribute graph paper, rulers, and scissors to the students. Graph paper with one-quarter-inch squares or larger is recommended.
2. Have students draw a rectangle with a specific area on the graph paper. (For graph paper with quarter-inch squares, an area of 12 square inches or greater is recommended.) Tell students to keep the drawing close to one of the corners of the paper. They will use most of the sheet before they have finished. Have them use rulers for straight edges.
3. Have students count the squares in their rectangle to verify the area.
4. Have students draw a diagonal line that connects two opposite vertices of their rectangle. Have students cut out the rectangle and then the triangles. Tell students to verify that the triangles are congruent.
5. Have students use one of the triangles to measure sides for three squares. Have students use a different edge of the triangle for the sides of each square. Have students cut out the two smaller squares.
6. Tell students to fit the two smaller squares into the larger one that is still on their paper. They will have to cut one of the squares into several pieces. Explain and discuss the Pythagorean theorem.