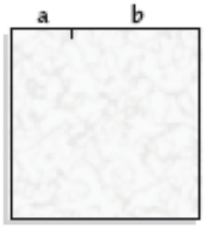
Pythagorean Tile Proof

Use two different colored squares of paper. Student 1 completes Steps 1 & 2 and Student 2 completes Steps 3 & 4. Students label the area of rectangles, squares and triangles in terms of *a* and *b.* Students then cut out shapes. The triangles should fit perfectly on the rectangles leaving the squares a^2 and b^2 (of one color) = to c^2 (of other color).

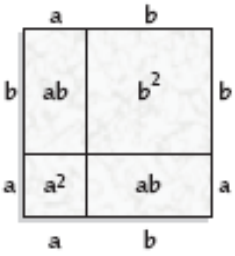
Activity

Use paper folding to develop the Pythagorean Theorem.

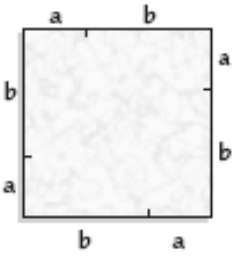
Step 1 On a piece of patty paper, make a mark along one side so that the two resulting segments are not congruent. Label one as *a* and the other as *b*.



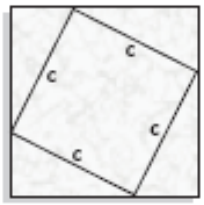
Step 2 Copy these measures on the other sides in the order shown at the right. Fold the paper to divide the square into four sections. Label the area of each section.



Step 3 On another sheet of patty paper, mark the same lengths *a* and *b* on the sides in the different pattern shown at the right.

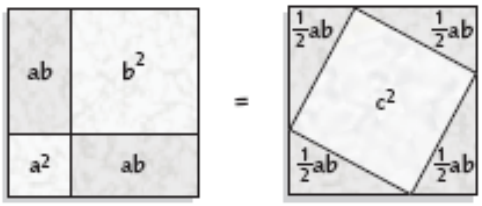


Step 4 Use your straightedge and pencil to connect the marks as shown at the right. Let *c* represent the length of each hypotenuse.



Step 5 Label the area of each section, which is $\frac{1}{2}ab$ for each triangle and c^2 for the square.

Step 6 Place the squares side by side and color the corresponding regions that have the same area. For example, $ab = \frac{1}{2}ab + \frac{1}{2}ab$.



The parts that are not shaded tell us that $a^2 + b^2 = c^2$.