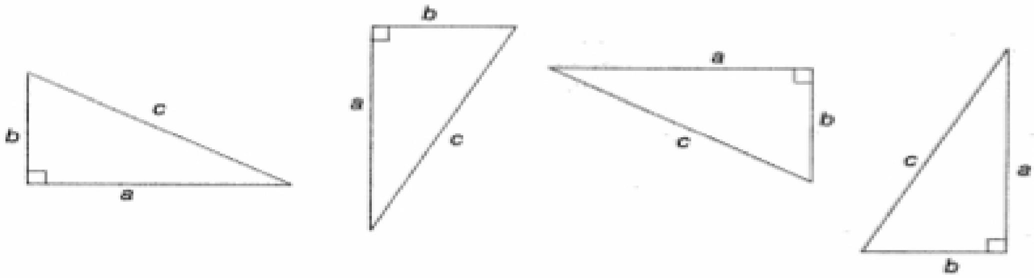
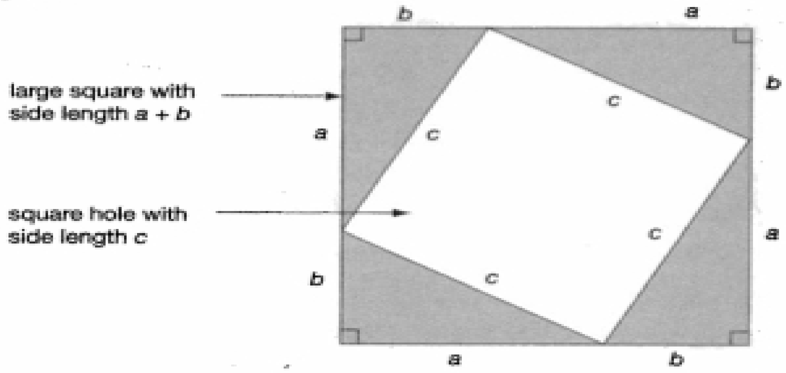
Activity:

Step 1: Cut out four copies of the same right triangle. Identify the leg lengths as a and b and the hypotenuse length as c.



Step 2: Position the triangles to form a square with side length $a + b$ and an inside hole with side length c.



Step 3: Reason as follows:

- Each of the four triangles has an area of $\frac{ab}{2}$.
- The hole is a square, since the angles have to be right angles because the other two angles are the acute angles in a right triangle and add to 90 degrees. The area of the square hole is c^2.
- The area of the large square with side length $a + b$ is $(a + b)^2$, and its area is the sum of the areas of the hole and the four triangles.

So $(a + b)^2 = c^2 + 4 \cdot \frac{ab}{2}$.

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Fig. 3.14. Linking a geometric representation with an algebraic representation to validate the Pythagorean theorem