Pythagorean Puzzle A - Activities

Activity 1

1) Use the triangle and the three squares to form the puzzle.
2) Compare the lengths of the sides of the squares with the lengths of the sides of the triangle.

Activity 2

1) Use the triangle, the small square, the biggest square, and the big parallelogram to form the puzzle.
   What can you say about the area of this parallelogram and the area of the square you did not use?
2) Verify that the base of the red square is equal to one base of the red parallelogram.
3) Compare the height of the red square with the height of the red parallelogram.
   What can you say about the height of the square and parallelogram?

Activity 3

1) Use the triangle, the two bigger squares and the small parallelogram to form the puzzle.
   What can you say about the area of the small blue parallelogram and the area of the small blue square?
2) Take the two pieces that have the same area. Verify that the base of the blue square is equal to one base of the blue parallelogram.
3) Compare the height of the blue square with the height of the blue parallelogram.

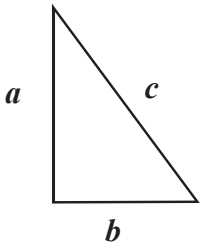
Activity 4

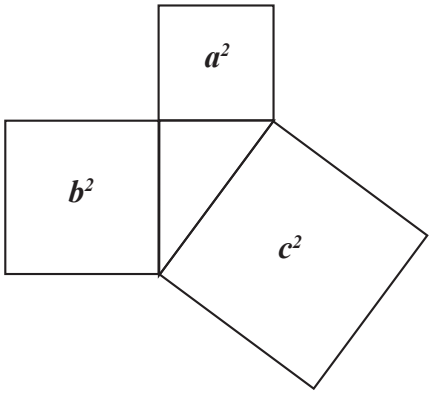
Use the triangle, the two parallelograms, and the two smaller squares to form the puzzle.
What can you conclude about the area of the big square and the areas of the two parallelograms?

Activity 5

Link together the results obtained in activities 2, 3 and 4, to relate the area of the square on the hypotenuse to the sum of the areas of the squares on the legs. State the relation in your own words.

This is a very important theorem in mathematics, known as the Pythagorean theorem. If we label the hypotenuse as c, and the legs as a and b, the theorem can be expressed as $a^2 + b^2 = c^2$.





Reference

Hall, G. D. A Pythagorean puzzle. In *Teacher-made aids for elementary school mathematics: Readings from the Arithmetic Teacher*. National Council of Teachers of Mathematics, 1974.