Theorem (Pythagorean Theorem)**.** The square of the hypotenuse (the side opposite the right angle) is equal to the sum of the squares of the other two sides. The theorem can be written as an equation relating the lengths of the sides a, b and c, often called the "Pythagorean equation":
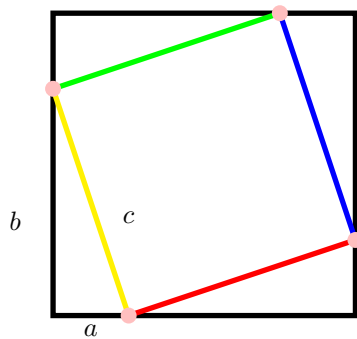
$$a^2 + b^2 = c^2,$$

where c represents the length of the hypotenuse and a and b the lengths of the triangle's other two sides.

Proof. The fourth approach starts with the same four triangles, except that, this time, they combine to form a square with the side (a + b) and a hole with the side c. We can compute the area of the big square in two ways. Thus

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

simplifying which we get the needed identity:

$$a^2 + b^2 = c^2,$$

$\square$