

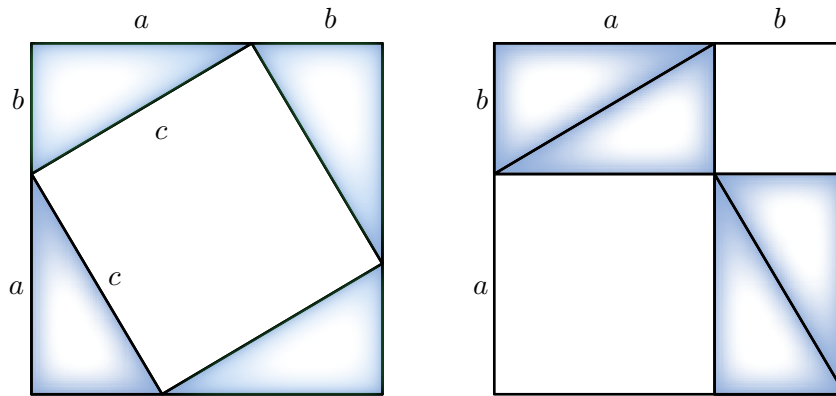
# Pythagorean Theorem

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The Pythagorean theorem states that in a right-angled triangle where  $c$  is the the hypotenuse and  $a$  and  $b$  are the two other sides following equation holds:

$$a^2 + b^2 = c^2 \quad .$$

The following images illustrates why Pythagoras' theorem holds:



Both squares have the same dimension  $a + b$  and therefore have the same area. Both squares contain four triangles with sides  $a, b, c$  (blue). The rest of the left square is occupied by a square with area  $c^2$ ; the rest of the right square is occupied with two squares with area  $a^2$  and  $b^2$ .

Therefore  $c^2$  in the left square and  $a^2$  and  $b^2$  in the right square occupy the same area which proves the theorem.