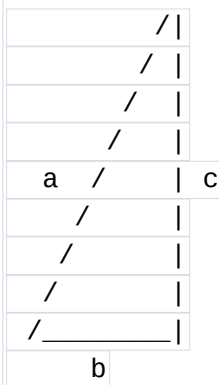


Pythagoras' theorem, also known as the Pythagorean theorem, states that in a right-angled triangle, the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the other two sides.

In a right-angled triangle, one of the angles is a right angle, which measures 90 degrees. The side opposite the right angle is called the hypotenuse, and it is the longest side of the triangle. The other two sides are called the legs or catheti.

To understand the theorem, let's consider the following example:

In the right-angled triangle below, the length of the hypotenuse is "c", and the lengths of the two legs are "a" and "b".



According to the Pythagorean theorem, we have:

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

This means that if we square the length of the hypotenuse, we get the sum of the squares of the lengths of the legs.

For example, if we have a right-angled triangle where one leg has a length of 3 units, and the other leg has a length of 4 units, we can use the Pythagorean theorem to find the length of the hypotenuse as follows:

$$c^2 = 3^2 + 4^2 \quad c^2 = 9 + 16 \quad c^2 = 25 \quad c = \sqrt{25} \quad c = 5$$

So, the length of the hypotenuse is 5 units.

The Pythagorean theorem has numerous applications in mathematics and various fields such as engineering, physics, and surveying. It is used to solve problems related to distance, time, velocity, acceleration, and many others.