



The triangle shown is a right angled triangle.

What is the area of the triangle?

What is the perimeter of the triangle?

Is there a value of t , such that all the sides are positive integers?

Primitive Pythagorean Triples

A Pythagorean triple is a triple (x,y,z) of positive integers such that $x^2 + y^2 = z^2$.

A triple is said to be primitive if $\text{hcf}(x,y)=1$.

The two most famous examples of Primitive Pythagorean Triples are $(3,4,5)$ and $(5,12,13)$.

There are many examples of Primitive Pythagorean Triples. The Babylonians were aware of many some 3500 years ago.

Primitive Pythagorean Triples

Pythagoras was credited with discovering the following set of triples.

$$x = 2k+1, \quad y = 2k^2 + 2k, \quad z = 2k^2 + 2k + 1$$

In this example, k can take any positive integer greater than or equal to 1. ie $k \geq 1$.

$$(2mn, m^2 - n^2, m^2 + n^2)$$