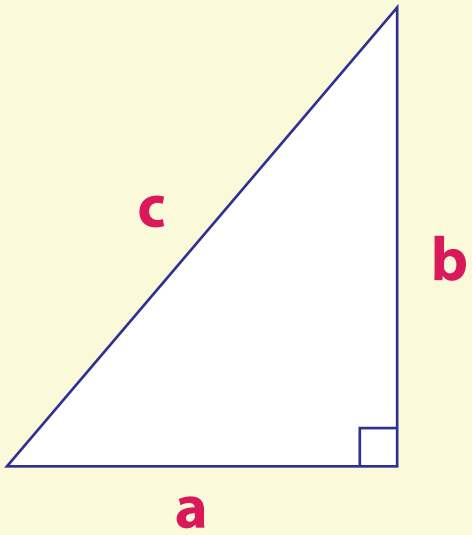
Name : _____ Date : _____

# Pythagorean Triples

**If three positive integers (a, b, and c) that represent the length of each side of a right triangle, satisfy the equation $a^2 + b^2 = c^2$, it is called a Pythagorean triple.**




**In a Pythagorean triple, two sides will always be represented by odd numbers and one side will be an even number.**

**Pythagorean triple formula for every odd number.**

* side a is an odd number.
* side b = $\frac{(a^2 - 1)}{2}$ (even number)
* side c = (b + 1) (odd number)

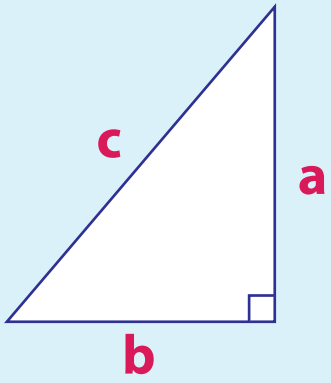
**Pythagorean triple formula for every even number.**

* side a is an even number.
* side b = $\left(\frac{a}{2}\right)^2 - 1$ (odd number)
* side c = (b + 2) (odd number)

Name : _____ Date : _____

# Pythagorean Triples

## Example with an even number



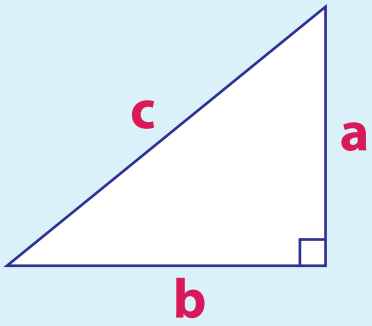

If $a = 4$, (even number)

$b = \left(\frac{a}{2}\right)^2 - 1 = 3$ (odd number)

$c = (b + 2) = 3 + 2 = 5$ (odd number)

Hence 3, 4, and 5 is a "Pythagorean Triple".

## Example with an odd number




If $a = 3$, (odd number)

$b = \frac{(a^2 - 1)}{2} = \frac{9 - 1}{2} = 4$ (even number)

$c = (b + 1) = 4 + 1 = 5$ (odd number)

Hence 3, 4, and 5 is a "Pythagorean Triple".