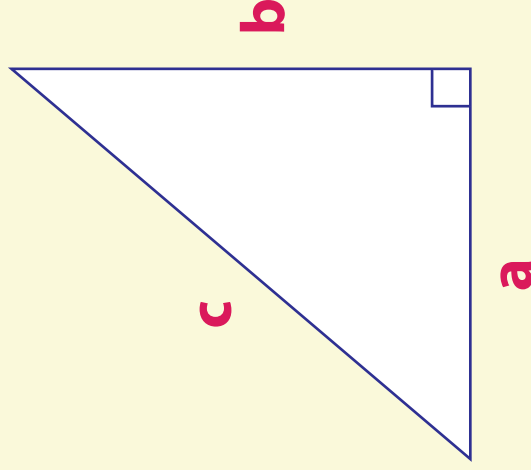


Name: _____

Pythagorean Triples

If three positive integers (a , b and c) that represent the length of each side of a right-angled triangle, then the equation $a^2 + b^2 = c^2$ holds true. This is known as the Pythagorean theorem.



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

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Formula for every odd number:

$$\left(\frac{a^2 - 1}{2}\right) + 1 \quad (\text{odd number})$$

Formula for every even number:

$$\left(\frac{a^2}{2}\right) - 1 \quad (\text{odd number})$$

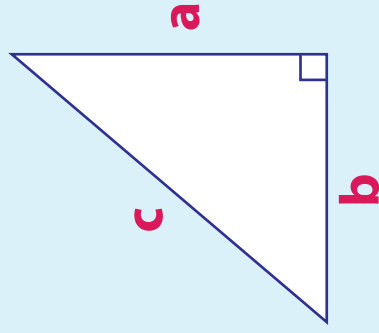
* side $b = (a + 1)$ (odd number)

* side $c = (a + 2)$ (odd number)

Name: _____

Pythagorean Triples

Example with an even number



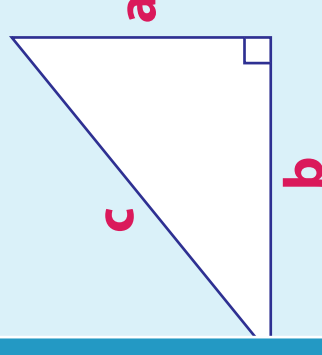
If $a = 4$, (even number)

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

$$c = (b + 2) = 3 + 2 = 5 \text{ (odd number)}$$

Hence 3, 4, and 5 is a “Pythagorean Triple”.

Example with an odd number



Example with an odd number

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

$$c = a + 1 = 5 \text{ (odd number)}$$

Hence 3, 4, and 5 is a “Pythagorean Triple”.

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