Lesson 9.1 Pythagorean Theorem

Wednesday, March 29, 2023 8:56 PM

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Pythagor... Theorem

Pythagorean Theorem and Its Converse

Workbook pages 127-130

Content Objective

Students will solve problems using the Pythagorean Theorem and its converse

Florida's B.E.S.T. Standards for Mathematics

MA.912.GR.3.2

Given a mathematical context, use coordinate geometry to classify or justify definitions, properties and theorems involving circles, triangles or quadrilaterals.

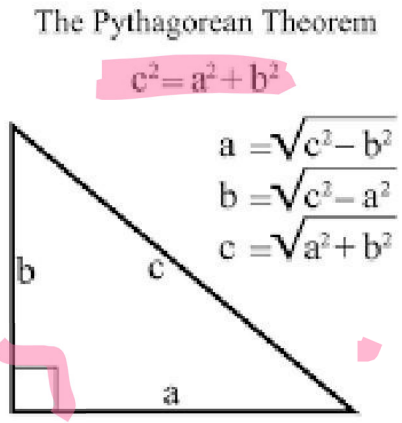
MA.912.T.1.2

Solve mathematical and real-world problems involving right triangles using trigonometric ratios and the Pythagorean Theorem.

Learn
The Pythagorean Theorem

The Pythagorean Theorem relates the lengths of the hypotenuse and legs of a right triangle.

In a right triangle, the sum of the squares of the lengths of the legs is equal to the square of the length of the hypotenuse.



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Learn
The Pythagorean Theorem

A **Pythagorean triple** is a set of three nonzero whole numbers a, b, and c, such that $a^2 + b^2 = c^2$. The most common Pythagorean triples are shown below in the first row. The triples below them are found by multiplying each number in the triple by the same factor.

Common Pythagorean Triples			
3, 4, 5	**5, 12, 13**	**8, 15, 17**	**7, 24, 25**
6, 8, 10	10, 24, 26	16, 30, 34	14, 48, 50
9, 12, 15	15, 36, 39	24, 45, 51	21, 72, 75
$3x$, $4x$, $5x$	$5x$, $12x$, $13x$	$8x$, $15x$, $17x$	$7x$, $24x$, $25x$

Find Missing Measures by Using the Pythagorean

Theorem

Find the value of *x*.

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

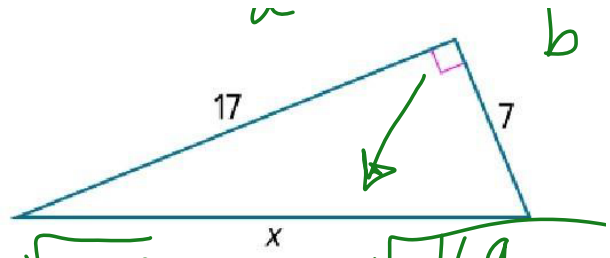
$x^2 = 17^2 + 7^2$

$x^2 = 289 + 49$

$x^2 = 338$

$x = \sqrt{338}$

$x = 18.4$



$c = \sqrt{169}$

$13\sqrt{2}$

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Find Missing Measures by Using the Pythagorean Theorem

Find the value of *x*.

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

$17^2 = x^2 + 8^2$

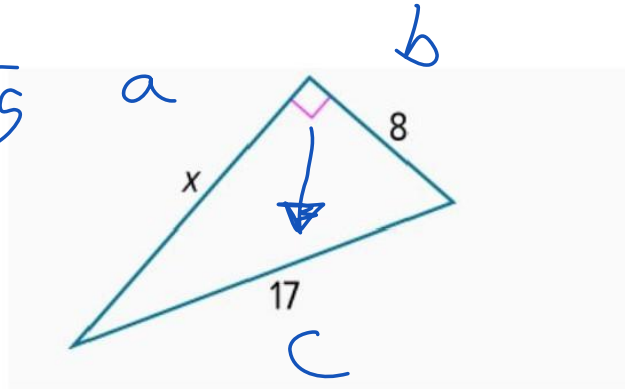
$289 = x^2 + 64$

$-64 \quad -64$

$225 = x^2$

$x = \sqrt{225}$

$x = 15$



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Find Missing Measures by Using the Pythagorean Theorem

Use a Pythagorean Triple to find the value of x.