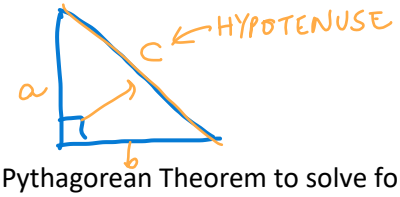
MTH1W

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

Math 9 – Unit 3: Solving Equations

Lesson 3.4: Pythagorean Theorem



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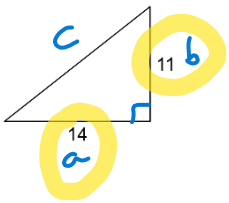
Date: March 3, 2026.

Learning Goal: We are learning to use the Pythagorean Theorem to solve for missing sides in right-angled triangle.

The infamous Pythagorean Theorem is essentially an equation. As long as we have enough information, we can use it to solve.

Part One: Given the following triangles, label the sides a, b, and c, then solve for the missing side.

1.



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

$c^2 = 14^2 + 11^2$

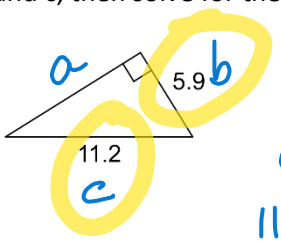
$c^2 = 196 + 121$

$c^2 = 317$

$c = \sqrt{317}$

$c \approx 17.8$

2.



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

$11.2^2 = a^2 + 5.9^2$

$125.44 = a^2 + 34.81$

$125.44 - 34.81 = a^2$

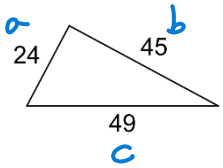
$90.63 = a^2$

$\sqrt{90.63} = a$

$a \approx 9.5$

Part Two: Given the following triangles, use the Pythagorean Theorem to prove whether or not the triangle is a right-angled triangle. First, label the sides.

1.



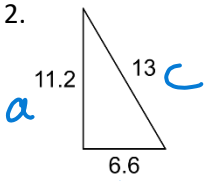
$c^2 = 49^2 = 2401$

$a^2 + b^2 = 24^2 + 45^2 = 576 + 2025 = 2601$

$c^2 \neq a^2 + b^2$

$\therefore$ Not Right Δ.

2.



$c^2 = 13^2 = 169$

$a^2 + b^2 = 11.2^2 + 6.6^2 = 125.44 + 43.56 = 169$

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

$\therefore$ Right Δ.

Part Three: Read the question twice. Draw the situation (probably utilizing a right-angled triangle). Label the information that you know. Solve for the missing side. Write the answer to the question in the sentence.

1. A television screen is described in terms of the diagonal measure of its screen. If a TV screen is 20 inches wide and 15 inches high, what is the length of its diagonal (and hence, the size of the TV)?

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

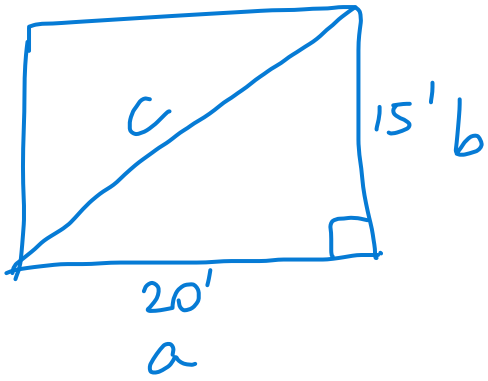
$c^2 = 20^2 + 15^2$

$c^2 = 400 + 225$

$c^2 = 625$

$c = \sqrt{625} = 25'$

$\therefore$ The TV is $25'$ in size.



Success Criteria:

- I can use the Pythagorean Theorem to solve for a missing side in a triangle.