

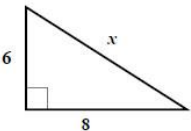
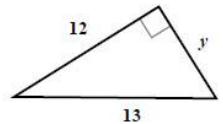
“Unwrapping” the Standards

1. Choose a course priority standard for the “unwrapping process”.
2. Skills: Circle the verbs – what *students* need to do.
3. Concepts: Underline nouns and noun phrases that represent *teachable concepts*.
4. Compose Big Idea statements

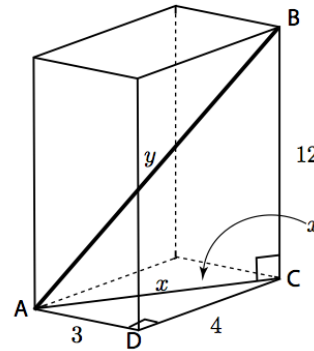
Content Area: Math

Grade Level: 8th

Standard: 8.G.7

Domain: Geometry (G) Cluster: Understand and apply the Pythagorean Theorem Standard: 8.G.7 - Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two- and three-dimensions. (DOK 1,2)		
1. Skills (verbs)	2. Key Concepts (nouns)	3. Additional Clarifications / Examples
Students need to be able to do.....	Students need to know.....	
Apply	the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two- and three-dimensions.	<p>Acceptable answers can be as a radical or decimal approximation.</p> <p>Apply the theorem to mathematical problems in two- or three-dimensions (can solve for a leg or hypotenuse).</p> <p><u>Examples:</u></p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  $6^2 + 8^2 = x^2$ $36 + 64 = x^2$ $100 = x^2$ $\sqrt{100} = \sqrt{x^2}$ <div style="border: 1px solid red; padding: 2px; display: inline-block;">$x = 10$</div> </div> <div style="text-align: center;">  $12^2 + y^2 = 13^2$ $144 + y^2 = 169$ $y^2 = 25$ $\sqrt{y^2} = \sqrt{25}$ <div style="border: 1px solid red; padding: 2px; display: inline-block;">$y = 5$</div> </div> </div>

Examples:



$$\begin{aligned}3^2 + 4^2 &= x^2 \\9 + 16 &= x^2 \\25 &= x^2 \\\sqrt{25} &= x^2 \\5 &= x\end{aligned}$$

$$\begin{aligned}12^2 + 5^2 &= y^2 \\144 + 25 &= y^2 \\169 &= y^2 \\\sqrt{169} &= y^2 \\13 &= y\end{aligned}$$

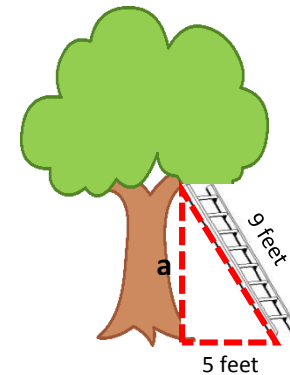
Apply theorem to real-world situations in two- or three-dimensions (can solve for a leg or hypotenuse).

Example:

The Irrational Club wants to build a tree house. They have a 9-foot ladder that must be propped diagonally against the tree. If the base of the ladder is 5 feet from the bottom of the tree, how high will the tree house be off the ground?

Solution:

$$\begin{aligned}a^2 + 5^2 &= 9^2 \\a^2 + 25 &= 81 \\a^2 &= 56 \\\sqrt{a^2} &= \sqrt{56} \\a &= \sqrt{56} \text{ feet or } \approx 7.5 \text{ feet}\end{aligned}$$



Big Idea(s) in student language: Use the Pythagorean Theorem to find the missing side lengths in right triangles in real-world and mathematical problems for 2 and 3 dimensions.