**Using the Pythagorean Theorem**

*What do you want to do?*

**Find the length of a side of a right triangle.**

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| **1. Determine which side is unknown**  **A leg or the hypotenuse?**  The hypotenuse is always c.  The legs are a and b.ac  The hypotenuse is always the longest  side of a right triangle. It is across from  the right angle. Follow the arrow.  b    Decision Point      5 Here we have to Here we c  a find a (or b). have to find 6  c.    4 8 | **When the hypotenuse is missing, substitute values for a and b into the formula and solve for c.**  **Formula:**  6 c  Replace a and b  with the given values 62 + 82 = c2  8  **Simplify**  Solve 62 and 82 36 + 64 = c2  Add 100 = c2  **Square Root** 100 = c2 6 10  =  10 = c  8 |
| **When the leg is missing, substitute values**  **for the given leg (a or b) and the hypotenuse,c,**  **into the formula and solve for the unknown.**    **Formula:**  a 5  Replace b and c  with the given values a2 + 42 = 52    4 | **Simplify**  Solve 42 and 52 a2 + 16 = 25  AI (-16) a2 + 16 -16 = 25 -16  CLT a2 = 9  Square Root = 3 5  Simplify a = 3    4 |

***Using the Pythagorean Theorem***

*What do you want to do?*

***Determine if a triangle is a right triangle*.**

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| **Determine if a triangle is a right triangle.** |  |
| **Problem:**  **A triangle has side lengths 5, 12, and 7. Is it a right triangle?**  **5 in**    **7 in**  **12 in.** | **1. Given are three side lengths. Put them**  **in the Pythagorean formula with the**  **largest number representing c, the**  **hypotenuse.**  Pythagorean Theorem  **FALSE** It cannot be a right triangle. |
| **Problem:**  **A triangle has side lengths 6, 8, and 10. Is it a right triangle?**  **6 in**    **8 in**  **10 in.** | **1. Given are three side lengths. Put them**  **in the Pythagorean formula with the**  **largest number representing c, the**  **hypotenuse.**  Pythagorean Theorem  **TRUE** It is a right triangle. |