Bellwork
01/05/2012

1. Solve $x^2+9=25$

$\sqrt{x^2}=\sqrt{16}$

$x=\pm 4$

2. Simplify $\sqrt{20}$ in simplest radical form.

$\sqrt{20}$

$\sqrt{4}\cdot\sqrt{5}$

$2\sqrt{5}$

Geometry
7.1 Apply the Pythagorean Theorem
Standard(s): 2, 4

Vocabulary:

- positive
- whole #'s

1. **Pythagorean Triple: A set of three positive integers *a*, *b*, and *c* that satisfy the equation $c^2=a^2+b^2$.**

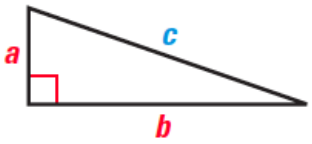
   Remember: c is the hypotenuse and will always be the largest of the 3 #'s.

THEOREM *For Your Notebook*

THEOREM 7.1 Pythagorean Theorem

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

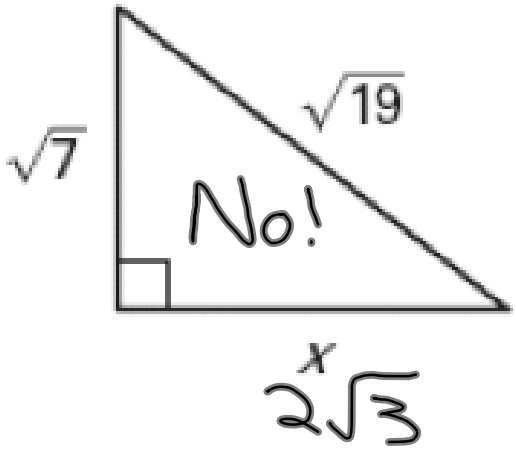
Proof: p. 434; Ex. 32, p. 455



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

Find an Unknown Side Length

Find the unknown side length. Simplify any radicals. Tell whether the numbers are a pythagorean triple.



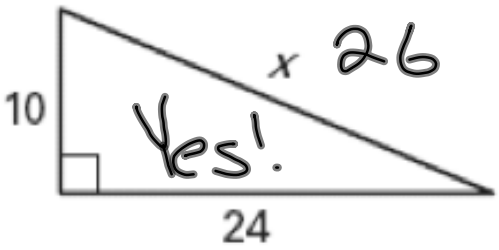
$c^2 = a^2 + b^2$

$(\sqrt{19})^2 = x^2 + (\sqrt{7})^2$

$19 = x^2 + 7$

$\sqrt{x^2} = \sqrt{12}$

$x = 2\sqrt{3}$



$x^2 = 10^2 + 24^2$

$x^2 = 100 + 576$

$x^2 = 676$

$x = 26$

Use Pythagorean Triples

The given lengths are two sides of a right Δ. All three side lengths are integers and together form a Pythagorean triple. Find the length of the third side and tell whether it is a leg or hypotenuse.

28 and 45

$c^2 = 28^2 + 45^2$

$c^2 = 784 + 2025$

$c^2 = 2089$

$c = 53$ hypotenuse

$45^2 = a^2 + 28^2$

$a = 35.22\ldots$

56 and 65

$c^2 = 56^2 + 65^2$

$c = 85.79\ldots$

$65^2 = 56^2 + b^2$

$b = 33$

leg

Finding Area of Figures

Find the area of the right triangle with the given leg and hypotenuse length.

NOTE: You need to use Pyth. Thm. to find the height first!

leg=9 mi

hypotenuse=10 mi

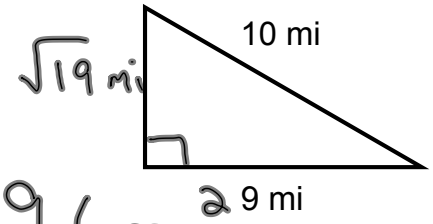
$A = \frac{bh}{2}$

$10^2 = h^2 + 9^2$

$100 = h^2 + 81$

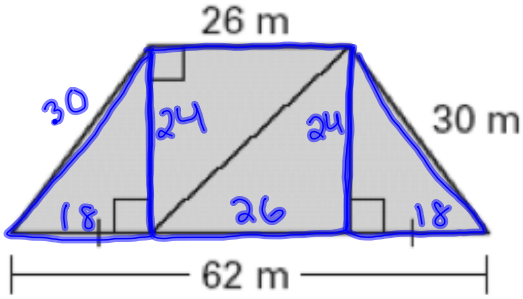
$h = \sqrt{19}$

$\frac{9\sqrt{19}}{2}$



$A = 19.6 \text{ mi}^2$

Find the area of the figure. Round to the nearest tenth.



$62 - 26$

$36 \div 2 = 18$

$30^2 = h^2 + 18^2$

$900 = h^2 + 324$

$\sqrt{h^2} = \sqrt{576}$

$h = 24$

$A(\times 2) = b \cdot h$

$A(\times 2) = 24 \cdot 18$

$A = 432$

$A = l \cdot w$

$A = 26 \cdot 24$

$A = 624$

$A = 1056 \text{ m}^2$

Homework Assignment

Worksheet 7.1B