Ropes #7

- Review checklist to complete Ropes Problem
- Review the problem and provide hints
- Turn in Ropes in class
**EXAMPLE 2** Finding the Length of a Leg

Find the unknown length \( a \) in simplest form.

\[
a^2 + b^2 = c^2
\]

Pythagorean theorem

\[
a^2 + 10^2 = 12^2
\]

Substitute.

\[
a^2 + 100 = 144
\]

Evaluate powers.

\[
a^2 = 44
\]

Subtract 100 from each side.

\[
a = \sqrt{44}
\]

Take positive square root of each side.

\[
a = 2\sqrt{11}
\]

Simplify.

**ANSWER** The unknown length \( a \) is \( 2\sqrt{11} \) units = 6.6 units.
Leg of a Right Triangle

Example 2: Finding the Length of a Leg

Find the unknown length $a$ in simplest form.

- $a^2 + b^2 = c^2$  
  Pythagorean theorem
- $a^2 + \square^2 = \square^2$  
  Substitute.
- $a^2 + \square = \square$  
  Evaluate powers.
- $a^2 = \square$  
  Subtract $\square$ from each side.
- $a = \square$  
  Take positive square root of each side.
- $a = \square$  
  Simplify.

Answer: The unknown length $a$ is $\square$ units.
Leg of a Right Triangle

Example 2: Finding the Length of a Leg

Find the unknown length $a$ in simplest form.

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

$$a^2 + 10^2 = 15^2$$  
Substitute.

$$a^2 + 100 = 225$$  
Evaluate powers.

$$a^2 = 125$$  
Subtract 100 from each side.

$$a = \sqrt{125}$$  
Take positive square root of each side.

$$a = 5\sqrt{5}$$  
Simplify.

Answer: The unknown length $a$ is $5\sqrt{5}$ units.  

= 11.2 units
Complete Practice Worksheet
(hypotenuse and leg calculations)