Applying Special Right Triangles

Objectives/Assignment

- Find the side lengths of special right triangles.
- Use special right triangles to solve real-life problems, such as finding the side lengths of the triangles.

Applying Special Right Triangles

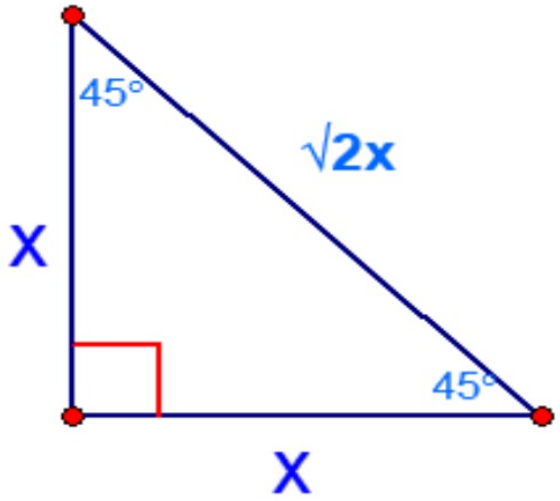
Side lengths of Special Right Triangles

- Right triangles whose angle measures are 45°-45°-90° or 30°-60°-90° are called special right triangles. The theorems that describe these relationships of side lengths of each of these special right triangles follow.

Applying Special Right Triangles

Theorem : 45°-45°-90° Triangle Theorem

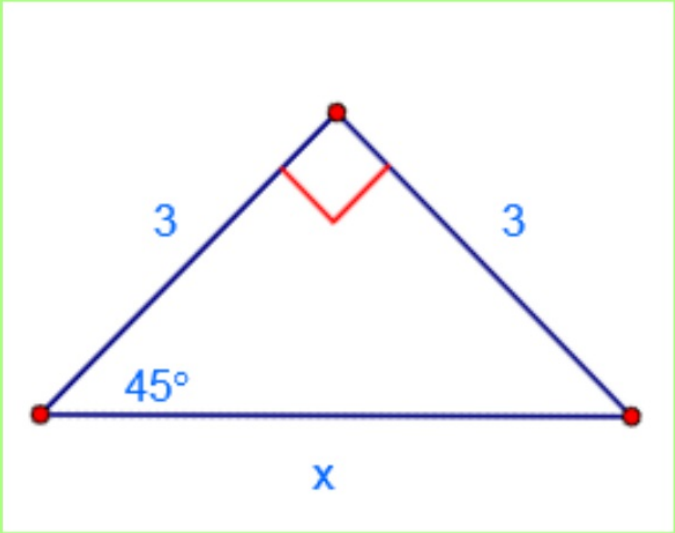
- In a 45°-45°-90° triangle, the hypotenuse is √2 times as long as each leg.



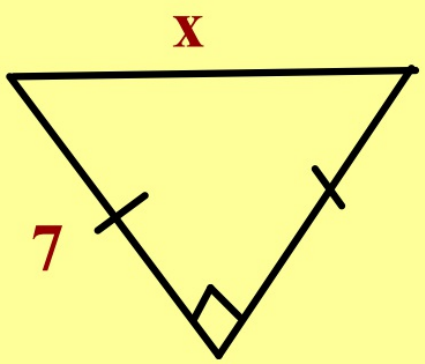
Hypotenuse = √2 · leg

Ex. 1: Finding the hypotenuse in a 45°-45°-90° Triangle

1. Find the value of x

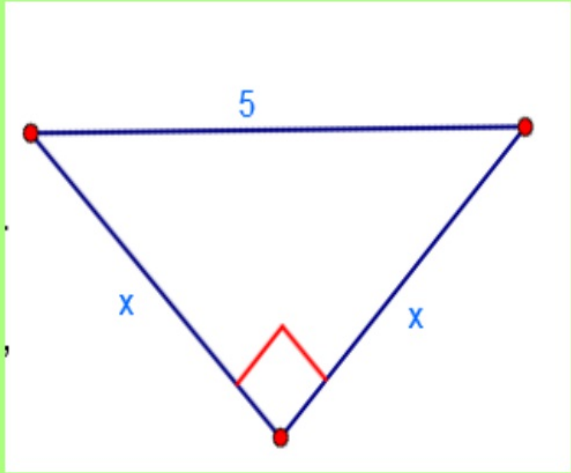


2. Find the value of x :

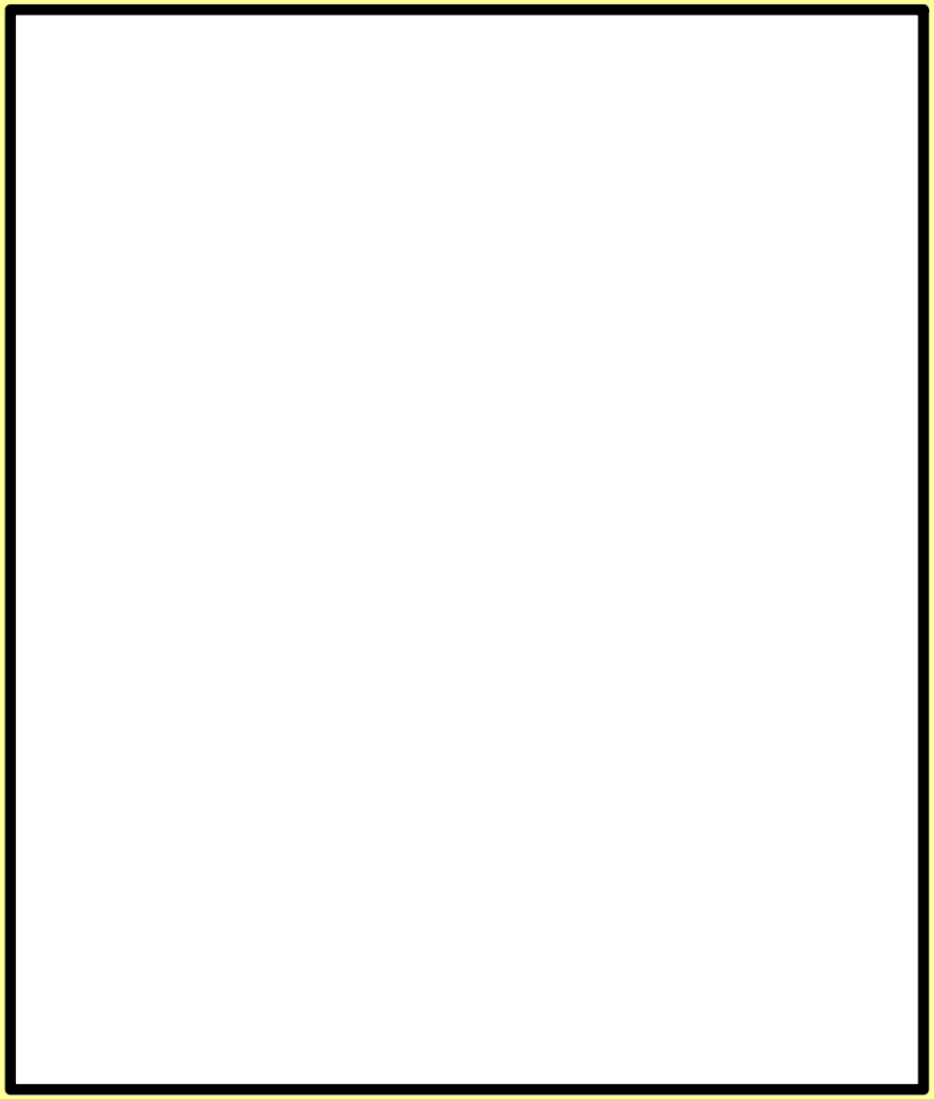


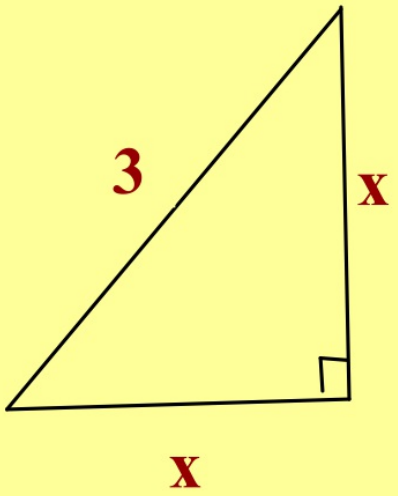
Ex. 2: Finding a leg in a 45°-45°-90° Triangle

3. Find the value of x.

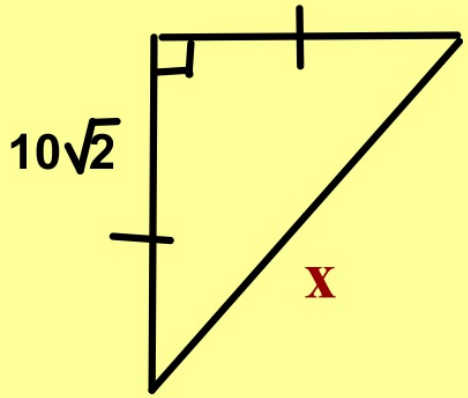


4. Find the value of x.

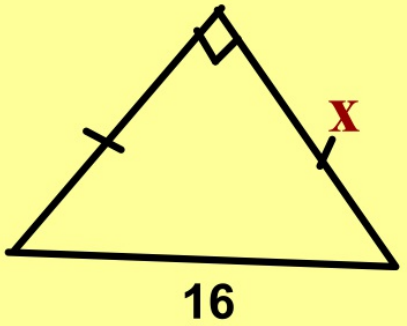




5.



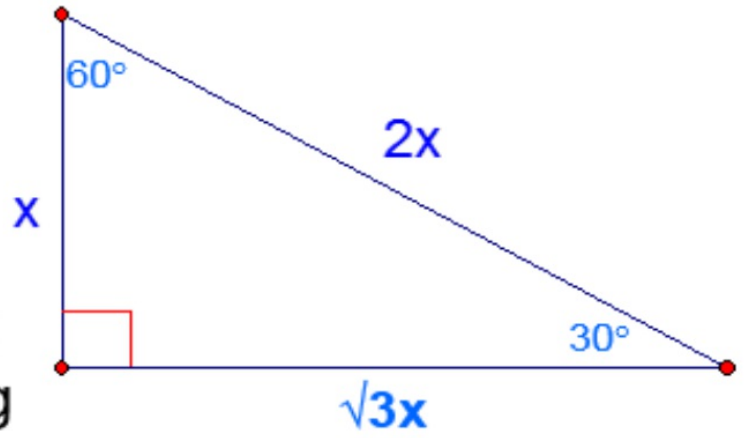
6.



Applying Special Right Triangles

Theorem : 30°-60°-90° Triangle Theorem

- In a 30°-60°-90° triangle, the hypotenuse is twice as long as the shorter leg, and the longer leg is √3 times as long as the shorter leg.



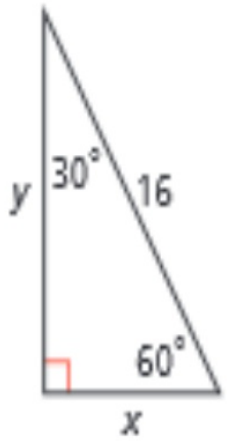
Hypotenuse = 2 · shorter leg

Longer leg = √3 · shorter leg

Finding side lengths in a 30-60°-90° Triangle

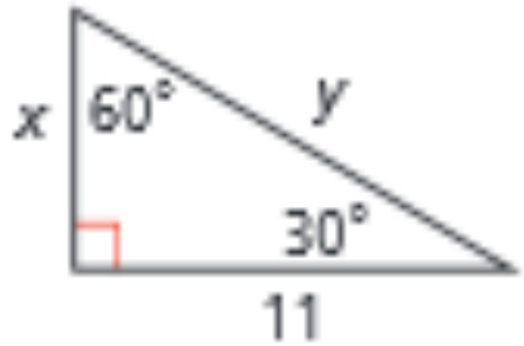
Find the values of x and y. Give your answers in simplest radical form.

A



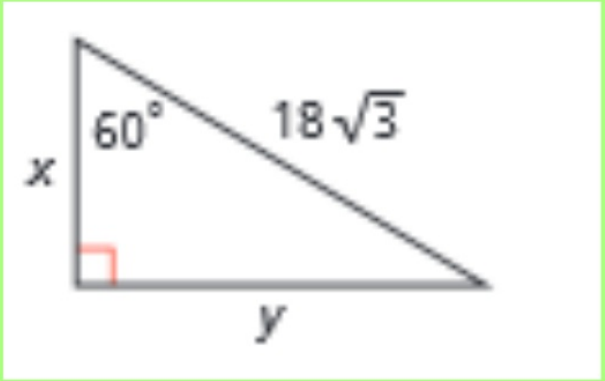
Finding side lengths in a 30-60°-90° Triangle

B



Finding side lengths in a 30-60°-90° Triangle

3.



4.