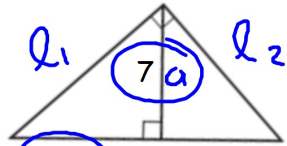


Launch:

Find the missing side:



$$*a = \sqrt{h_1 \cdot h_2}$$

$$l_1 = \sqrt{h_1 \cdot h}$$

$$l_2 = \sqrt{h_2 \cdot h}$$

$$7^2 = \sqrt{10 \cdot x}$$

$$49 = 10x$$

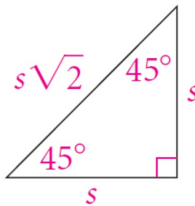
$$\div 10 \quad \div 10$$

$$4.9 = x$$

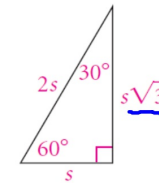
6.6 Some Special Triangles

Objective: To find the length of the third side of a triangle given the lengths of two sides and the measure of their included angle.

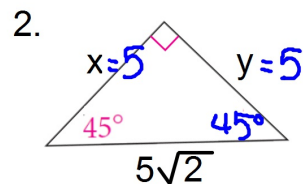
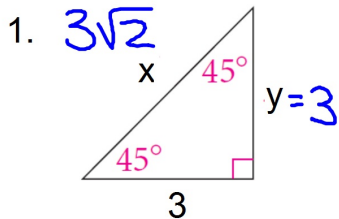
(45-45-90 Triangle Theorem)



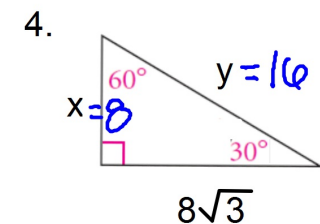
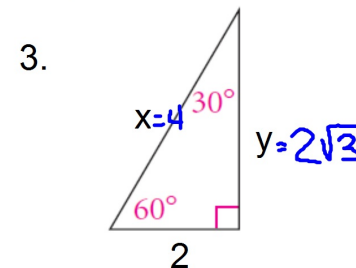
30-60-90 Triangle Theorem



Examples: Find the missing side lengths

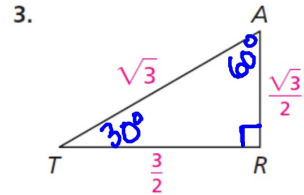
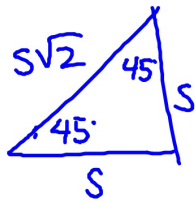
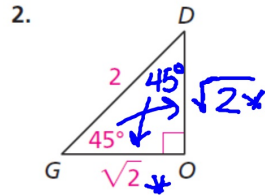


Examples: Find the missing side lengths



Check Your Understanding

For Exercises 2 and 3, find the missing angle measures and side length of each triangle. Explain your answers.

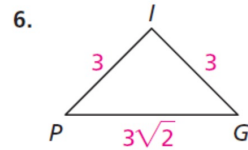
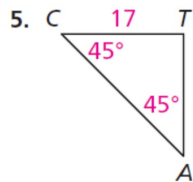


30-60-90

On Your Own

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For Exercises 5–8, find any missing angle measures or side lengths. Explain your answers.



Page 472: 5, 6, 9-11

9. **Standardized Test Prep** The Garden Club is building a flower garden for Lincoln High School. The design is a square with diagonal walkways. The length of each walkway is 49.5 ft. Find the area of the garden.

A. 1225 ft^2 B. 1980 ft^2 C. 2450 ft^2 D. 4900 ft^2

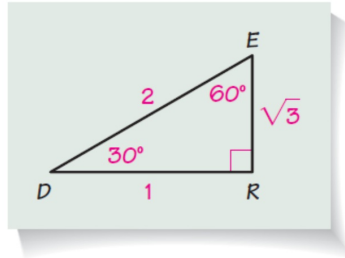
10. **What's Wrong Here?** Derman and Sasha made up triangle problems so they could practice with the special right triangles from this lesson.

Derman wrote this problem:

In $\triangle DER$, $DE = 2$ cm, $DR = 1$ cm, and $m\angle EDR = 30^\circ$. Find the missing side lengths and angle measures.

Sasha said, "I don't think we can solve that one yet." Derman said, "Oh come on, it's easy. Here's a picture."

Explain what is wrong with Derman's solution. Use paper and pencil or geometry software to construct the triangle with Derman's given information.



11. A right triangle with a 30° angle has one side that is 1 inch long. Show all possible triangles. Find and label the lengths of the other two sides in each case.