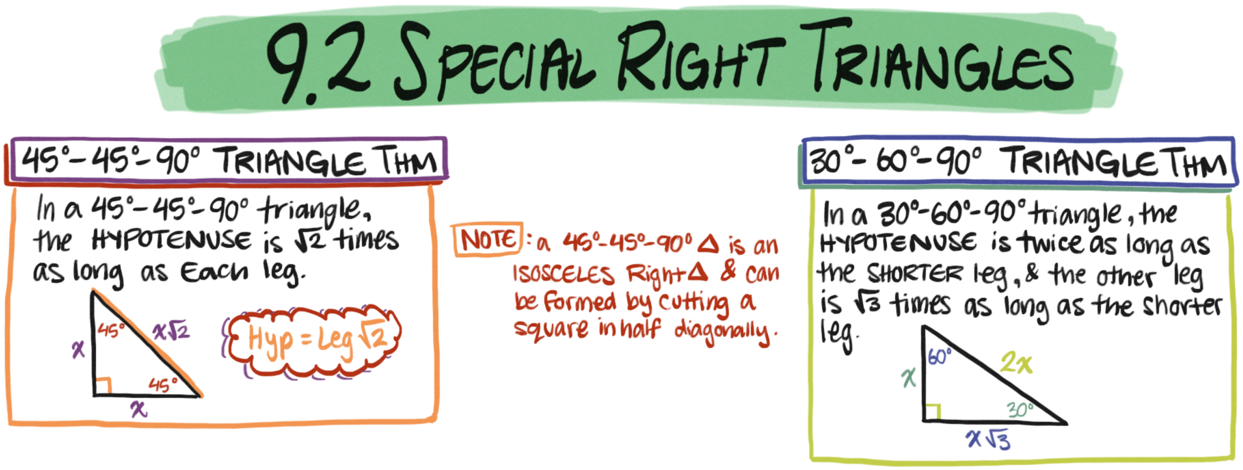
9.2 Special Right Triangles

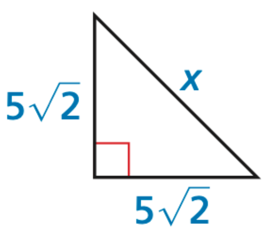
Objective: Today we will find the side lengths of special right triangles and we will solve real-life problems involving special right triangles.

Warm-up: Does a triangle with side lengths $8, 2\sqrt{65}, \& \ 14$ form a right triangle?
If NOT, is it acute or obtuse?

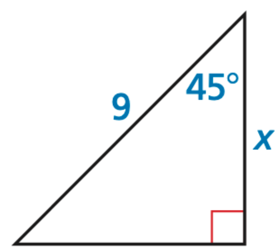


In Exercises 3–6, find the value of x. Write your answer in simplest form. *(See Example 1.)*

4.

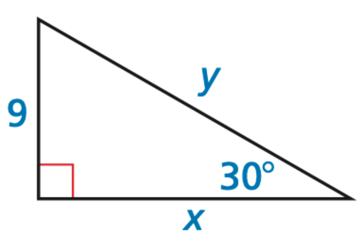


6.

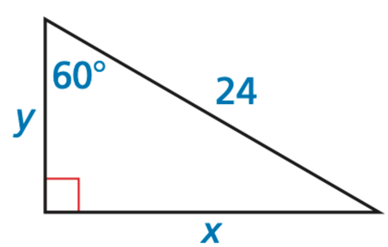


In Exercises 7–10, find the values of x and y. Write your answers in simplest form. *(See Example 2.)*

7.



9.

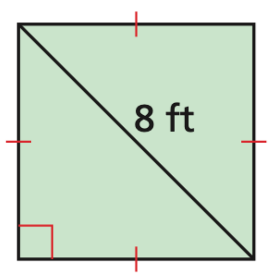


In Exercises 13 and 14, sketch the figure that is described. Find the indicated length. Round decimal answers to the nearest tenth.

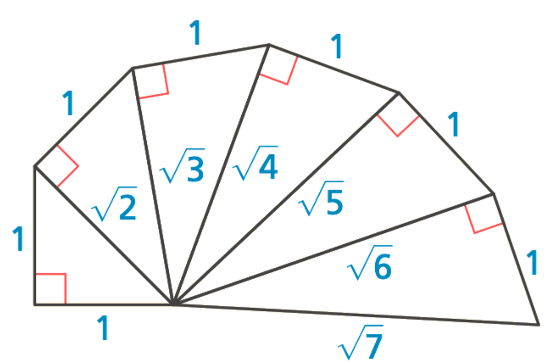
14. The perimeter of a square is 36 inches. Find the length of a diagonal.

In Exercises 15 and 16, find the area of the figure. Round decimal answers to the nearest tenth. *(See Example 3.)*

15.



20. HOW DO YOU SEE IT? The diagram shows part of the *Wheel of Theodorus*.



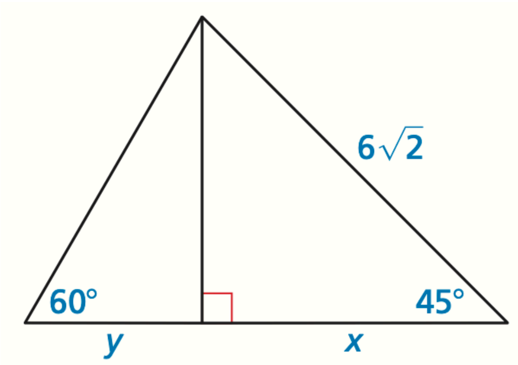
a. Which triangles, if any, are 45°-45°-90° triangles?

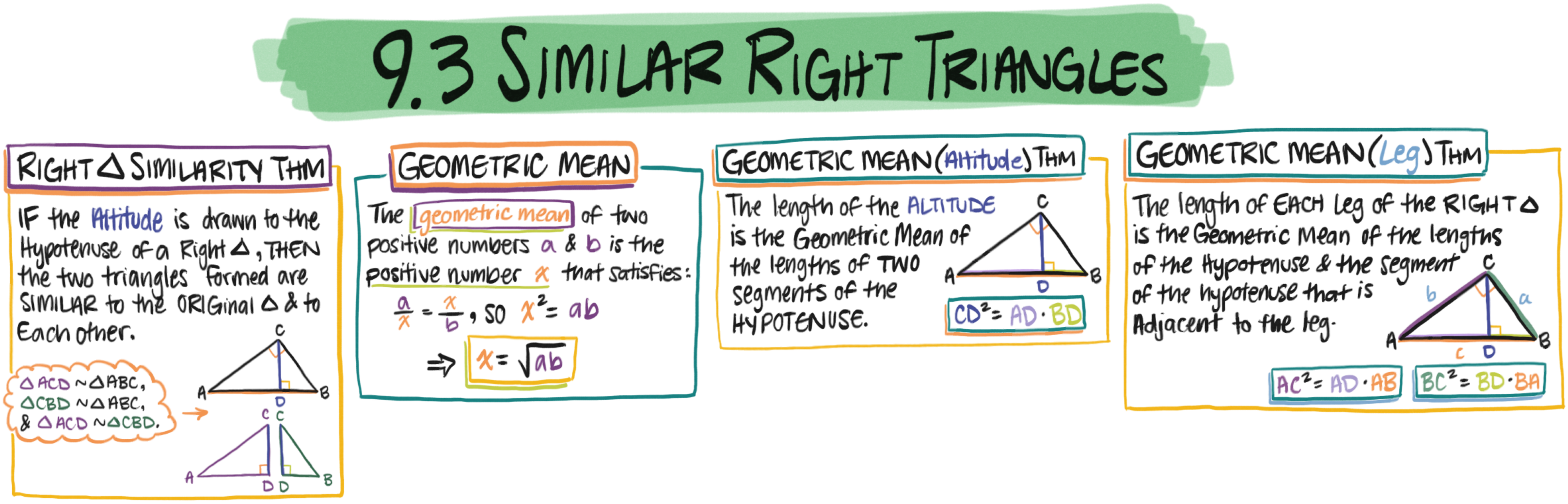
b. Which triangles, if any, are 30°-60°-90° triangles?

9.3 Similar Right Triangles

Objective: Today we will identify similar triangles, solve real-life problems involving similar triangles, & we will use geometric means.

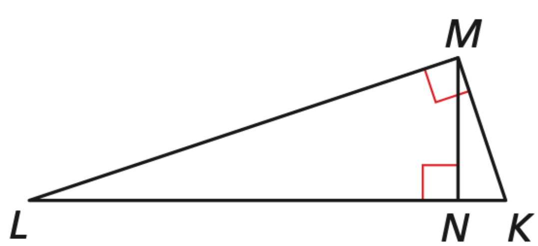
Warm-up: Find the values of *x* & *y*.





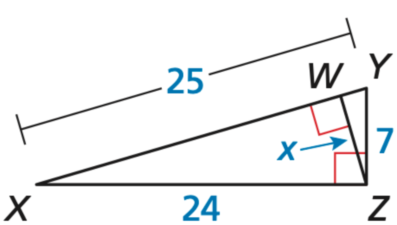
In Exercises 3 and 4, identify the similar triangles.

4.

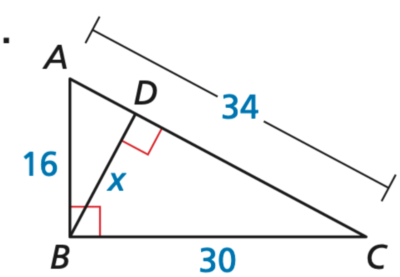


In Exercises 5–10, find the value of *x*.

5.



8.



In Exercises 11–18, find the geometric mean of the two numbers. *(See Example 3.)*

12. 9 and 16

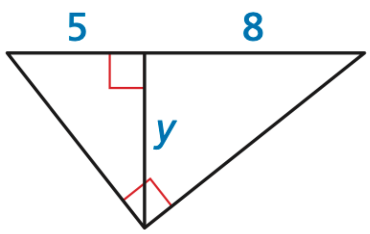
14. 25 and 35

15. 16 and 25

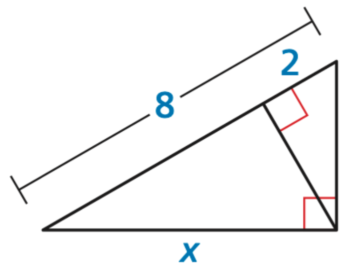
17. 17 and 36

In Exercises 19–26, find the value of the variable.

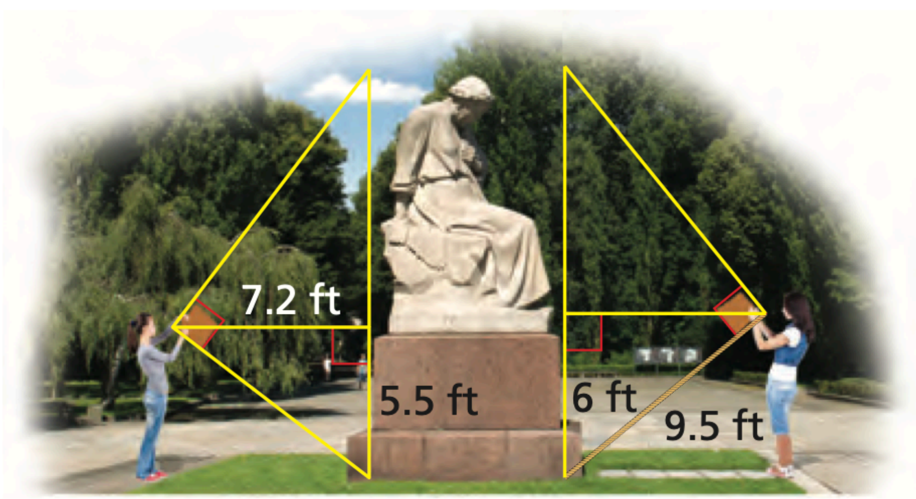
20.



26.



MODELING WITH MATHEMATICS **In Exercises 29 and 30, use the diagram.** *(See Example 5.)*



29. You want to determine the height of a monument at a local park. You use a cardboard square to line up the top and bottom of the monument, as shown at the above left. Your friend measures the vertical distance from the ground to your eye and the horizontal distance from you to the monument. Approximate the height of the monument.