

The Pythagorean Theorem & Right Triangles

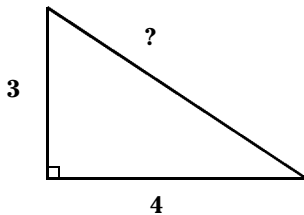
Algebra

for Students.

Guided Practice Worksheet

Using the Pythagorean Theorem

1. Find the missing side of the triangle.



2. Determine whether or not each set of numbers is a Pythagorean triple. Show your work.

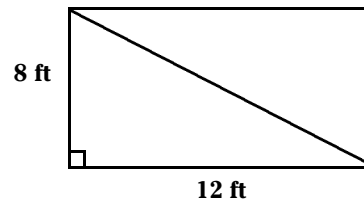
(a) 5-12-13

(b) 6-8-10

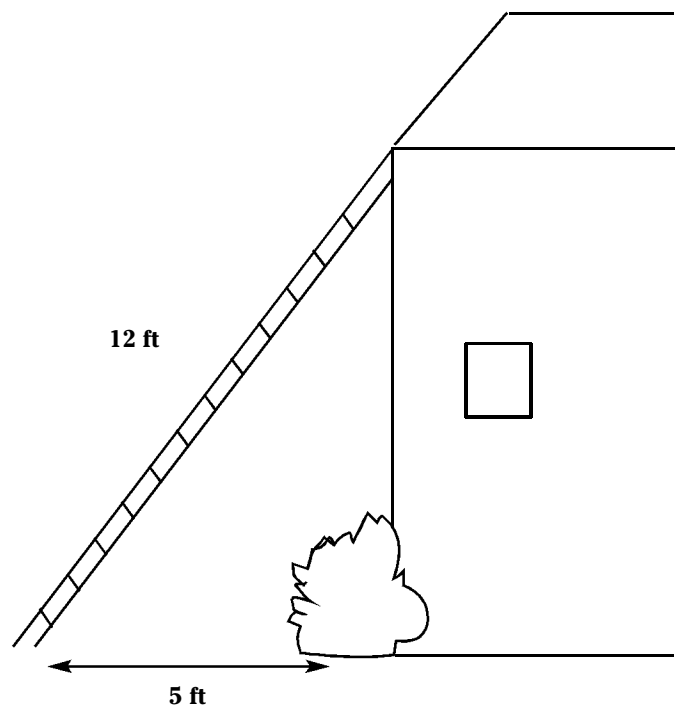
(c) 7-24-25

(d) 8-14-23

3. The rectangle represents one wall of a small den. Find the length of the diagonal cross brace used to give the wall support. Round your answer to the nearest hundredth of a foot.



4. A roofer needs to repair some shingles on the roof of a house, and uses a 12-foot ladder to reach the roof. In order to clear the bushes and ensure a safe placement of the ladder, the roofer puts the ladder 5 feet out from the side of the house. What is the height of the house from the ground to the beginning of the roof? Round your answer to the nearest hundredth of a foot.



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Analyzing a Solution to a Pythagorean Theorem Problem

Examine the following problem and solution. Find and correct any mistakes in the solution.

PROBLEM

The legs of a triangle have lengths of 8 and 15. What is the length of the hypotenuse?

SOLUTION

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

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

$$c^2 = 8^2 + 15^2$$

$$c = \sqrt{8^2 + 15^2}$$

$$c = \sqrt{8^2} + \sqrt{15^2}$$

$$c = 8 + 15$$

$$c = 23$$

The length of the hypotenuse is 23.

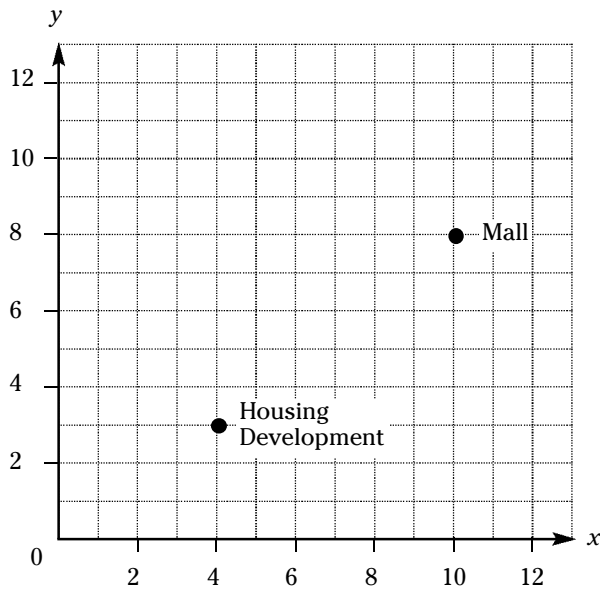
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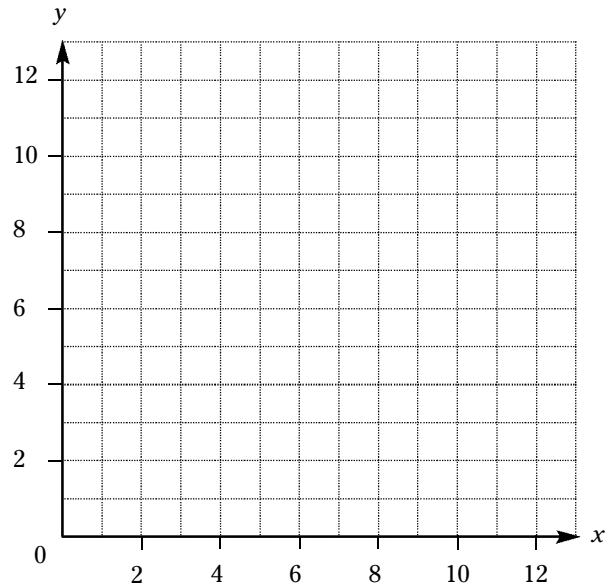
Using the Distance Formula

1. The coordinate grid below, whose scale is in miles, represents a local community that has a housing development and a nearby mall. Find the distance from the housing development to the mall. Round your answer to the nearest tenth of a mile.



2. Two different teams of hikers start at the entrance to a nature preserve and take separate trails. Team A hikes 3 miles north and 8 miles east, while Team B hikes 4 miles east and 7 miles north.

- (a) Plot the end-of-hike positions of Team A and Team B on the coordinate grid below. Label each point with the appropriate team and the coordinates of the point. (Note: The scale of the grid is in miles.)



- (b) How far apart are the two teams of hikers once they have finished their hikes? Round your answer to the nearest tenth of a mile.