

EXTRA PRACTICE 33
Solving Problems Using Quadratic Equations
Use after Section 7.3

Name _____

Example: Find the length of a diagonal of a square whose sides are 7 m long. Give an exact answer and an approximation to three decimal places.

Let d = length of the diagonal.

Then substitute 7 for a , 7 for b , and d for c in the Pythagorean equation.

$$7^2 + 7^2 = d^2$$

$$49 + 49 = d^2$$

$$98 = d^2$$

$$\sqrt{98} = d$$

$$9.899 \approx d$$

Solve.

1. Find the length of a diagonal of a square whose sides are 11 cm long. _____
2. Find the length of a diagonal of a rectangle with width 9 cm and length 12 cm.

3. The width of a rectangle is 5 inches less than its length. The area of the rectangle is 84 in.^2 . Find the dimensions of the rectangle. _____
4. The hypotenuse of a right triangle is 50 m long. The length of one leg is 10 m longer than the other. Find the length of the shorter leg. _____
5. The length of a rectangle is 4 times the width. The area of the rectangle is 900 in.^2 . Find the length and the width. _____
6. The hypotenuse of a right triangle is 17 feet. One leg is 7 feet shorter than the other. Find the lengths of the legs. _____

EXTRA PRACTICE 33 (continued)
Solving Problems Using Quadratic Equations
Use after Section 7.3

7. The length of a rectangle is 5 inches more than twice the width. The area of the rectangle is 102 in.^2 . How long is the rectangle? _____

8. The hypotenuse of a right triangle is 26 in. The length of one leg is 14 in. longer than the other. Find the length of the shorter leg. _____

9. The perimeter of a rectangle is 20 inches. The area of the same rectangle is 18 sq. inches. Find the width of the rectangle to the nearest tenth of an inch. _____

10. A landscaper wants to enclose a 90-ft by 120-ft rectangle with a walk of uniform width. He wants to use a supply of crushed rock that will cover 1744 square feet of walk. How wide should he make the walk? _____

11. A boat travels 12 miles upstream and then turns around and travels 12 miles downstream. The total time for both trips is 3 hours. If the stream flows at 1 mph, how fast does the boat travel in still water? Round the answer to the nearest tenth. _____

12. The speed of a boat in still water is 15 km/h. The boat travels 40 km upstream and 40 km downstream in a total time of 6 hr. What is the speed of the stream? _____