

# 10-1

## Practice

Form K

### The Pythagorean Theorem

Use the triangle at the right. Find the missing side length. If necessary, round to the nearest tenth.

1.  $a = 16, b = 12$  **20**

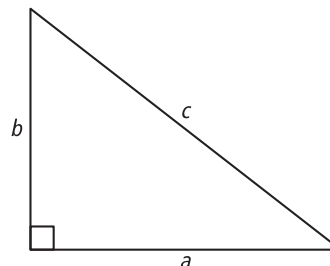
2.  $a = 0.8, b = 0.6$  **1**

3.  $a = 15, c = 20$  **13.2**

4.  $b = 18, c = 30$  **24**

5.  $a = 72, c = 98$  **66.5**

6.  $b = 32, c = 44$  **30.2**



7. A hiker goes six miles east and then turns south. If the hiker finishes 7.2 miles from the starting point, how far south did the hiker go? **4 mi**

8. A teacher is cutting along the diagonal of a rectangular piece of construction paper for a bulletin board which is 11 inches long and 8.5 inches wide. What will be the length of the cut? **13.9 in.**

Determine whether the given lengths can be side lengths of a right triangle.

9. 15 m, 20 m, 25 m **yes**

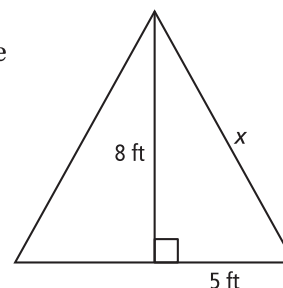
10. 22 ft, 24 ft, 30 ft **no**

11. 38 yd, 72 yd, 80 yd **no**

12. 46.5 cm, 62 cm, 77.5 cm **yes**

13. A roofer is gathering information for purchasing supplies for the roof shown at the right. Using the dimensions shown, what is the length  $x$  of the roof from the top to the lower edge? If necessary, round to the nearest tenth.

**approximately 9.4 ft**



# 10-1

## Practice (continued)

Form K

### The Pythagorean Theorem

Any set of three positive integers that satisfies the equation  $a^2 + b^2 = c^2$  is a *Pythagorean triple*. Determine whether each set of numbers is a Pythagorean triple.

14. 5, 9, 11 **no**

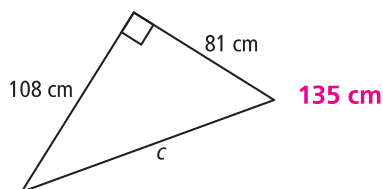
15.  $\sqrt{3}$ ,  $\sqrt{4}$ ,  $\sqrt{5}$  **no**

16. 8, 10, 6 **yes**

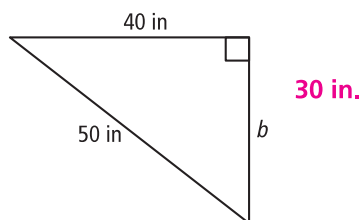
17.  $\sqrt{5}$ ,  $\sqrt{8}$ ,  $\sqrt{13}$  **yes**

Find each missing side length.

18.



19.



20. A rectangular box is 9 in. wide, 11 in. tall, and 20 in. long. What is the diameter of the smallest circular opening through which the box will fit? If necessary, round to the nearest tenth of a centimeter. **14.2 in.**

21. Find the height of a pyramid whose square base measures 30 yd on each side and whose slant height is 45 yd. If necessary, round to the nearest tenth of a yard. **42.4 yd**

22. **Open-Ended** Write the lengths of the sides of a right triangle with one leg whose length is 75 cm.

**Answers may vary. Sample: 75 cm, 100 cm, 125 cm**

23. **Writing** State the various parts of a right triangle. Explain how you can identify the parts. Describe the relationship between each part of the right triangle and the Pythagorean Theorem.

**The sides of a right triangle are composed of two legs and the hypotenuse. The three angles are composed of one right angle and two acute angles. The right angle is congruent to one corner of a square and the hypotenuse is the side across from the right angle. The Pythagorean Theorem is the relationship between the lengths of the sides of a right triangle. The Pythagorean Theorem says that  $a^2 + b^2 = c^2$ , where  $a$  and  $b$  are the lengths of the two legs and  $c$  is the length of the hypotenuse.**