Section 9.R.2 Square Roots and Pythagorean Theorem

Go to Section 9.R.2 Learn mode in Hawkes to follow along!

Square Roots

Terminology of Radicals

The symbol $\sqrt{\ }$ is called _____

The number under the radical sign is called _____

The complete expression, such as $\sqrt{49}$, is called _____

Example 2 Evaluating Square Roots

Use your memory of the values in Table 2 to evaluate each expression.

a. $\sqrt{256}$ **b.** $\sqrt{81}$

Solution

Exercises

Evaluate each expression.

1. $\sqrt{36}$

2. $\sqrt{81}$

3. $\sqrt{225}$

4. $\sqrt{169}$

5. $\sqrt{196}$

6. $\sqrt{361}$

7. $\sqrt{900}$

8. $\sqrt{3600}$

Approximating Square Roots

Example 3 Calculating Square Roots Using a Calculator

Use a calculator to approximate each square root to the nearest ten-thousandth.

a. $\sqrt{2}$ **b.** $\sqrt{18}$

Solution

Exercises

Use a calculator to approximate each square root to the nearest ten-thousandth.

9. $\sqrt{8}$ **14.** $\sqrt{10}$

10. $\sqrt{5}$ **15.** $\sqrt{800}$

11. $\sqrt{24}$ **16.** $\sqrt{500}$

12. $\sqrt{32}$ **17.** $\sqrt{242}$

13. $\sqrt{34}$ **18.** $\sqrt{489}$

For each problem, **a.** use your understanding of square roots to estimate the value of each square root. Then, **b.** use your calculator to find the value of each square root accurate to the nearest ten-thousandth.

19. a. The nearest whole numbers to $\sqrt{50}$ are ____ and ____.

b. Find the value of $\sqrt{50}$.

20. a. The nearest whole numbers to $\sqrt{23}$ are ____ and ____.

b. Find the value of $\sqrt{23}$.

21. a. The nearest whole numbers to $\sqrt{11}$ are ____ and ____.

b. Find the value of $\sqrt{11}$.

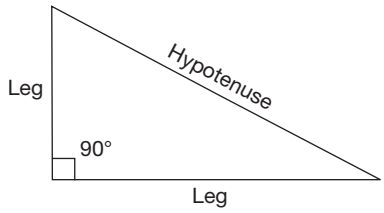
The Pythagorean Theorem

Terms Related to Right Triangles

Right triangle: _____

Hypotenuse: _____

Leg: _____

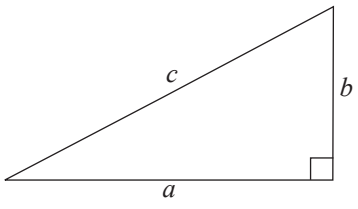


The Pythagorean Theorem

In a right triangle, the _____

_____

_____ = _____ + _____



Example 5 Finding the Length of the Hypotenuse

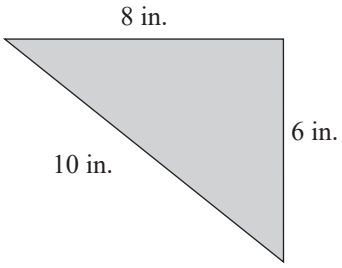
Find the length of the hypotenuse of a right triangle with legs of length 12 cm and 5 cm.

Solution

Exercises

Use the Pythagorean Theorem to determine whether each triangle is a right triangle.

22.



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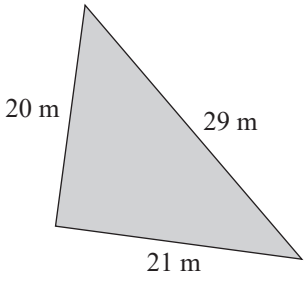

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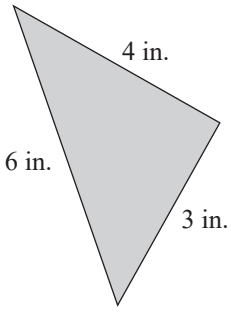

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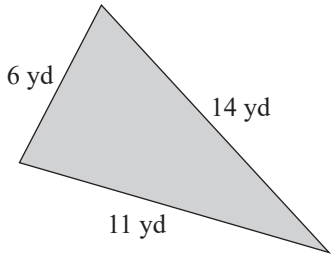
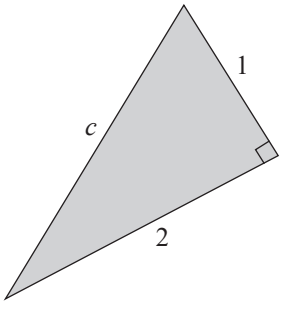


Find the hypotenuse for each right triangle accurate to the nearest hundredth.

26.



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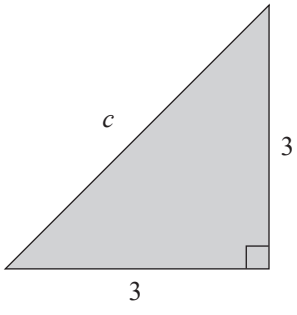

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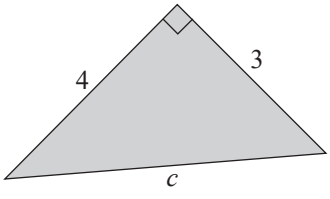

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