English Spanish

6 Chapter Review

Check It Out Vocabulary Help BigIdeasMath.com

Review Key Vocabulary

square root, *p. 232*
perfect square, *p. 232*
radical sign, *p. 232*
radicand, *p. 232*
theorem, *p. 236*
legs, *p. 238*
hypotenuse, *p. 238*
Pythagorean Theorem, *p. 238*
irrational number, *p. 246*
real numbers, *p. 246*
Pythagorean triple, *p. 261*

Review Examples and Exercises

6.1 Finding Square Roots *(pp. 230–235)*

Find the square root(s).

a. $-\sqrt{36}$

$-\sqrt{36}$ represents the *negative* square root.

∴ Because $6^2 = 36$, $-\sqrt{36} = -\sqrt{6^2} = -6$.

b. $\sqrt{1.96}$

$\sqrt{1.96}$ represents the *positive* square root.

∴ Because $1.4^2 = 1.96$, $\sqrt{1.96} = \sqrt{1.4^2} = 1.4$.

c. $\pm\sqrt{\frac{16}{81}}$

$\pm\sqrt{\frac{16}{81}}$ represents both the *positive and negative* square roots.

∴ Because $\left(\frac{4}{9}\right)^2 = \frac{16}{81}$, $\pm\sqrt{\frac{16}{81}} = \pm\sqrt{\left(\frac{4}{9}\right)^2} = \frac{4}{9}$ and $-\frac{4}{9}$.

Exercises

Find the two square roots of the number.

1. 16 **2.** 900 **3.** 2500

Find the square root(s).

4. $\sqrt{1}$ **5.** $-\sqrt{\frac{9}{25}}$ **6.** $\pm\sqrt{1.96}$

Evaluate the expression.

7. $15 - 4\sqrt{16}$ **8.** $\sqrt{\frac{54}{6}} + \frac{2}{3}$ **9.** $10(\sqrt{81} - 12)$

6.2 The Pythagorean Theorem *(pp. 236–241)*

Find the length of the hypotenuse of the triangle.

$a^2 + b^2 = c^2$ Write the Pythagorean Theorem.

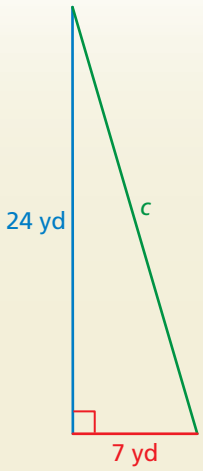
$7^2 + 24^2 = c^2$ Substitute.

$49 + 576 = c^2$ Evaluate powers.

$625 = c^2$ Add.

$\sqrt{625} = \sqrt{c^2}$ Take positive square root of each side.

$25 = c$ Simplify.

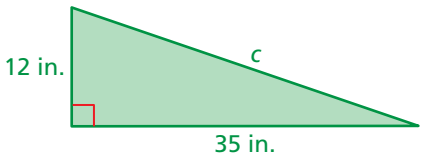


∴ The length of the hypotenuse is 25 yards.

Exercises

Find the missing length of the triangle.

10.



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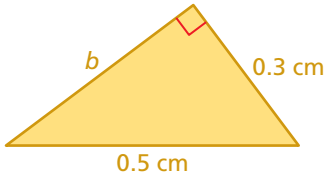
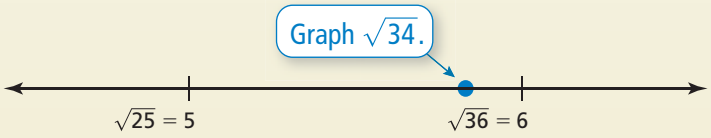


6.3 Approximating Square Roots *(pp. 244–251)*

Estimate $\sqrt{34}$ to the nearest integer.

Use a number line and the square roots of the perfect squares nearest to the radicand. The nearest perfect square less than 34 is 25. The nearest perfect square greater than 34 is 36.



Because 34 is closer to 36 than to 25, $\sqrt{34}$ is closer to 6 than to 5.

∴ So, $\sqrt{34} \approx 6$.

Exercises

Estimate to the nearest integer.

12. $\sqrt{14}$ **13.** $\sqrt{90}$ **14.** $\sqrt{175}$

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6.4 Simplifying Square Roots *(pp. 252–257)*

Simplify $\sqrt{28}$.

$\sqrt{28} = \sqrt{4 \cdot 7}$ Factor using the greatest perfect square factor.

$= \sqrt{4} \cdot \sqrt{7}$ Use the Product Property of Square Roots.

$= 2\sqrt{7}$ Simplify.

Simplify $\sqrt{\frac{13}{64}}$.

$\sqrt{\frac{13}{64}} = \frac{\sqrt{13}}{\sqrt{64}}$ Use the Quotient Property of Square Roots.

$= \frac{\sqrt{13}}{8}$ Simplify.

Exercises

Simplify the expression.

15. $\sqrt{\frac{99}{100}}$ **16.** $\sqrt{96}$ **17.** $\sqrt{75}$

6.5 Using the Pythagorean Theorem *(pp. 258–263)*

Find the height of the stilt walker. Round your answer to the nearest tenth.

$a^2 + b^2 = c^2$ Write the Pythagorean Theorem.

$6^2 + x^2 = 13^2$ Substitute.

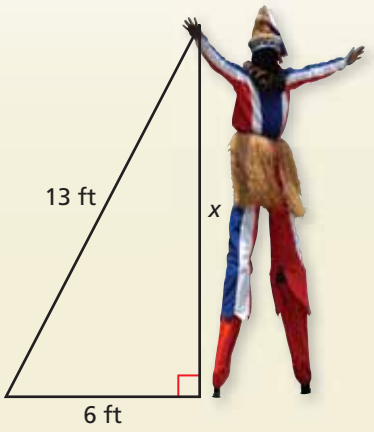
$36 + x^2 = 169$ Evaluate powers.

$x^2 = 133$ Subtract 36 from each side.

$\sqrt{x^2} = \sqrt{133}$ Take positive square root of each side.

$x \approx 11.5$ Use a calculator.

∴ The height of the stilt walker is about 11.5 feet.



Exercises

Find the height x. Round your answer to the nearest tenth, if necessary.

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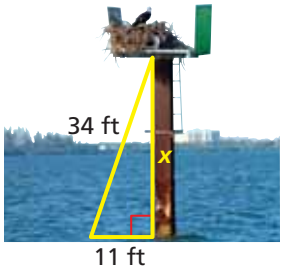

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