

# LT 1.1 - 1.6

## Exploring Square Roots and Irrational Numbers

Find each square root.

- |                              |                              |                              |                              |
|------------------------------|------------------------------|------------------------------|------------------------------|
| 1. $\sqrt{16}$<br><u>4</u>   | 2. $\sqrt{85}$<br><u>9.2</u> | 3. $\sqrt{26}$<br><u>5.1</u> | 4. $\sqrt{36}$<br><u>6</u>   |
| 5. $\sqrt{98}$<br><u>9.9</u> | 6. $\sqrt{40}$<br><u>6.3</u> | 7. $\sqrt{100}$<br><u>10</u> | 8. $\sqrt{18}$<br><u>4.2</u> |

What two whole numbers is this square root between?

- |                                 |                               |                                 |                                 |
|---------------------------------|-------------------------------|---------------------------------|---------------------------------|
| 9. $\sqrt{5}$<br><u>2 + 3</u>   | 10. $\sqrt{121}$<br><u>11</u> | 11. $\sqrt{68}$<br><u>8 + 9</u> | 12. $\sqrt{144}$<br><u>12</u>   |
| 13. $\sqrt{29}$<br><u>5 + 6</u> | 14. $\sqrt{64}$<br><u>8</u>   | 15. $\sqrt{37}$<br><u>6 + 7</u> | 16. $\sqrt{75}$<br><u>8 + 9</u> |

# LT 1.7 & 1.8

Write each fraction as a decimal.

- |   |  |  |
|---|--|--|
| 1. $\frac{4}{5} = \frac{8}{10} = .8$          | 2. $\frac{3}{4} = \frac{75}{100} = .75$      | 3. $\frac{3}{25} = \frac{12}{100} = .12$     |
| 4. $\frac{1}{4} = \frac{25}{100} = .25$       | 5. $\frac{3}{20} = \frac{15}{100} = .15$     | 6. $1\frac{7}{10} = 1.7$                     |
| 7. $\frac{17}{125} = \frac{136}{1000} = .136$ | 8. $\frac{17}{250} = \frac{68}{1000} = .068$ | 9. $\frac{11}{500} = \frac{22}{1000} = .022$ |

Write each decimal as a mixed number or fraction in simplest form.

- |  |  |  |
|--|--|--|
| 10. $0.4 = \frac{4}{10} = \frac{2}{5}$               | 11. $0.75 = \frac{75}{100} = \frac{3}{4}$            | 12. $1.5 = \frac{15}{10} = 1\frac{1}{2}$             |
| 13. $0.35 = \frac{35}{100} = \frac{7}{20}$           | 14. $2.7 = 2\frac{7}{10}$                            | 15. $0.625 = \frac{625}{1000} = \frac{5}{8}$         |
| 16. $0.\overline{36} = \frac{36}{99} = \frac{4}{11}$ | 17. $0.\overline{12} = \frac{12}{99} = \frac{4}{33}$ | 18. $0.\overline{45} = \frac{45}{99} = \frac{5}{11}$ |

# LT 1.9 & 1.10

Find the side length of a cube with each given volume.

1.  $1,000 \text{ m}^3$

$10 \text{ m}$

2.  $1 \text{ cm}^3$

$1 \text{ cm}$

3.  $729 \text{ ft}^3$

$9 \text{ ft}$

Find each cube root.

4.  $\sqrt[3]{216}$

$6$

5.  $\sqrt[3]{8}$

$2$

6.  $\sqrt[3]{64}$

$4$

7.  $\sqrt[3]{27}$

$3$

8.  $\sqrt[3]{512}$

$8$

9.  $\sqrt[3]{343}$

$7$

Solve each equation.

10.  $x^3 = 125$

$x = 5$

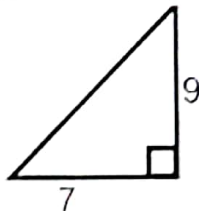
11.  $x^3 = 729$

$x = 9$

# LT 1.11 - 1.17

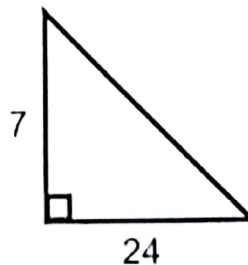
Find the missing hypotenuse. Round to the nearest tenth if necessary. (2 points each)

1.



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 7^2 + 9^2 &= c^2 \\ 49 + 81 &= c^2 \\ 130 &= c^2 \\ 11.4 &= c \end{aligned}$$

2.



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 7^2 + 24^2 &= c^2 \\ 49 + 576 &= c^2 \\ 625 &= c^2 \\ 25 &= c \end{aligned}$$

3.  $a = 5, b = 12, c = ?$

$$\begin{aligned} 5^2 + 12^2 &= c^2 \\ 25 + 144 &= c^2 \\ 169 &= c^2 \end{aligned}$$

$c = 13$

Do the following side lengths form a right triangle? Show your work. (2 points each)

4.  $a = 6, b = 7, c = 10$

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

$$6^2 + 7^2 = 10^2$$

$$36 + 49 = 100$$

$$85 = 100$$

No

5.  $a = 8, b = 12, c = 16$

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

$$8^2 + 12^2 = 16^2$$

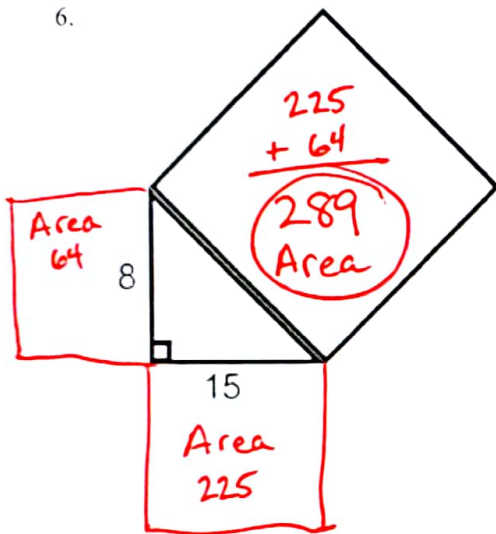
$$64 + 144 = 256$$

$$208 = 256$$

No

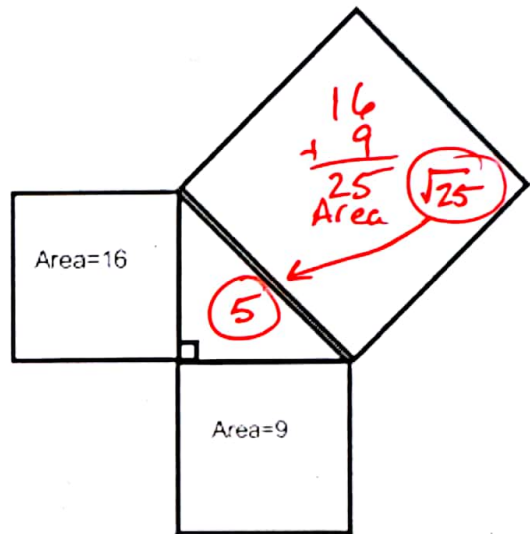
Find the area of the square. (2 points)

6.



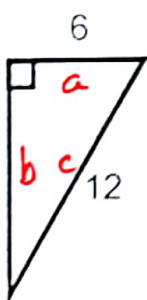
Find the length of the hypotenuse. (2 points)

7.



Find the missing side length. Round to the nearest tenth if necessary. (2 points each)

8.



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

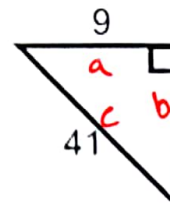
$$6^2 + b^2 = 12^2$$

$$36 + b^2 = 144$$

$$\begin{array}{r} 36 + b^2 = 144 \\ -36 \quad -36 \\ \hline b^2 = 108 \end{array}$$

$$b = 10.4$$

9.



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

$$9^2 + b^2 = 41^2$$

$$81 + b^2 = 1681$$

$$\begin{array}{r} 81 + b^2 = 1681 \\ -81 \quad -81 \\ \hline b^2 = 1600 \end{array}$$

$$b = 40$$

10.  $a = ?, b = 20, c = 29$

$$a^2 + 20^2 = 29^2$$

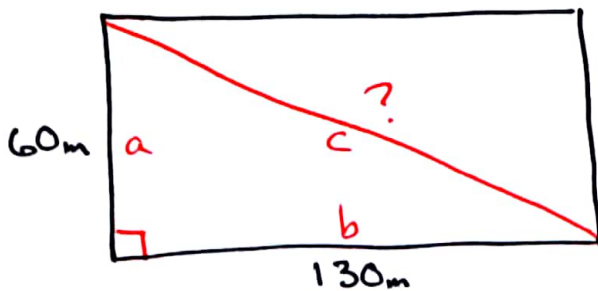
$$a^2 + 400 = 841$$

$$\begin{array}{r} a^2 + 400 = 841 \\ -400 \quad -400 \\ \hline a^2 = 441 \end{array}$$

$$a = 21$$

Solve and round to the nearest tenth if necessary.  
Include a diagram for each problem. (3 points)

11. A lacrosse field is a rectangle 60 meters wide and 130 meters long. The coach asks players to run from one corner to the other corner diagonally across. What is this distance?



$$60^2 + 130^2 = C^2$$

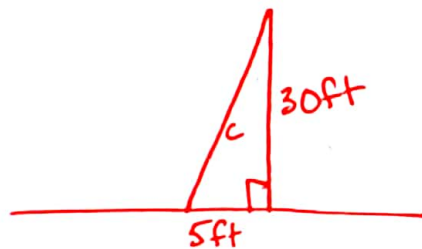
$$3600 + 16900 = C^2$$

$$20,500 = C^2$$

$$143.2m = C$$

Solve and round to the nearest tenth if necessary.  
Include a diagram for each problem. (3 points)

12. You're locked out of your house and the only open window is on the second floor, 30 feet above the ground. You need to borrow a ladder from one of your neighbors. There's a bush along the edge of the house, so you'll have to place the ladder 5 feet from the house. What length of ladder do you need to reach the window?



$$5^2 + 30^2 = C^2$$

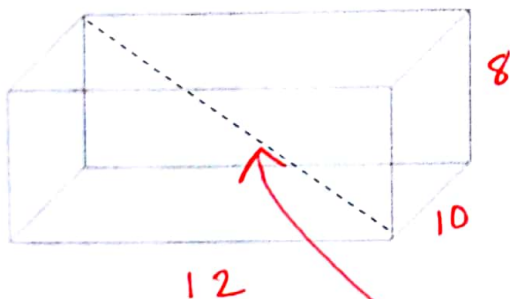
$$25 + 900 = C^2$$

$$925 = C^2$$

$$30.4 = C$$

feet

13. The width of a rectangular prism is 12, the height is 8, and the length is 10. Find the length of the diagonal of the entire prism. Round to the nearest tenth if necessary.



Step One: Find the length of the diagonal on the bottom surface.

$$12^2 + 10^2 = C^2$$

$$144 + 100 = C^2$$

$$244 = C^2$$

$$15.6 = C$$

Step Two: Find the length of the diagonal of the entire prism (dotted line) using your answer from Step One.

$$15.6^2 + 8^2 = C^2$$

$$244 + 64 = C^2$$

$$308 = C^2$$

$$17.5 = C$$