

-b ± √(b² + Max)
2a
key

7-2 Practice

The Pythagorean Theorem and Its Converse

Find x .

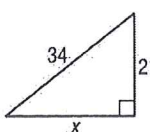
1.



$23^2 + 13^2 = x^2$
 $529 + 169 = x^2$
 $698 = x^2$

$\sqrt{698} \approx 26.4$

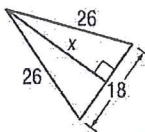
2.



$x^2 + 21^2 = 34^2$
 $x^2 + 441 = 1156$
 $x^2 = 715$

$x = \sqrt{715} = 26.7$

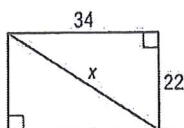
3.



$18^2 + x^2 = 26^2$
 $81 + x^2 = 676$
 $x^2 = 595$

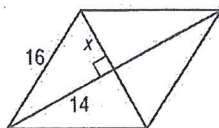
$x = \sqrt{595} = 24.4$

4.



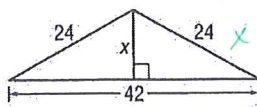
$22^2 + 34^2 = x^2$
 $484 + 1,156 = x^2$
 $1,640 = x^2$
 $x = 40.5$

5.



$x^2 + 14^2 = 16^2$
 $x^2 + 196 = 256$
 $x^2 = 60$
 $x = \sqrt{60} \approx 7.7$

6.



$24^2 + x^2 = 24^2$
 $441 + x^2 = 576$
 $x^2 = 135$
 $x = \sqrt{135} = 11.6$

Determine whether $\triangle GHI$ is a right triangle for the given vertices. Explain.

7. $G(2, 7), H(3, 6), I(-4, -1)$

Yes; $GH = \sqrt{2}$ $HI = \sqrt{98}$
 $IG = \sqrt{100} = 100$
 $\sqrt{2}^2 + \sqrt{98}^2 = 100^2$

8. $G(-6, 2), H(1, 12), I(-2, 1)$

$2 + 98 = 100$
 $100 = 100 \checkmark$
 $a^2 + b^2 = c^2$
 $\sqrt{(-6-1)^2 + (2-12)^2} = \sqrt{(-7)^2 + (-10)^2} = \sqrt{49 + 100} = \sqrt{149}$
 $\sqrt{(1+2)^2 + (12-1)^2} = \sqrt{3^2 + 11^2} = \sqrt{9 + 121} = \sqrt{130}$
 $\sqrt{(-2+2)^2 + (1-1)^2} = \sqrt{0 + 0} = 0$
 $149 \neq 130$
NO

9. $G(-2, 1), H(3, -1), I(-4, -4)$

Yes
 $\sqrt{29}^2 + \sqrt{29}^2 = \sqrt{58}^2$
 $29 + 29 = 58$

10. $G(-2, 4), H(4, 1), I(-1, -9)$

Yes
 $\sqrt{45}^2 + \sqrt{125}^2 = \sqrt{170}^2$
 $45 + 125 = 170$
 $170 = 170 \checkmark$
 $\sqrt{(-6+2)^2 + (2-1)^2} = \sqrt{(-4)^2 + (1)^2} = \sqrt{16 + 1} = \sqrt{17}$

Determine whether each set of measures can be the measures of the sides of a right triangle. Then state whether they form a Pythagorean triple.

11. 9, 40, 41

$9^2 + 40^2 = 41^2$
 $81 + 1600 = 1681$
 $1681 = 1681 \checkmark$
Right \triangle
Pythag Triple

12. 7, 28, 29

$7^2 + 28^2 = 29^2$
 $49 + 784 = 833$
 $833 \neq 841$
NO

13. 24, 32, 40

$24^2 + 32^2 = 40^2$
 $576 + 1,024 = 1,600$
 $\sqrt{1,600} = 40$
right

14. $\frac{9}{5}, \frac{12}{5}, 3$

$\frac{81}{25} + \frac{144}{25} = 9^2$
 $225 = 225 \checkmark$
Right \triangle
Pythag Triple

15. $\frac{1}{3}, \frac{2\sqrt{2}}{3}, 1$

$\frac{1}{9} + \frac{8}{9} = 1^2$
 $\frac{9}{9} = 1$
 $1 = 1 \checkmark$
Right \triangle
Pythag Triple

16. $\frac{\sqrt{4}}{7}, \frac{2\sqrt{3}}{7}, \frac{4}{7}$

$\frac{4}{49} + \frac{12}{49} = \frac{16}{49}$
 $\frac{16}{49} = \frac{16}{49} \checkmark$
Right \triangle
Pythag Triple

17. CONSTRUCTION The bottom end of a ramp at a warehouse is 10 feet from the base of the main dock and is 11 feet long. How high is the dock?

$10^2 + x^2 = 11^2$
 $100 + x^2 = 121$
 $x^2 = 21$
 $\sqrt{x^2} = \sqrt{21} = 4.6 \text{ ft}$

