

# The Pythagorean Theorem Assignment

Use the Pythagorean Theorem to find the length of the missing third side.

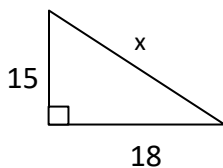
1.  $a = 4$     $b = 6$     $c = ?$

2.  $c = 15$     $b = 5$     $a = ?$

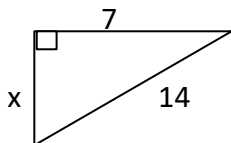
3.  $a = 5$     $c = 14$     $b = ?$

In the following triangles, find the length of the unknown sides.

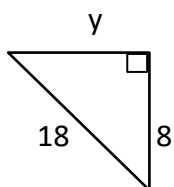
4.



5.



6.



# The Pythagorean Theorem Assignment

Determine whether each set of numbers form a Pythagorean triple.

7.  $(6, 8, 10)$

8.  $(6, 12, 18)$

Determine whether the following side measures form right triangle.

9.  $(15, 20, 25)$

10.  $(6, 10, 15)$

Find the distance between the point at  $(1, -3)$  and  $(-7, 8)$ .

11.  $(x_1, y_1)$        $(x_2, y_2)$        $d = ?$   
 $(1, -3)$        $(-7, 8)$

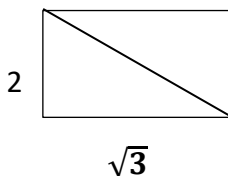
Find the distance between the point at  $(3, 4)$  and  $(6, 8)$ .

12.  $(x_1, y_1)$        $(x_2, y_2)$        $d = ?$   
 $(3, 4)$        $(6, 8)$

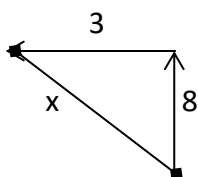
# The Pythagorean Theorem Assignment

## WORD PROBLEMS

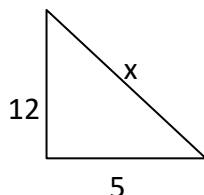
13. A rectangle has a width of 2 and a length  $y = \sqrt{3}$ . How long is the diagonal of the rectangle?



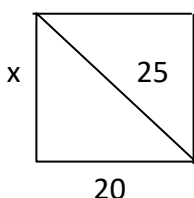
14. Mary walked 8 miles north and 3 miles west. How far is she from her starting point?



15. There is a building with a 12 ft. high window. You want to use a ladder to go up to the window, and you decide to keep the ladder 5 ft. away from the building to have a good slant. How long should the ladder be?



16. Sara's TV screen is 20 inches long. If the diagonal measures 25 inches, how long is the width of Sara's TV?



# The Pythagorean Theorem Assignment

## ANSWERS

Use the Pythagorean Theorem to find the length of the missing third side.

1.  $a = 4$     $b = 6$     $c = ?$

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

$$c^2 = 4^2 + 6^2$$

$$c^2 = 16 + 36$$

$$c^2 = 52$$

$$c = \sqrt{52}$$

$$c = 7, 2$$

2.  $c = 15$     $b = 5$     $a = ?$

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

$$a^2 = c^2 - b^2$$

$$a^2 = 15^2 - 5^2$$

$$a^2 = 225 - 25$$

$$a^2 = 200$$

$$a = \sqrt{200}$$

$$a = 14, 14$$

3.  $a = 5$     $c = 14$     $b = ?$

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

$$b^2 = c^2 - a^2$$

$$b^2 = 14^2 - 5^2$$

$$b^2 = 196 - 25$$

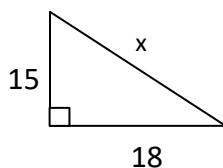
$$b^2 = 171$$

$$b = \sqrt{171}$$

$$b = 13, 1$$

In the following triangles, find the length of the unknown sides.

4.



$$x^2 = 15^2 + 18^2$$

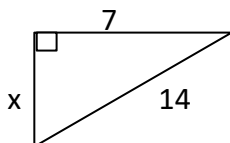
$$x^2 = 225 + 324$$

$$x^2 = 549$$

$$x = \sqrt{549}$$

$$x = 23, 43$$

5.



$$x^2 = 14^2 - 7^2$$

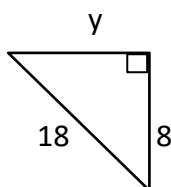
$$x^2 = 196 - 49$$

$$x^2 = 147$$

$$x = \sqrt{147}$$

$$x = 12, 12$$

6.



$$y^2 = 18^2 - 8^2$$

$$y^2 = 324 - 64$$

$$y^2 = 260$$

$$y = \sqrt{260}$$

$$y = 16, 12$$

# The Pythagorean Theorem Assignment

Determine whether each set of numbers form a Pythagorean triple.

7. (6, 8, 10)

$$10^2 = 6^2 + 8^2$$

$$100 = 36 + 64$$

$$100 = 100$$

yes

8. (6, 12, 18)

$$18^2 = 6^2 + 12^2$$

$$324 = 36 + 144$$

$$324 \neq 180$$

no

Determine whether the following side measures form right triangle.

9. (15, 20, 25)

$$25^2 = 15^2 + 20^2$$

$$625 = 225 + 400$$

$$625 = 625$$

yes

10. (6, 10, 15)

$$15^2 = 6^2 + 10^2$$

$$225 = 36 + 100$$

$$225 \neq 136$$

no

Find the distance between the point at (1, -3) and (-7, 8).

11.  $(x_1, y_1)$   $(x_2, y_2)$   $d = ?$   
 (1, -3) (-7, 8)

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\sqrt{((-7) - 1)^2 + (8 - (-3))^2}$$

$d =$

$$d = \sqrt{(-8)^2 + (11)^2}$$

$$d = \sqrt{185}$$

Find the distance between the point at (3, 4) and (6, 8).

12.  $(x_1, y_1)$   $(x_2, y_2)$   $d = ?$   
 (3, 4) (6, 8)

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\sqrt{(6 - 3)^2 + (8 - 4)^2}$$

$d =$

$$d = \sqrt{3^2 + 4^2}$$

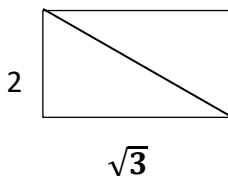
$$d = \sqrt{25}$$

$$d = 5$$

# The Pythagorean Theorem Assignment

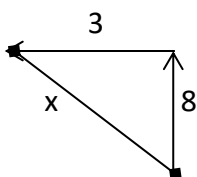
## WORD PROBLEMS

13. A rectangle has a width of 2 and a length  $y = \sqrt{3}$ . How long is the diagonal of the rectangle?



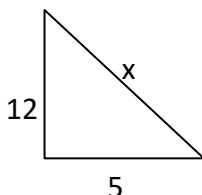
$$\begin{aligned}x^2 &= 2^2 + \sqrt{3}^2 \\x^2 &= 4 + 3 \\x^2 &= 7 \\x &= \sqrt{7} \\x &= 2,64\end{aligned}$$

14. Mary walked 8 miles north and 3 miles west. How far is she from her starting point?



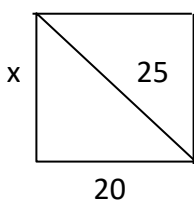
$$\begin{aligned}x^2 &= 8^2 + 3^2 \\x^2 &= 64 + 9 \\x^2 &= 73 \\x &= \sqrt{73} \\x &= 8,54 \text{ miles}\end{aligned}$$

15. There is a building with a 12 ft. high window. You want to use a ladder to go up to the window, and you decide to keep the ladder 5 ft. away from the building to have a good slant. How long should the ladder be?



$$\begin{aligned}x^2 &= 12^2 + 5^2 \\x^2 &= 144 + 25 \\x^2 &= 169 \\x &= \sqrt{169} \\x &= 13 \text{ ft.}\end{aligned}$$

16. Sara's TV screen is 20 inches long. If the diagonal measures 25 inches, how long is the width of Sara's TV?



$$\begin{aligned}x^2 &= 25^2 - 20^2 \\x^2 &= 625 - 400 \\x^2 &= 225 \\x &= \sqrt{225} \\x &= 15 \text{ inches}\end{aligned}$$