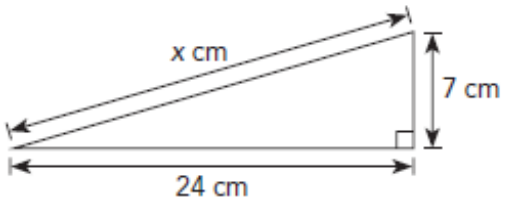
STATION 1 & 5

Find the value of *x*.

3.



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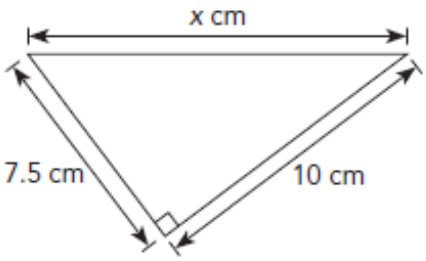

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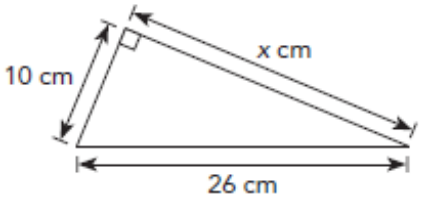
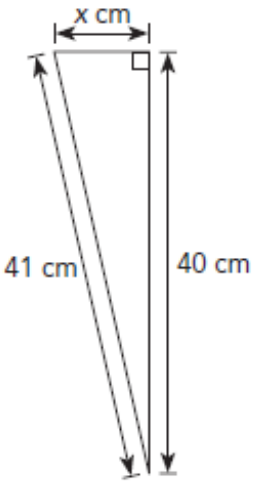


6.

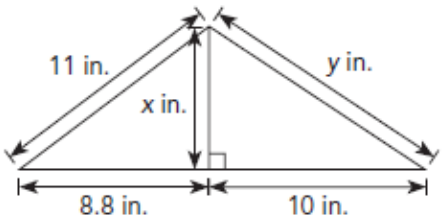


12. Alan placed a 10 foot ladder against a wall. The bottom of the ladder was 5 feet away from the wall. Find the height of the wall.

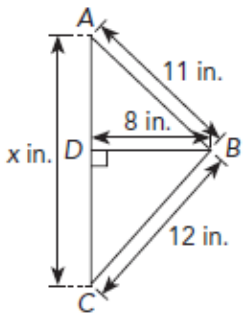
STATION 2 & 6

Calculate each unknown side length. Round your answer to the nearest tenth.

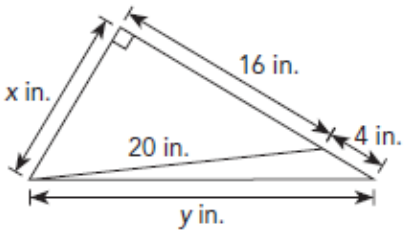
7.



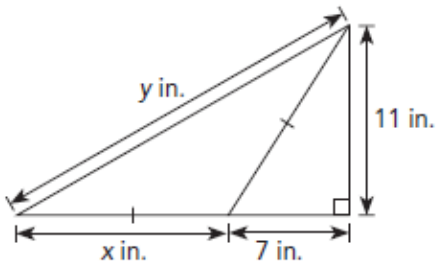
8.



9.



10.

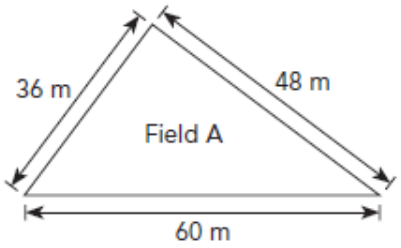


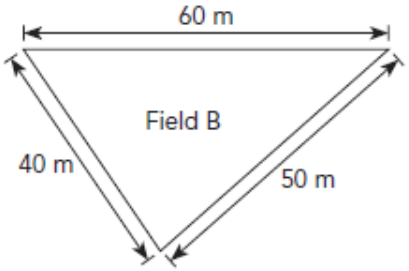
13. One end of a cable is attached to the top of a flagpole and the other end is attached 6 feet away from the base of the pole. If the height of the flagpole is 12 feet, find the length of the cable.

STATION 3 & 7

Solve. Show your work. Round your answer to the nearest tenth.

11. Fritz mows two triangular fields. Determine which field is a right triangle.





23. A triangle has side lengths 11.9 centimeters, 12 centimeters, and 16.9 centimeters. Is the triangle a right triangle?

24. To make a birthday card, Jane cuts a triangular pattern from a piece of cardboard. The triangular pattern has side lengths 9 centimeters, 14 centimeters, and 19 centimeters. Is the triangular pattern a right triangle?

14. An escalator runs from the first floor of a shopping mall to the second floor. The length of the escalator is 30 feet and the distance between the floors is 12 feet. Find the distance from the base of the escalator to the point on the first floor directly below the top of the escalator.

STATION 4 & 8

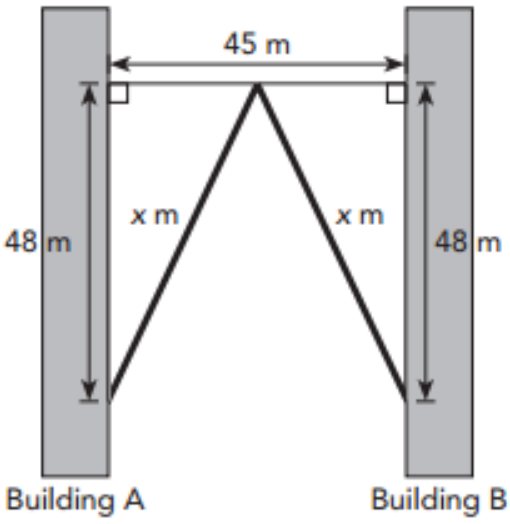
17. A whiteboard is 6 feet long and 3 feet wide. Find the length of the longest straight line that can be drawn on the whiteboard.

A lamp post has a height of 3.5 meters. The distance from the top of the lamp post to the tip of the shadow formed by the lamp post is 3.7 meters. What is the length of the shadow?

27. The size of the screen of a television set is typically given in terms of the length of its diagonal. Johan wants to buy a television set and mount it on a wall. However, there is only enough wall space for a television set with a length of at most 28 inches.

Find the length of a 37-inch television set with a width of 25 inches. Round your answer to the nearest tenth. Determine if the 37-inch television set is able to fit on the given wall space.

30. Two buildings are connected by a skywalk. The skywalk is supported by two beams. Each support beam forms a hypotenuse of a right triangle. The two support beams meet at the midpoint of the skywalk. Find the length of each support beam.



ANSWERS

STATION 1:

3. $x^2 = 24^2 + 7^2$
$x^2 = 576 + 49$
$x^2 = 625$
$x = \sqrt{625}$
$x = 25$

4. $x^2 = 10^2 + 7.5^2$
$x^2 = 100 + 56.25$
$x^2 = 156.25$
$x = \sqrt{156.25}$
$x = 12.5$

5. $26^2 = 10^2 + x^2$
$676 = 100 + x^2$
$676 - 100 = 100 + x^2 - 100$
$576 = x^2$
$x = \sqrt{576}$
$x = 24$

6. $41^2 = 40^2 + x^2$
$1{,}681 = 1{,}600 + x^2$
$1{,}681 - 1{,}600 = 1{,}600 + x^2 - 1{,}600$
$81 = x^2$
$x = \sqrt{81}$
$x = 9$

12. Let the height of the wall be x feet.
$10^2 = x^2 + 5^2$
$100 = x^2 + 25$
$100 - 25 = x^2 + 25 - 25$
$75 = x^2$
$x = \sqrt{75}$
$x \approx 8.7$
The height of the wall is approximately 8.7 feet.

STATION 2:

7. $11^2 = 8.8^2 + x^2$
$121 = 77.44 + x^2$
$121 - 77.44 = 77.44 + x^2 - 77.44$
$43.56 = x^2$
$x = \sqrt{43.56}$
$x = 6.6$
The value of x is 6.6.

$y^2 = x^2 + 10^2$
$y^2 = 43.56 + 100$
$y^2 = 143.56$
$y = \sqrt{143.56}$
$y \approx 12.0$
The value of y is approximately 12.0.

8. $11^2 = AD^2 + 8^2$
$121 = AD^2 + 64$
$121 - 64 = AD^2 + 64 - 64$
$57 = AD^2$
$AD = \sqrt{57}$
$AD \approx 7.55$
$12^2 = DC^2 + 8^2$
$144 = DC^2 + 64$
$144 - 64 = DC^2 + 64 - 64$
$80 = DC^2$
$DC = \sqrt{80}$
$DC \approx 8.94$
$x = 7.55 + 8.94$
$x = 16.49$
$x \approx 16.5$
The value of x is approximately 16.5.

9. $20^2 = 16^2 + x^2$
$400 = 256 + x^2$
$400 - 256 = 256 + x^2 - 256$
$144 = x^2$
$x = \sqrt{144}$
$x = 12$
The value of x is 12.
$y^2 = (16 + 4)^2 + 12^2$
$y^2 = 20^2 + 12^2$
$y^2 = 400 + 144$
$y^2 = 544$
$y = \sqrt{544}$
$y \approx 23.3$
The value of y is approximately 23.3.

10. $x^2 = 7^2 + 11^2$
$x^2 = 49 + 121$
$x^2 = 170$
$x = \sqrt{170}$
$x \approx 13.04$
The value of x is approximately 13.0.
$y^2 \approx 11^2 + (13.04 + 7)^2$
$y^2 = 11^2 + 20.04^2$
$y^2 \approx 121 + 401.60$
$y^2 = 522.60$
$y = \sqrt{522.60}$
$y \approx 22.9$
The value of y is approximately 22.9.

13. Let the length of the cable be x feet.
$x^2 = 6^2 + 12^2$
$x^2 = 36 + 144$
$x^2 = 180$
$x = \sqrt{180}$
$x \approx 13.4$
The length of the cable is approximately 13.4 feet.

STATION 3:

11. Field A:

$$36^2 + 48^2 \stackrel{?}{=} 60^2$$
$$1{,}296 + 2{,}304 \stackrel{?}{=} 3{,}600$$
$$3{,}600 = 3{,}600$$

So, Field A is a right triangle.

Field B:

$$40^2 + 50^2 \stackrel{?}{=} 60^2$$
$$1{,}600 + 2{,}500 \stackrel{?}{=} 3{,}600$$
$$4{,}100 \neq 3{,}600$$

So, Field B is not a right triangle.

14. Let the distance from the base of the escalator to the point on the first floor directly below the top of the escalator be x feet.

$$30^2 = 12^2 + x^2$$
$$900 = 144 + x^2$$
$$900 - 144 = 144 + x^2 - 144$$
$$756 = x^2$$
$$x = \sqrt{756}$$
$$x \approx 27.5$$

The distance from the base of the escalator to the point on the first floor directly below the top of the escalator is approximately 27.5 feet.

23.

$$11.9^2 + 12^2 \stackrel{?}{=} 16.9^2$$
$$141.61 + 144 \stackrel{?}{=} 285.61$$
$$285.61 = 285.61$$

The triangle is a right triangle.

24.

$$9^2 + 14^2 \stackrel{?}{=} 19^2$$
$$81 + 196 \stackrel{?}{=} 361$$
$$277 \neq 361$$

The triangular pattern is not a right triangle.

STATION 4:

17. Let the longest line be x feet.

$$x^2 = 6^2 + 3^2$$
$$x^2 = 36 + 9$$
$$x^2 = 45$$
$$x = \sqrt{45}$$
$$x \approx 6.7$$

The longest line that can be drawn across the whiteboard is approximately 6.7 feet.

Let the length of the shadow be x meters.

$$3.7^2 = 3.5^2 + x^2$$
$$13.69 = 12.25 + x^2$$
$$13.69 - 12.25 = 12.25 + x^2 - 12.25$$
$$1.44 = x^2$$
$$x = \sqrt{1.44}$$
$$x = 1.2$$

The length of the shadow is 1.2 meters.

27. Let the length of the television be x inches.

$$37^2 = 25^2 + x^2$$
$$1{,}369 = 625 + x^2$$
$$1{,}369 - 625 = 625 + x^2 - 625$$
$$744 = x^2$$
$$x = \sqrt{744}$$
$$x \approx 27.3$$

The length of the television is approximately 27.3 inches.

So, the 37-inch television set is able to fit into the given wall space.

30. 53.0 m