Warm Up

Solve the equation. Write your answer in simplest form.

1. $8 = x\sqrt{2}$

2. $1.5 = x\sqrt{3}$

3. $2x = 8\sqrt{7}$

4. $5\sqrt{2} = \sqrt{3}x$

5. $\frac{9}{2} = x\sqrt{3}$

6. $8.4 = \sqrt{2}x$

Essential Question

How are the properties of the Pythagorean Theorem related in special right triangles?

Needed Vocab:
► Special Right Triangles

Goal: "I can...
Use the patterns of special right triangles to solve for variables or the lengths of sides."

In your table groups, plot the points and find the length of all the sides in reduced radical form.
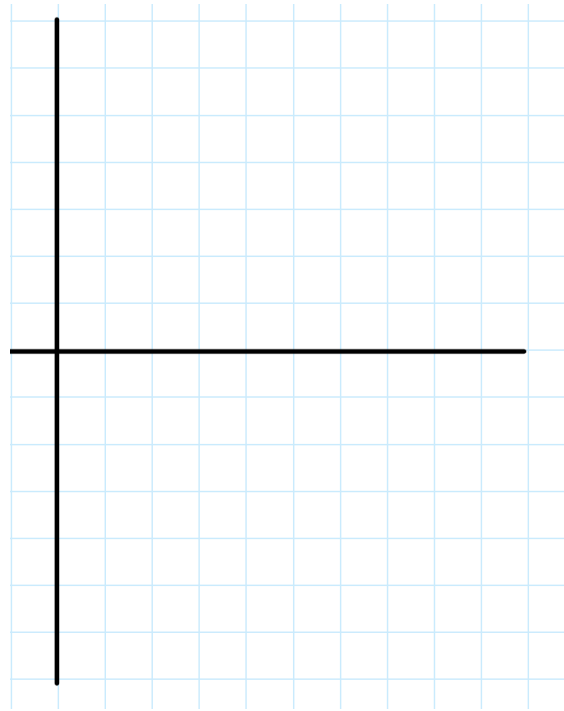
A(1,1), B(1,5), C(5,1)
D(2,-1), E(5,-1), F(2,-4)

form...
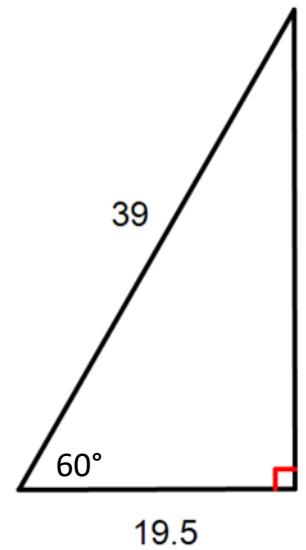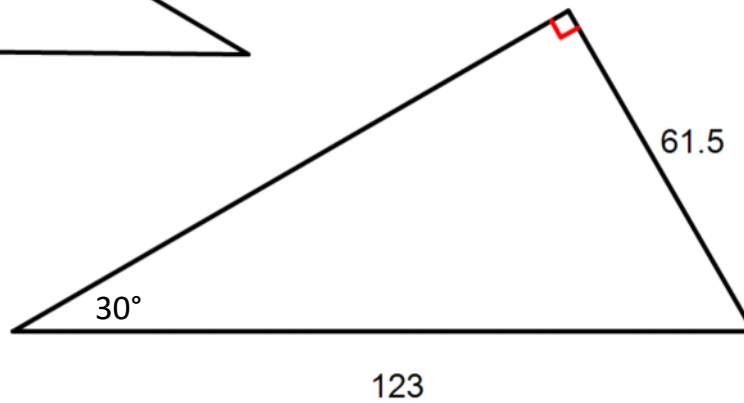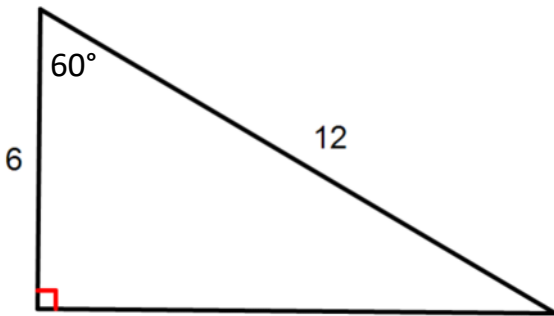A(1,1), B(1,5), C(5,1)
D(2,-1), E(5,-1), F(2,-4)

What are the angles of the triangles?

Find the missing side lengths, in reduced radical form.
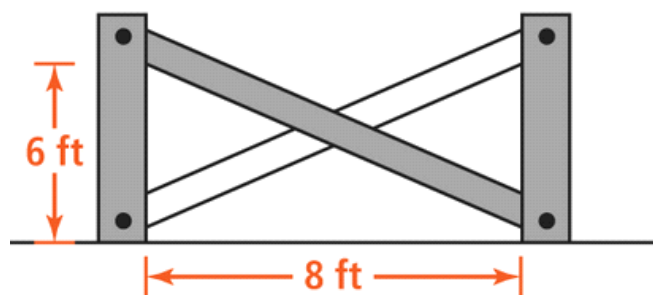
60°
6
12

39
60°
19.5

61.5
30°
123

Example 1

A. To satisfy safety regulations, the distance from the wall to the base of a ladder should be at least one-fourth the length of the ladder. Did Drew set up the ladder correctly?
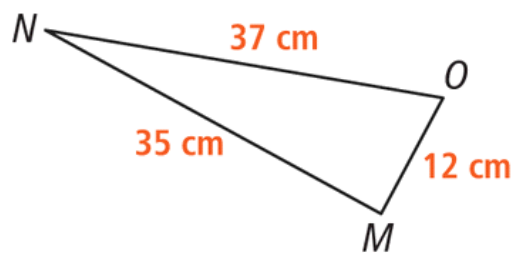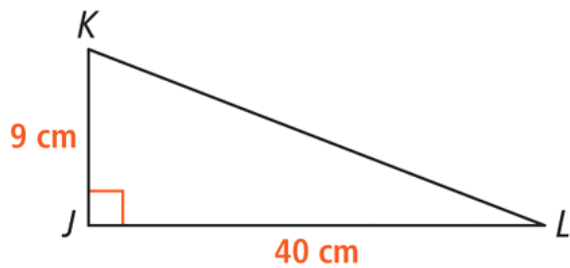
9 ft

|←2.5 ft→|

B. The length of each crosspiece of the fence is 10 ft. Why would a rancher build this fence with the measurements shown?

6 ft

|←———— 8 ft ————→|

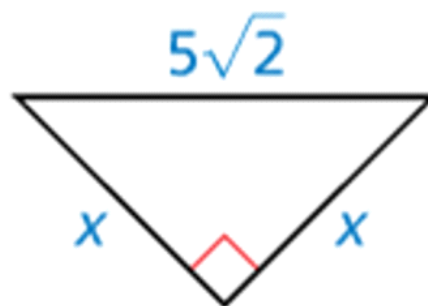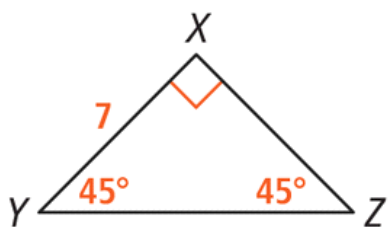**a.** What is *KL*?

b. Is △*MNO* a right triangle? Explain.

K

9 cm

J

40 cm

L

N

37 cm

O

35 cm

12 cm

M

EXAMPLE 2   Find the value of x. Answers in reduced radical form.

8

45°

x

$5\sqrt{2}$

x

x

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a. What are *XZ* and *YZ*?

X

7

45°

45°

Y

Z

b. What are *JK* and *LK*?
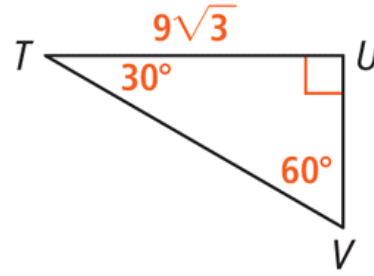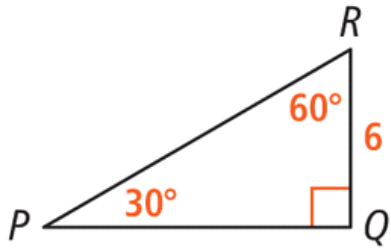
L

45°

K

$12\sqrt{2}$

45°
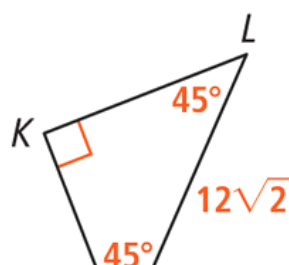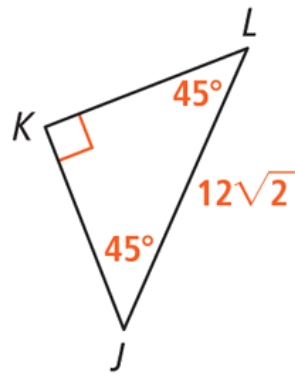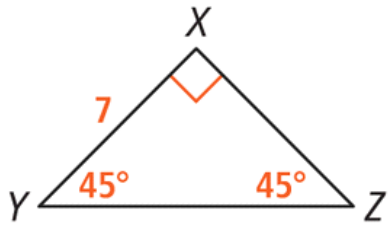
Example 3

Find the values of x and y. Write your answer in simplest form.
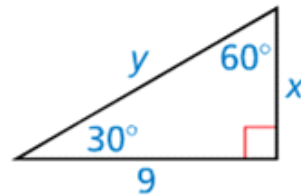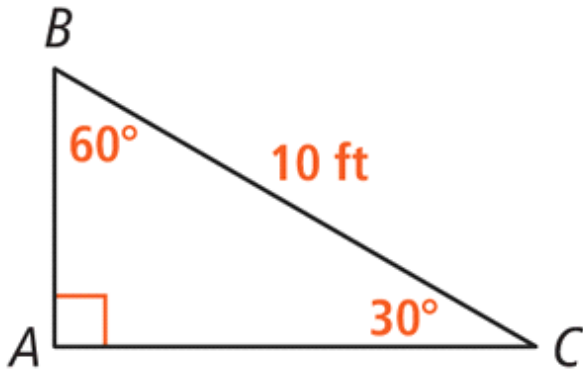

a. What are *PQ* and *PR*?
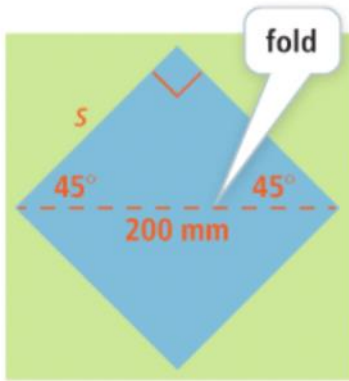
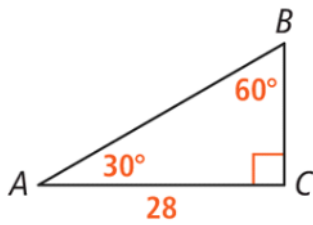**b.** What are *UV* and *TV*?

EXAMPLE 4

A. Alejandro needs to make both the horizontal and vertical supports, $\overline{AC}$ and $\overline{AB}$, for a ramp. Is one 12-foot board long enough for both supports? Explain.
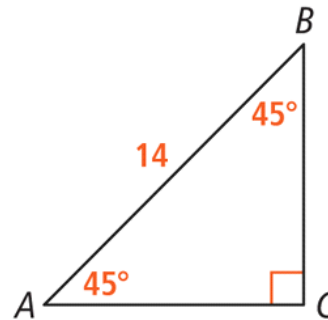
B. Olivia starts an origami paper crane by making the 200-mm diagonal fold. What are the side length and area of the paper square?

fold

s

45°   45°

200 mm

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a. What are *AB* and *BC*?

B

60°

30°

A   28   C

b. What are *AC* and *BC*?

B

45°

14

45°

A   C

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https://tinyurl.com/vwf8olb

Homework

Pg. 352
10, 11, 14-16, 20-22, 25, 27