## Warm Up

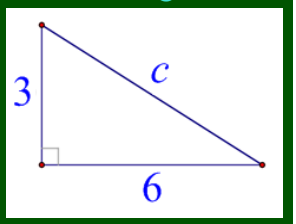
1.) Which side lengths could NOT be the lengths of the sides of a right triangle?

A 5, 12, 13
B 3, 4, 5
C 4, 6, 8
D 10, 24, 26
E 9, 12, 15

Jan 18-3:04 PM

## Warm Up

2.) What is the length of the missing side in the given triangle?




Jan 18-3:04 PM

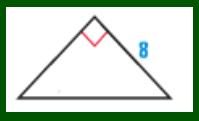
# 8.3 Special Right Triangles

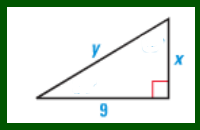
1.) Use properties of special right triangles to find missing side lengths.

Nov 4-10:28 AM

## 8.3 Special Right Triangles

Find the lengths of the missing sides of this triangle.

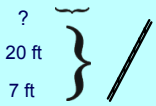



Jan 18-3:27 PM

Warm up: One end of a ladder is placed 7 feet from a house. The other end of the ladder reaches 20 feet up the side of the house. How long is the ladder?

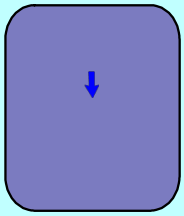
Place all items in the proper place on the house according to the story above.

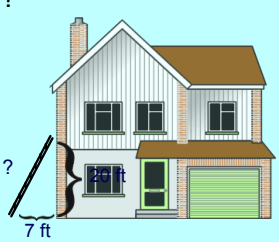



Oct 23-10:35 AM

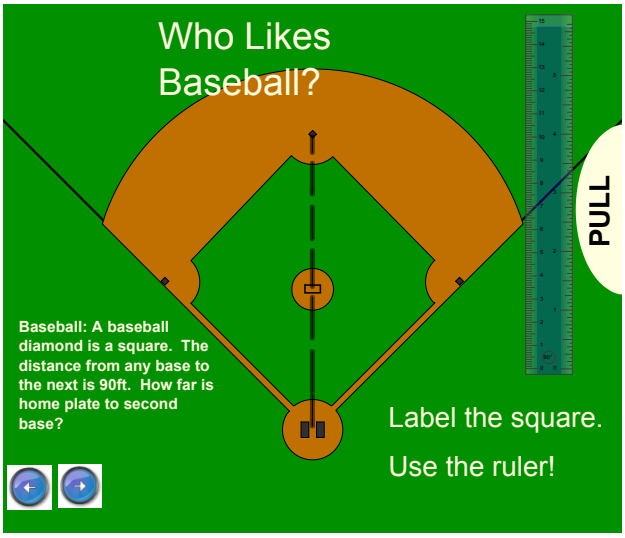
Warm up: One end of a ladder is placed 7 feet from a house. The other end of the ladder reaches 20 feet up the side of the house. How long is the ladder?

Solve for the ?

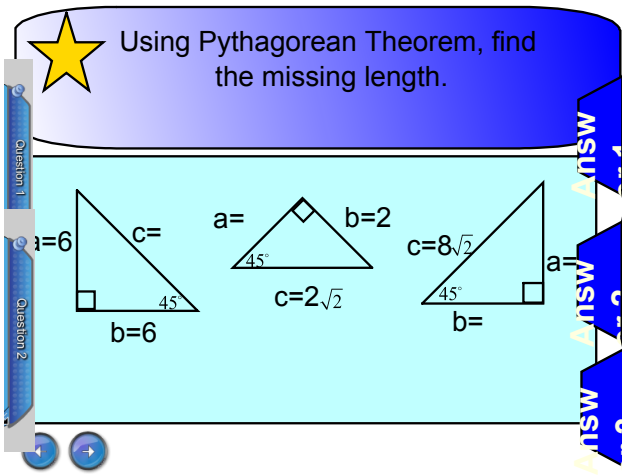




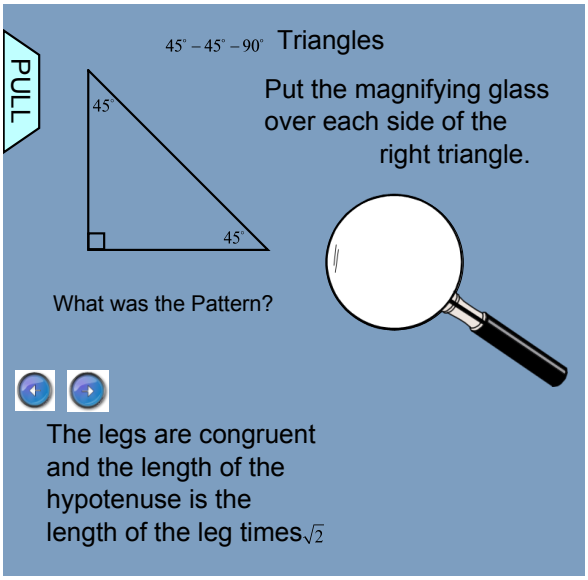

Oct 23-10:35 AM



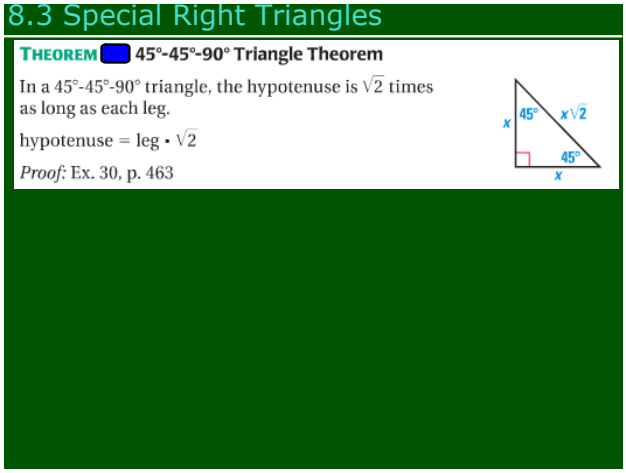

Baseball diamond



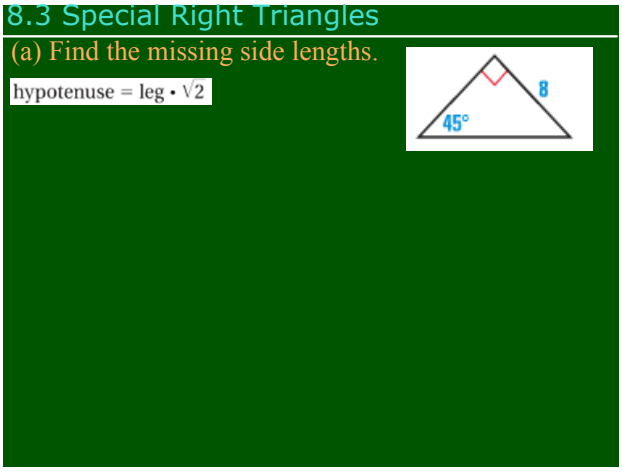

Oct 21-1:26 PM



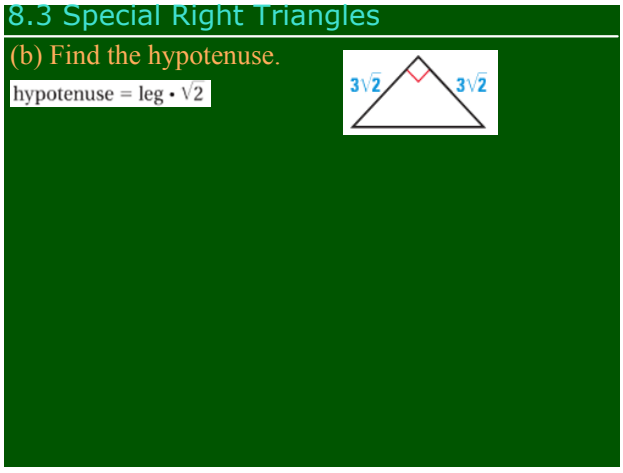

Oct 21-1:35 PM




Jan 18-3:27 PM




Jan 18-3:27 PM

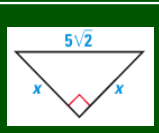



Jan 18-3:27 PM

## 8.3 Special Right Triangles

(c) Find the lengths of the legs.

hypotenuse = leg • $\sqrt{2}$

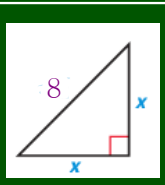



Jan 18-3:27 PM

## 8.3 Special Right Triangles

(d) Find the lengths of the legs.

hypotenuse = leg • $\sqrt{2}$




Jan 18-3:27 PM

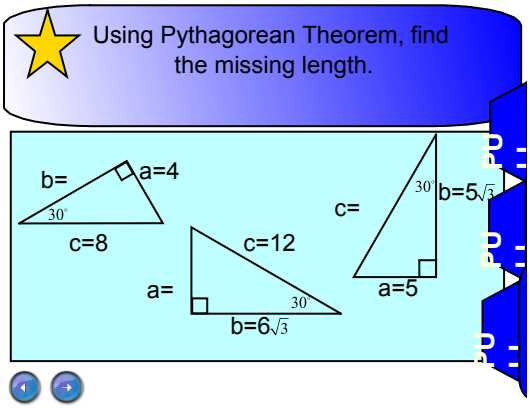
## 8.3 Special Right Triangles

(e) What type of triangle has side lengths of 3, 7, and 9?

Pull

Jan 18-3:27 PM

Using Pythagorean Theorem, find the missing length.

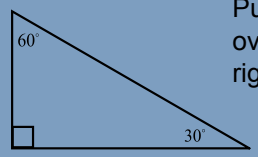


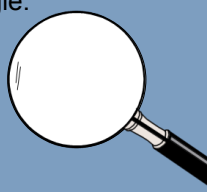

1. What are the angles of the triangles? How do you know this?
2. What similarities do you see between the three triangles?

Oct 21-4:55 PM

$30^\circ - 60^\circ - 90^\circ$ Triangle

Put the magnifying glass over each side of the right triangle.



What was the Pattern?

The length of the hypotenuse is 2 times the length of the shorter leg. The length of the longer leg is $\sqrt{3}$ times the length of the shorter leg.

Oct 23-11:06 AM

## 8.3 Special Right Triangles

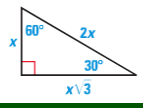
**THEOREM** **30°-60°-90° Triangle Theorem**

In a 30°-60°-90° triangle, the hypotenuse is twice as long as the shorter leg, and the longer leg is $\sqrt{3}$ times as long as the shorter leg.

hypotenuse = 2 • shorter leg

longer leg = shorter leg • $\sqrt{3}$

*Proof:* Ex. 32, p. 463

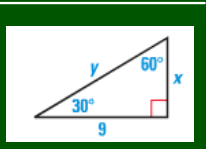



Jan 18-3:27 PM

## 8.3 Special Right Triangles

(f) Find the missing lengths.

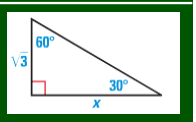
hypotenuse = 2 • shorter leg
longer leg = shorter leg • $\sqrt{3}$




Jan 18-3:27 PM

## 8.3 Special Right Triangles

(g) Find the missing side lengths.




Jan 18-3:27 PM

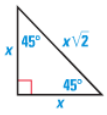
## 8.3 Special Right Triangles

**THEOREM 45°-45°-90° Triangle Theorem**

In a 45°-45°-90° triangle, the hypotenuse is $\sqrt{2}$ times as long as each leg.

hypotenuse = leg • $\sqrt{2}$

*Proof:* Ex. 30, p. 463



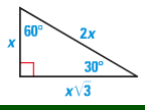

**THEOREM 30°-60°-90° Triangle Theorem**

In a 30°-60°-90° triangle, the hypotenuse is twice as long as the shorter leg, and the longer leg is $\sqrt{3}$ times as long as the shorter leg.

hypotenuse = 2 • shorter leg

longer leg = shorter leg • $\sqrt{3}$

*Proof:* Ex. 32, p. 463

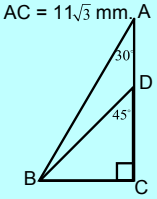



Jan 18-3:27 PM

## Guided Practice!

Find the length of each missing side in the figure.

AC = $11\sqrt{3}$ mm. A




BC = ____

DC = ____ ∠DBC =

AB = ____ ∠ABC =

DB ≈ ____

Answers

Oct 23-12:39 PM

## Practice Problems

Starter

### Starter

Find the length of each missing side in each figure.

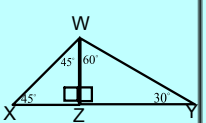
XZ = 15 cm.

WZ = _____

WY = _____

WX = _____

ZY = _____




### Challenge

Find the length of each missing side in each figure.

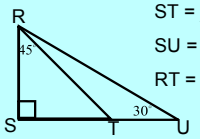
RS = 7 ft.

RU = ____

ST = ____

SU = ____

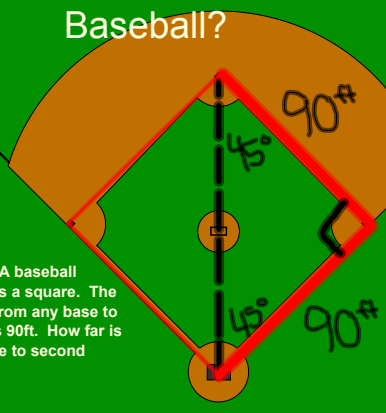
RT = ____




Challenge

Oct 23-12:15 PM

## Who Likes Baseball?

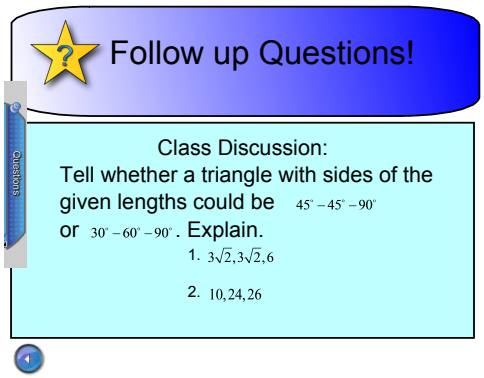



**Baseball: A baseball diamond is a square. The distance from any base to the next is 90ft. How far is home plate to second base?**

HINT

ANSWER

Baseball diamond




1. $45^\circ - 45^\circ - 90^\circ$; Two sides are equal, and $(3\sqrt{2}) \bullet \sqrt{2} = 6$, so the hypotenuse = leg$\bullet\sqrt{2}$.

2. Neither; This triangle is similar to the 3-4-5 triangle.

Oct 23-12:56 PM