



Do Now

Turn in your Test Corrections

Calculator



Simplify: $\frac{3}{\sqrt{5}}$

13) ~~$\sqrt[3]{3} \cdot \sqrt[3]{-20}$~~

14) $\sqrt{5} \cdot \sqrt{3}$

15) $\sqrt{6} \cdot \sqrt{2}$

16) $\sqrt[3]{3} \cdot \sqrt[3]{9}$

Agenda!

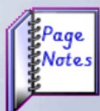
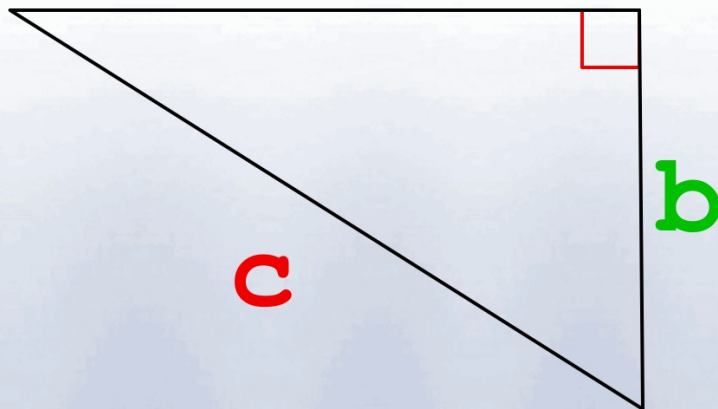
1. Pythagorean Theorem and right triangles.

2. Group Practice.

3. Homework



9.1 The Pythagorean Theorem **a**



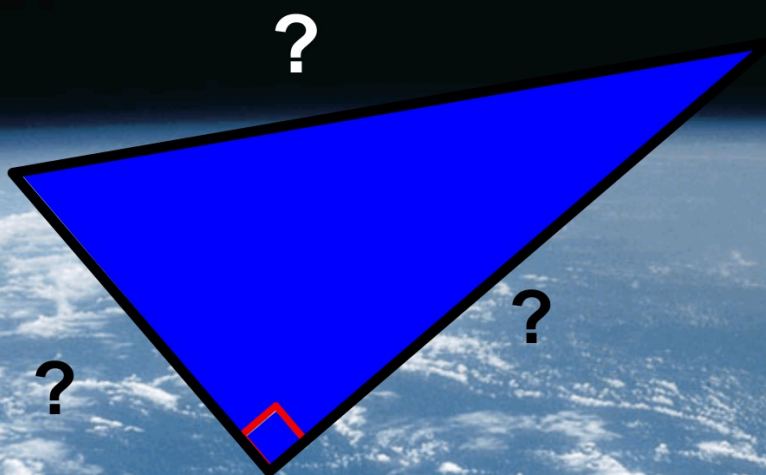
To go to page 2 click



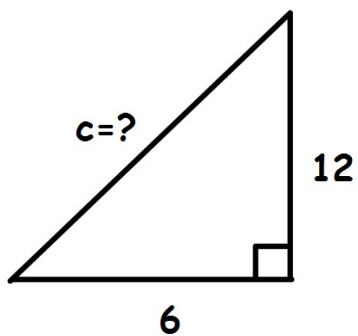
$$a^2 + b^2 = c^2$$

*** Please contact me if you notice any errors or would like to make any suggestions.**

Click on the questionmark to display the correct label for the side.



Reset



Find the length of side c (round to the nearest whole number).

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

What do you know?

$$a = 12, b = 6$$

What do you need to find?

the length of c

Fill in the blanks... $a^2 + b^2 = c^2$

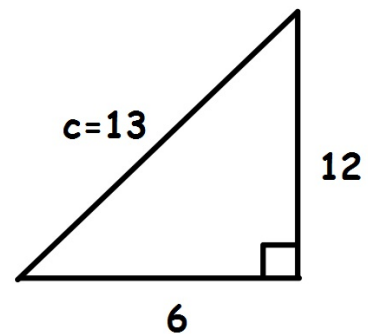
$$12^2 + 6^2 = c^2$$

$$144 + 36 = c^2$$

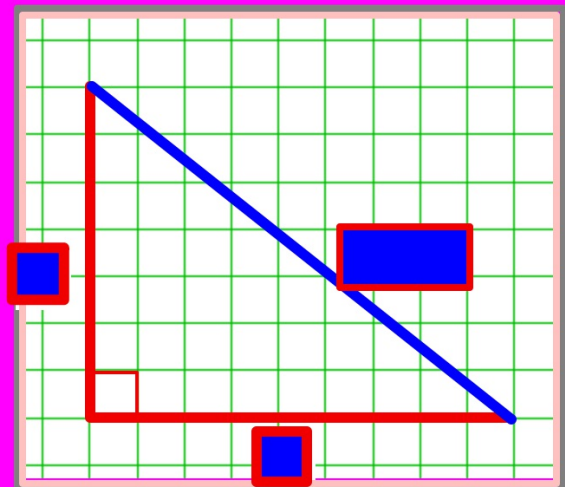
$$180 = c^2$$

$$\sqrt{180} = c$$

$$13 = c$$



Identify the length of each side. Then use the Pythagorean theorem to solve for the hypotenuse? (hint: you do not need to simplify the square root).

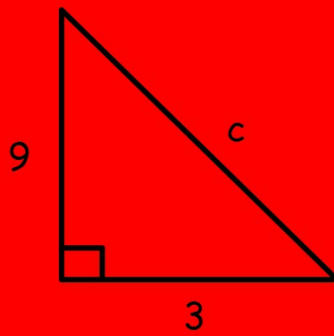


Switch to
Pen Tool

Switch to
Eraser

Show
Page Notes

Practice Makes Perfect!



Show your work here

✓ Your Answer Here

Pythagorean Theorem

If the length of one leg of a right triangle is 5 and the length of the hypotenuse is 6, then the length of the other leg is

Example 2

Using the picture from 911 below, find the distance the flagpole was off the ground at that moment.

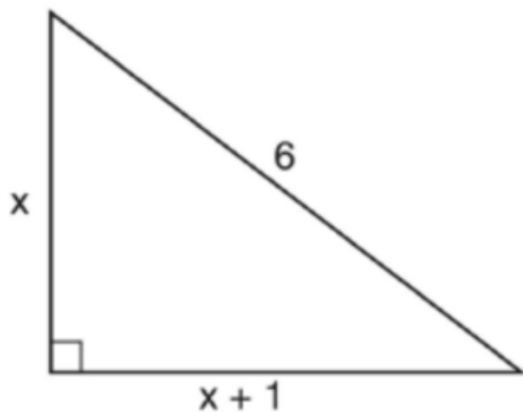


- A** 783 ft.
- B** 43 ft.
- C** 17 ft.
- D** None of the above



Pythagorean Theorem

As shown in the accompanying diagram, the hypotenuse of the right triangle is 6 meters long. One leg is 1 meter longer than the other. Find the lengths of *both* legs of the triangle, to the *nearest hundredth of a meter*.



Pythagorean Triples

Which set of numbers could be the lengths of the sides of a right triangle?

A. $\{10, 24, 26\}$

B. $\{12, 16, 30\}$

C. $\{3, 4, 6\}$

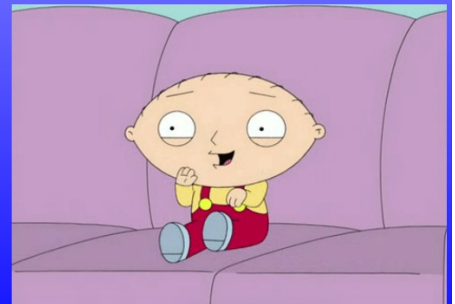
D. $\{4, 7, 8\}$

Group Practice!

1. Go to Google Classroom: **In-Class Activity 05/08/17**.
2. You may work in groups! **40 minutes** to complete this activity. Stay on task and submit **one paper per group** once finished!
3. Only do the **ODD NUMBERS!**
4. **Answers are in the back**. Check your answers.

Expectations:

- Group (3 max per group) work.
- Ask yourself, your group, and then your teacher.
- Finish the task.



Brain Break!





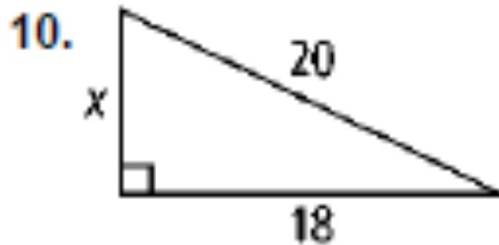
Do Now

Take out your homework for questions

Calculator



15. **Reasoning** A square has a diagonal of 12 cm. What is the perimeter of the square? Express in simplest radical form.



Agenda!

- 1. Special Right Triangles**
- 2. Group Practice.**
- 3. Homework**



Don't put this in your notes:

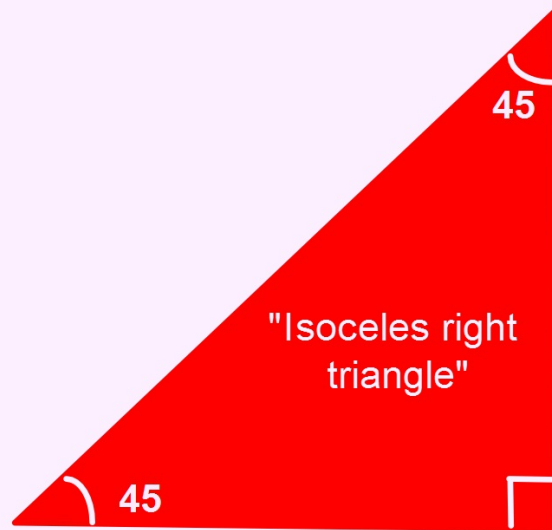
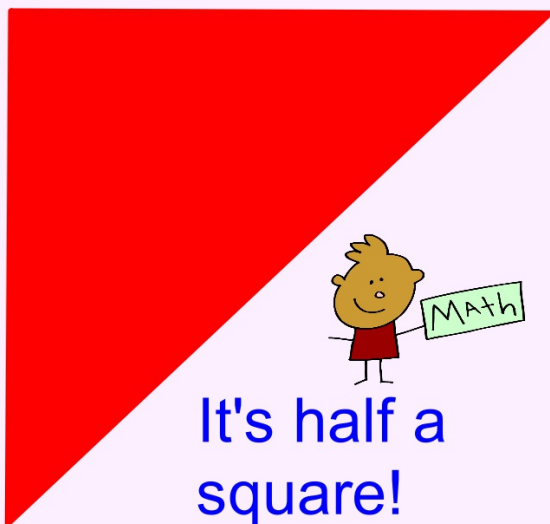
Side lengths of Special Right Triangles

Right triangles whose angle measures are 45° - 45° - 90° or 30° - 60° - 90° are called **special right triangles**.

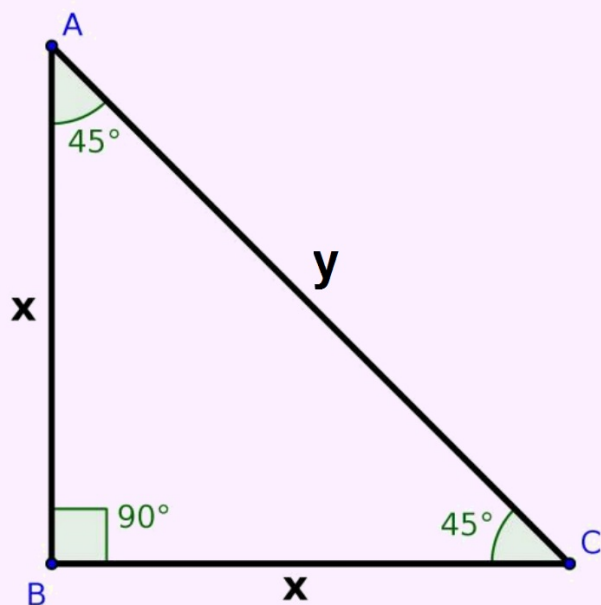
There are theorems that describe the relationships of the three side lengths of the two special right triangles.

45-45-90 Special Right Triangle

What makes it so special?



Our goal is to find a relationship between the leg and the hypotenuse: **Use the Pythagorean Theorem**



$$x^2 + x^2 = y^2$$

$$2x^2 = y^2$$

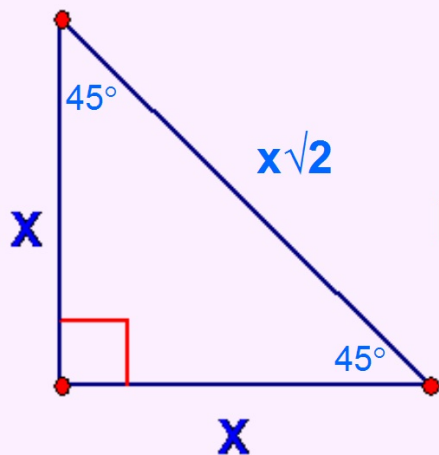
$$\sqrt{2x^2} = \sqrt{y^2}$$

$$x\sqrt{2} = y$$

$$y = x\sqrt{2}$$

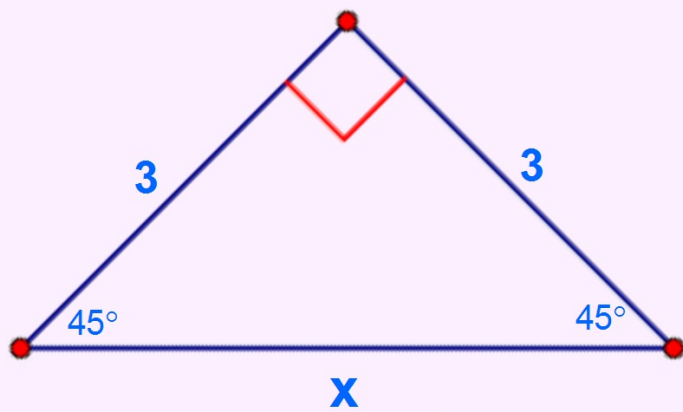
Theorem 8-5: 45°- 45°- 90° Triangle Theorem

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

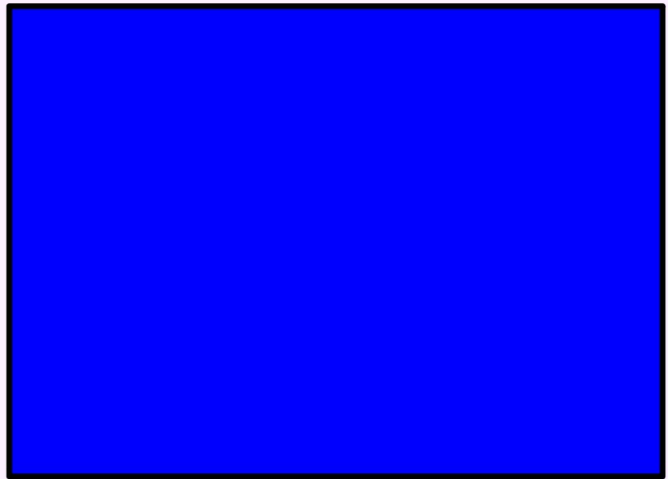
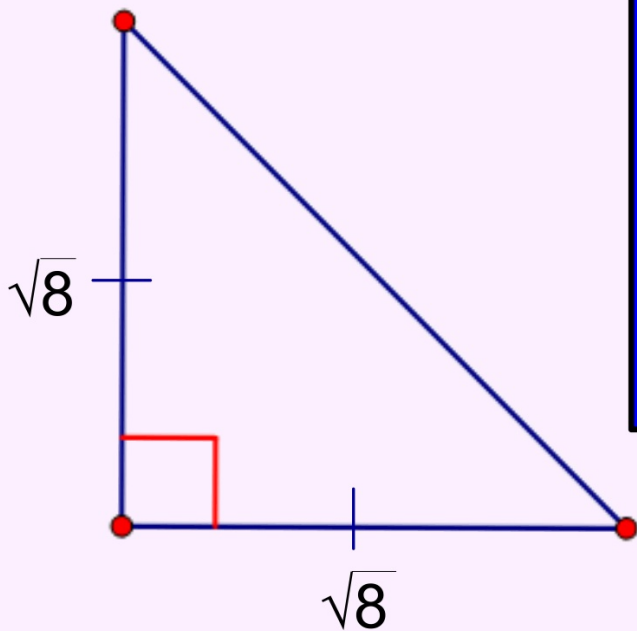


$$\text{Hypotenuse} = \sqrt{2} \cdot \text{leg}$$

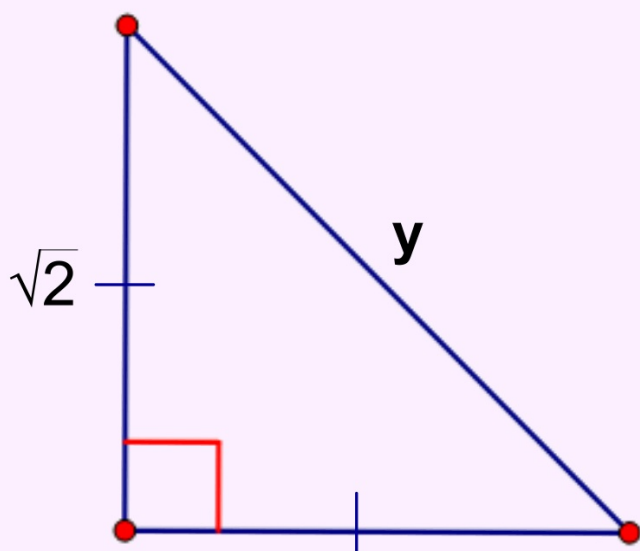
Example 1: Finding the hypotenuse in a 45° - 45° - 90° Triangle



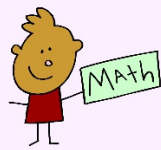
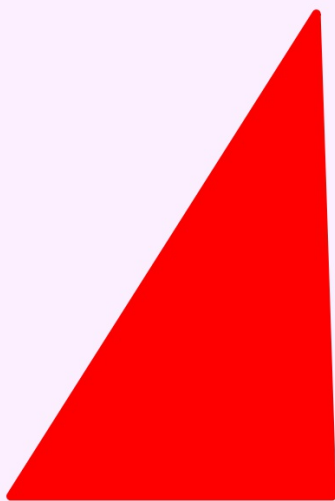
Example 2: Finding the hypotenuse in a 45°-45°-90° Triangle



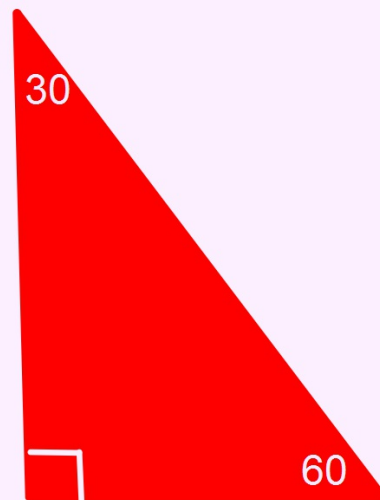
Find the hypotenuse.....



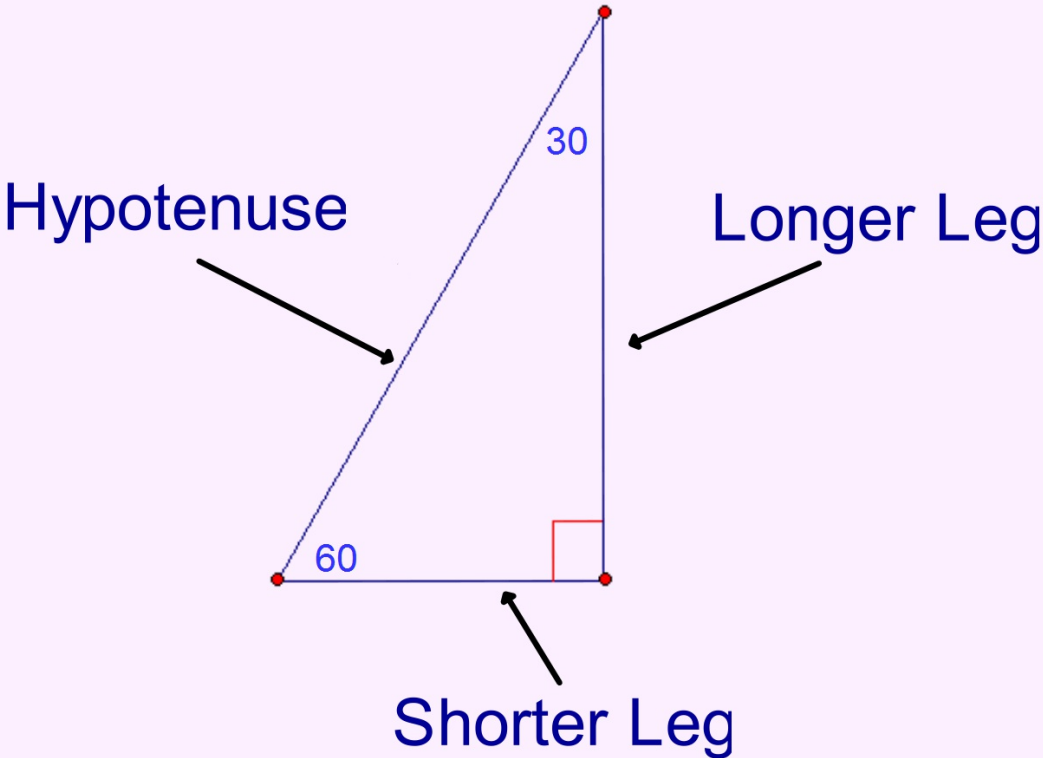
30-60-90 Special Triangle: What makes it so special?



Half an
equilateral \triangle

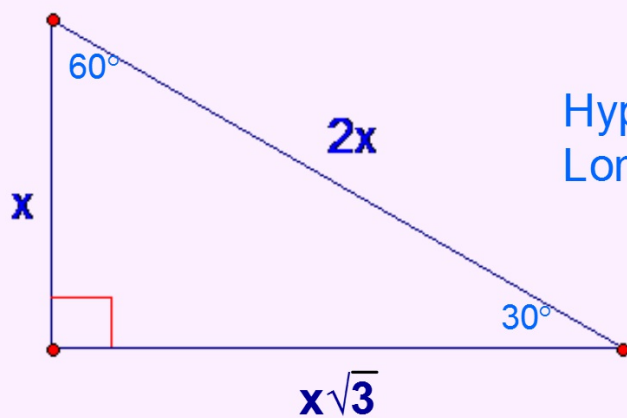


30-60-90 Special Right Triangle



Theorem 8-6: 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.

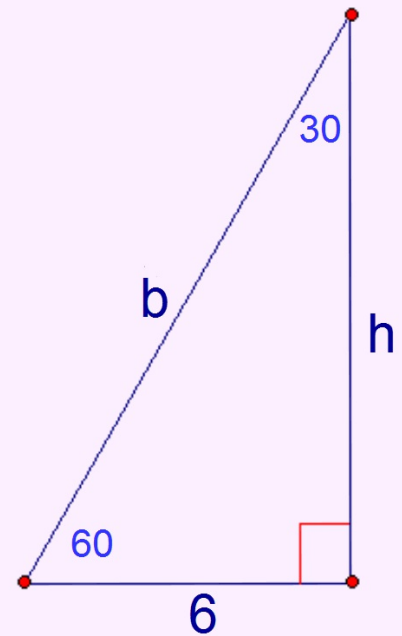


Hypotenuse = $2 \cdot$ shorter leg
Longer leg = $\sqrt{3} \cdot$ shorter leg

Example 1: Finding side lengths in a 30° - 60° - 90° Triangle

Find hypotenuse b :

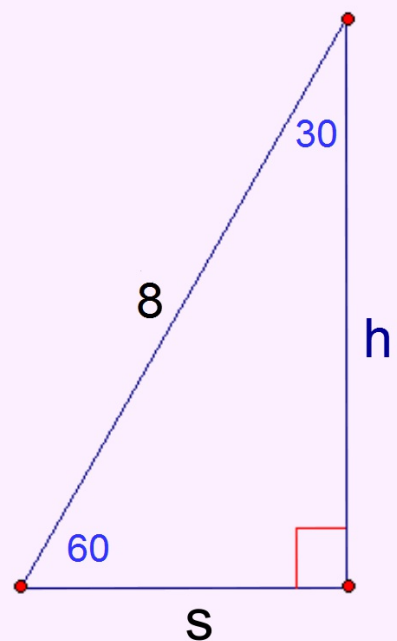
Find longer leg h :



Example 2: Finding side lengths in a 30°-60°-90° Triangle

Find shorter leg s :

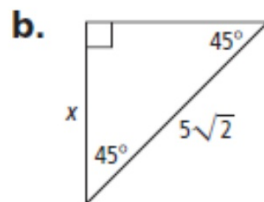
Find longer leg h :



CHECK FOR UNDERSTANDING

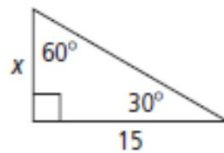
Problem 1

What is the value of each variable?

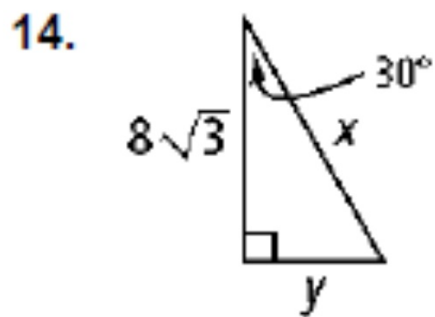
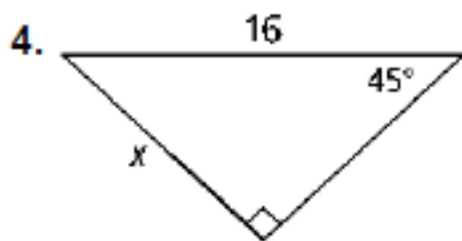


Problem 4

What is the value of x ?



CHECK FOR UNDERSTANDING



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