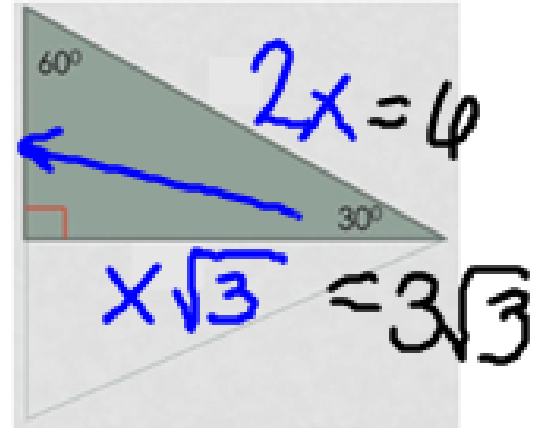


$$4 + h^2 = 16$$

$$\sqrt{h^2} = \sqrt{12}$$

$$h = 2\sqrt{3}$$

$$3 = x$$



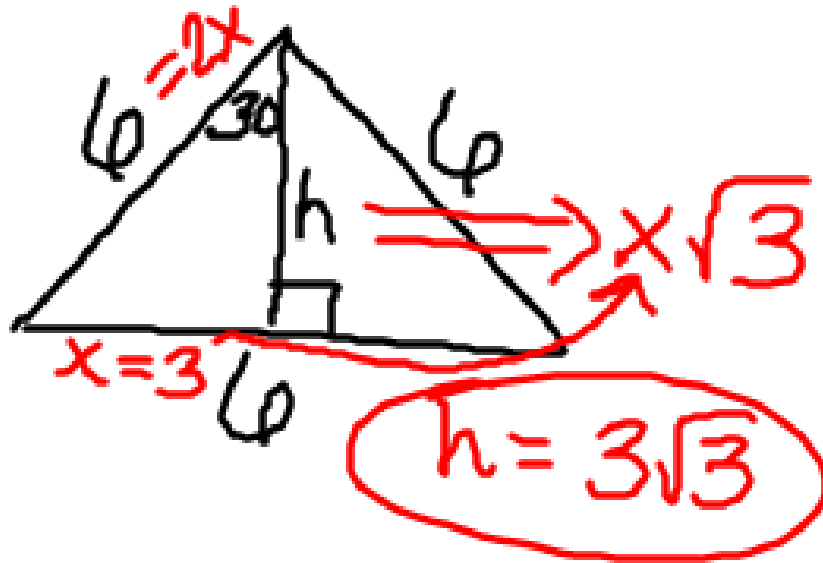
$$3^2 + h^2 = 4^2$$

$$9 + h^2 = 16$$

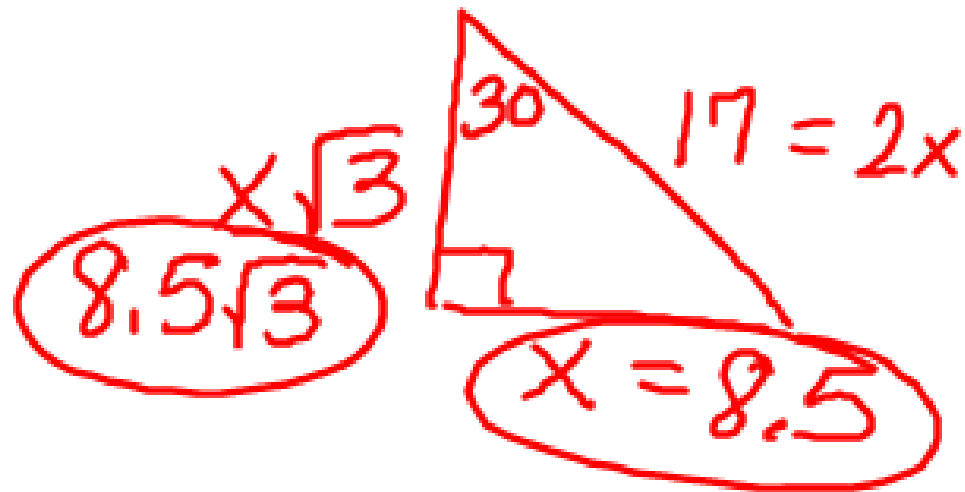
$$\sqrt{h^2} = \sqrt{7}$$

$$3\sqrt{3}$$

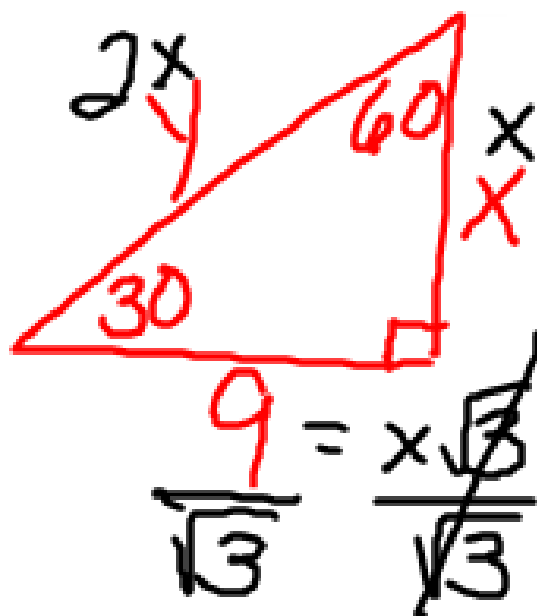
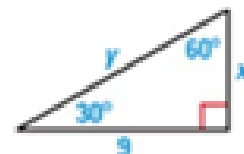
**Logo** The logo on a recycling bin resembles an equilateral triangle with side lengths of 6 centimeters. What is the approximate height of the logo?



The length of a hypotenuse of a  $30^\circ - 60^\circ - 90^\circ$  right triangle is 17 yards. Find the other two lengths.



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

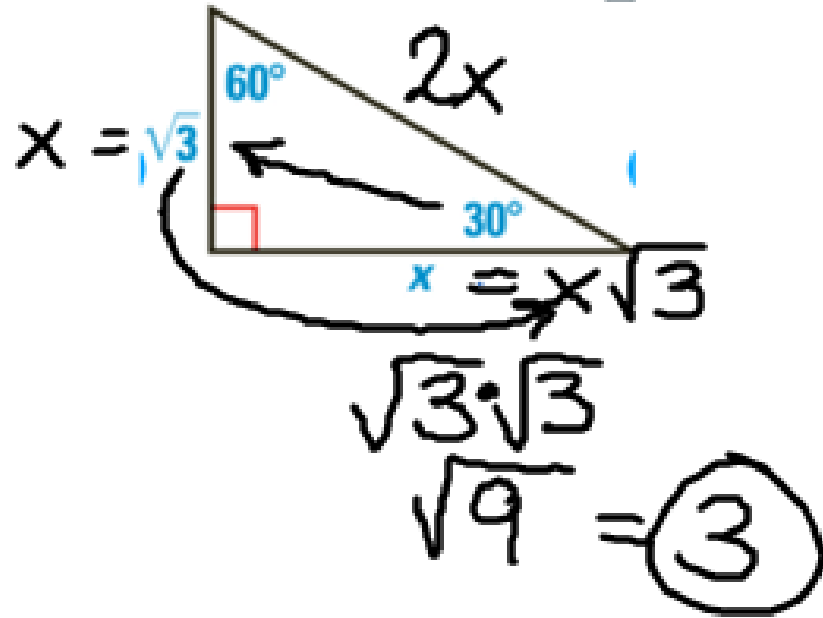


$$x = \frac{9 \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}} = \frac{9\sqrt{3}}{3}$$

$$x = 3\sqrt{3}$$

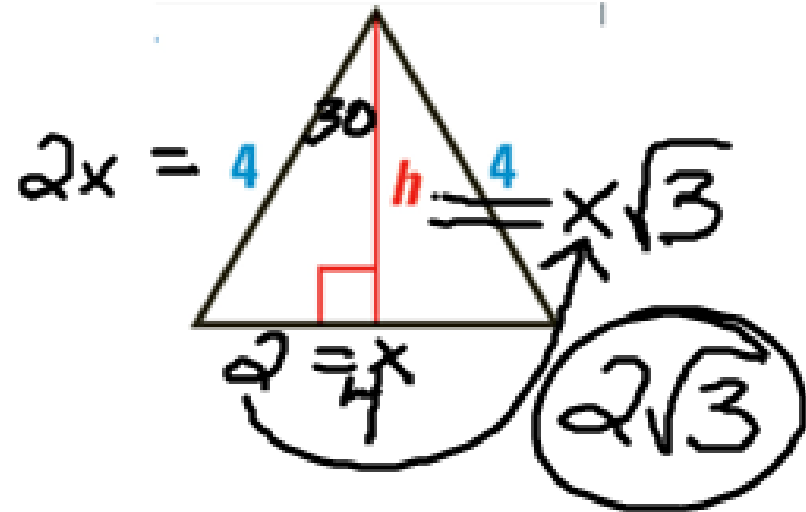
$$y = 2(3\sqrt{3})$$
$$= 6\sqrt{3}$$

You try: Find the value of  $x$ .



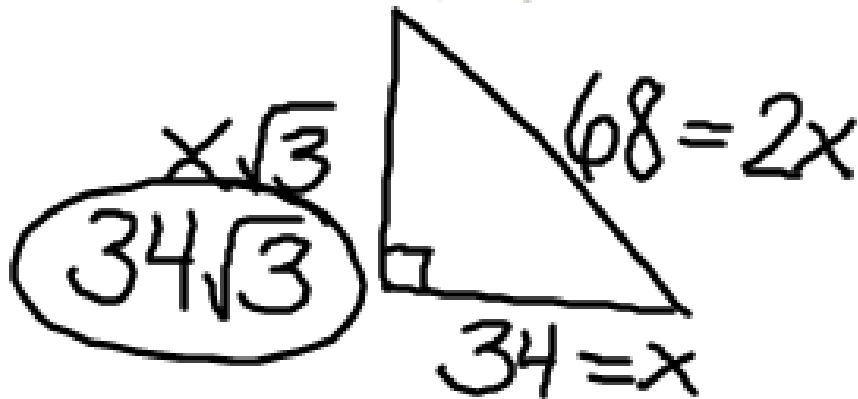
You try:

Find the height of the equilateral triangle.



You try:

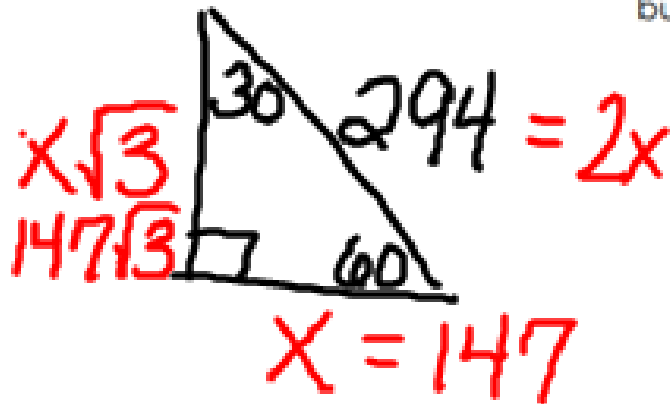
A right triangle has a leg with a length of 34 and a hypotenuse with a length of 68. A student notices that the hypotenuse is twice the length of the given leg and says that this means it is a  $30^\circ - 60^\circ - 90^\circ$  triangle. If the student is correct, what should the length of the remaining leg be? Explain your answer. Confirm your answer using the Pythagorean Theorem.



BEAT THE TEST!

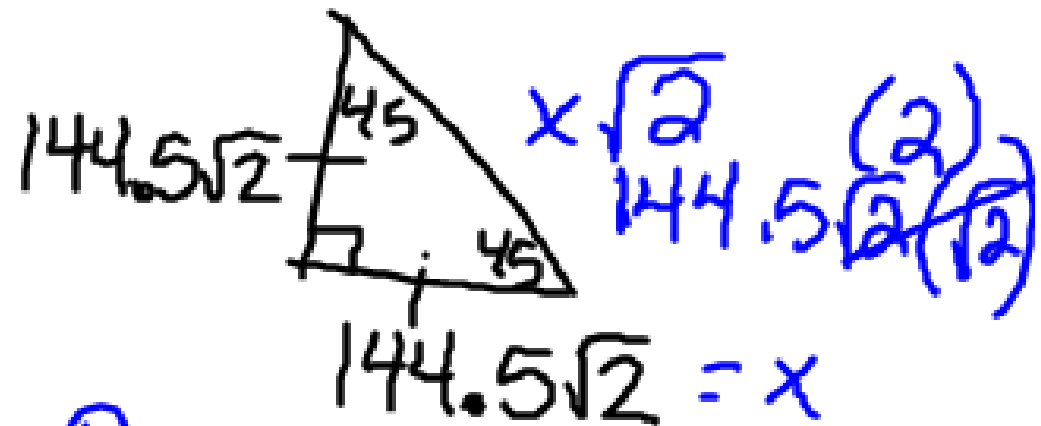
1. The base of the engineering building at Lenovo Tech Industries is approximately a  $30^\circ - 60^\circ - 90^\circ$  triangle with a hypotenuse of about 294 feet. The base of the engineering building at Asus Tech Industries is approximately an isosceles right triangle with a side about  $144.5\sqrt{2}$  feet.

What is the difference between the perimeters of the two buildings? Round your answer to the nearest hundredth.



$$\begin{array}{r} P = 254.6115 \\ + 294 \\ + 147 \\ \hline 695.6115 \end{array}$$

$$\begin{array}{r} 697.7077 \\ - 695.6115 \\ \hline 2.0962 \end{array}$$



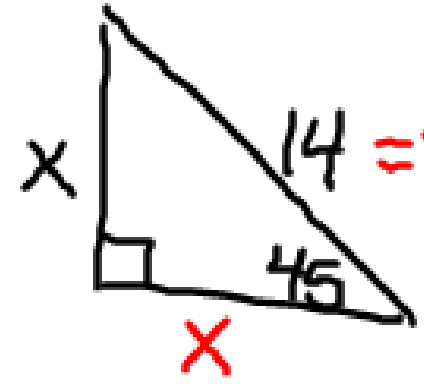
$$\begin{aligned} P &= 289 + 2(144.5\sqrt{2}) \\ &= 289 + 408.7077 \\ &= 697.7077 \end{aligned}$$

$$= 2.10$$

**Dump Truck** The body of a dump truck is raised to empty a load of sand. How high is the 14 foot body from the frame when it is tipped upward at the given angle?



- a. 45° angle
- b. 60° angle



$$14 = x\sqrt{2}$$

$$\frac{14}{\sqrt{2}} = \frac{x\sqrt{2}}{\sqrt{2}}$$

$$\sqrt{2} \cdot \frac{14}{\sqrt{2}} = x$$

$$\frac{7 + 4\sqrt{2}}{2} = 7\sqrt{2}$$

$$7\sqrt{3}$$

$$x\sqrt{3}$$

