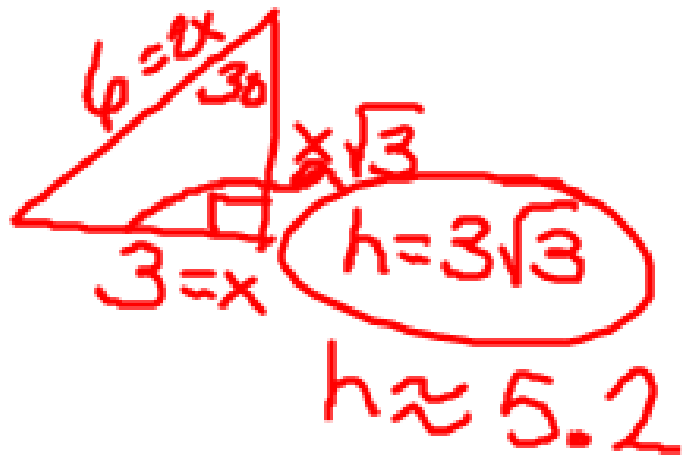
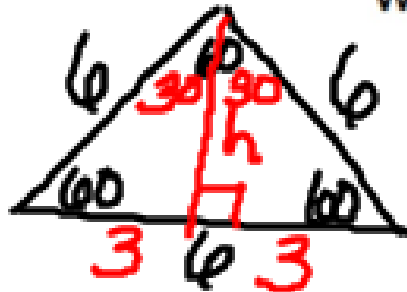


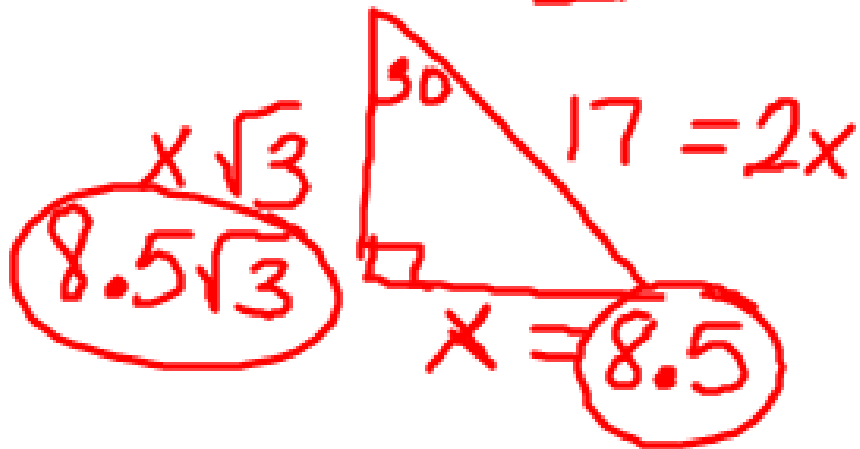
$$\begin{aligned}
 3^2 + b^2 &= 6^2 \\
 9 + b^2 &= 36 \\
 -9 &\quad -9 \\
 \hline
 \sqrt{b^2} &= \sqrt{27} \\
 &= \sqrt{3 \cdot 9} \\
 &= 3\sqrt{3}
 \end{aligned}$$

$$\begin{aligned}
 4^2 + b^2 &= 8^2 \\
 16 + b^2 &= 64 \\
 -16 &\quad -16 \\
 \hline
 \sqrt{b^2} &= \sqrt{48} \\
 &= \sqrt{16 \cdot 3} \\
 &= 4\sqrt{3}
 \end{aligned}$$

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.



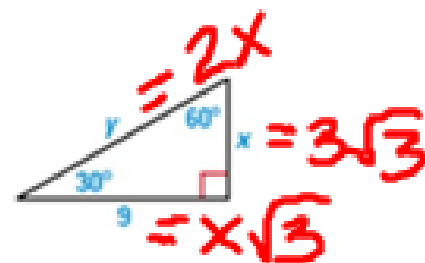
Find the values of x and y . Write your answer in simplest radical form.

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

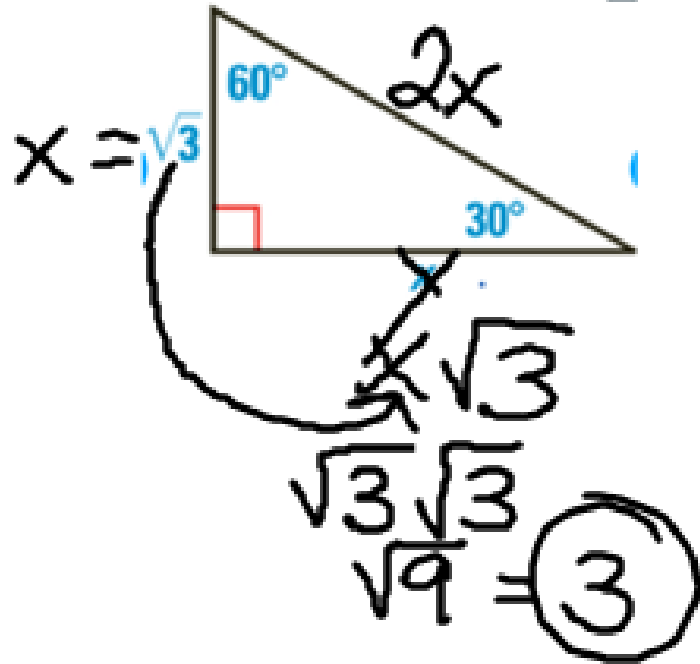
$$x = \frac{3 \cdot 9}{3}$$

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

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

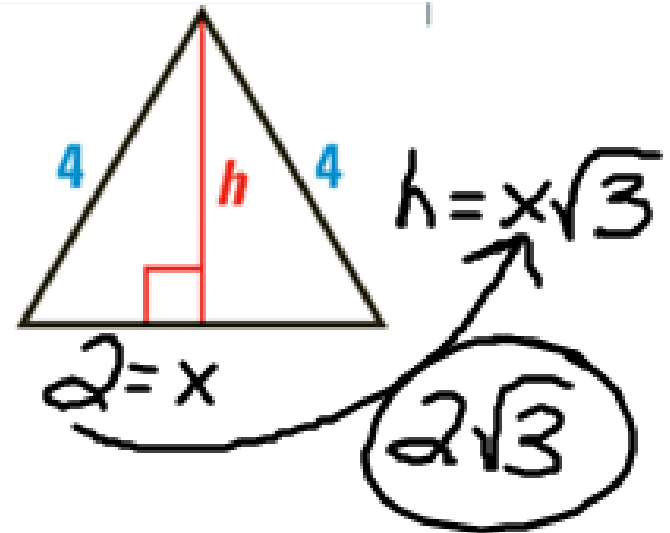


You try: Find the value of x .



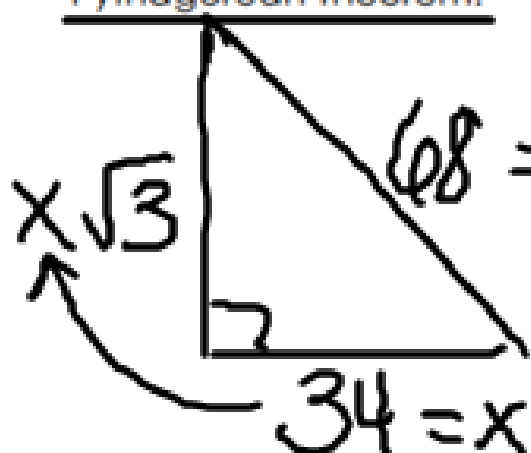
You try:

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.



$$\begin{aligned} & \textcircled{34\sqrt{3}} \\ & \approx 58.8897 \end{aligned}$$

$$34^2 + b^2 = 68^2$$

$$\begin{array}{r} 1156 + b^2 = 4624 \\ -1156 \quad -1156 \\ \hline \end{array}$$

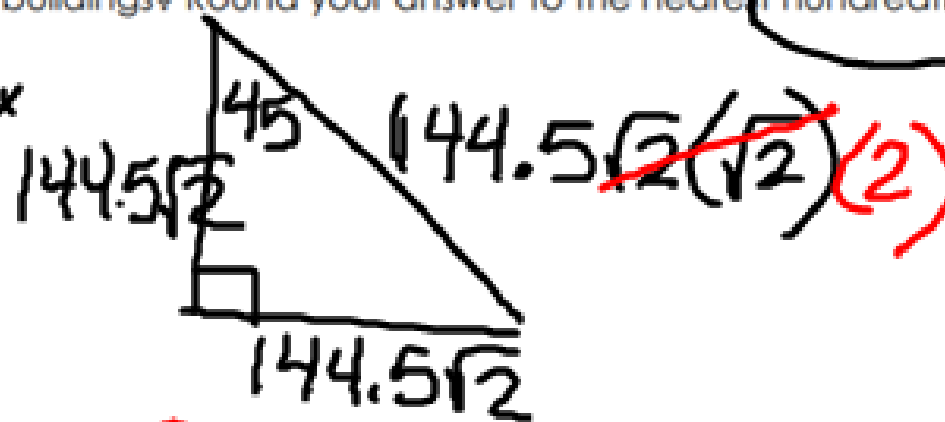
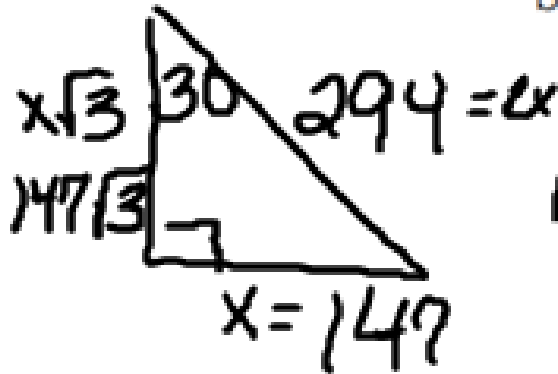
$$\sqrt{b^2} = \sqrt{3468}$$

$$b = 58.8897$$

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.



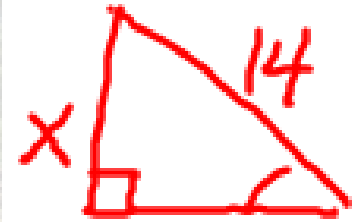
$$\begin{array}{r} P = 254.6115 \\ + 294 \\ + 147 \\ \hline 695.6115 \end{array}$$

$$\begin{array}{r} P = 204.3539(2) + 289 \\ = 697.7078 \end{array}$$

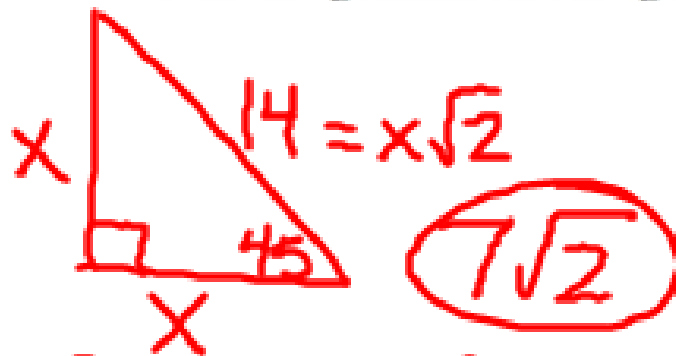
$$\begin{array}{r} 697.7078 - 695.6115 \\ \hline 2.0963 \end{array}$$

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



$$x^2 + x^2 = 14^2$$

$$\frac{2x^2}{2} = \frac{196}{2}$$

$$\sqrt{x^2} = \sqrt{98}$$

$$\sqrt{7} \sqrt{14} = \sqrt{7} \sqrt{2}$$

