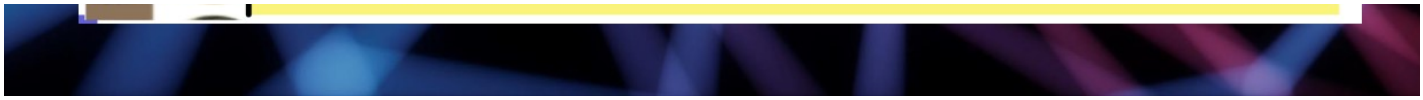
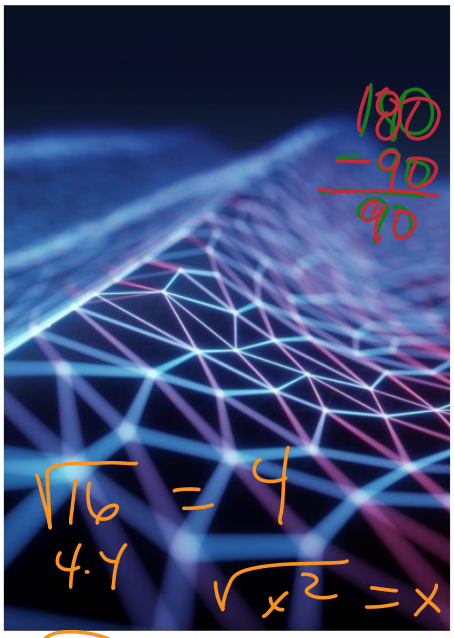




Locker

Explore 1 Investigating an Isosceles Right Triangle

Discover relationships that always apply in an isosceles right triangle.

(A) The figure shows an isosceles right triangle. Identify the base angles, and use the fact that they are complementary to write an equation relating their measures.

(B) Use the Isosceles Triangle Theorem to write a different equation relating the base angle measures.

(C) What must the measures of the base angles be? Why?

(D) Use the Pythagorean Theorem to find the length of the hypotenuse in terms of the length of each leg, x.

Students, draw anywhere on this slide!

Pear Deck Interactive Slide
Do not remove this bar

Explore 2 Investigating Another Special Right Triangle

Discover relationships that always apply in a right triangle formed as half of an equilateral triangle.

(A) $\triangle ABD$ is an equilateral triangle and $\overline{BC}$ is a perpendicular from B to $\overline{AD}$. Determine all three angle measures in $\triangle ABC$.

(B) Explain why $\triangle ABC \cong \triangle DBC$.

(C) Let the length of $\overline{AC}$ be x. What is the length of $\overline{AB}$, and why?

(D) Using the Pythagorean Theorem, find the length of $\overline{BC}$.

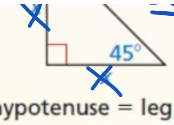
Students, draw anywhere on this slide!

Pear Deck Interactive Slide
Do not remove this bar

Theorem

Theorem 9.4 45°-45°-90° Triangle Theorem

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



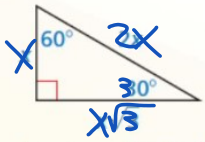
Proof Ex. 19, p. 476

hypotenuse = leg • $\sqrt{2}$

Theorem

Theorem 9.5 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.



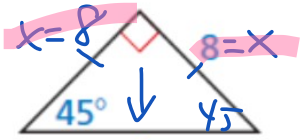
Proof Ex. 21, p. 476

hypotenuse = shorter leg • 2

longer leg = shorter leg • $\sqrt{3}$

Find the value of x. Write your answer in simplest form.

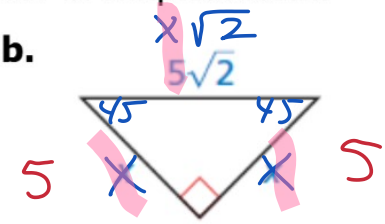
a.



Hypotenuse

$8\sqrt{2}$

b.



$5\sqrt{2}$

Students, draw anywhere on this slide!

Pear Deck Interactive Slide
Do not remove this bar

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

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

$(x\sqrt{3})^2 = (9)^2$

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

$x^2 3 = 81$

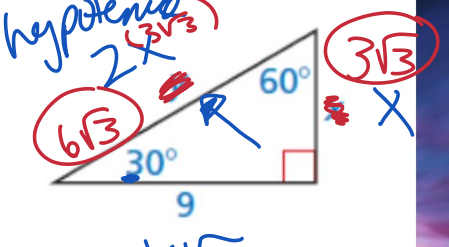
$\frac{3x^2}{3} = \frac{81}{3}$

$x^2 = 27$

$x = \sqrt{27}$

$\sqrt{9}\sqrt{3}$

$3\sqrt{3}$



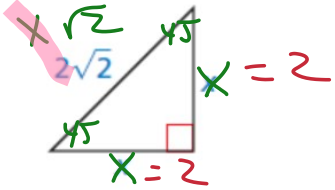
$x\sqrt{3}$

Students, draw anywhere on this slide!

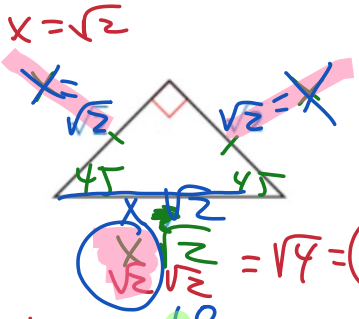
Pear Deck Interactive Slide
Do not remove this bar

Find the value of the variable. Write your answer in simplest form.

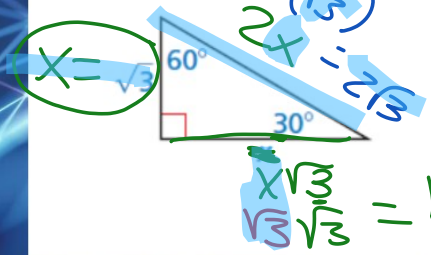
1.



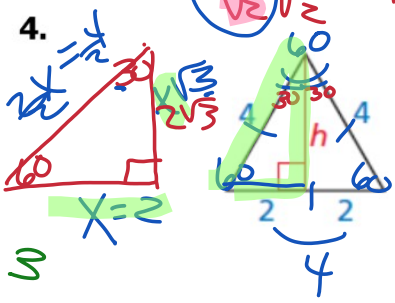
2.



3.



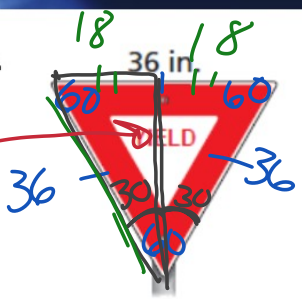
4.



Students, draw anywhere on this slide!

Pear Deck Interactive Slide
Do not remove this bar

The road sign is shaped like an equilateral triangle. Estimate the area of the sign by finding the area of the equilateral triangle.

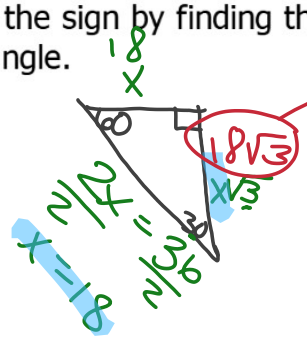


$A = \frac{1}{2}bh$

$A = \frac{1}{2}(36)(18\sqrt{3})$

$A = (18)(18\sqrt{3})$

$A = 324\sqrt{3}$



Students, draw anywhere on this slide!

Pear Deck Interactive Slide
Do not remove this bar