Warm Up
Solve for the unknown side or angle.


Notes
What are the parts of a right triangle?


## Notes

Pythagorean Theorem: Given a right triangle, the square of the hypotenuse is equal to the sum of the squares of the legs.

Label the picture using the letters $\mathrm{a}, \mathrm{b}$, and c .


Remember, $a$ and $b$ are legs, and $c$ is the hypotenuse (the longest side).

Notes
Use the Pythagorean Theorem to solve for x .


Notes
Find the length of the diagonal of a square with side length 6.


$$
\begin{aligned}
& 6^{2}+6^{2}=x^{2} \\
& 72=x^{2} \quad \begin{array}{r}
\sqrt{72} \\
x=6 \sqrt{3}^{2}
\end{array}
\end{aligned}
$$

Find the length of the diagonal of a rectangle with dimensions 4 in $\times 5$ in.


$$
\begin{aligned}
& 4^{2}+5^{2}=x^{2} \quad x=\sqrt{41} \\
& 16+25 \\
& 41=x^{2}
\end{aligned}
$$

Notes
The bottom of a 10-foot straight ladder is set into the ground 6 feet away from a wall. When the top of the ladder is leaned against the wall, what is the distance above the ground it will reach?


Notes
Pythagorean Triples are 3 integers that form a right triangle. We can check because they satisfy the Pythagorean Theorem.

Common triples:
3, 4, 5
$5,12,13$
7, 24, 25
$8,15,17$

Notes
Pythagorean Triples are 3 integers that form a right triangle.
We can check because they satisfy the Pythagorean Theorem.

Which are Pythagorean Triples?


Notes
Find a third number to generate a set of Pythagorean Triples:


