Reteaching 3-9

The Pythagorean Theorem

OBJECTIVE: Solve problems using the Pythagorean Theorem

MATERIALS: None

As you solve problems using the Pythagorean Theorem, keep in mind these ideas:

- In the formula, $a$ and $b$ represent the legs of the right triangle.
- The hypotenuse is represented by $c$. This is the side opposite the right angle.
- Drawing a picture of the triangle each time is a good strategy for making sure you use the formula correctly.
- Writing $a$, $b$, and $c$ on your picture with the values from your problem gives you a visual representation of your problem before you solve it.

Example

Find the length of the missing side: $a = 3, b = 5, c = 5$.

\[
\begin{align*}
    c &= 5 \\
    a &= 3 \\
    b &= ? \\
\end{align*}
\]

- Draw a triangle and include the values from the problem for $a$, $b$, and $c$.

- $a^2 + b^2 = c^2$ --- Use the Pythagorean Theorem.

- $3^2 + b^2 = 5^2$ --- Substitute 3 for $a$ and 5 for $c$.

- $9 + b^2 = 25$ --- Simplify.

- $b^2 = 16$ --- Subtract 9 from each side.

- $\sqrt{b^2} = \sqrt{16}$ --- Take the square root of each side.

- $b = 4$ --- Use a calculator if necessary.

Exercises

Draw and label a triangle. Find the length of the missing side to the nearest tenth.

1. $a = 6, b = 3, c = 10$
2. $a = 3, b = 4, c = 5$
3. $a = 5, b = 12, c = 13$

Find the length of the missing side to the nearest tenth.

4. $a = 3, b = 5, c = 7$
5. $a = 4, b = 3, c = 9$
6. $a = 7.5, b = 4, c = 8$
7. $a = 5, b = 12, c = 13$
8. $a = 8, b = 4, c = 17$
9. $a = 6, b = 8, c = 10$
10. $a = 3, b = 24, c = 25$
11. $a = 4, b = 3, c = 5$
12. $a = 9, b = 15, c = 15$