8.P.1 Lesson Date:_____

Introduction to the Pythagorean Theorem

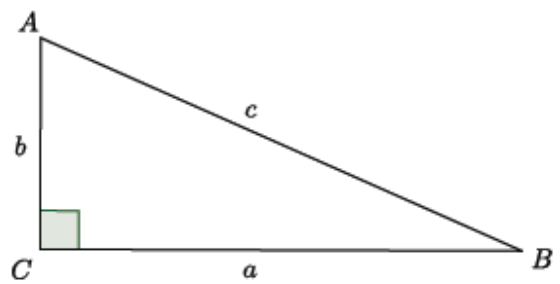
Student Objectives

- I know the Pythagorean Theorem and can use it to find the length of the hypotenuse of a right triangle.
- I can take square roots of perfect squares.

Classwork

Notes:

- Given a right triangle ABC with C being the vertex of the right angle, then the sides AC and BC are called the _____of ΔABC and AB is called the _____of ΔABC.

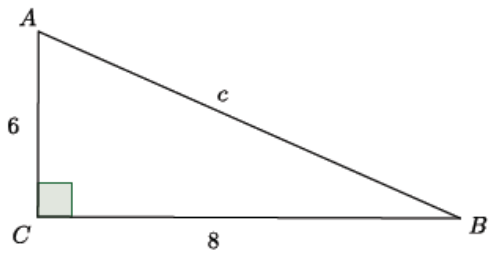


- Take note of the fact that side a is opposite the angle A, side b is opposite the angle B, and side c is opposite the angle C.
- The Pythagorean Theorem states that for any right triangle, $a^2 + b^2 = c^2$.
- Use the Pythagorean Theorem when you know two sides of a _____triangle and want to know the third.
- The _____ is
  - always the longest side,
  - always the variable ____ in the Theorem formula,
  - only found in a _____triangle,
  - and always opposite the _____angle.

- The inverse function of squaring is taking the square root.
- $\sqrt{x^2} = x$
- $\sqrt{36}$ can be read "radical 36" or "the square root of 36" and means what number times itself is ____. $\sqrt{36} =$_____

Example 1

Now that we know what the Pythagorean Theorem is, let's practice using it to find the length of a hypotenuse of a right triangle.



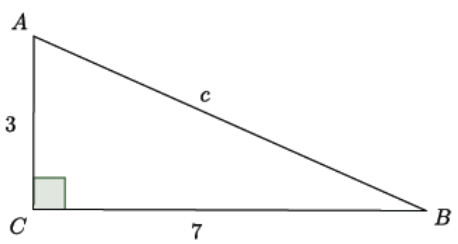
The Pythagorean Theorem states that for right triangles $a^2 + b^2 = c^2$ where a and b are the legs and c is the hypotenuse. Then,

$$a^2 + b^2 = c^2$$
$$8^2 + 6^2 = c^2$$
$$64 + 36 = c^2$$
$$100 = c^2$$

Since we know that $100 = 10^2$, we can say that the hypotenuse $c = 10$.

Example 2

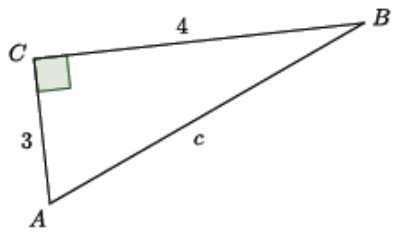
Determine the length of the hypotenuse of the right triangle.



Exercises 1–4

For each of the exercises, determine the length of the hypotenuse of the right triangle shown. Note: Figures not drawn to scale.

1.



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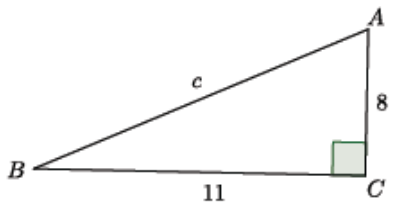

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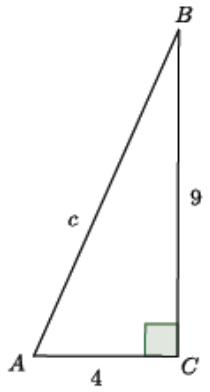

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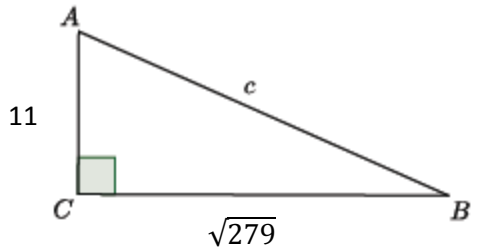

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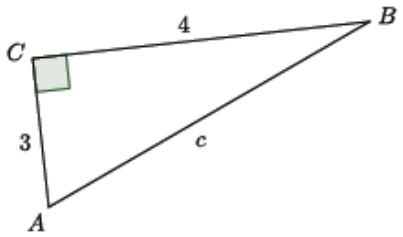
Homework Homework Homework Homework Homework

For each of the problems below, determine the length of the hypotenuse of the right triangle shown. Note: Figures not drawn to scale.

1.



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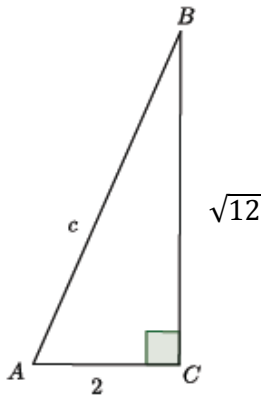

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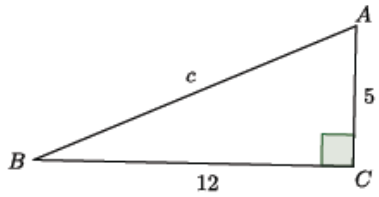

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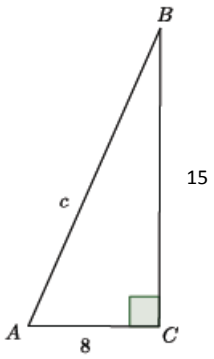

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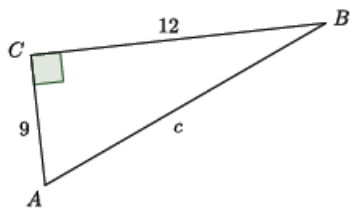
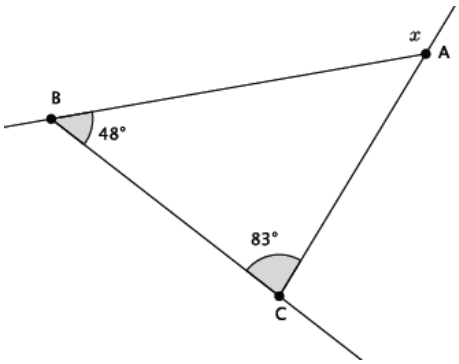
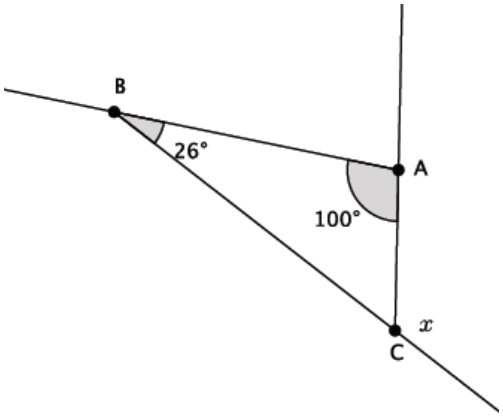
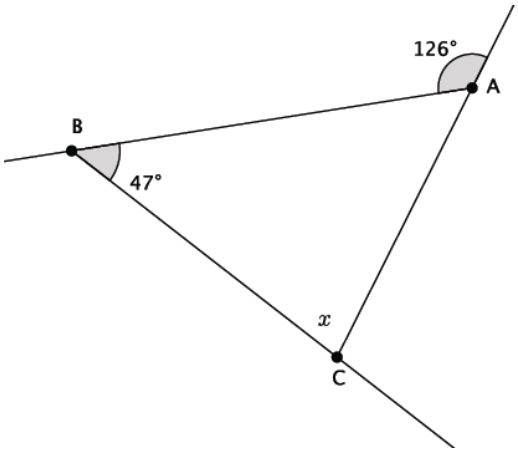


6. Find the measure of angle x.



7. Find the measure of angle x.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