

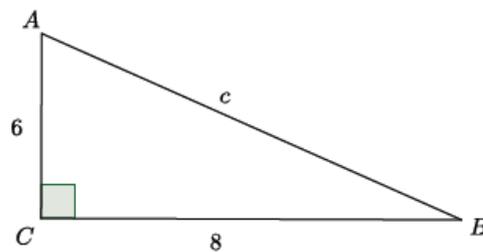
## Lesson 15: Informal Proof of the Pythagorean Theorem

### Classwork

#### 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.

Determine the length of the hypotenuse of the right triangle.



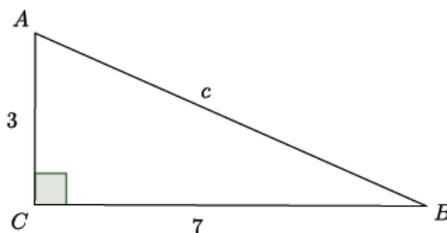
The Pythagorean theorem states that for right triangles  $a^2 + b^2 = c^2$ , where  $a$  and  $b$  are the legs and  $c$  is the hypotenuse. Then,

$$\begin{aligned}a^2 + b^2 &= c^2 \\6^2 + 8^2 &= c^2 \\36 + 64 &= c^2 \\100 &= c^2.\end{aligned}$$

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

#### Example 2

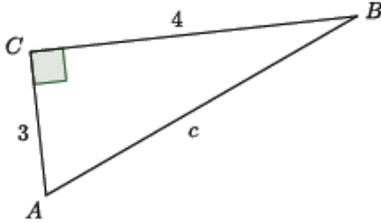
Determine the length of the hypotenuse of the right triangle.



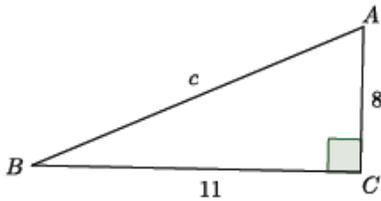
**Exercises 1–5**

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

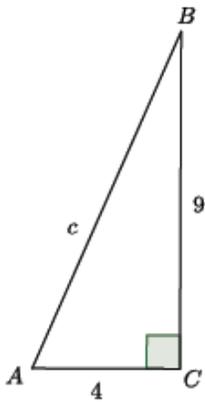
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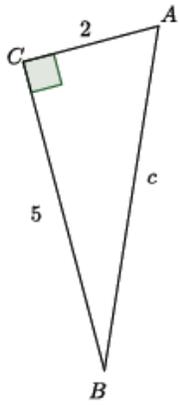
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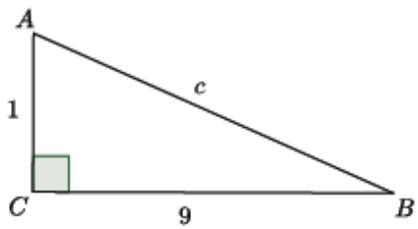
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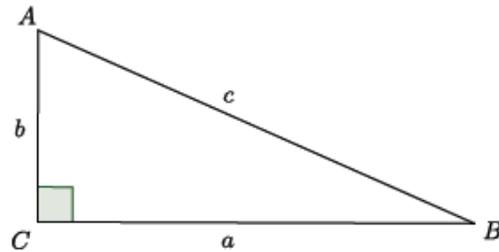


5.



**Lesson Summary**

Given a right triangle  $ABC$  with  $C$  being the vertex of the right angle, then the sides  $AC$  and  $BC$  are called the *legs* of  $\triangle ABC$ , and  $AB$  is called the *hypotenuse* of  $\triangle ABC$ .



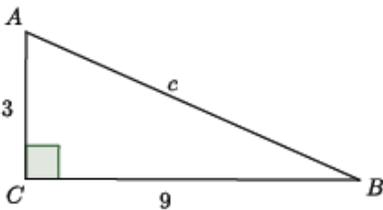
Take note of the fact that side  $a$  is opposite the angle  $A$ , side  $b$  is opposite the angle  $B$ , and side  $c$  is opposite the angle  $C$ .

The Pythagorean theorem states that for any right triangle,  $a^2 + b^2 = c^2$ .

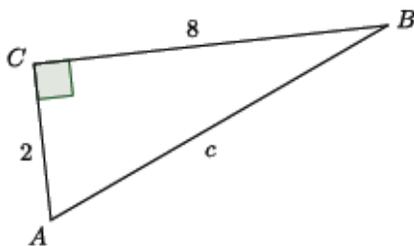
**Problem Set**

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

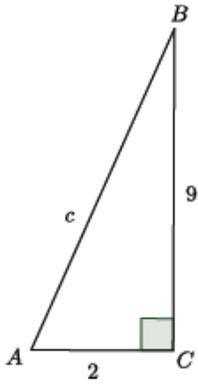
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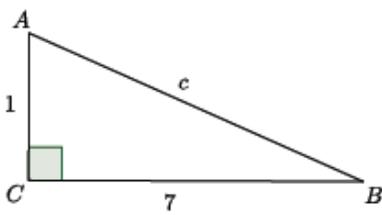
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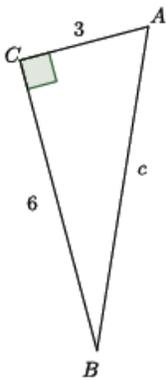
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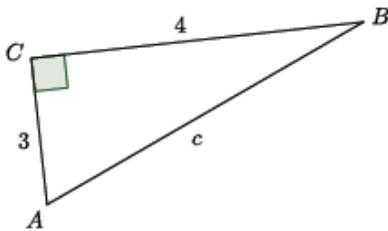
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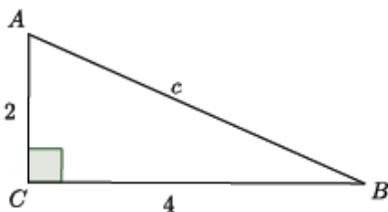
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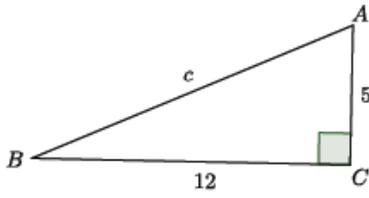
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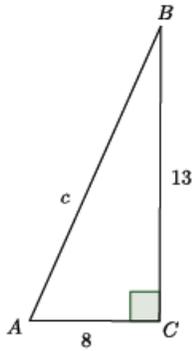
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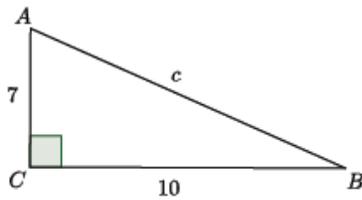
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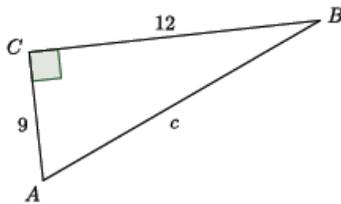
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