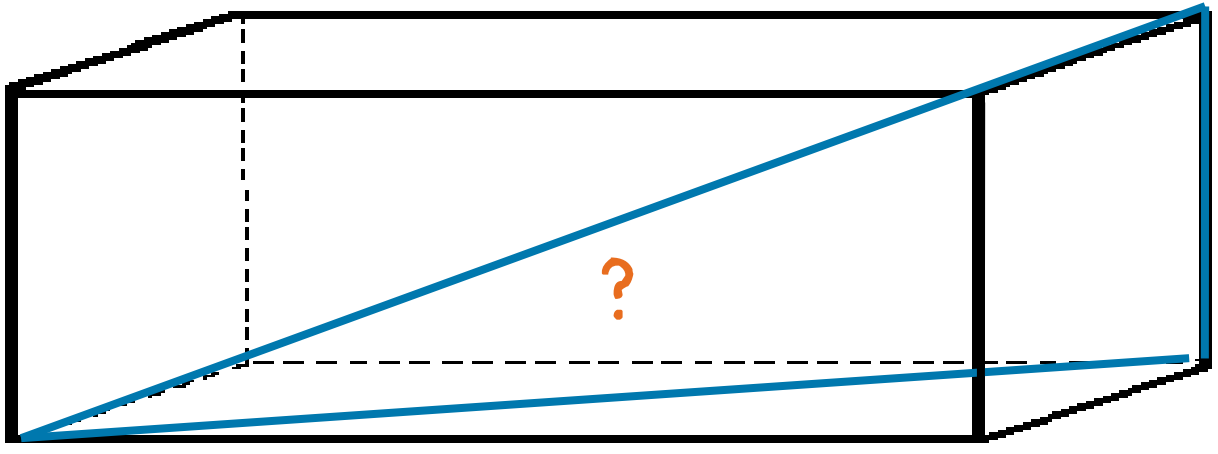
How do you find the length of a diagonal inside a rectangular prism?



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In this lesson you will learn how to solve for diagonal lengths in rectangular prisms by applying the Pythagorean Theorem.

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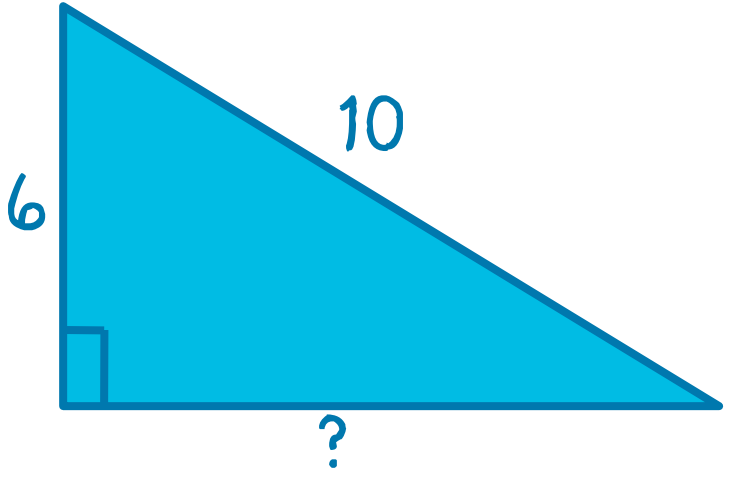
Let's Review

How to use equations and substitution with the Pythagorean Theorem.



$$A^2 + B^2 = C^2$$

$$6^2 + B^2 = 10^2$$

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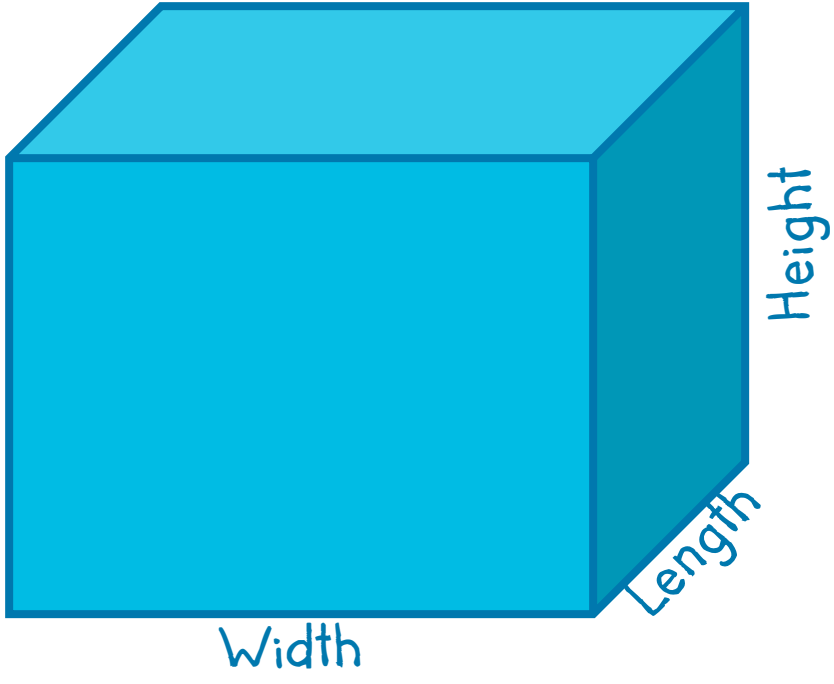
Let's Review

What is a three-dimensional figure?



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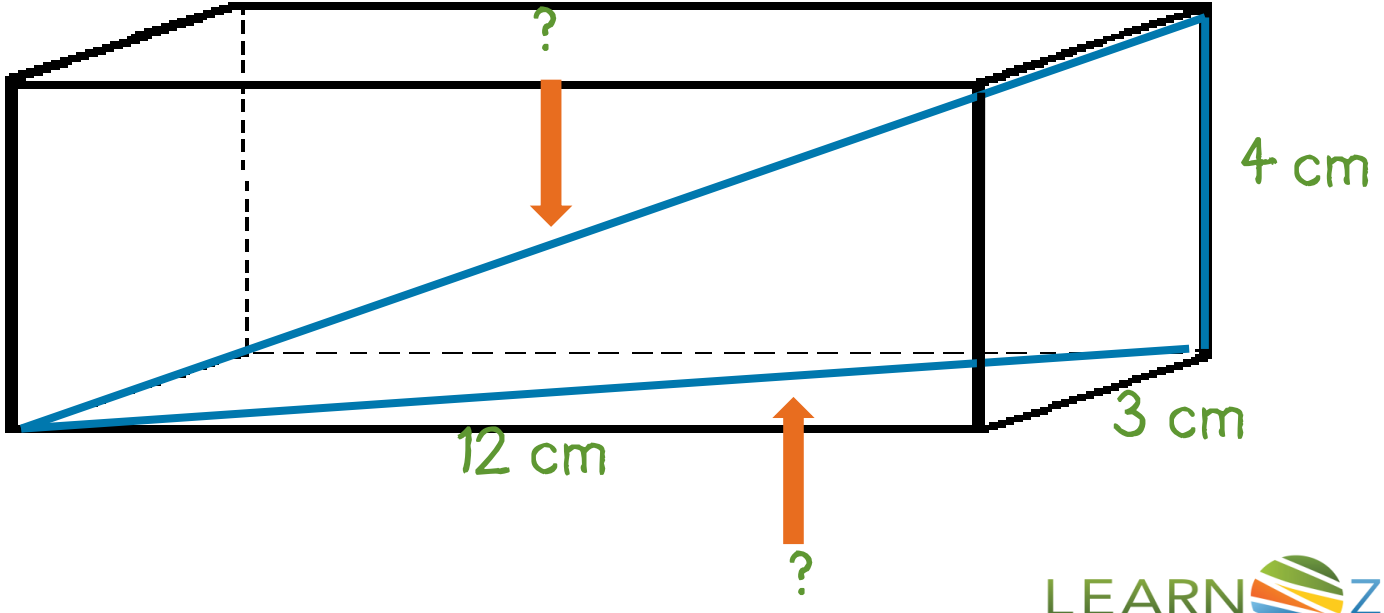
A Common Misunderstanding

The process of solving for the length of the diagonal in a rectangular prism requires only one step.



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Core Lesson

1. Write equations to represent the situation or illustration.

2. Solve for the unknown side lengths.

3. Check your answers.

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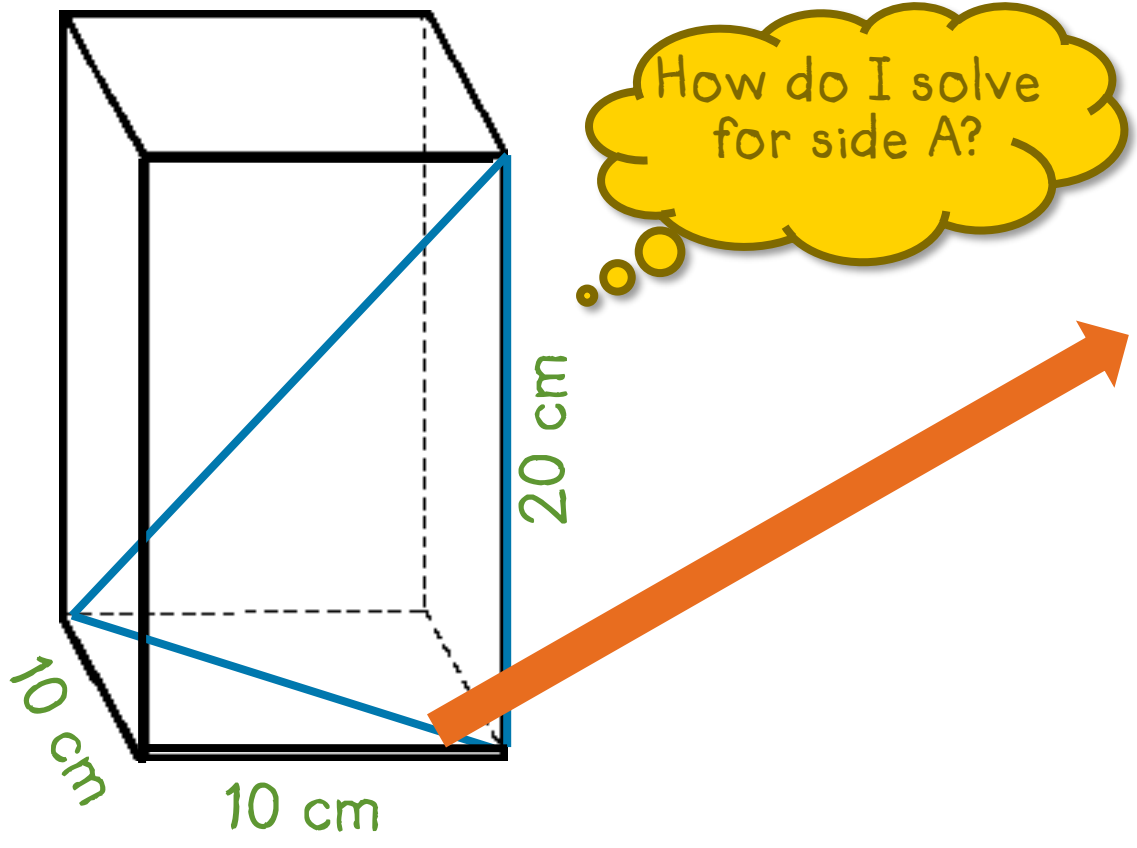
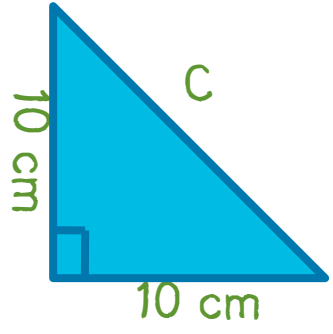
Core Lesson

Write equations to represent the illustration.



Side A



$$10^2 + 10^2 = C^2$$

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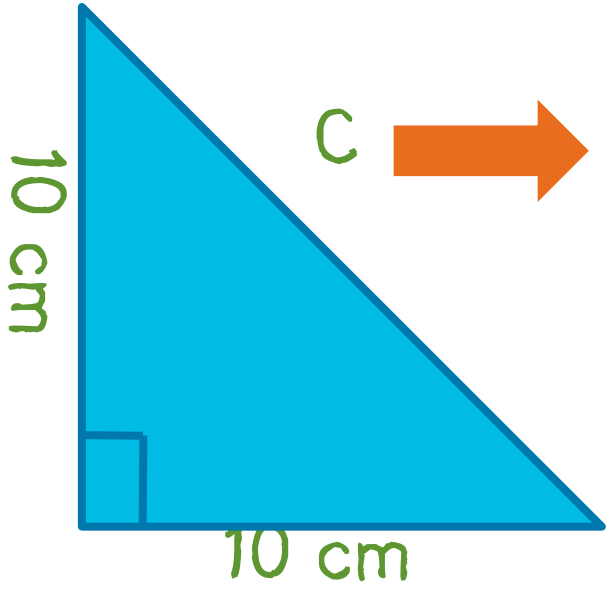
Core Lesson

Solve for side A.



C → Side A

$10^2 + 10^2 = C^2$

$100 + 100 = C^2$

$\sqrt{200} = C$

$14.14 = C$ → Side A

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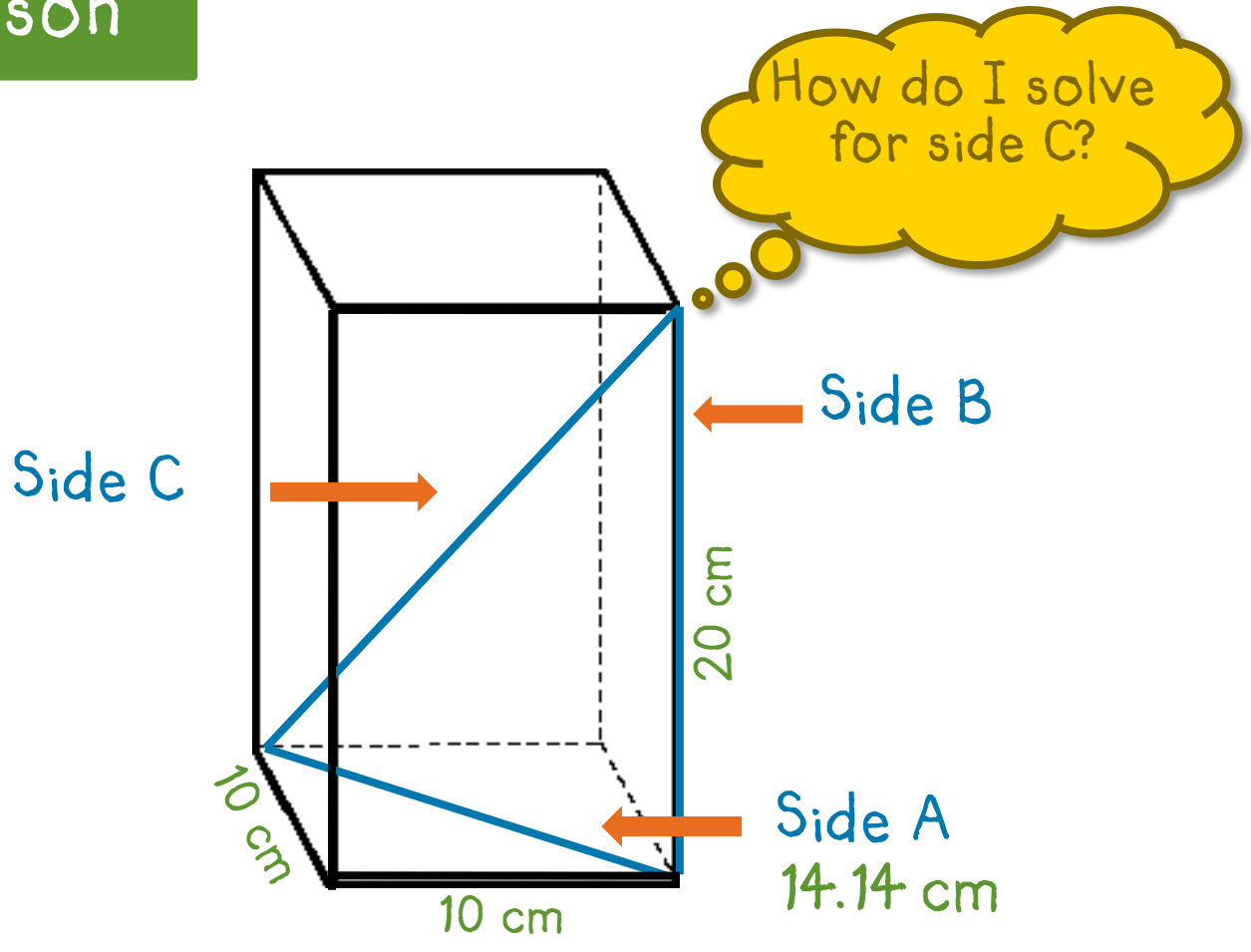
Core Lesson



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Core Lesson

Solve for side C.

Side A Length	Side B Length	Side C Length	A^2	B^2	C^2
14.14	20	24.5	200	400	600

$$A^2 + B^2 = C^2$$
$$200 + 400 = C^2$$
$$\sqrt{600} = C$$
$$24.5 = C$$

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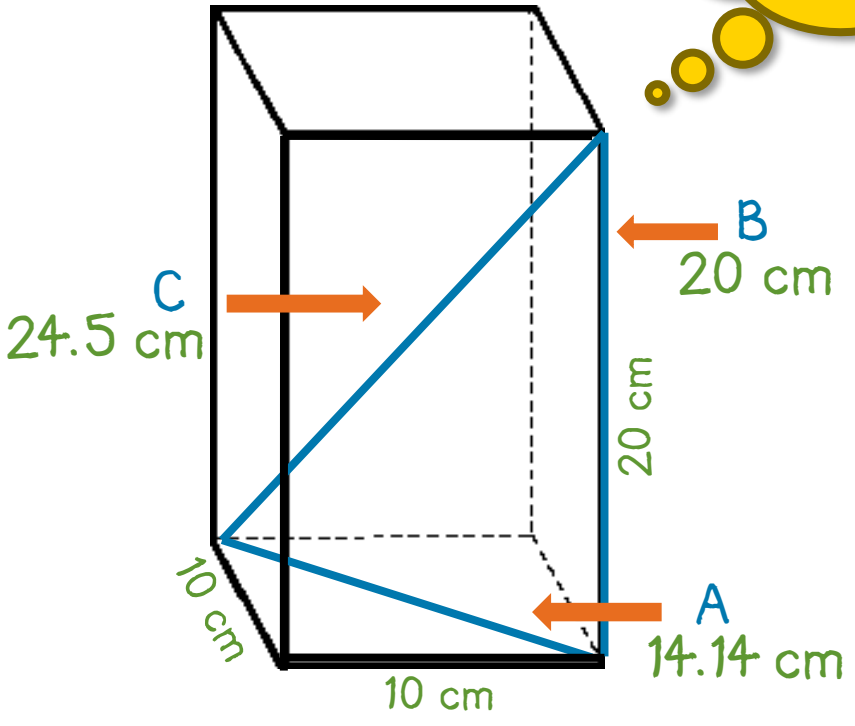
Core Lesson

Did I solve for the unknown side lengths correctly?

$A^2 + B^2 = C^2$



Side A: $(10)^2 + (10)^2 = (14.14)^2$

$100 + 100 = 200$

Side C: $(14.14)^2 + (20)^2 = (24.5)^2$

$200 + 400 = 600$

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Core Lesson

1. Write equations to represent the situation or illustration.

2. Solve for the unknown side lengths.

3. Check your answers.

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In this lesson you have learned how to solve for diagonal lengths in rectangular prisms by applying the Pythagorean Theorem.

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