


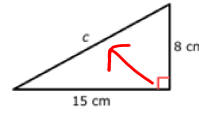
Objectives: You will be able to use the converse of the Pythagorean Theorem to determine if a triangle is a right triangle.

Pythagorean Theorem

$$a^2 + b^2 = c^2$$


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Example 1:



15, 8, 17

$$8^2 + 15^2 = c^2$$

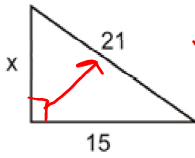
$$64 + 225 = c^2$$

$$\sqrt{289} = \sqrt{c^2}$$

$$17 = c$$

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Example 2:



$$x^2 + 15^2 = 21^2$$

$$x^2 + 225 = 441$$

$$-225 \quad -225$$

$$\sqrt{x^2} = \sqrt{216}$$

$$x = 14.7$$

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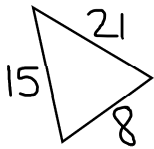
Converse of the Pythagorean Theorem

If the square of the length of the largest side of a triangle is equal to the sum of the squares of the lengths of the other two sides, then the triangle is a right triangle.



You can use the converse of the Pythagorean Theorem to determine if a triangle is a **right** triangle!!

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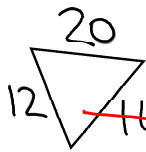
$$15^2 + 8^2 \stackrel{?}{=} 21^2$$

$$225 + 64 \stackrel{?}{=} 441$$

$$289 \neq 441$$

No!!

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$$12^2 + 16^2 \stackrel{?}{=} 20^2$$

$$144 + 256 \stackrel{?}{=} 400$$

$$400 = 400$$

Yes!!

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Example 3: Can a triangle with sides 8, 15, and 16 be a right triangle?

$$8^2 + 15^2 \stackrel{?}{=} 16^2$$

$$64 + 225 \stackrel{?}{=} 256$$

$$289 \neq 256$$

No!!

Example 4: Can a triangle with sides 20, 48, and 52 be a right triangle?

$$20^2 + 48^2 \stackrel{?}{=} 52^2$$

$$400 + 2304 \stackrel{?}{=} 2704$$

$$2704 = 2704$$

Yes 😊



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