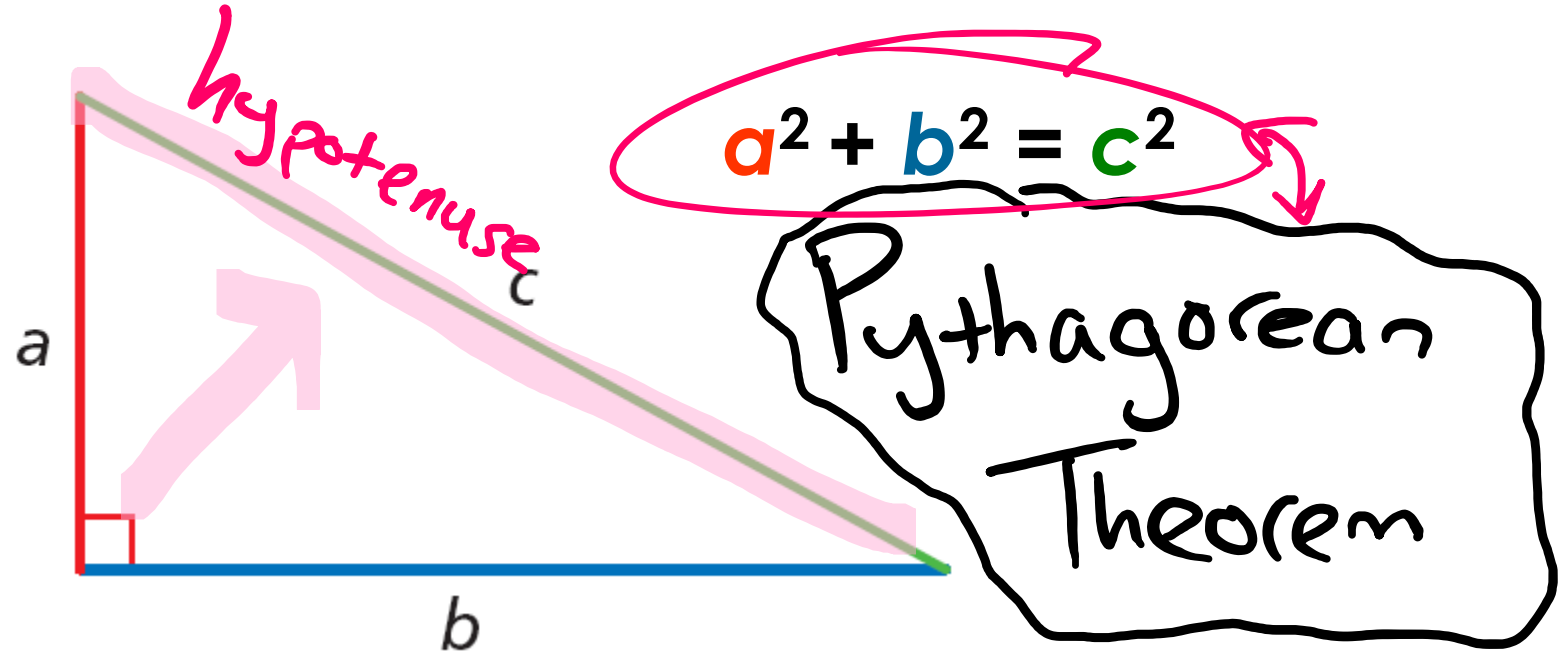
Need a Calculator and Homework Out

Check Homework

Objective:

Right Triangles and Pythagorean Multiples

In a right triangle, the sum of the squares of the lengths of the legs equals the square of the length of the hypotenuse.



A Brief History

- The Pythagorean theorem takes its name from the ancient Greek mathematician Pythagoras (569 B.C.?-500 B.C.?), who was perhaps the first to offer a proof of the theorem. But people had noticed the special relationship between the sides of a right triangle long before Pythagoras.

- Although Pythagoras is credited with the famous theorem, it is likely that the Babylonians knew the result for certain specific triangles at least a millennium earlier than Pythagoras. It is not known how the Greeks originally demonstrated the proof of the Pythagorean Theorem. If the methods of Book II of Euclid's ***Elements*** were used, it is likely that it was a dissection type of proof similar to the following:

A proof of the Pythagorean Theorem using Similarity…

$f^2 = de$

$b^2 = c \cdot e$

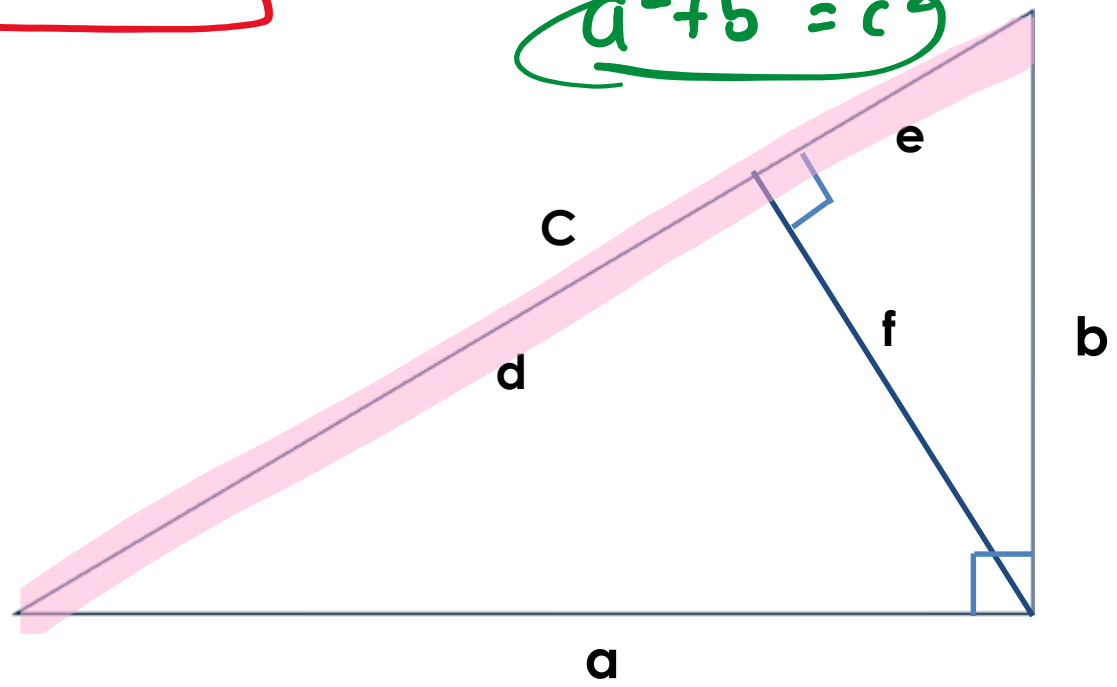
$a^2 = d \cdot c$

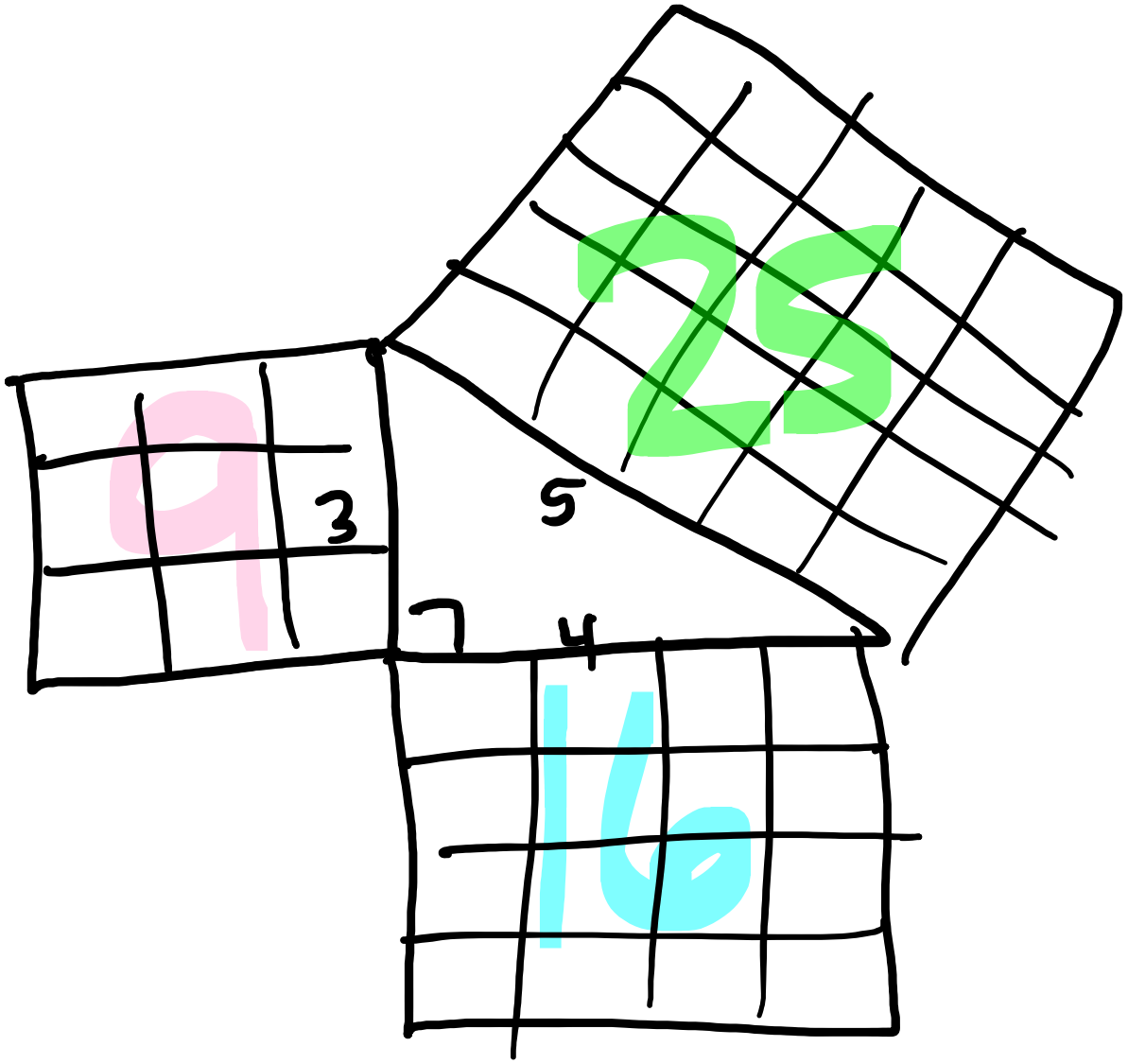
$a^2 + b^2 = ce + dc$

$a^2 + b^2 = c(e + d)$

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

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




9
3
25
5
4
16

There are MANY other proofs of the Pythagorean Theorem

https://www.youtube.com/watch?v=CAkMUdeB06o&spfreload=10

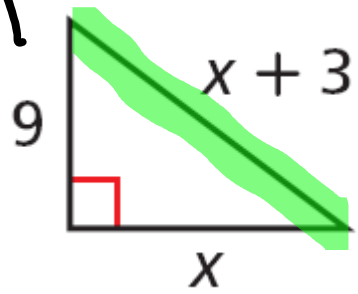
$81 + x^2 = y^2 + 6x + 9$

$81 = 6x + 9$

$72 = 6x$

$12 = x$

1. Find the value of x.



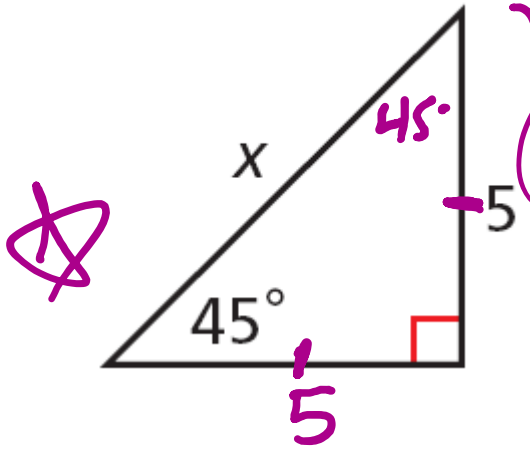
2.

$5^2 + 5^2 = x^2$

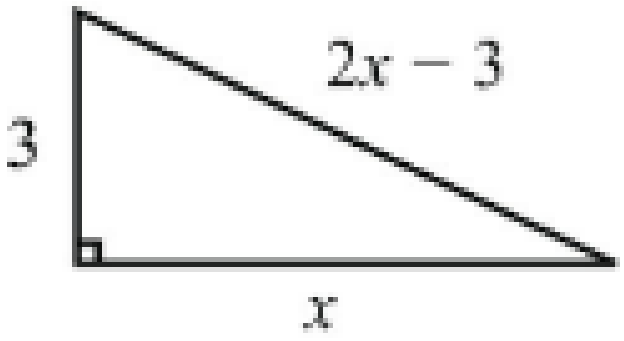
$50 = x^2$

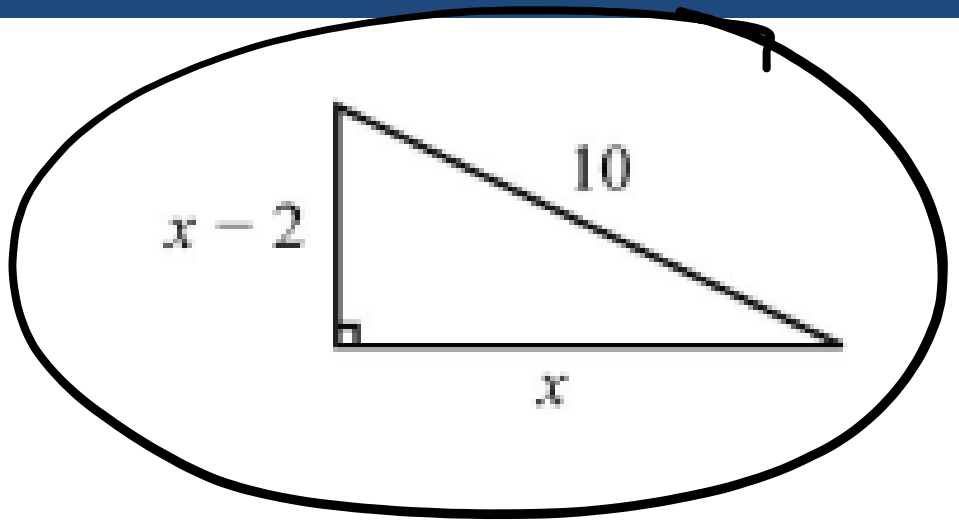
$\sqrt{50} = x$

$5\sqrt{2} = x$



3. An entertainment center is 52 in. wide and 40 in. high. Will a TV with a 60 in. diagonal fit in it? Explain.





Find the value of x for each.

3 whole #s that satisfy the Pythagorean Theorem

A set of three nonzero whole numbers *a*, *b*, and *c* such that $a^2 + b^2 = c^2$ is called a **Pythagorean triple**.

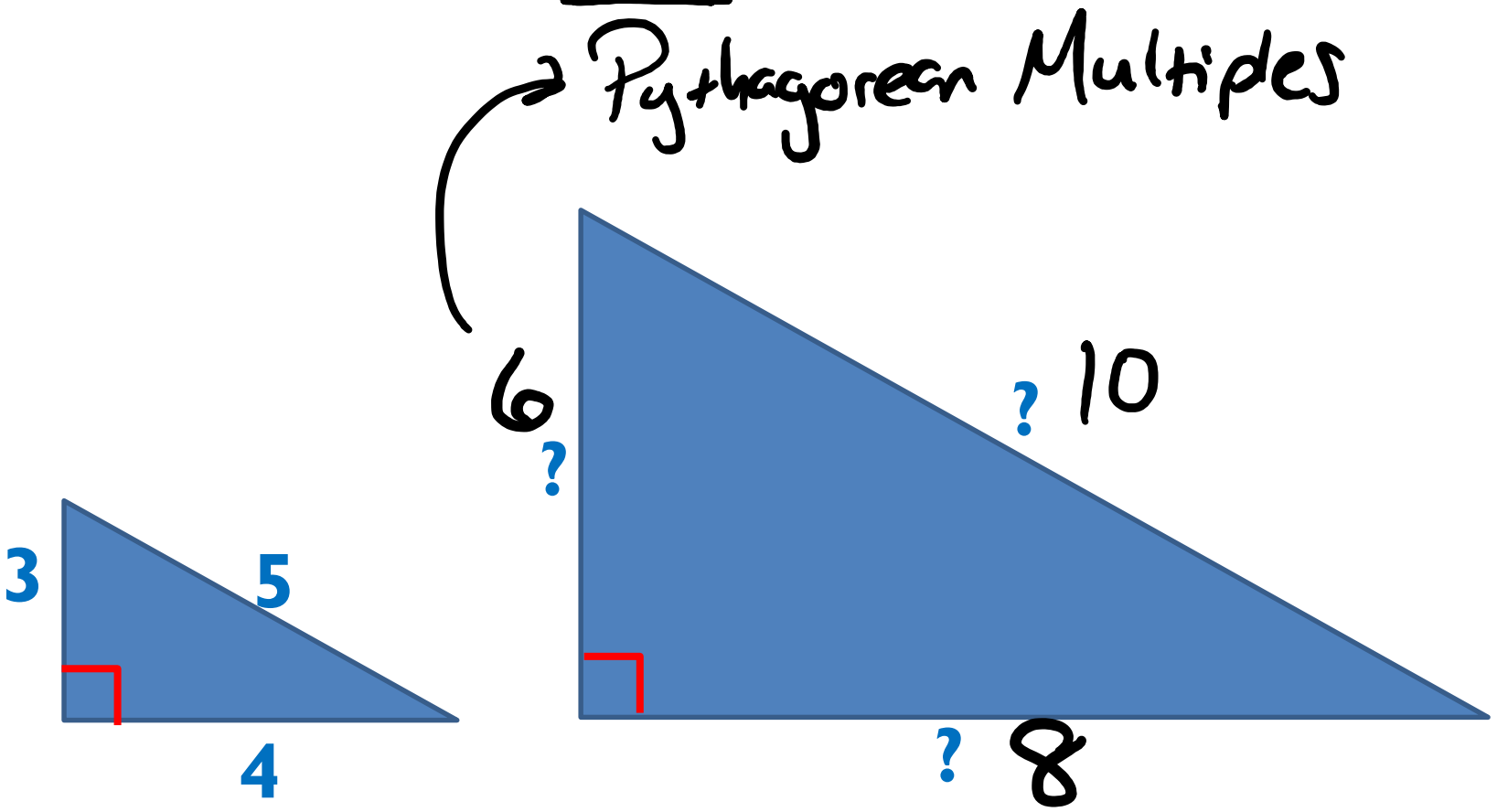
Common Pythagorean Triples			
3, 4, 5	5, 12, 13	8, 15, 17	7, 24, 25

I expect you to know these four!

$3^2+4^2=5^2$ $5^2+12^2=13^2$

If 3, 4, 5 works…

- Could you tell me the lengths of the sides of a triangle that would be **similar** to this triangle?



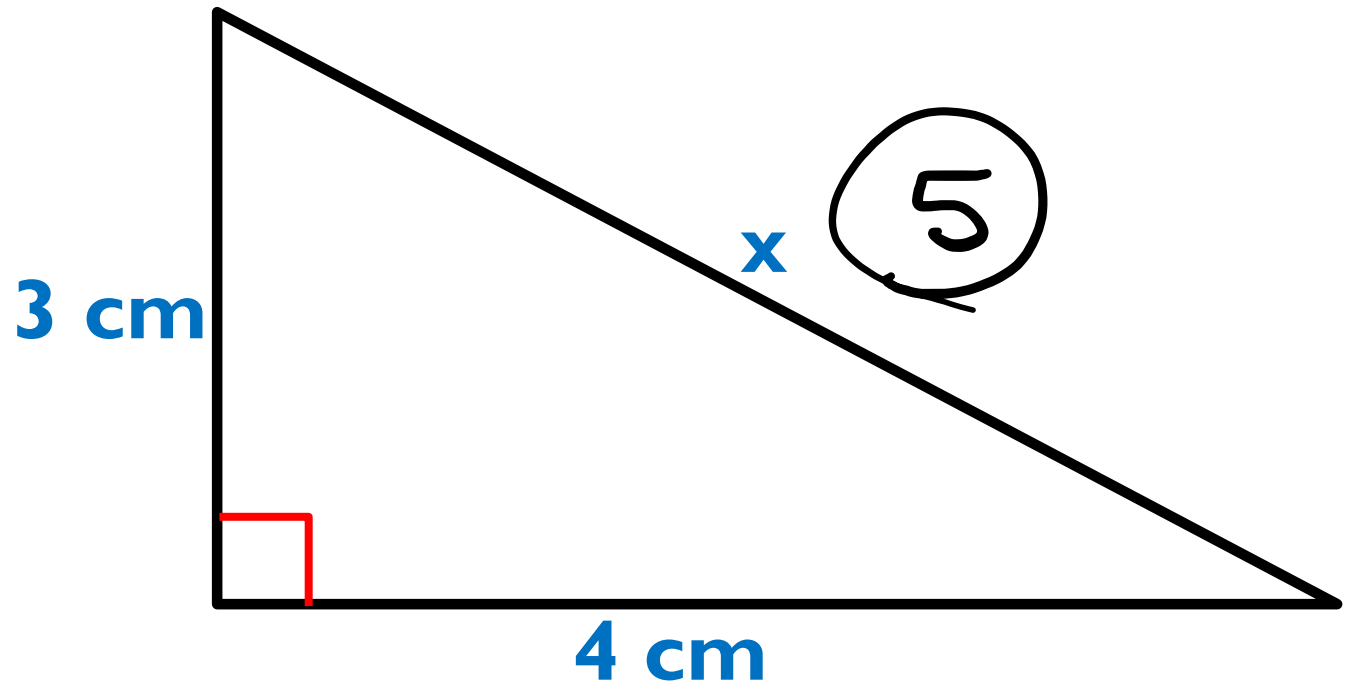
Common Pythagorean Triples

- 3, 4, 5
- 5, 12, 13
- 8, 15, 17
- 7, 24, 25

- + any multiple of these!

- 3, 4, 5 —x2→ 6, 8, 10
- 3, 4, 5 —x3→ 9, 12, 15
- 3, 4, 5 —x6→ 18, 24, 30
- 3, 4, 5 —x100→ 300, 400, 500

Find the length of the side!



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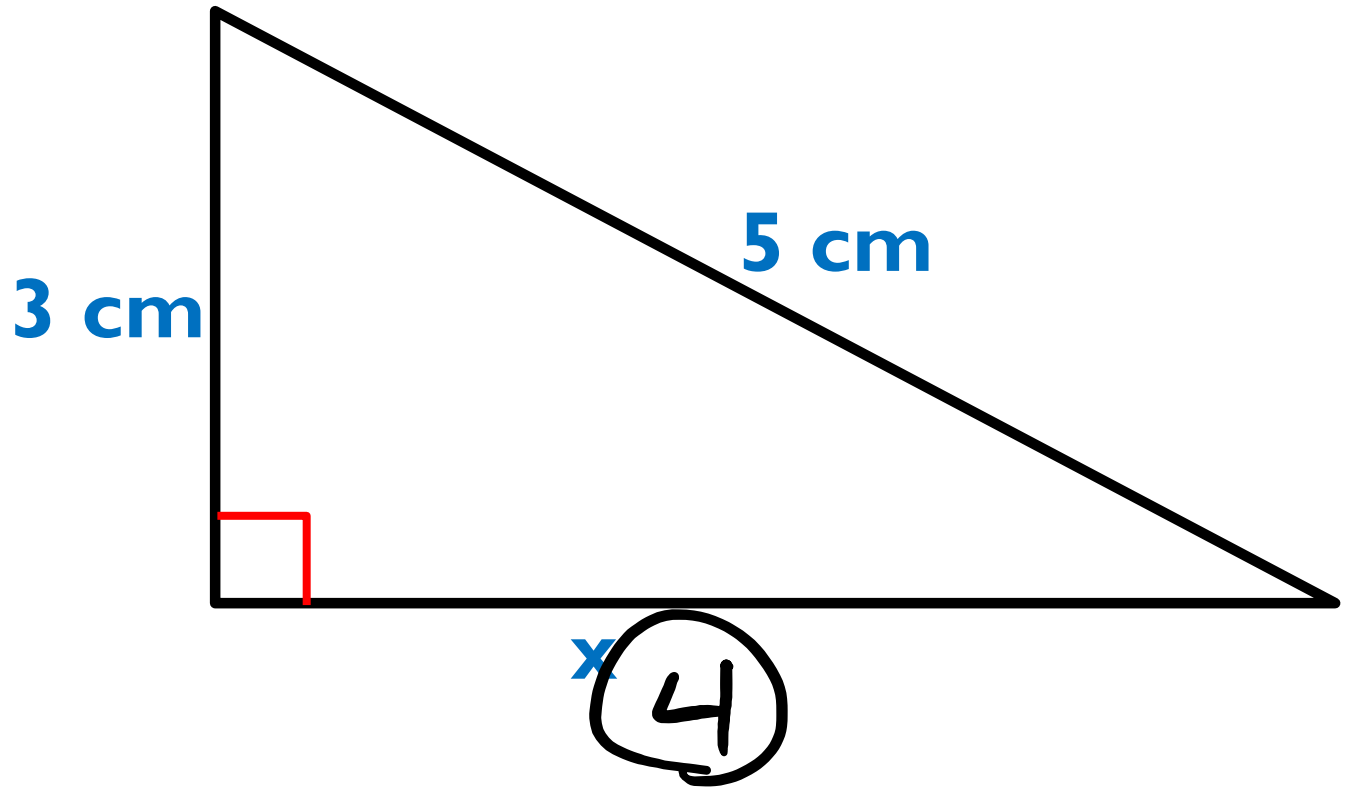

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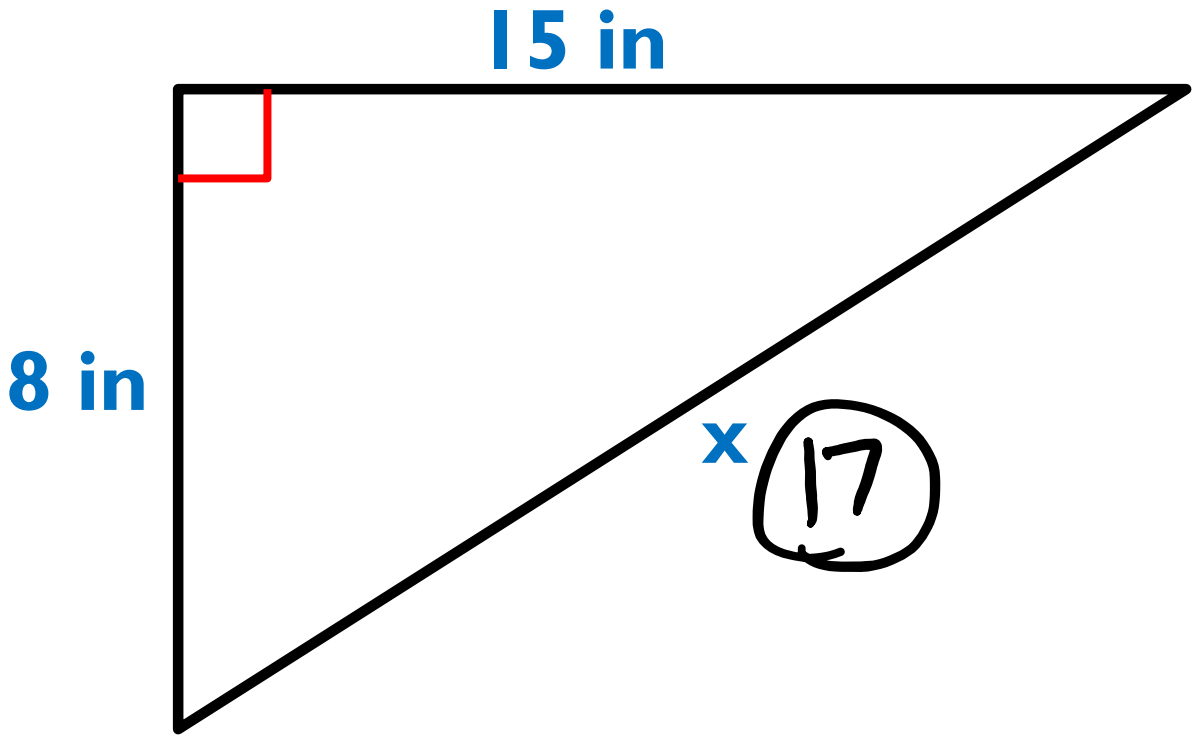

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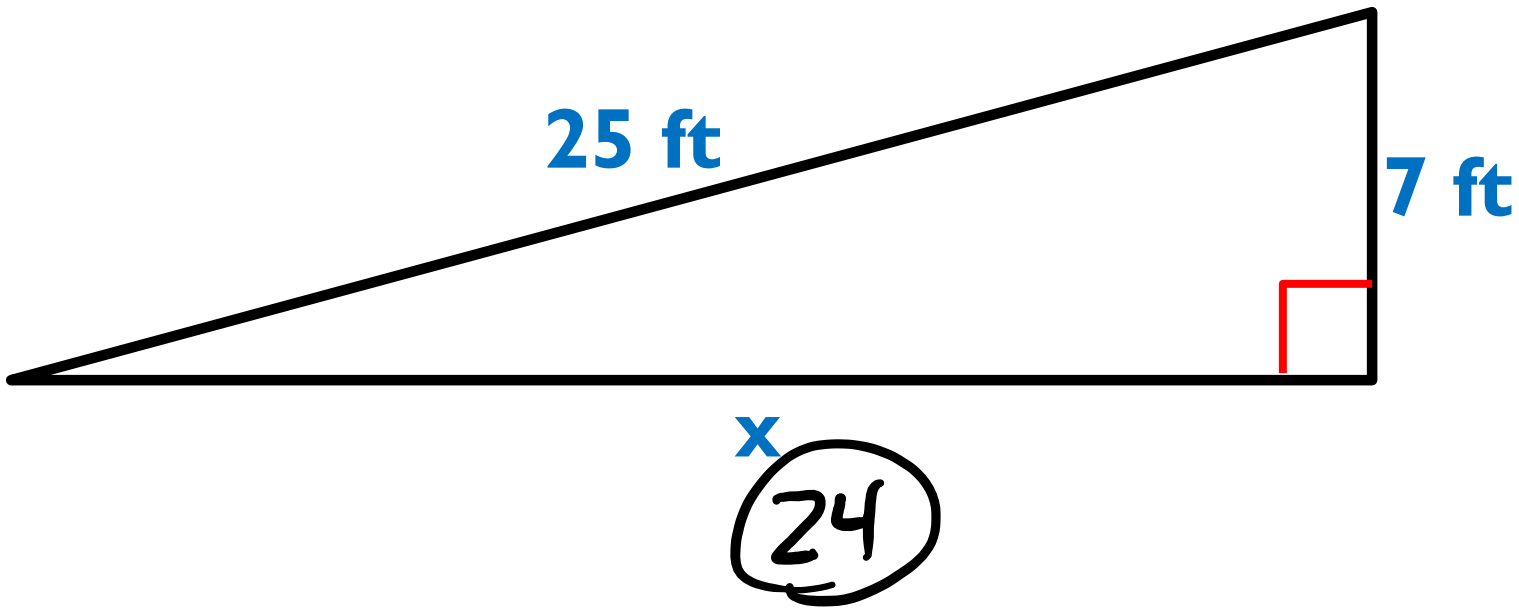

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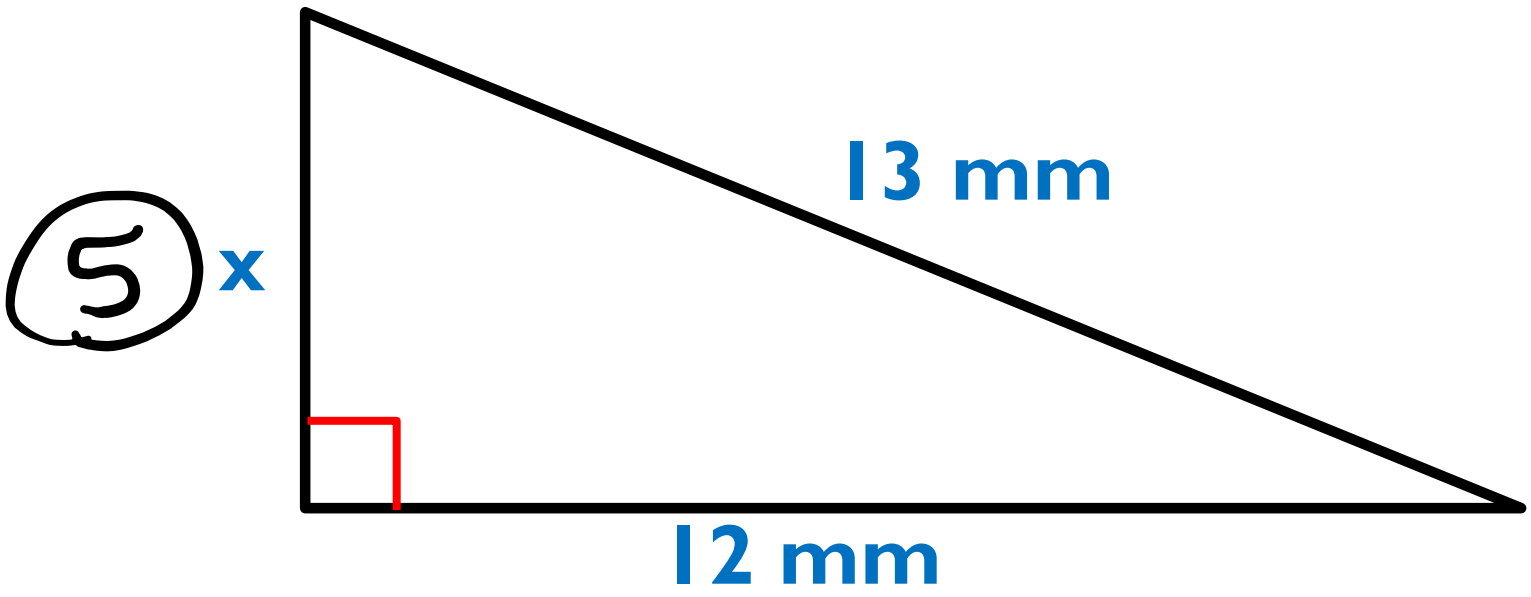

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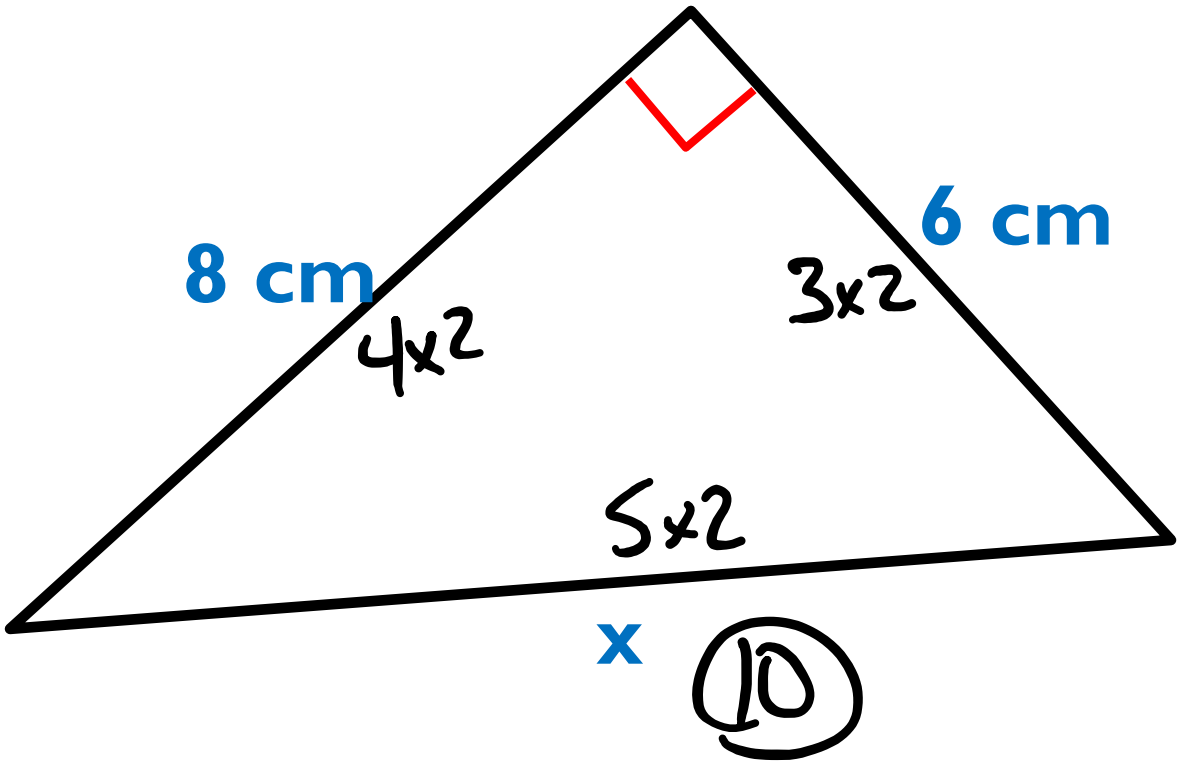

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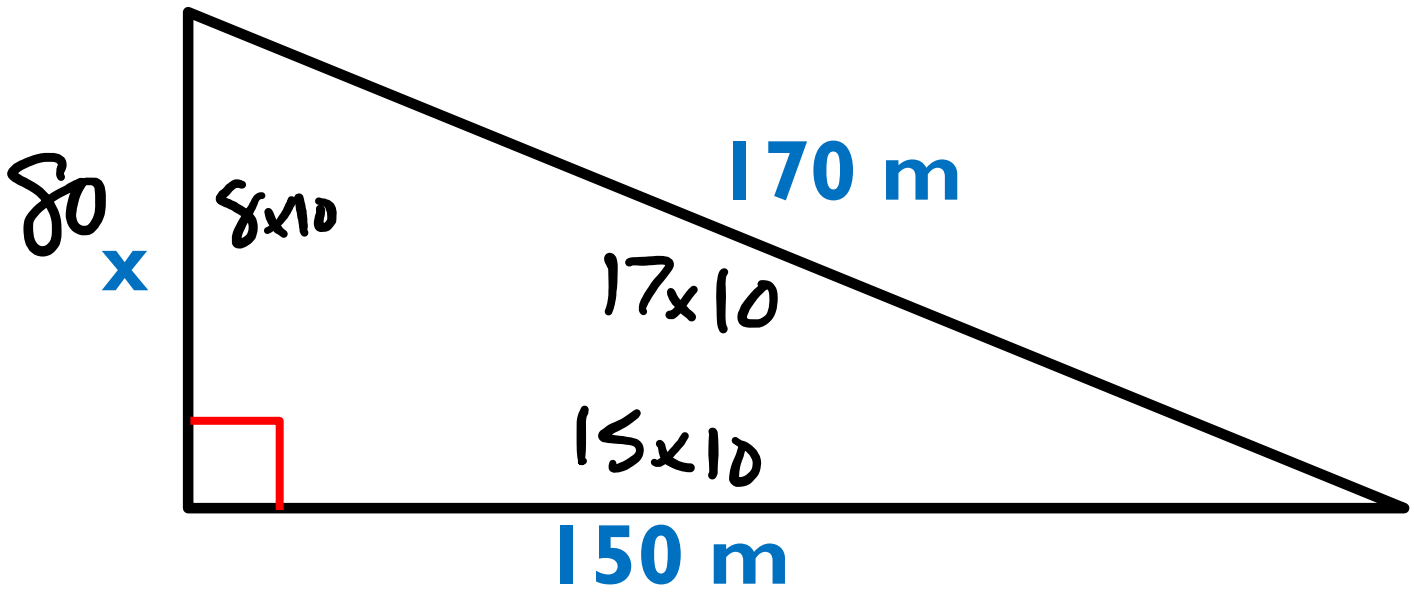

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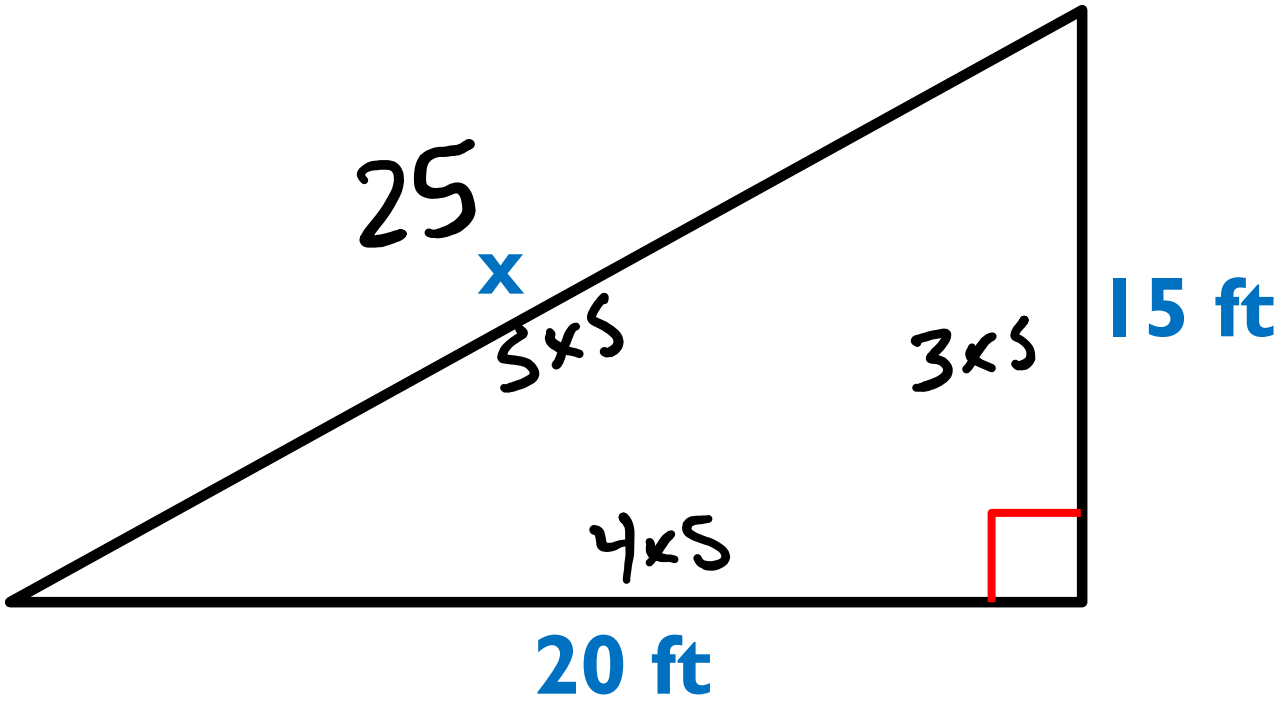

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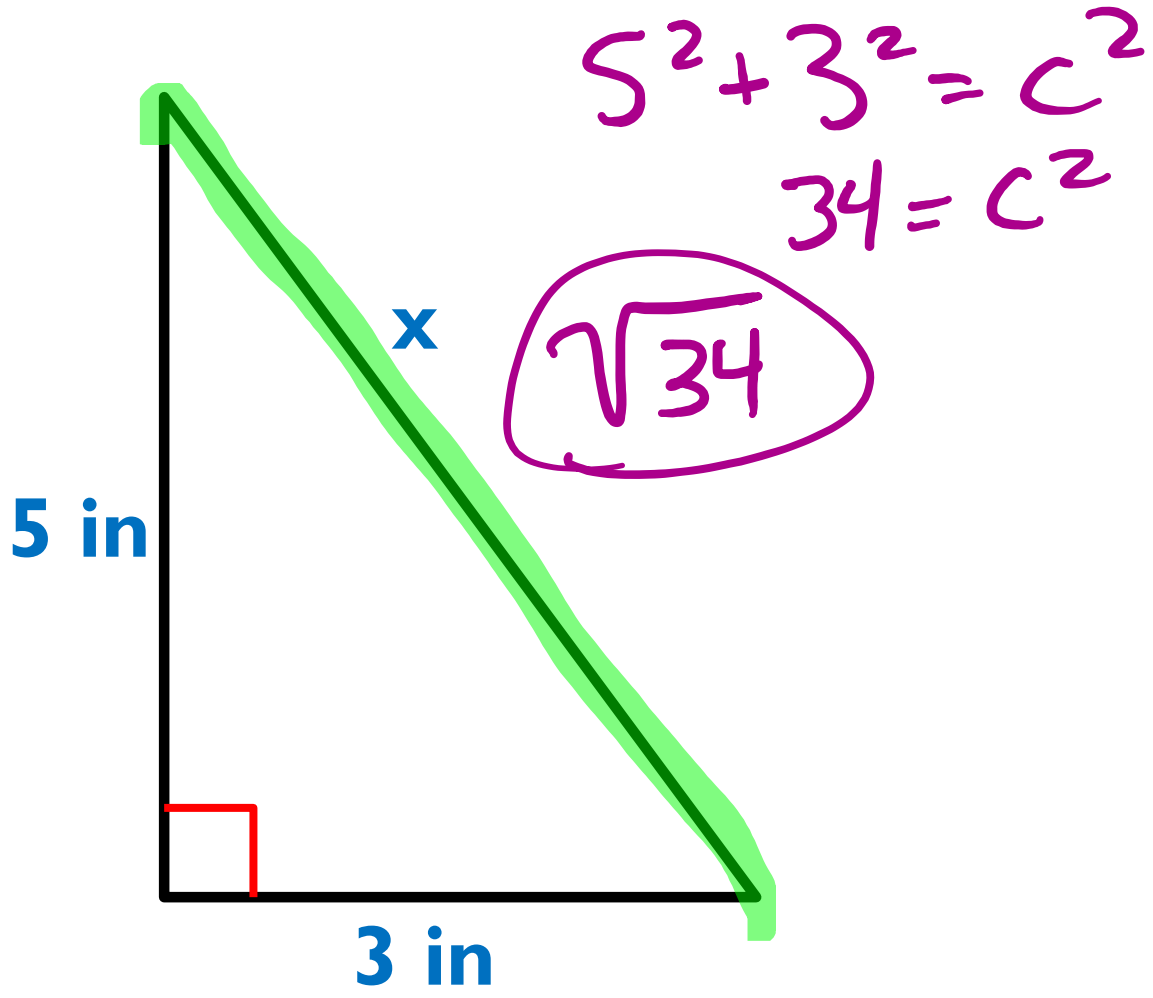

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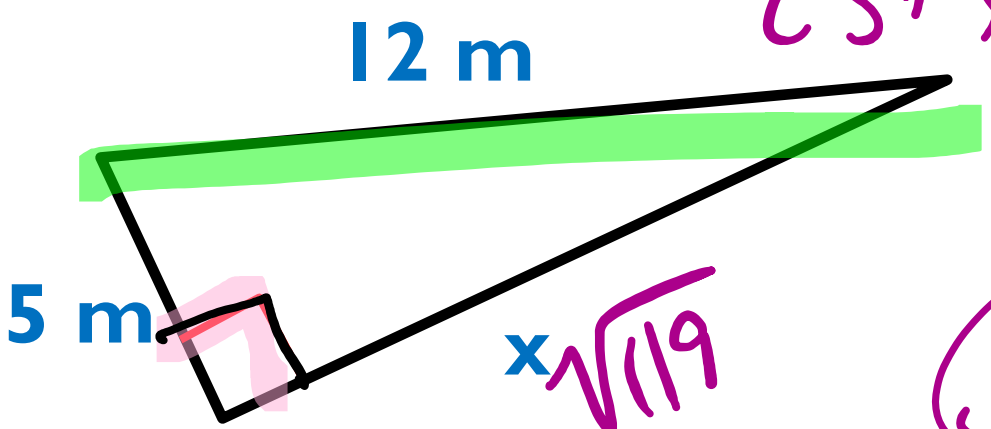

$5^2 + x^2 = 12^2$

$25 + x^2 = 144$

$x^2 = 119$

$x = \sqrt{119}$

$x\sqrt{119}$

Homework: Worksheet