

Pythagoras' Theorem: Finding Short and Long Sides



Use the diagram and Pythagoras' theorem to find the missing side.

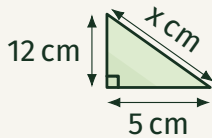
Name _____

Date _____

Show your method

Write the equation using $a^2 + b^2 = c^2$, substitute the known lengths, and solve for the missing side. Round to 1 decimal place if needed.

Worked example Find the missing side in a right-angled triangle with legs 5 cm and 12 cm.



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

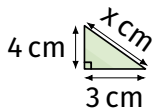
$$5^2 + 12^2 = c^2$$

$$25 + 144 = c^2$$

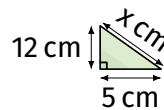
$$169 = c^2$$

$$c = 13 \text{ cm}$$

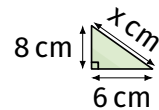
1. Find the length of x .



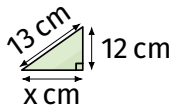
2. Find the length of x .



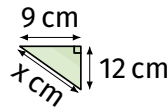
3. Find the length of x .



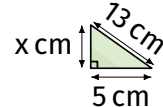
4. Find the length of x .



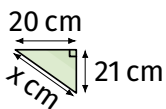
5. Find the length of x .



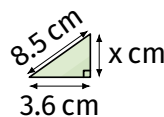
6. Find the length of x .



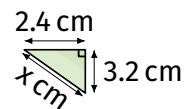
7. Find the length of x .



8. Find the length of x .



9. Find the length of x .



Pythagoras' Theorem (continued)

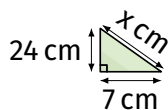
Apply Pythagoras' theorem to find missing sides in various contexts.



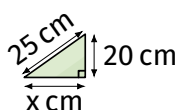
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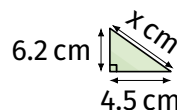
10. Find the length of x .



11. Find the length of x .



12. Find the length of x .



13. A rope 15 m long is attached to the top of a vertical pole. The rope is anchored 9 m from the base. Find the height.

14. A rectangular frame is 1.2 m wide and 0.9 m high. Find the diagonal length.

15. A ladder is 10 m long. It rests 6 m from a wall. How high does it reach?

16. A right-angled triangle has legs 8 cm and x cm. If the hypotenuse is 17 cm, find x .

17. One leg is 11 m. The hypotenuse is 60 m. Find the other leg to 1 d.p.

18. A square has side 5 cm. Find its diagonal to 1 d.p.

