

Pythagorean Triples — Solutions

Worked answers showing how to check triples and scale them.



Name _____

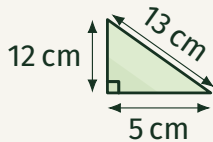
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Check and complete

For each triangle, use Pythagoras' theorem to verify it forms a triple, or find the missing side to complete the triple.

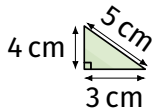
Worked example

Check that 5, 12, 13 form a Pythagorean triple.



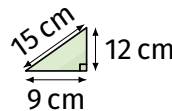
Using $a^2 + b^2 = c^2$: $5^2 + 12^2 = 25 + 144 = 169 = 13^2$ Yes, (5, 12, 13) is a Pythagorean triple.

1. Is this a Pythagorean triple?
Check using $a^2 + b^2 = c^2$.



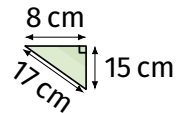
Solution: $3^2 + 4^2 = 9 + 16 = 25 = 5^2$. Yes, (3, 4, 5) is a triple.

2. Is this a Pythagorean triple?
Check using $a^2 + b^2 = c^2$.



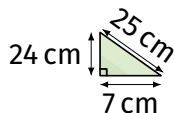
Solution: $9^2 + 12^2 = 81 + 144 = 225 = 15^2$. Yes, it is a triple.

3. Is this a Pythagorean triple?
Check using $a^2 + b^2 = c^2$.



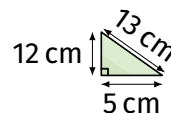
Solution: $8^2 + 15^2 = 64 + 225 = 289 = 17^2$. Yes, (8, 15, 17) is a triple.

4. Is this a Pythagorean triple?
Check using $a^2 + b^2 = c^2$.



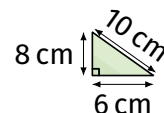
Solution: $7^2 + 24^2 = 49 + 576 = 625 = 25^2$. Yes, (7, 24, 25) is a triple.

5. Is this a Pythagorean triple?
Check using $a^2 + b^2 = c^2$.



Solution: $5^2 + 12^2 = 25 + 144 = 169 = 13^2$. Yes, (5, 12, 13) is a triple.

6. Is this a Pythagorean triple?
Check using $a^2 + b^2 = c^2$.



Solution: $6^2 + 8^2 = 36 + 64 = 100 = 10^2$. Yes, (6, 8, 10) is a triple.

7. (3, 4, 5) is a Pythagorean triple.
Find the triple formed by multiplying every side by 4.

Solution: $(3 \times 4, 4 \times 4, 5 \times 4) = (12, 16, 20)$

8. (5, 12, 13) is a Pythagorean triple. A triangle has sides 10, 24, and x . Use the triple to find x .

Solution: Scaled by 2: $x = 13 \times 2 = 26$

9. (3, 4, 5) is a Pythagorean triple. A triangle has sides 15, 20, and x . Use the triple to find x .

Solution: Scaled by 5: $x = 5 \times 5 = 25$

10. A right-angled triangle has side lengths in the ratio 3 : 4 : 5. If the longest side is 20 cm, find the other two sides.

Solution: $5k = 20 \Rightarrow k = 4$. Sides: 12 cm, 16 cm

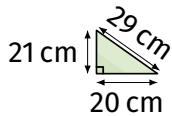
11. A right-angled triangle has side lengths in the ratio 5 : 12 : 13. If the shortest side is 15 cm, find the longest side.

Solution: $5k = 15 \Rightarrow k = 3$. Longest: $13 \times 3 = 39$ cm

12. A right-angled triangle has side lengths in the ratio 8 : 15 : 17. If the shortest side is 16 cm, find the hypotenuse.

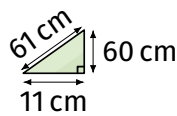
Solution: $8k = 16 \Rightarrow k = 2$. Hypotenuse: $17 \times 2 = 34$ cm

13. Is this a Pythagorean triple? Check using $a^2 + b^2 = c^2$.



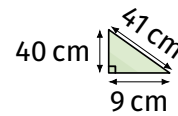
Solution: $20^2 + 21^2 = 400 + 441 = 841 = 29^2$. Yes, it is a triple.

14. Is this a Pythagorean triple? Check using $a^2 + b^2 = c^2$.



Solution: $11^2 + 60^2 = 121 + 3600 = 3721 = 61^2$. Yes, it is a triple.

15. Is this a Pythagorean triple? Check using $a^2 + b^2 = c^2$.



Solution: $9^2 + 40^2 = 81 + 1600 = 1681 = 41^2$. Yes, it is a triple.

16. (8, 15, 17) is a Pythagorean triple. Find the triple formed by multiplying every side by 3.

Solution: $(8 \times 3, 15 \times 3, 17 \times 3) = (24, 45, 51)$

17. A right-angled triangle has side lengths in the ratio 7 : 24 : 25. If the longest side is 50 cm, find the other two sides.

Solution: $25k = 50 \Rightarrow k = 2$. Sides: 14 cm, 48 cm

18. (6, 8, 10) is a Pythagorean triple. Find the triple formed by multiplying every side by 5.

Solution: $(6 \times 5, 8 \times 5, 10 \times 5) = (30, 40, 50)$