

Checking whether a triangle is right-angled



Identify the longest side, then use $a^2 + b^2 = c^2$ to check if the triangle is right-angled.

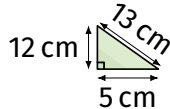
Name _____

Date _____

Check for equality

Identify the longest side. Square all three sides. If $a^2 + b^2 = c^2$ exactly, the triangle is right-angled.

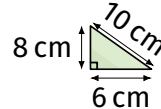
1. Is this triangle right-angled?



Solution

Yes. $5^2 + 12^2 = 25 + 144 = 169 = 13^2$

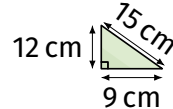
2. Is this triangle right-angled?



Solution

Yes. $6^2 + 8^2 = 36 + 64 = 100 = 10^2$

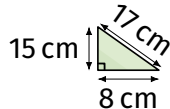
3. Is this triangle right-angled?



Solution

Yes. $9^2 + 12^2 = 81 + 144 = 225 = 15^2$

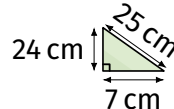
4. Is this triangle right-angled?



Solution

Yes. $8^2 + 15^2 = 64 + 225 = 289 = 17^2$

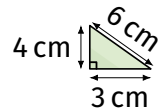
5. Is this triangle right-angled?



Solution

Yes. $7^2 + 24^2 = 49 + 576 = 625 = 25^2$

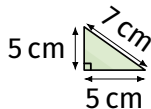
6. Is this triangle right-angled?



Solution

No. $3^2 + 4^2 = 25 \neq 36 = 6^2$

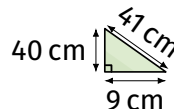
7. Sides: 5, 5, 7. Right-angled?



Solution

No. $5^2 + 5^2 = 50 \neq 49 = 7^2$

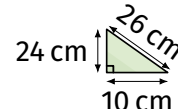
8. Sides: 40, 9, 41. Right-angled?



Solution

Yes. $9^2 + 40^2 = 81 + 1600 = 1681 = 41^2$

9. Sides: 10, 24, 26. Right-angled?



Solution

Yes. $10^2 + 24^2 = 100 + 576 = 676 = 26^2$

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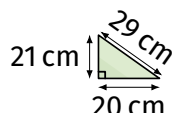
Name _____

Date _____

Check for equality

Identify the longest side. Square all three sides. If $a^2 + b^2 = c^2$ exactly, the triangle is right-angled.

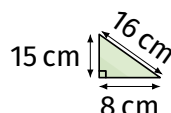
10. Is this a Pythagorean triple?



Solution

Yes. $20^2 + 21^2 = 400 + 441 = 841 = 29^2$

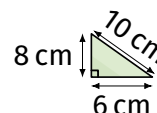
11. Close check: sides 8, 15, 16.



Solution

No. $8^2 + 15^2 = 289 \neq 256 = 16^2$

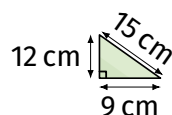
12. Scale factor? 6, 8, 10 is $k \times (3, 4, 5)$.



Solution

$k = 2$. This is $2 \times (3, 4, 5)$

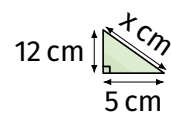
13. Scale factor? 9, 12, 15 is $k \times (3, 4, 5)$.



Solution

$k = 3$. This is $3 \times (3, 4, 5)$

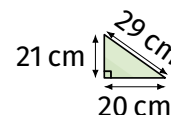
14. Find x . This is a 5-12-13 triple.



Solution

$x = 13$. Check: $5^2 + 12^2 = 169 = 13^2$

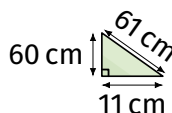
15. Show equality. Is this right-angled?



Solution

Yes. $20^2 + 21^2 = 841 = 29^2$

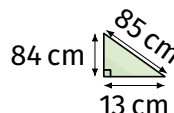
16. Sides 11, 60, 61. Triple?



Solution

Yes.
 $11^2 + 60^2 = 121 + 3600 = 3721 = 61^2$

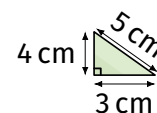
17. Sides 13, 84, 85. Triple?



Solution

Yes.
 $13^2 + 84^2 = 169 + 7056 = 7225 = 85^2$

18. Explain: why is $3^2 + 4^2 = 5^2$?



Solution

$9 + 16 = 25$. The 3-4-5 triple satisfies the Pythagorean theorem exactly.