LESSON MAKER PRO

Triangle Truth Test

Use side lengths to check for a right angle.

GRADE 8 · 8.MG.4.b

8.MG.4.b "Determine whether a triangle is a right triangle given the measures of its three sides."

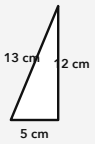
NAME _____ DATE _____

CHECK THE LONGEST SIDE

Put the longest side aside as c. A triangle is a right triangle when the squares of the two shorter sides add to the square of the longest side: $a^2 + b^2 = c^2$.

WORKED EXAMPLE

Is the triangle shown a right triangle?

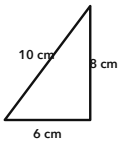


1. The longest side is 13 cm.
2. $5^2 + 12^2 = 25 + 144 = 169$.
3. $13^2 = 169$, so the two results are equal.

Answer: Yes, it is a right triangle.

PRACTICE 6 problems

1 Is the triangle shown a right triangle? Show the equation you used.

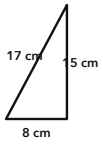


ANSWER _____

2 A triangle has side lengths 10 cm, 11 cm, and 15 cm. Is it a right triangle? Show the equation you used.

ANSWER _____

3 Is the triangle shown a right triangle? Show the equation you used.



ANSWER _____

4 A triangle has side lengths 9 cm, 10 cm, and 14 cm. Is it a right triangle? Show the equation you used.

ANSWER _____

5 A triangle has side lengths 20 cm, 21 cm, and 29 cm. Is it a right triangle? Show the equation you used.

ANSWER _____

6 A triangle has side lengths 16 cm, 30 cm, and 34 cm. Is it a right triangle? Show the equation you used.

ANSWER _____

APPLY IT Show your work

1 At a skate park, a ramp and its supports form a triangle with side lengths 18 ft, 24 ft, and 30 ft. Is the ramp triangle a right triangle?

WORK SPACE

ANSWER _____

2 For a student film, a triangular light stand has side lengths 14 in., 18 in., and 22 in. Is the stand a right triangle?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A triangle has side lengths 28 cm, 45 cm, and 53 cm. Jordan says it is a right triangle. Is Jordan correct? Explain by comparing the needed squares.

WORK SPACE AND ANSWER

ANSWER KEY

Triangle Truth Test

GRADE 8 · 8.MG.4.b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Is the triangle shown a right triangle? Show the equation you used.	**Yes. $6^2 + 8^2 = 36 + 64 = 100$, and $10^2 = 100$.**
2	A triangle has side lengths 10 cm, 11 cm, and 15 cm. Is it a right triangle? Show the equation you used.	**No. $10^2 + 11^2 = 221$, but $15^2 = 225$.**
3	Is the triangle shown a right triangle? Show the equation you used.	**Yes. $8^2 + 15^2 = 64 + 225 = 289$, and $17^2 = 289$.**
4	A triangle has side lengths 9 cm, 10 cm, and 14 cm. Is it a right triangle? Show the equation you used.	**No. $9^2 + 10^2 = 181$, but $14^2 = 196$.**
5	A triangle has side lengths 20 cm, 21 cm, and 29 cm. Is it a right triangle? Show the equation you used.	**Yes. $20^2 + 21^2 = 400 + 441 = 841$, and $29^2 = 841$.**
6	A triangle has side lengths 16 cm, 30 cm, and 34 cm. Is it a right triangle? Show the equation you used.	**Yes. $16^2 + 30^2 = 256 + 900 = 1156$, and $34^2 = 1156$.**

PART 2 · APPLY IT

1. **Yes, the ramp triangle is a right triangle.** Use 30 ft as the longest side. $18^2 + 24^2 = 324 + 576 = 900$, which equals 30^2.
2. **No, the light stand is not a right triangle.** Use 22 in. as the longest side. $14^2 + 18^2 = 520$, while $22^2 = 484$.

CHALLENGE

Yes. Jordan is correct because $28^2 + 45^2 = 784 + 2025 = 2809$, and $53^2 = 2809$.

Accept equivalent correct equations and computations. Students must use the longest side as the side compared to the sum of the squares of the other two sides.