

Right Angle Check

Use side lengths to test triangles.

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

Find the longest side and call it c . Square the two shorter sides and add them. If that sum equals c^2 , the triangle is a right triangle.

WORKED EXAMPLE

Are side lengths 7, 24, and 25 a right triangle?

- 25 is the longest side.
- $7^2 + 24^2 = 49 + 576 = 625$.
- $25^2 = 625$.
- The sums are equal, so the triangle is a right triangle.

Answer: Yes, it is a right triangle.

PRACTICE 6 problems

1 Are side lengths 8, 15, and 17 a right triangle?

ANSWER _____

2 Are side lengths 6, 8, and 11 a right triangle?

ANSWER _____

3 Are side lengths 9, 12, and 16 a right triangle?

ANSWER _____

4 Are side lengths 5, 12, and 13 a right triangle?

ANSWER _____

5 Are side lengths 10, 10, and 14 a right triangle?

ANSWER _____

6 Are side lengths 12, 16, and 20 a right triangle?

ANSWER _____

APPLY IT Show your work

- 1** A gaming desk has a triangular support with side lengths 9 inches, 12 inches, and 15 inches. Does the support form a right triangle?

WORK SPACE

ANSWER _____

- 2** A skateboard ramp has a triangular side with lengths 8 feet, 15 feet, and 18 feet. A builder says the ramp has a right angle. Is the builder correct?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A triangle has side lengths 20 cm, 21 cm, and 29 cm. Is it a right triangle? Explain by showing the squared side lengths.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Are side lengths 8, 15, and 17 a right triangle?	Yes, $8^2 + 15^2 = 17^2$.
2	Are side lengths 6, 8, and 11 a right triangle?	No, $6^2 + 8^2 = 100$ and $11^2 = 121$.
3	Are side lengths 9, 12, and 16 a right triangle?	No, $9^2 + 12^2 = 225$ and $16^2 = 256$.
4	Are side lengths 5, 12, and 13 a right triangle?	Yes, $5^2 + 12^2 = 13^2$.
5	Are side lengths 10, 10, and 14 a right triangle?	No, $10^2 + 10^2 = 200$ and $14^2 = 196$.
6	Are side lengths 12, 16, and 20 a right triangle?	Yes, $12^2 + 16^2 = 20^2$.

PART 2 • APPLY IT

- Yes, the support forms a right triangle.** 15 is the longest side. Since $9^2 + 12^2 = 81 + 144 = 225$ and $15^2 = 225$, the triangle is right.
- No, the builder is not correct.** 18 is the longest side. Since $8^2 + 15^2 = 64 + 225 = 289$ and $18^2 = 324$, the triangle is not right.

CHALLENGE

Yes. $20^2 + 21^2 = 400 + 441 = 841$, and $29^2 = 841$, so it is a right triangle.

Accept correct work that identifies the longest side and compares the sum of the squares of the two shorter sides with the square of the longest side. Students may write equivalent true equations, such as $64 + 225 = 289$.