



GRADE 8 · GEOMETRY · HOMEWORK

WHY PYTHAGORAS WORKS

Today's goal: I can explain a proof of the Pythagorean Theorem and its converse.

Pick your peppers!

Everyone does Mild & Medium. Then climb as high as you can.



Medium
Digit the Fox



Spicy
Blaze the Dragon



Extra Spicy
Pi the Owl



REMEMBER $a^2 + b^2 = c^2$, c the hypotenuse. Square proof: $(a + b)^2 - 2ab = a^2 + b^2 = c^2$. Letters make it a proof. The converse tests a triangle.



FAMILY CORNER

No need to remember this math yourself! Ask your student to teach you Mr DJ's example, then try the first Mild problem together.



MEDIUM

Digit the Fox: Stretch your brain.

- 1 Do the square count for legs 7 and 24: big square, four triangles, leftover. What is the hypotenuse?

Answer

- 2 Do the square count for legs 2 and 6. Give the hypotenuse squared.

Answer

- 3 Are 9, 40 and 41 the sides of a right triangle? Show the test and name the statement you used.

Answer

- 4 Are 5, 6 and 8 the sides of a right triangle? Show the test.

Answer



OOPS ALERT

Careful on #1! The slip Mr DJ sees most: Forgot the half. Two full rectangles, so $2ab = 336$.



SPICY

Blaze the Dragon: Bring the heat!

- 5 Write the square proof in letters. Show where the $2ab$ cancels.

Answer

6 Explain why checking a hundred right triangles would still not prove the theorem.

Answer

7 Write the converse of “if a number ends in 0 then it is divisible by 5”. Is the converse true?

Answer



EXTRA SPICY

Pi the Owl: Big-brain challenge.

8 Why does the standard ask for a PROOF of Pythagoras rather than only how to use it?

Answer



How did this sheet feel?



Easy for me



Just right



Made me think

Stuck? Watch Mr DJ explain it

“The Pythagorean Theorem Explained ($a^2 + b^2 = c^2$)” on
YouTube: [youtube.com/@MathWithMrDJ](https://www.youtube.com/@MathWithMrDJ)

Brain break: daily puzzles

Three new math puzzles every day, free:
puzzles.mathwithmrdj.com