Who Proved It?

Trace a right-triangle rule through mathematical history

AWH.C.6.4.B "Mathematics: Pythagoras and Euclid"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline evidence that people knew the right-triangle relationship before Pythagoras, circle what later writers connected to his name, and number two details that show what Euclid contributed.

A Rule with a Long History

1. Imagine a surveyor checking whether the corner of a new field is square. A rope stretched along two sides and a line across the corner form a triangle. For a right triangle, the squares of the two shorter sides add up to the square of the longest side: $a^2 + b^2 = c^2$. This relationship can help check distances without measuring every line directly. People often call it the Pythagorean theorem, but its history did not begin with one person. Babylonian clay tablets show that people used right-triangle number relationships centuries before Pythagoras lived.

2. Pythagoras lived in the Greek world in the sixth century BCE. He gathered followers who studied numbers, music, and shapes. Later writers connected his name to the right-triangle relationship, yet no mathematical writing by Pythagoras survives. Historians cannot confirm that he discovered the rule or wrote its first proof. His school's interest in finding general patterns still matters. A list of side lengths can show that a relationship works in particular cases. A proof must explain why it works for every right triangle. That shift from examples to general reasoning became an important feature of Greek mathematics.

3. About three centuries after Pythagoras, Euclid worked in Alexandria, Egypt. In the *Elements*, he organized definitions, starting assumptions, and proofs into a connected system. Book I includes a proof of the right-triangle relationship, now called the Pythagorean theorem. Euclid did not present a new rule that replaced an older one. He showed how a result could follow from earlier statements through logical steps. Copies and translations of the *Elements* carried this approach across many centuries. The story of this theorem therefore involves earlier practical knowledge, uncertain personal credit, and a written argument that others could examine.

2 ANSWER WITH EVIDENCE

Use the passage

1. What evidence challenges the claim that Pythagoras was the first person to know the right-triangle relationship?

2. Why can historians not confirm that Pythagoras wrote the first proof of the rule?

3. How does Euclid's contribution differ from the earlier knowledge shown by the Babylonian tablets?

4. According to the passage, what does a proof establish that a list of side lengths does not?

3 YOUR TURN

Your own words

A museum label reads, “Pythagoras invented the right-triangle rule, and Euclid invented a different rule.” Write a replacement label of four sentences that corrects both claims, explains what a proof adds, and names one limit of the evidence.

ANSWER KEY

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HIGH SCHOOL · AWH.C.6.4.B

PART 1 · READ AND MARK

Underline evidence that people knew the right-triangle relationship before Pythagoras, circle what later writers connected to his name, and number two details that show what Euclid contributed. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What evidence challenges the claim that Pythagoras was the first person to know the right-triangle relationship?	**Babylonian clay tablets show that people used right-triangle number relationships centuries before Pythagoras lived.**
2	Why can historians not confirm that Pythagoras wrote the first proof of the rule?	**No mathematical writing by Pythagoras survives, so there is not enough evidence to confirm that claim.**
3	How does Euclid's contribution differ from the earlier knowledge shown by the Babylonian tablets?	**The tablets show the use of right-triangle number relationships. Euclid's *Elements* includes a proof within a connected system of definitions, assumptions, and proofs.**
4	According to the passage, what does a proof establish that a list of side lengths does not?	**A proof explains why the relationship works for every right triangle, not just for particular examples.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Babylonian tablets show that people used right-triangle number relationships before Pythagoras lived. Later writers linked Pythagoras to the theorem, but no mathematical writing by him survives, so his exact contribution is uncertain. Euclid later included a proof of the same relationship in the *Elements*, not a different rule. Unlike a list of examples, a proof explains why the relationship holds for every right triangle.

Accept responses that distinguish earlier use of the relationship from Euclid's written proof. Students should not claim that the surviving evidence establishes who first discovered or proved the rule.