Grade 8 Mathematics EOG (GSE) Quiz

Geometry - (MGSE8.G.6) Proof Of Pythagorean Theorem

Student Name:		Date:
Teacher Name: THUYNG	A DAO	Score:
1)		
	The area of the green square is 9 ft^2 . The area of the yellow square is 25 ft^2 .	
What is the area of the red A) 5 ft ² B) 16 ft ² C) 81 ft ² D) 128 ft ² 2)	d square (labelled "b" in the diagram)?	
	The area of the red square is 16 ft ² . The area of the yellow square is 25 ft ² .	

What is the area of the green square?

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- 3 ft² A)
- 9 ft²
- B)
- 81 ft² C)
- 128 ft² D)

3) Which number completes the Pythagorean Triple of 9, 12, x?

- 5 3 A)
- 5 B) C) 10
- D) 15
- 4)



The area of the green square is 9 ft^2 . The area of the red square is 16 ft^2 .

What is the area of the yellow square?

- 25 ft² A)
- 49 ft² B)
- 81 ft² C)
- 128 ft² D)



Which mathematical sentence is represented by the diagram? A) $3^2 + 4^2 = 5^2$

- B) $3^2 + 5^2 = 4^2$
- C) $8^2 + 12^2 = 14^2$
- D) $9^2 + 16^2 = 25^2$

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What is the length of segment AD?

- A) 3
- B) 4
- C) 5
- D) 6
- /

7)



The area of the green square is 9 ft^2 . The area of the red square is 16 ft^2 .

What is the length of side c?

- A) 5 ft
- B) 25 ft
- C) 81 ft
- D) 128 ft



When proving the Pythagorean Theorem, we use the given diagram. What is the area of all four triangles combined?

- 1 2 ab A)
- 2ab B) 4ab
- C)
- D) 8ab
- 9)



Shown here are the three essential steps in a proof of the Pythagorean Theorem. Why is the color blue kept the same in all three steps?

- A) because the blue areas remain constant in size
- B) because the blue areas are converted to squares
- C) because blue is used on the edges of the squares
- D) because the blue regions are rearranged to form triangles



Shown here are the three essential steps in a proof of the Pythagorean Theorem. Comparing the 1st and 3rd steps, how are the colored regions related as to areas?

- A) yellow + blue = orange
- B) orange = yellow + green
- C) yellow + blue = green + orange
- D) yellow + green = orange + blue

11)



formal proof

Statement	Reason	
ΔABC is a right triangle $\overline{BD} \perp \overline{AC}$	Given	
∠ ABC = ∠BDC	Right angles have the same measure.	
\angle BCA = \angle BCD	same angle	
ΔΑΒϹ ~ΔΒϽϹ	AA Similarity Postulate	
$\frac{BC}{DC} = \frac{AC}{BC}$	Corresponding sides of similar triangles are proportional	
$BC^2 = (AC)(DC)$	Cross multiplication	
∠ ABC = ∠ADB	Right angles have the same measure	
\angle BCA = \angle BAD	same angle	
ΔΑΒϹ ~ΔΑΒD	AA Similarity Postulate	
$\frac{AB}{AD} = \frac{AC}{AB}$	Corresponding sides of similar triangles are proportional	
$AB^2 = (AC)(AD)$	cross multiplication	
$AB^2 + BC^2 = (AC)(AD) + (AC)(DC)$	Addition	
$AB^2 + BC^2 = (AC)(AD + DC)$?	
$AB^2 + BC^2 = (AC)^2$	Addition	

What is the missing reason?

- A) Addition Property
- B) Division Property
- C) Associative Property
- D) Distributive Property

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In analyzing this diagram, which statement represents a crucial step to proving the Pythagorean theorem using this diagram?

- A) The large square on the left contains two smaller squares.
- B) The large square on the right contains a smaller square with side length c.
- C) The perimeter of the blue square is equal to the perimeter of the yellow square.
- D) Recognize that BOTH of the large squares contain 4 right triangles with base a and height b.

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In analyzing this diagram, which statement does not represent a crucial step to proving the Pythagorean theorem using this diagram?

- A) The pythagorean theorem states that $a^2 + b^2 = c^2$.
- B) Recognize that both large squares contain 4 right triangles with base a, and height b.
- C) Recognize that both large squares have side lengths b + a, thus their areas must be equal.
- D) Recognize that the area of the blue square is not equal to the area of the yellow square.



Shown here are the three essential steps in a proof of the Pythagorean Theorem. Which statement is justified by the diagram in Step 1?

A) $4(\frac{AB}{2}) = C^2$ B) $B(A + B) = B^2 + 2(\frac{1}{2}BA)$

C)
$$A^2 + B^2 = C^2$$

D)
$$(A + B)^2 = A^2 + 2AB + B^2$$

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Which statement represents a crucial step to proving the Pythagorean theorem using this diagram?

- The large square on the left contains two smaller squares. A)
- B) The area of the blue square is not equal to the area of the yellow square.
- C) The large square on the right contains a smaller square with side length c.
- D) Both large squares have side lengths of b + a, so we can conclude that the large squares have the same area.

16)



When proving the Pythagorean Theorem, we use the given diagram. What is the area of the big square?

- 4ab A)
- a²b² B)
- C)
- $a^{2} + b^{2}$ $a^{2} + 2ab + b^{2}$ D)

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In analyzing this diagram, which statement represents a crucial step in proving the Pythagorean theorem using this diagram?

- A) Recognize that the large square on the left contains two smaller squares.
- B) Recognize that the purple triangles and the yellow square have equal areas.
- C) Recognize that the blue square and the yellow square are not equal in area.
- D) See that the red and purple triangles can be subtracted from both pictures.