1.6 Blank Note

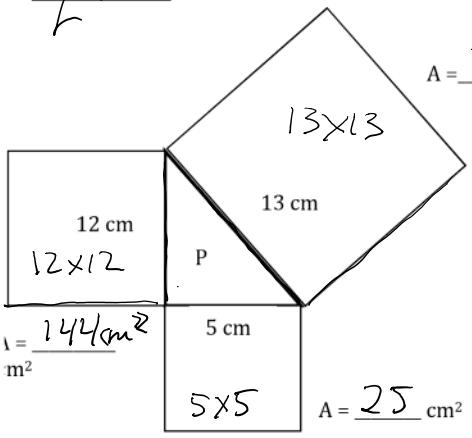
Friday, January 15, 2016 2:02 PM

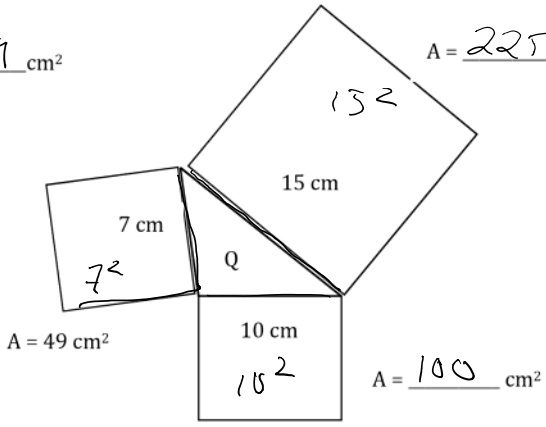
Unit 1: Square Roots & The Pythagorean Theorem Math 8

1.6 Exploring the Pythagorean Theorem

The Pythagorean Theorem is true for right triangles only!

To see which triangle is a right triangle, check to see if the area of the square on the longest side is equal to the sum of the areas of the squares on the other two sides.





$a^2 + b^2 = c^2$

$12^2 + 5^2 = 13^2$

$144 + 25 = 169$

$169 = 169$ ✓

triangle P is a Right triangle.

$a^2 + b^2 = c^2$

$7^2 + 10^2 = 15^2$

$49 + 100 = 225$

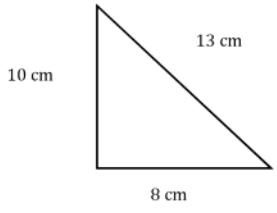
$149 \neq 225$ ✗

The Pythagorean Theorem applies to the triangle P, but NOT to triangle Q.

* A set of 3 whole numbers that satisfy the Pythagorean Theorem is called a Pythagorean triple. For example, the number combination 5 – 12 - 13 is a Pythagorean triple because $5^2 + 12^2 = 13^2$ and they are all whole numbers!

Try These:

1. Is this triangle a right triangle? Show your work to prove your answer.



$a^2 + b^2 = c^2$

$8^2 + 10^2 = 13^2$

$64 + 100 = 169$

$164 \neq 169$

Yes / No it is / is not a right triangle.
It does / does not satisfy the Pythagorean Theorem.

6, 8, 10 6-8-10

2. Is a triangle with side lengths 5, 12, and 13 cm a right triangle? Is it a Pythagorean Triple? Explain.

$a^2 + b^2 = c^2$

$6^2 + 8^2 = 10^2$

$36 + 64 = 100$

$100 = 100$

Yes/No it is/is not a right triangle.

It does/does not satisfy the Pythagorean Theorem.

yes it is a pythagorean triple.

Assignment: p. 43 # 3, 6aceg, 7ace, 8, 11

① ② Extra practice & handout. → optional

9x9

9^2

square of 8 = $8^2 = 8 \times 8$

squareroot

$\sqrt{16}$

$= 4$

square root of 49 = $\sqrt{49} = 7$

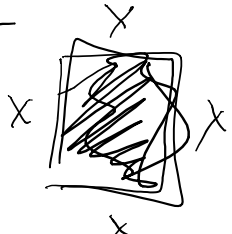
$7^2 = 49$

square ≠ square root

$\sqrt{16} = 4$

$4^2 = 16$

perimeter → distance around



$4x$

area = stuff in the middle

$x \cdot x = x^2$

area = 36

side length = $\sqrt{36}$

9. consecutive square numbers

196, 201, 225

10.

whole numbers $\sqrt{23}$

$\sqrt{16}$, $\sqrt{23}$, $\sqrt{25}$

4 5