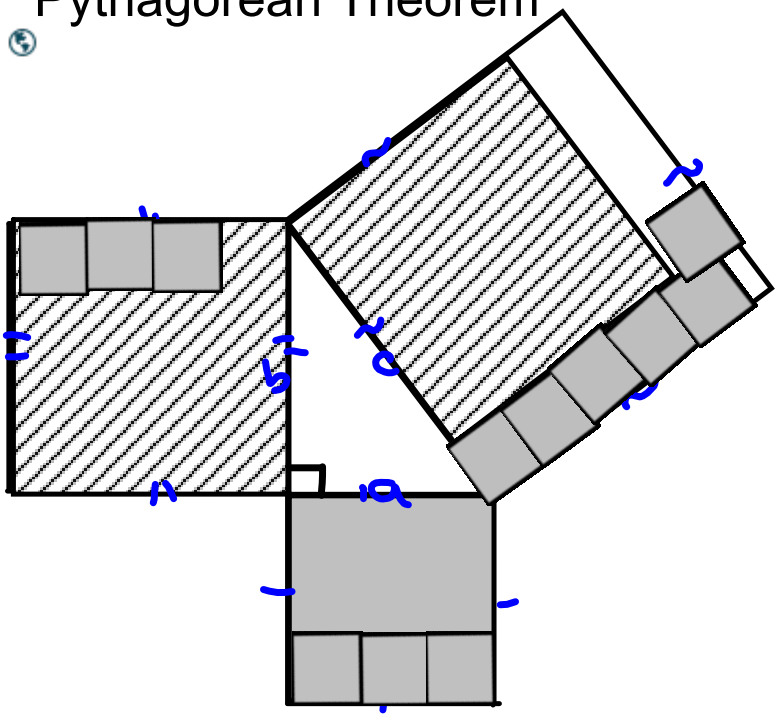
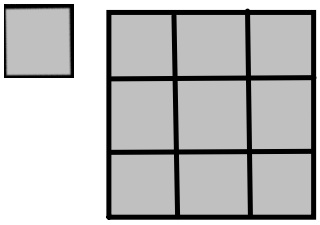
Pythagorean Theorem





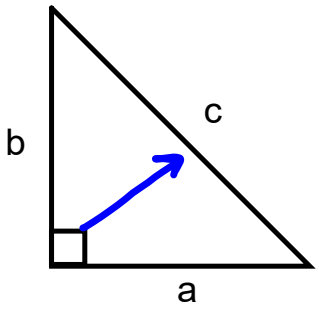
Pythagorean Theorem

- Right Angle Triangle has one angle that 90°

- the side directly across to the right angle is always the longest side, it is the **hypotenuse.**

We use "c" for the hypotenuse

- Legs are side "a" and "b"



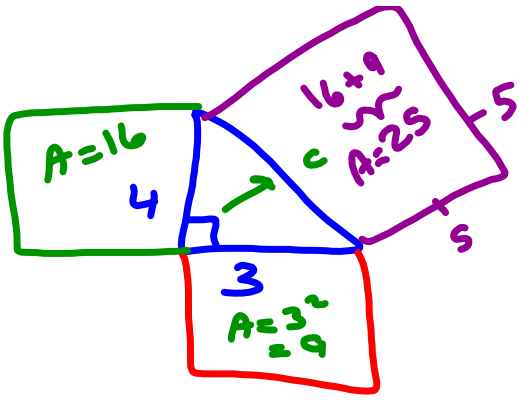
Pythagorean Theorem Equation:

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

area of the square off the hypotenuse

$$(c)^2 - (b)^2 = (a)^2$$

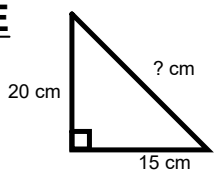
area of the square off the leg


A=16
4
3
A=3²
=9
16+9
A=25
c
5
5

Pythagorean Theorem Equation:

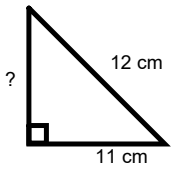
Then to find the length of the **HYPOTENUSE**

$$c = \sqrt{(a)^2 + (b)^2}$$



Then to find the length of a **LEG**

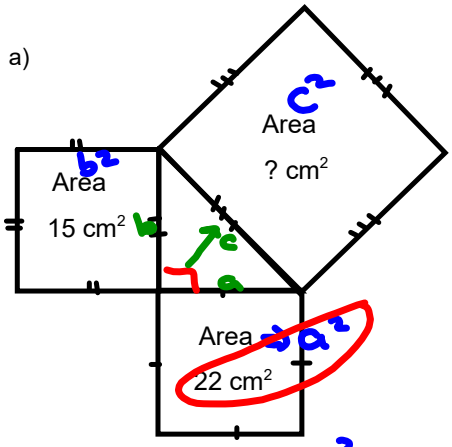
$$a = \sqrt{(c)^2 - (b)^2}$$



Example)

Find the area of the indicated square:

a)

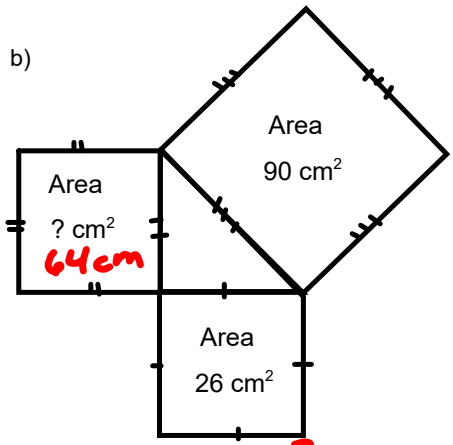


$c^2 = a^2 + b^2$

$= 22 + 15$

$c^2 = 37\ cm^2$

b)



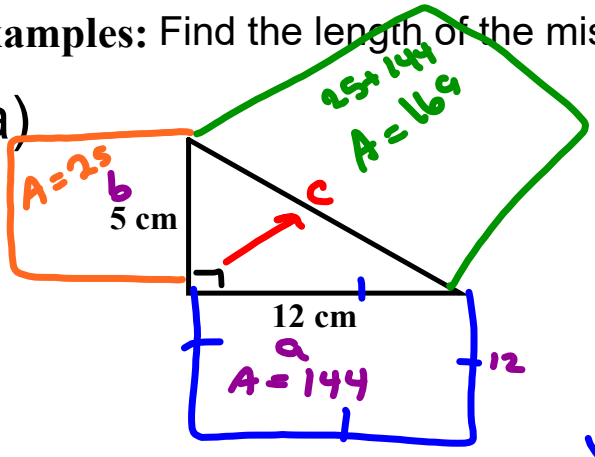
$a^2 = c^2 - b^2$

$= 90 - 26$

$a^2 = 64\ cm^2$

Examples: Find the length of the missing side.

2a)



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

$c^2 = (12)^2 + (5)^2$

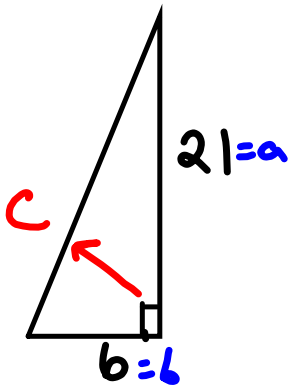
$c^2 = 144 + 25$

$c^2 = 169 cm^2$

$\sqrt{c^2} = \sqrt{169 cm^2}$

$c = 13 cm$

2b)



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

$c^2 = (21)^2 + (6)^2$

$c^2 = 441 + 36$

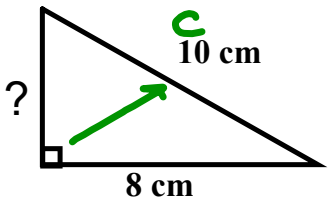
$c^2 = 477$

$\sqrt{c^2} = \sqrt{477}$

$c = 21.8 cm$

Examples: Find the length of the missing side.

3a)



given 'c'

$a^2 = c^2 - b^2$

$a^2 = (10)^2 - (8)^2$

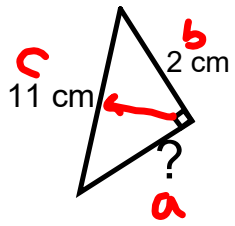
$a^2 = 100 - 64$

$a^2 = 36$

$\sqrt{a^2} = \sqrt{36}$

$a = 6$

3b)



$a^2 = c^2 - b^2$

$a^2 = (11)^2 - (2)^2$

11×11 ; 2×2

$a^2 = 121 - 4$

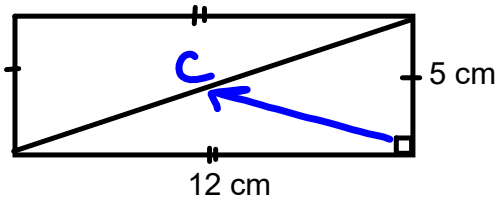
$a^2 = 117$

$\sqrt{a^2} = \sqrt{117}$

$a = 10.8\text{cm}$

Find the length of the diagonal of the rectangle.

c



ADD TO YOUR NOTES