Finnegan Granholm Pythagorean Theorem Proof

## Step 1: show $z = 90°$

$x + y + z = 180°$

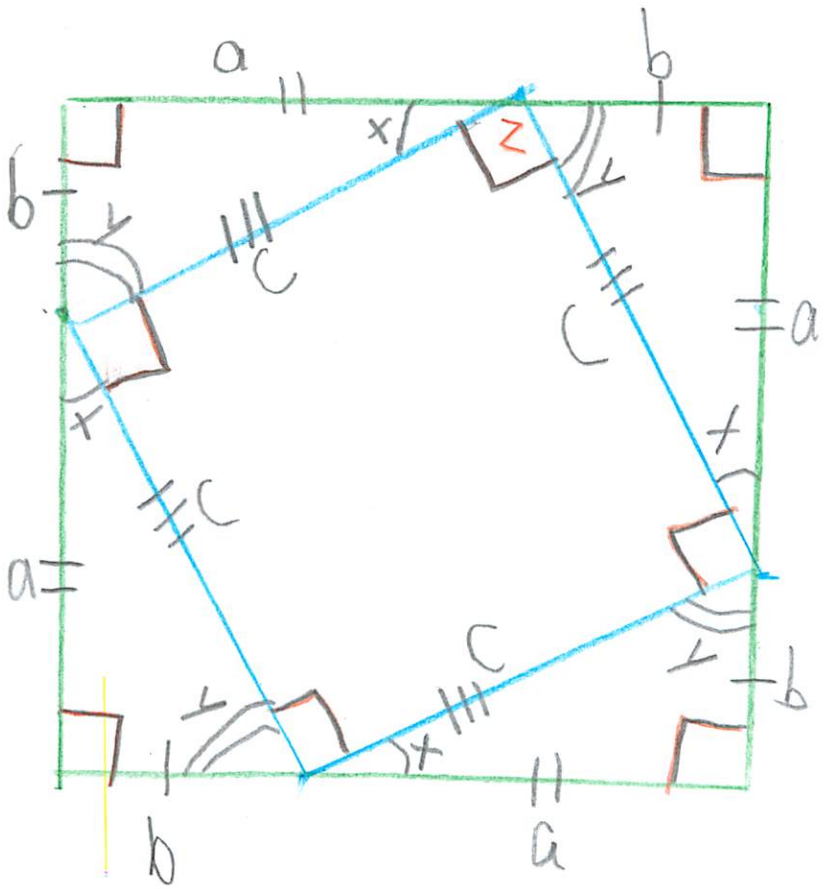
Angles inside triangle =

$180° = x + y + 90$

$x + y + 90 = x + y + z$

$-(x+y)$ $-(x+y)$

$z = 90°$



{Step #2 - Area of triangles}

$A_{\Delta} = \frac{1}{2}ab$

~3: Area of inside square.

$A_{\text{inside }\square} = lw = c(c) = c^2$

Step 4 - Area of outer square

$A_{\text{outer }\square} = 4\left(\frac{1}{2}ab\right) + c^2 = 2ab + c^2$

(length of side equals $a+b$)

$A_{\text{outer }\square} = (a+b)(a+b) = a^2 + 2ab + b^2$

(F, O, I, L)

Set the areas equal:

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

$-2ab \qquad\qquad -2ab$

$\therefore a^2 + b^2 = c^2$ ← Pythagorean Theorem