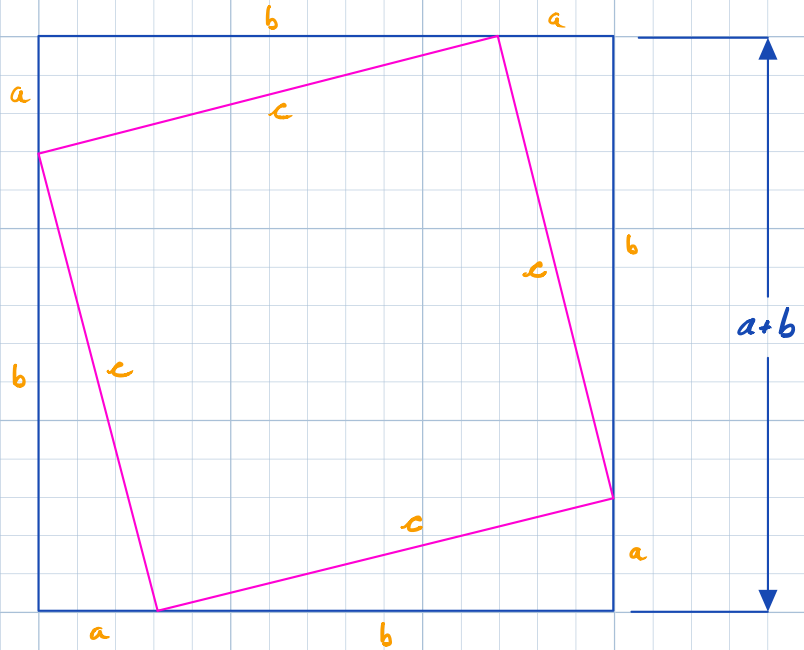


# How to prove the Pythagorean Theorem

- ① Begin with square
- ② Draw square inside
- ③ Label same length sides with same letters

Reminder: Area of Square is side length squared  
Area of Triangle is  $\frac{1}{2}$  times base times height



$$\text{Area of large square: } (a+b)^2$$

$$\begin{aligned} \text{Area of large square: } & 4 \cdot (\text{Area of triangles}) + \text{Area pink square} \\ & = 4 \left( \frac{1}{2} ab \right) + c^2 \end{aligned}$$

$$\text{Set expressions equal: } (a+b)^2 = 4 \left( \frac{1}{2} ab \right) + c^2$$

$$(a+b)(a+b) = 4 \cdot \frac{1}{2} ab + c^2$$

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

$$a^2 + \cancel{2ab} + b^2 = \cancel{2ab} + c^2$$

$$\begin{array}{r} -2ab \qquad -2ab \\ a^2 + b^2 = c^2 \end{array}$$

$$\boxed{a^2 + b^2 = c^2}$$