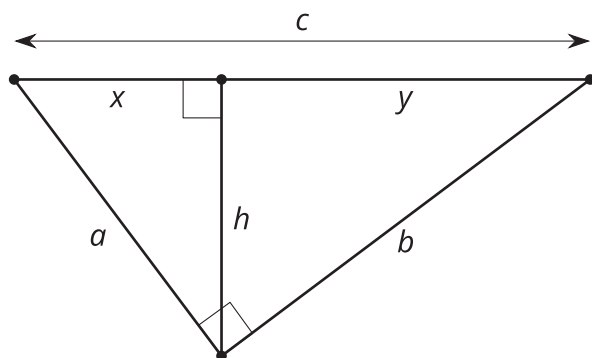


## Unit 3 Lesson 14: Proving the Pythagorean Theorem

### 1 Notice and Wonder: Variable Version (Warm up)

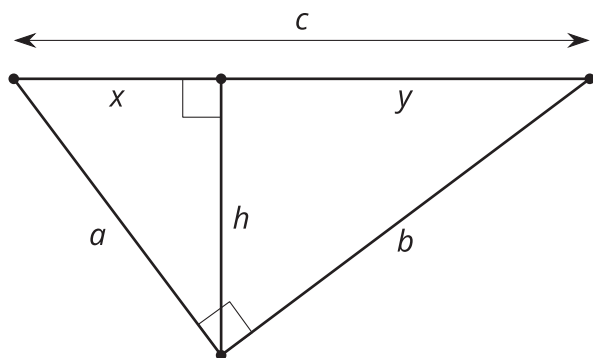
Student Task Statement



What do you notice? What do you wonder?

## 2 Prove Pythagoras Right

### Student Task Statement

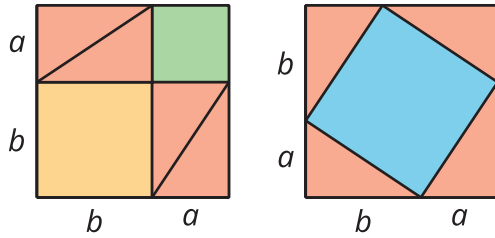


Elena is playing with the equivalent ratios she wrote in the warm-up. She rewrites  $\frac{a}{x} = \frac{c}{a}$  as  $a^2 = xc$ . Diego notices and comments, "I got  $b^2 = yc$ . The  $a^2$  and  $b^2$  remind me of the Pythagorean Theorem." Elena says, "The Pythagorean Theorem says that  $a^2 + b^2 = c^2$ . I bet we could figure out how to show that."

1. How did Elena get from  $\frac{a}{x} = \frac{c}{a}$  to  $a^2 = xc$ ?
2. What equivalent ratios of side lengths did Diego use to get  $b^2 = yc$ ?
3. Prove  $a^2 + b^2 = c^2$  in a right triangle with legs length  $a$  and  $b$  and hypotenuse length  $c$ .

### 3 An Alternate Approach

#### Student Task Statement



When Pythagoras proved his theorem he used the 2 images shown here. Can you figure out how he used these diagrams to prove  $a^2 + b^2 = c^2$  in a right triangle with hypotenuse length  $c$ ?

## Images for Activity Synthesis

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

