

What Did He Say?

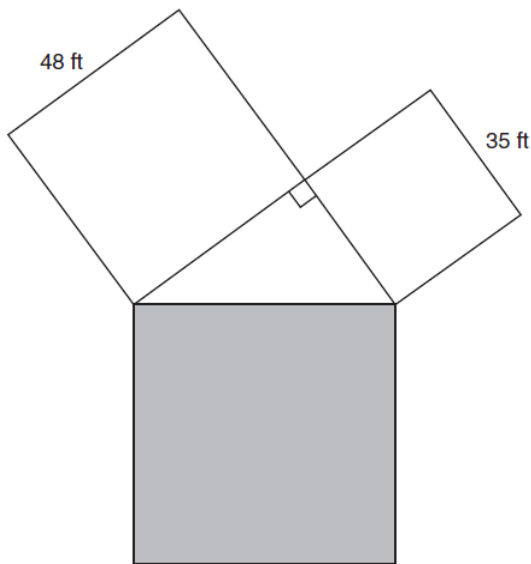
Teacher Notes

What Did He Say? Using the Pythagorean Theorem

Everyone can say $a^2 + b^2 = c^2$ but not everyone can use it to answer questions. What did Pythagorus really say and how can you use a calculator to do the work?

Pythagorus said that similar figures attached to the sides of a right triangle (we use squares because they are easy) have a particular relationship. The sum of the areas of the two smaller ones equals the area of the largest one. Let's see how we can use that understanding to make easy work of questions about right triangles.

11 The drawing below shows three squares joined at their vertices to form a right triangle.



What is the area of the shaded square?

The relationship that is true for right triangles can be found easily using the home screen of the calculator.

What Did He Say?

$48^2 + 35^2$	3529
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The sum of the areas of the two smaller squares is the area of the larger square. Answer choice A is correct.

- A** 3529 ft^2
- B** 1079 ft^2
- C** 6889 ft^2
- D** 169 ft^2

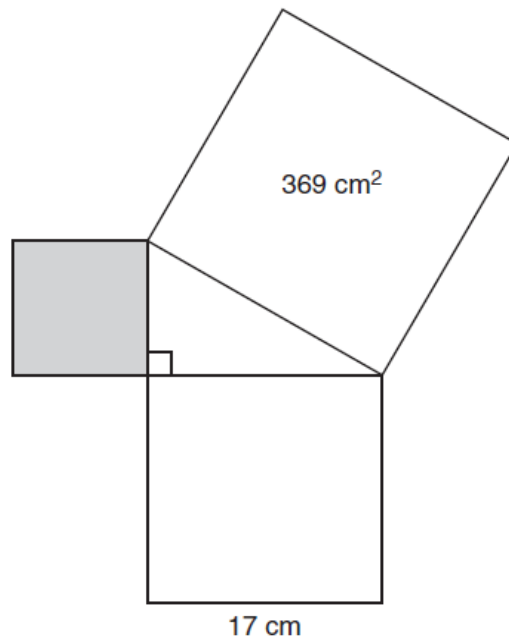
Look at the question below. What is different about this question from the previous example?

How could you use a similar process to find the missing area?

In this question, students may need leading questions to help them understand that, since the area of one of the smaller squares is missing, the students would need to subtract areas to find the answer as well as multiplying to find the area for the square for which the side length is given.

What Did He Say?

49 The three squares shown below are joined at their vertices to form a right triangle.



What is the area of the shaded square?

- A** 80 cm^2
- B** 352 cm^2
- C** 2 cm^2
- D** 658 cm^2

Missing area is found by subtracting the area of the square with side length of 17 cm from the area of the larger square.

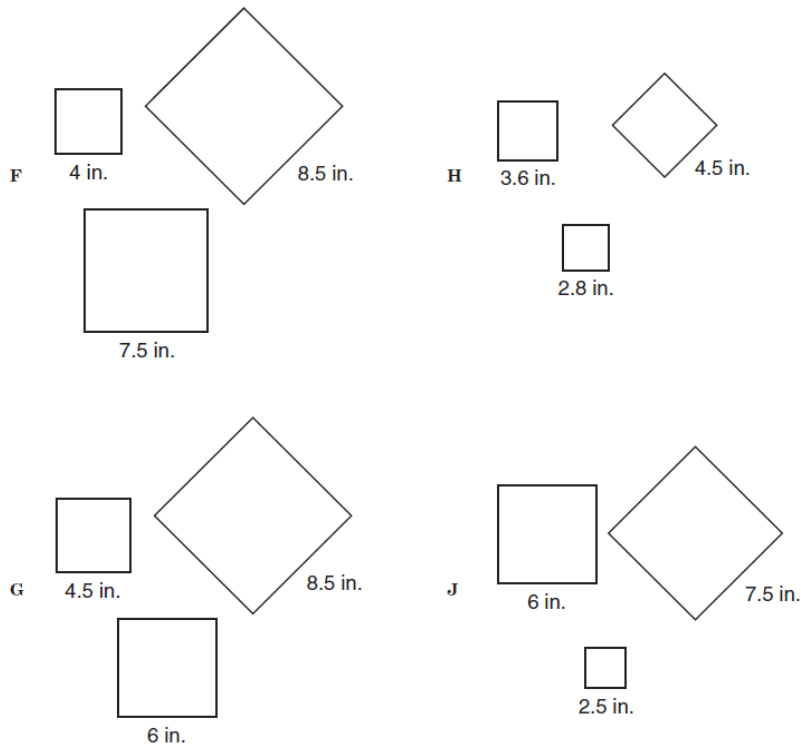
$369 - 17^2$	80
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Answer choice A indicates the correct area.

What Did He Say?

The question below presents the information somewhat differently. How could you use the same basic strategy on the home screen to find the answer?

32 Which group of squares can be joined at their vertices to form a right triangle?



Students would need to check to see if the sums of the areas of the two smaller squares equals the area of the larger squares.

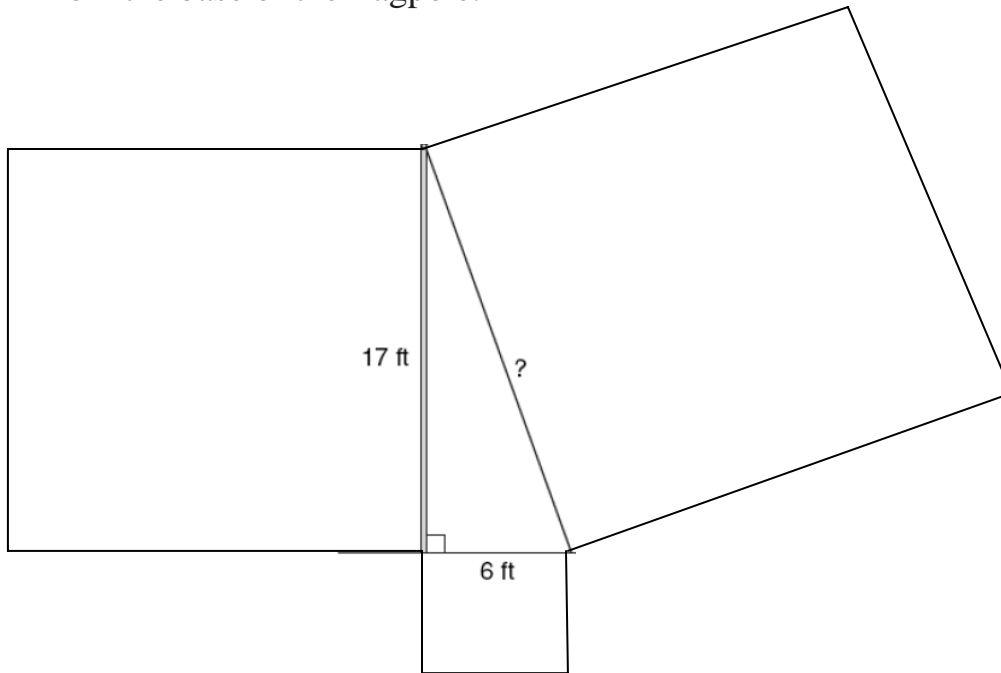
$4^2 + 7.5^2$	72.25
8.5^2	72.25

The squares in answer choice F can be joined at their vertices to form a right triangle.

What Did He Say?

Use what you have learned about the Pythagorean Theorem to find the length of the support wire. Students should draw their own squares on the sides of the triangle. It makes it easier to tell if they need to add or subtract to get the answer.

8 A flagpole that is 17 feet tall is supported by a wire that is anchored 6 feet from the base of the flagpole.



Which best represents the length of the wire?

- F** 16 feet
- G** 23 feet
- H** 18 feet
- J** 20 feet

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62+172           325
√(325)
18.02775638
■
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The length of the wire is about 18 feet.