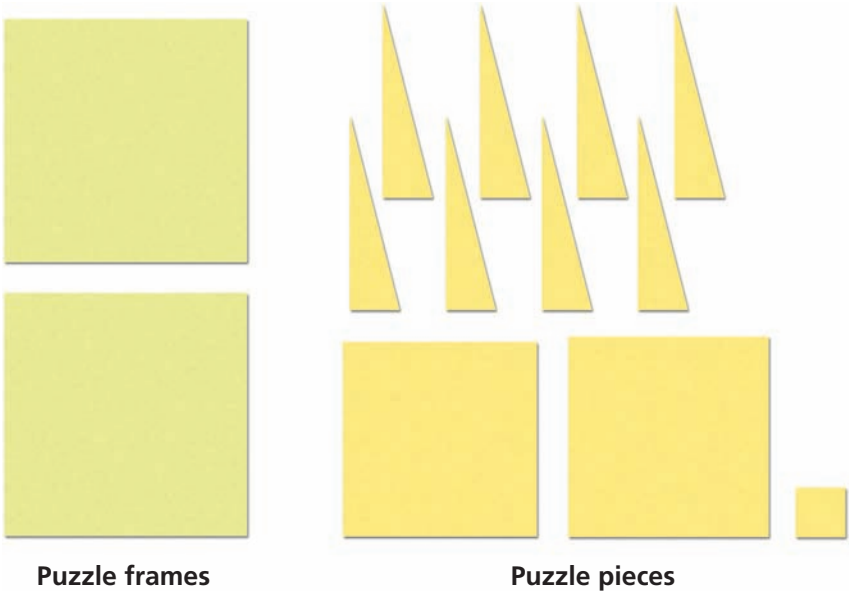
Problem 3.2 A Proof of the Pythagorean Theorem

Use the puzzles your teacher gives you.



Puzzle frames Puzzle pieces

A. Study a triangle piece and the three square pieces. How do the side lengths of the squares compare to the side lengths of the triangle?

B. **1.** Arrange the 11 puzzle pieces to fit exactly into the two puzzle frames. Use four triangles in each frame.

2. What conclusion can you draw about the relationship among the areas of the three squares?

3. What does the conclusion you reached in part (2) mean in terms of the side lengths of the triangles?

4. Compare your results with those of another group. Did that group come to the same conclusion your group did? Is this conclusion true for all right triangles? Explain.

C. Suppose a right triangle has legs of length 3 centimeters and 5 centimeters.

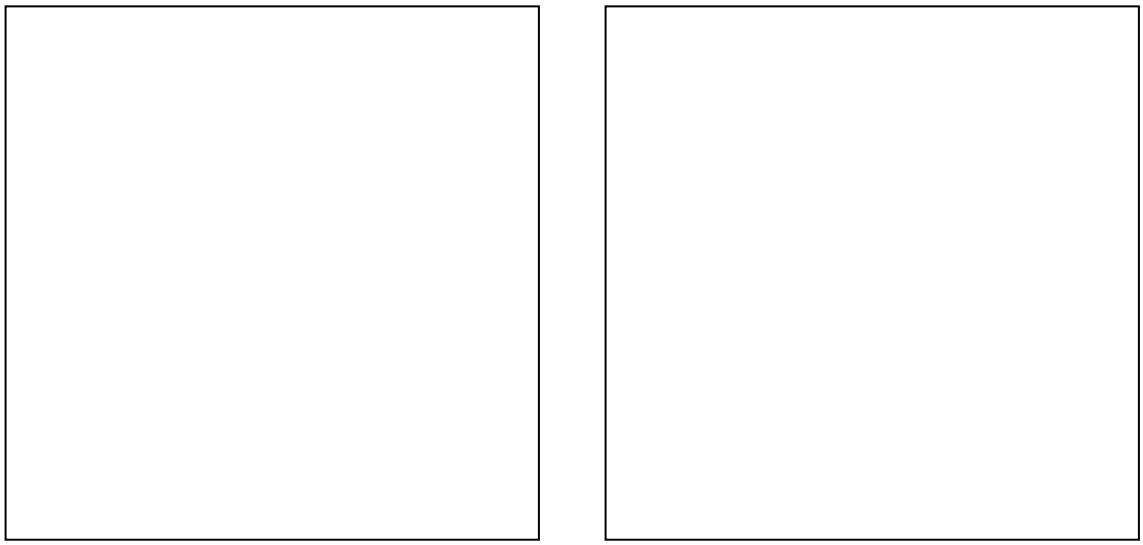
1. Use your conclusion from Question B to find the area of a square drawn on the hypotenuse of the triangle.

2. What is the length of the hypotenuse?

D. In this Problem and Problem 3.1, you explored the Pythagorean Theorem, a relationship among the side lengths of a right triangle. State this theorem as a rule for any right triangle with leg lengths a and b and hypotenuse length c.

ACE **Homework starts on page 38.**

Puzzle Frames



Puzzle Pieces