

Math Lab

The Pythagorean Theorem

in IDEA

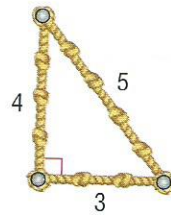
the relationship among the sides of a right triangle.

Targeted TEKS
8.7 The student uses geometry to model and describe the physical world. (C) Use diagrams or models to illustrate the Pythagorean Theorem.

NEW Vocabulary

Right angle a triangle with one angle that measures 90°

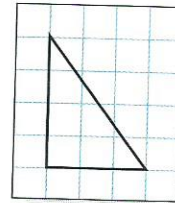
Four thousand years ago, the ancient Egyptians used mathematics to lay out their fields with square corners. They took a piece of rope and knotted it into 12 equal spaces. Taking three stakes, they stretched the rope around the stakes to form a right triangle. The sides of the triangle had lengths of 3, 4, and 5 units.



ACTIVITY

Concepts in Motion
BrainPOP® tx.msmath3.com

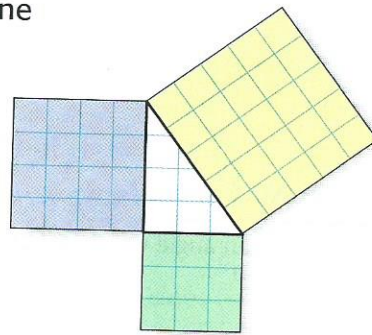
STEP 1 On centimeter grid paper, draw a triangle as shown at the right. Cut out the triangle.



STEP 2 Measure the length of the longest side in centimeters. In this case, it is 5 centimeters.

STEP 3 Cut out three squares: one with 3 centimeters on a side, one with 4 centimeters on a side, and one with 5 centimeters on a side.

STEP 4 Place the edges of the squares against the corresponding sides of the right triangle.



STEP 5 Find the area of each square.

ANALYZE THE RESULTS

1. What relationship exists among the areas of the three squares?

Repeat the activity for each right triangle whose two shorter sides have the following measures. Write an equation to show your findings.

2. 6 cm, 8 cm

3. 5 cm, 12 cm

4. Write a sentence or two summarizing your findings.

5. **MAKE A CONJECTURE** Determine the length of the third side of a right triangle if the legs of the triangle are 9 inches and 12 inches long.