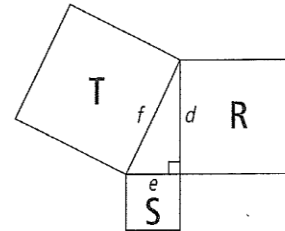


3.2 Exploring the Pythagorean Relationship

MathLinks 8, pages 88–94

Key Ideas Review

Use the diagram below to complete #1.



1. a) Write an addition statement to show the relationship of the squares.

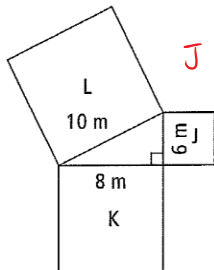
$d^2 + e^2 = f^2$ or Area of R + Area of S = Area of T

- b) Use words to describe the relationship of the squares.

The sum of Areas of S and R is equal to the area of T.

Practise and Apply

2. a) What are the areas of the squares in the diagram? Show your work.



$J = 6^2 = 36\text{m}^2$

$K = 8^2 = 64\text{m}^2$

$L = 10^2 = 100\text{m}^2$

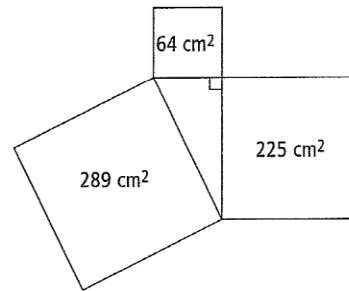
- b) Write two addition statements to show the relationship between the squares.

$36\text{m}^2 + 64\text{m}^2 = 100\text{m}^2$

$6^2 + 8^2 = 10^2$

Area of J + Area of K = Area of L

3. a) Complete the table using information provided in the diagram below.



Area of Square	Side Length of Square
64 cm ²	8 cm
225 cm ²	15 cm
289 cm ²	17 cm

Name: _____

Date: _____

- b) Show the relationship of the squares.

$$64\text{cm}^2 + 225\text{cm}^2 = 289\text{cm}^2$$

$$8^2 + 15^2 = 17^2$$

4. The sides of a right triangle measure 15 cm, 20 cm, and 25 cm.

- a) What is the area of each square? Show your work.

$$225\text{cm}^2, 400\text{cm}^2, 625\text{cm}^2$$

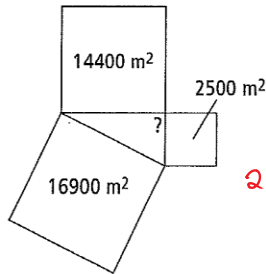
- b) Show the relationship of the squares.

$$225\text{cm}^2 + 400\text{cm}^2 = 625\text{cm}^2$$

or

$$15^2 + 20^2 = 25^2$$

5. Is the triangle below a right triangle? Explain your reasoning.

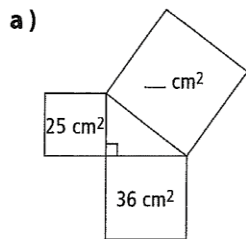


yes.

$$2500\text{m}^2 + 14400\text{m}^2 = 16900\text{m}^2$$

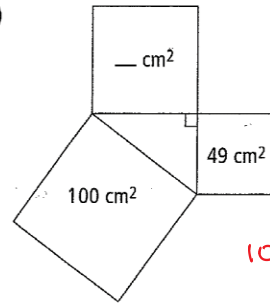
The sum of the areas of two smaller squares is equal to the area of the largest square.

6. Use the Pythagorean relationship to find the unknown area of the squares in the following diagrams. Show your work.



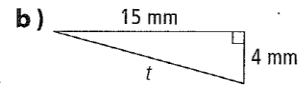
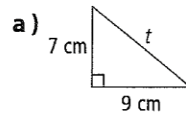
$$25 + 36 = 61\text{cm}^2$$

b)



$$100 - 49 = 51\text{cm}^2$$

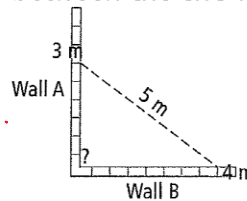
7. What is the area of the square on side t of each triangle? Show your work.



$$7^2 + 9^2 = 49 + 81 = 130\text{cm}^2$$

$$4^2 + 15^2 = 16 + 225 = 241\text{mm}^2$$

8. Jeremy wants to make sure that the walls he is building are at right angles to each other. He measures and marks 3 m along Wall A, and 4 m along Wall B. The distance between the two marks is 5 m.



Are the walls at right angles to each other? Explain how you know.

yes.

$$3^2 + 4^2 = 5^2$$

$$9\text{m}^2 + 16\text{m}^2 = 25\text{m}^2$$