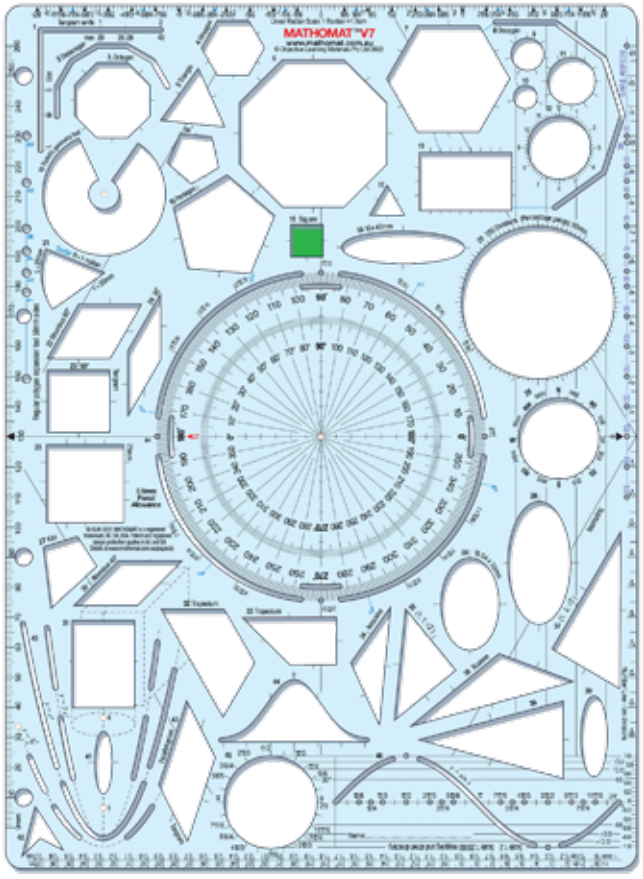
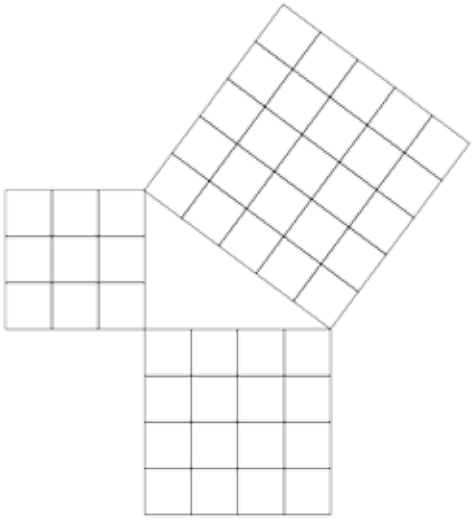
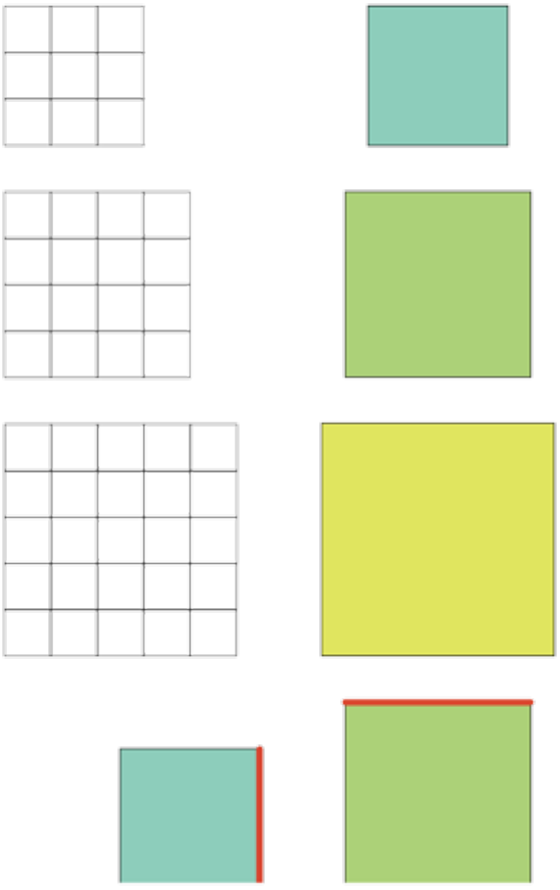
The theorem of Pythagoras



This shows how you can use Mathomat to prove Pythagoras' theorem:
in any right-angled triangle the square of longest side (the hypotenuse) equals the sum of the squares of the other two sides.

Use the square (shape 16) on Mathomat and copy the drawing below.





The area of this square is 9 square units.
One side = 3 squares
Area = s x s = s^2 = 9
s= 3

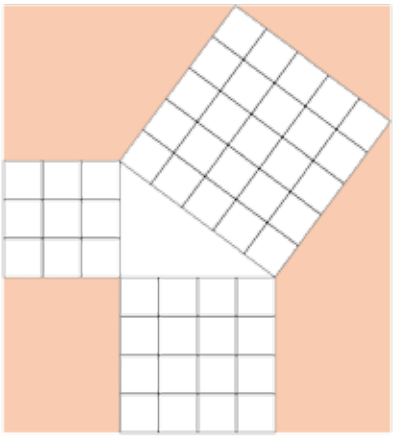
The area of this square is 16 square units.
One side = 4 squares
Area = s x s = s^2 =16
s= 4

The area of this square is 25 square units.
One side = 5 squares
Area = s x s = s^2 = 25
s = 5

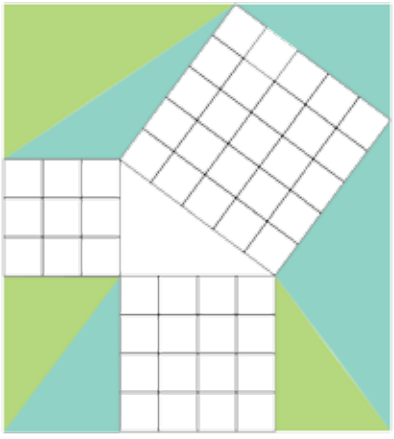
$a^2 + b^2 = h^2$ 9 + 16 = 25

The right-angled triangle is formed with one side of each square.

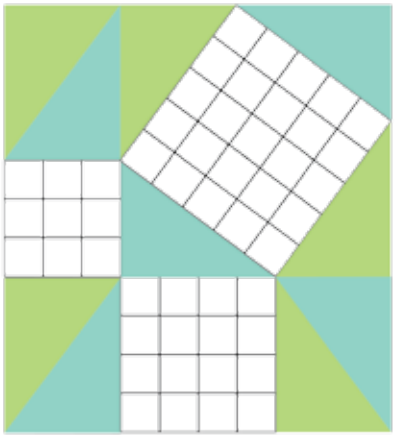
Interesting discoveries from this proof



The quadrilaterals that are used to encase the three squares will also form a rectangle when we use them to form a composite shape.



The quadrilaterals that are used to encase the three squares can be decomposed into different triangles.



All the quadrilaterals can be decomposed into right-angled triangles, congruent to the one that was formed in the middle.