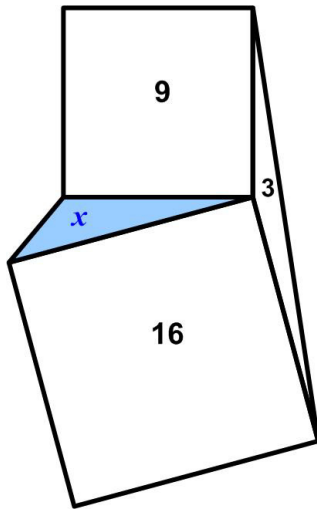


Two Squares Puzzle

13 January 2025

Jim Stevenson



This is another nice problem from the 2025 Math Calendar ([1]).

The two squares in the diagram have areas 9 and 16 and form two of the sides of a triangle with area 3. What is the area x of the blue triangle?

Again, the result must be a number of a day in a month.

Solution

This turns out to be virtually the same problem as in my January 2019 post “Four of a Kind”¹ from Futility Closet.

Consider the green triangle in Figure 1. If we draw a line from its bottom vertex parallel to the side of the 3×3 square, then it describes the altitude h of the green triangle. Since the base of the triangle is 3 and its area 3, we have $3 = 3h/2 \Rightarrow h = 2$.

Now rotate the green triangle 90° clockwise (Figure 2). Since its other edge is of length 4, its vertex coincides with the vertex of the blue triangle. Therefore the blue triangle with base 3 has the same altitude as the green triangle, namely 2. And so its area is also 3.

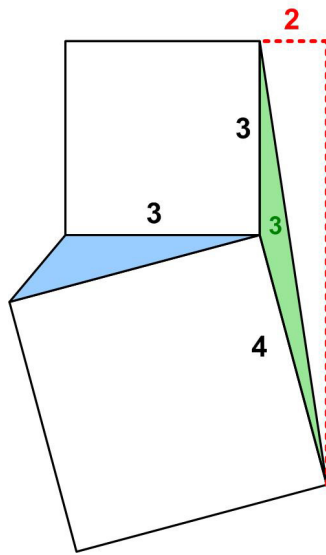


Figure 1

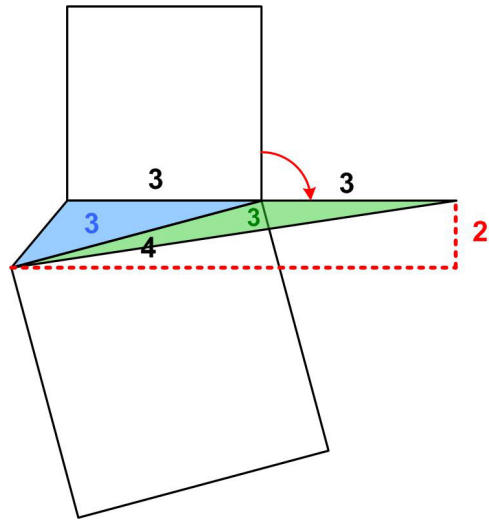


Figure 2

References

- [1] Rapoport, Rebecca and Dean Chung, *Mathematics 2025: Your Daily epsilon of Math*, American Mathematical Society, 2025 June.

© 2025 James Stevenson

¹ <https://josmfs.net/2019/01/18/four-of-a-kind/>