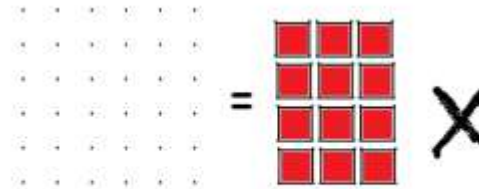
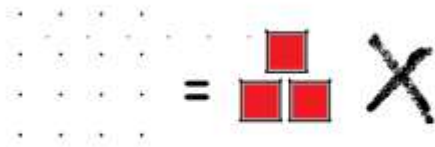
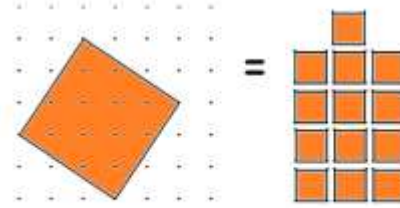
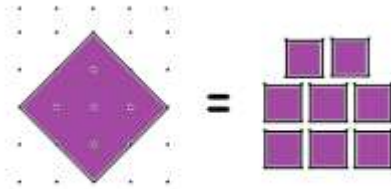
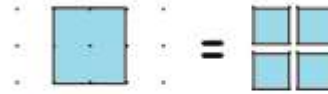
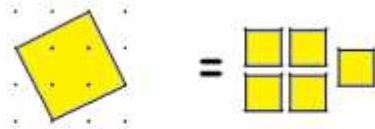


# MORE WITHOUT WORDS

*Mathematical Puzzles to Confound and Delight*



## MWW 27: SOLUTION



If the side of a square shifts  $a$  places over and  $b$  places up, then, by the Pythagorean Theorem, the side length of the (tilted) square is  $\sqrt{a^2 + b^2}$  units and the area of the square is thus  $a^2 + b^2$  square units.

As 3 and 12 each do not equal the sum of two squares, there is no tilted square of area 3 and none of area 12.

**Question:** Does this mean that every number that does equal the sum of two square numbers can be the area of some tilted square?

**Question:** There are two very different ways to draw a square of area 25 on a grid – one horizontal and one tilted. (Do you see them?) Which is the next number that can be represented as the area of a square in more than one way?