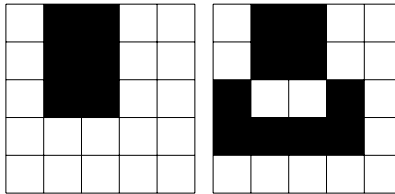


# An Original Puzzle

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I came up with this math competition-style puzzle recently. Consider a  $5 \times 5$  grid whose cells may be either white (0) or black (1). All cells are initially white. We may select a rectangle within this grid and flip the colors of the cells within the rectangle. For example, the result of two such operations in order are below:



The first rectangle flipped is 3 cells tall and 2 cells wide, and the second is  $2 \times 4$ . The puzzle is: How many distinct ways are there to create the pattern below using exactly four of these operations, starting from a fully white board?

