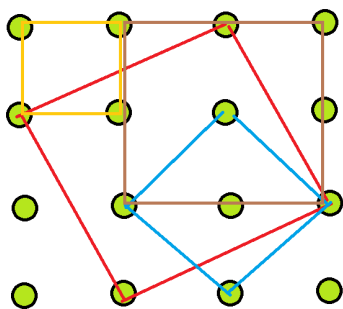


Squares as Rectangles: Solutions

puzzle #1

One can draw 20 squares on the array of dots shown with each corner of the square you draw on a dot. Can you find all 20?

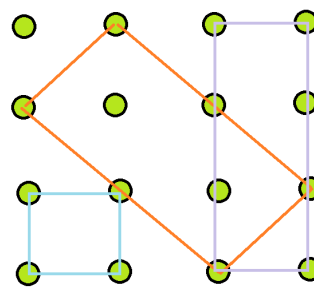


ANSWER TO PUZZLE 1:

One can draw nine 1x1 squares, four 2x2 squares, and one 3x3 square with horizontal and vertical sides. But one can also draw four tilted squares like the blue one and two tilted squares like the red one. That makes for a total of 20 squares.

puzzle #2

How many rectangles can you draw on the grid shown with each corner of the rectangle you draw on a dot?



ANSWER TO PUZZLE 2:

Since squares are rectangles we have all 20 squares of the previous puzzle. If one counts all the 1x2 and 2x1 rectangles, 1x3 and 3x1 rectangles, and 2x3 and 3x2 rectangles, that gets us to a count of 42 rectangles with horizontal and vertical sides. Plus, there are 2 tilted non-square rectangles you can draw as well. That makes for 44 rectangles.

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The NMF Weekly is written by mathematician Dr. James Tanton as a resource for friends and fans of the 2021 National Math Festival.

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