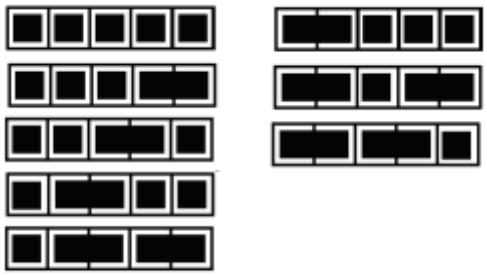
WITHOUT WORDS

Mathematical Puzzles to Confound and Delight

WW 23: SOLUTION



8

There are eight ways to tile a stip five units long with square tiles and dominos.

For a strip six units long, if the first tile used is a square tile, then there are 8 ways to tile the remaining five cells just as above. If the first tile used is a domino, then there are 5 ways to tile the remaining four cells (just as we see in the question statement). This gives a total of $8+5=13$ ways to tile a six-cell strip.

In the same manner, we see that there are $13+8=21$ ways to tile a seven-cell strip, $21+13=34$ ways to tile an eight-cell strip, and so on. Each count is the sum of counts for a strip one cell shorter and one two cells shorter. This generates the sequence of numbers with each term after the second the sum of the two previous terms:

$$1,2,3,5,8,13,21,34,55,89,144,\ldots.$$

These are the Fibonacci numbers. They also appeared in WW19.