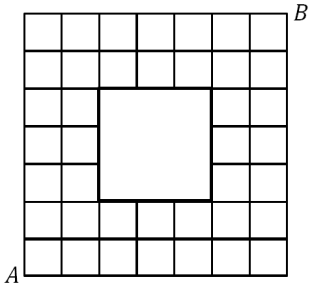
May 2016 Puzzle

Consider the grid shown in the figure to the right. How many different ways are there to get from point A (the bottom left corner) to point B (the top right corner) if you must move along the gridlines in combinations of only upward and rightward moves?



May 2016 Solution

The answer is… 982

Because one can only move in combinations of upward and rightward moves, the number of ways to arrive at any given point in the grid is the sum of the number of ways to arrive at the position directly below it (if that position exists) and the number of ways to arrive at the position directly to its left (if that position exists). Since we start at position A there is only one way to arrive at position A. Using the "sum rule" described above, the table shown below was completed, starting at the bottom left-corner and then working towards the upper-right corner where we arrive at our answer of 982.

1	8	36	85	155	267	491	982
1	7	28	49	70	112	224	491
1	6	21	21	21	42	112	267
1	5	15			21	70	155
1	4	10			21	49	85
1	3	6	10	15	21	28	36
1	2	3	4	5	6	7	8
1	1	1	1	1	1	1	1

B

A