The goal is to calculate the number of ways to navigate from the top-left corner of a square grid to the bottom-right corner in a taxicab geometry. We take the size of the grid to be $2N \times 2N$.

The problem is equivalent to asking how many ways there are to permute a set of $2N$ objects when it is comprised of two distinct sets of N identical objects. We represent the first type of object as A and the second as B. For example, take $N = 2$, so that the six types of lattice path are represented by

$$\{AABB\}, \{ABBA\}, \{BBAA\}, \{BAAB\}, \{ABAB\}, \{BABA\}. \tag{1}$$

If we were dealing with a set of $2N$ distinct objects, the number of permutations would be $(2N)!$. Since there are two subsets of N identical objects, and there are $N!$ ways to arrange each subset, then the number of lattice paths is given by

$$\frac{(2N)!}{N!N!}. \tag{2}$$

Therefore, setting $N = 20$ gives us the answer

$$\frac{40!}{20!20!} = 137846528820. \tag{3}$$