

# The Magic Suitcase

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The simplest solution to this problem is to generate a square randomly. The square is a random permutation of the numbers from 1 to  $n^2$ . It is necessary for the  $2 \cdot n + 2$  sums to be distinct. One can estimate the probability that all such sums will be different. In total, there are  $n^3 - n^2 + 1$  distinct sums of  $n$  numbers from 1 to  $n^2$ . The probability that  $2 \cdot n + 2$  randomly chosen numbers from them will be distinct approaches 1 for large  $n$ . This estimate will not be exact, as the sums in the square depend on each other, but it is possible to assess the order of magnitude.