

12 people sit randomly on 20 seats in a row. What is the probability that each one of them has exactly one neighbour? Please show your work

There are $20 \cdot 19$ Variants of each one of them has exactly one neighbor.(because there are 2 vacant places)

Total variants are C_{20}^{12}

So $P = 20 \cdot 19 / C_{20}^{12}$