

Answer on Question #43939-Math-Statistics and Probability

There are 999 Cards with two jokers. Three person (Say a, b, c) draw cards so each will have 333 cards at the end. What is the probability for only one person getting 2 jokers at the end? (Doesn't matter if it's a, b or c)

Solution

Total number of hands that can be dealt is

$$\binom{999}{333} \cdot \binom{666}{333},$$

where

$$\binom{999}{333} = \frac{999!}{(999 - 333)! 333!}.$$

Number of hands with both jokers to one person:

$$\binom{997}{331} \cdot \binom{666}{333}.$$

Number of ways of choosing that "one" person is 3.

The probability for only one person getting 2 jokers at the end is

$$3 \cdot \frac{\binom{997}{331} \cdot \binom{666}{333}}{\binom{999}{333} \cdot \binom{666}{333}} = 3 \cdot \frac{333 \cdot 332}{999 \cdot 998} = \frac{332}{998}.$$

Answer: $\frac{332}{998}$.