Solution to Huygen's Fourth Exercise[1]

Let $C(n,k)$ denote the binomial coefficient "n choose k."

Huygens assumed exactly 3 white tokens among the 12 tokens. The probability of this event is

$$\frac{C(4,3) \cdot C(8,4)}{C(12,7)} = \frac{35}{99}.$$

Hence the parts of the players are as 35 to 64.

Hudde assumed at least 3 white among the 12. The probability of this event is

$$\frac{C(4,4) \cdot C(8,3)}{C(12,7)} + \frac{C(4,3) \cdot C(8,4)}{C(12,7)} = \frac{7}{99} + \frac{35}{99} = \frac{42}{99}.$$

Hence the parts are as 42 to 57 or as 14 to 19.