

Solution to Huygen's Fourth Exercise¹

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.

¹Prepared by Richard Pulskamp, Department of Mathematics and Computer Science, Xavier University, Cincinnati, Ohio. This document created February 1, 2009.