

IMM - DTU

02405 Probability

2004-2-10

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Question a) We use the formula for the number of combinations

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$$\binom{7}{4}$$

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$$\binom{7}{4} = \binom{7}{3}$$

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$$\binom{7}{4} = \binom{7}{3} = 7!$$

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$$\binom{7}{4} = \binom{7}{3} = \frac{7!}{4!}$$

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$$\binom{7}{4} = \binom{7}{3} = \frac{7!}{4!3!} = \frac{7 \cdot 6 \cdot 5}{3 \cdot 2 \cdot 1}$$

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$$\binom{7}{4} = \binom{7}{3} = \frac{7!}{4!3!} = \frac{7 \cdot 6 \cdot 5}{3 \cdot 2 \cdot 1} = 35$$

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$$35 \left(\frac{5}{6}\right)^3$$

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$$35 \left(\frac{5}{6}\right)^3 \left(\frac{1}{6}\right)^4$$

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Question b) The probability in question is given by the binomial distribution, see eg. page 81.

$$35 \left(\frac{5}{6}\right)^3 \left(\frac{1}{6}\right)^4 = \frac{35 \cdot 125}{6^7} = 0.0156$$

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