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Probability theory and mathematical statistics:

Classical probability — Practice II

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Let  $4N$  be the total number of balls,  $3N$  green ones and  $N$  yellow ones.

$$P(A) = \frac{3N}{4N} = \frac{3}{4}$$

The letters L, E, C, T, U, R, E are written on 7 cards, then 4 cards are taken and placed on a desk. What's the probability they make a word CUTE?

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$$P(A) = \frac{1 \cdot 1 \cdot 1 \cdot 2}{7 \cdot 6 \cdot 5 \cdot 4} = \frac{1}{420}$$

The first box contains  $a$  brown balls and  $b$  orange balls, the second box contains  $c$  brown balls and  $d$  orange balls. One ball is taken from each box. What's the probability both balls are of different colors?

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$$P(A) = \frac{ad + bc}{(a + b)(c + d)}$$

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With  $n$  tosses, the probability to have 6 points at least once is

$$P_n(A) = \frac{6^n - 5^n}{6^n} = 1 - \left(\frac{5}{6}\right)^n$$

$$P_n(A) > \frac{1}{2}$$

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$$n > \log_{5/6}(1/2) = 3,801784016923931$$

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$$P(A) = \frac{C_{M-1}^{m-1} C_{N-M}^{n-m}}{C_N^n}$$

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$\omega = (x, y)$ ,  $xy$  is even when  $x$  or  $y$  is even.  $xy$  is odd when both  $x$  and  $y$  are odd.

$$P(A) = \frac{6^2 - 3^2}{6^2}$$