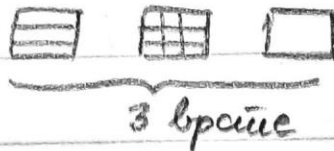


31.08.2021.

1. 25 кутија



$25 = 3 \cdot 8 + 1 \Rightarrow$ ако се равномерно распоредим сигурно је 9 у истој кутији

2. 5-циф. 2 парне

1° прва парна

2° прва непарна

----- $4 * \binom{4}{1} * 5^4$

----- $\binom{4}{2} * 5^5$

} +

3. 142 студента , $56+52+30+30 = 168$
африкани

\rightarrow неопталан редослед студената

$$x_1 + x_2 + x_3 + x_4 = 142$$

$y_i = x_i - \text{количина}$

$$0 \leq x_1 \leq 56 \quad 0 \leq x_2 \leq 52 \quad 0 \leq x_3 \leq 30 \quad 0 \leq x_4 \leq 30$$

$$S_1 : x_1 \geq 57 \Rightarrow y_1 + x_2 + x_3 + x_4 = 85 \quad N(S_1) = \binom{88}{3}$$

$$S_2 : x_2 \geq 53 \Rightarrow x_1 + y_2 + x_3 + x_4 = 89 \quad N(S_2) = \binom{92}{3}$$

$$S_3 : x_3 \geq 31 \Rightarrow x_1 + x_2 + y_3 + x_4 = 111 \quad N(S_3) = S_4 = \binom{114}{3}$$

$$N(S_1 S_2) = \binom{35}{3} \quad N(S_1 S_3) = N(S_1 S_4) = \binom{57}{3} \quad N(S_2 S_3) = N(S_2 S_4) = \binom{61}{3}$$

$$N(S_3 S_4) = \binom{83}{3} \quad N(S_1 S_2 S_3) = N(S_1 S_2 S_4) = \binom{4}{3} \quad N(S_1 S_3 S_4) = \binom{26}{3}$$

$$N(S_2 S_3 S_4) = \binom{31}{3} \quad S_1 S_2 S_3 S_4 = 0$$

$$N = \binom{145}{3}$$

$$\Rightarrow N(S_1' S_2' S_3' S_4') = \binom{145}{3} - \binom{88}{3} - \binom{92}{3} - 2 \cdot \binom{114}{3} + \binom{35}{3} + 2 \binom{57}{3} + 2 \binom{61}{3} + \binom{83}{3} - 2 \binom{4}{3} - \binom{26}{3} - \binom{31}{3}$$

$$4. \quad a_0 = 1 \quad a_1 = 4$$

$$a_{n+2} = a_{n+1} a_n$$

$$\log_2 a_{n+2} = 3 \log_2 a_{n+1} + 4 \log_2 a_n$$

$$b_n = \log_2 a_n$$

$$b_{n+2} = 3b_{n+1} + 4b_n$$

$$b_n = t^n$$

$$t^{n+2} = 3t^{n+1} + 4t^n$$

$$t^2 - 3t - 4 = (t-4)(t+1) = 0$$

$$b_n = A \cdot (-1)^n + B \cdot 4^n$$

$$b_0 = \log_2 1 = 0 = A + B$$

$$b_1 = \log_2 4 = 2 = -A + 4B$$

$$\left. \begin{array}{l} b_0 = \log_2 1 = 0 = A + B \\ b_1 = \log_2 4 = 2 = -A + 4B \end{array} \right\} \Rightarrow 5B = 2 \Rightarrow B = \frac{2}{5}$$

$$A = -\frac{2}{5}$$

$$\Rightarrow b_n = -\frac{2}{5}((-1)^n - 4^n)$$

$$a_n = 2^{-\frac{2}{5}((-1)^n - 4^n)}$$