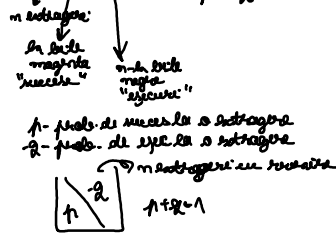


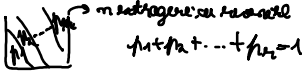
Scheme de probabilitate

① Schema binomială (a lui Bernoulli)
(cu două evenimente)

$$P(n; k; m-k) = C_n^k \cdot p^k \cdot q^{n-k}$$



② Schema cu bile nerevenite (cu n culori)



$$P(n; n_1, n_2, \dots, n_k) = \frac{n!}{n_1! n_2! \dots n_k!} \cdot p_1^{n_1} \cdot p_2^{n_2} \cdot \dots \cdot p_k^{n_k}$$

③ Schema hipergeometrică
(fără bile nerevenite)



$$N = N_1 + N_2$$

$$P(n; n_1; n - n_1) = \frac{C_{N_1}^{n_1} \cdot C_{N_2}^{n - n_1}}{C_N^n}$$

④ Schema cu bile nerevenite (cu n culori)



$$P(n; n_1, n_2, \dots, n_k) = \frac{C_{N_1}^{n_1} \cdot C_{N_2}^{n_2} \cdot \dots \cdot C_{N_k}^{n_k}}{C_N^n}$$

⑤ Schema lui Pascal (geometrică)



$$P("k") = p \cdot q^{k-1}$$

Care e prob. ca după k a la-a încercare să dai succes?

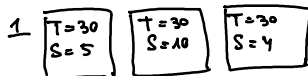
⑥ Schema lui Poisson



evenimente independente diferite (p₁/q₁, ..., p_n/q_n)

$$P(n; k, n-k) \text{ coef. lui } t^k \text{ din polinomul } Q(t) = \prod_{i=1}^n (p_i \cdot t + q_i)$$

Scheme clasice ale probabilității



$$a) p_1 = \frac{5}{30}; q_1 = \frac{25}{30}$$

$$p_2 = \frac{10}{30}; q_2 = \frac{20}{30}$$

$$p_3 = \frac{4}{30}; q_3 = \frac{26}{30}$$

$$b) P(3; 1, 2) = p_1 q_2 q_3 + q_1 p_2 q_3 + p_3 q_1 q_2$$

c) (adunăm prob. pt. evenimentele rezolvate succes, adică sunt compatibile)

$$P_0 = P(3; 0, 3) + P(3; 1, 2) + P(3; 2, 1)$$

$$= \dots$$

$$p_1 p_2 q_3 + p_1 p_3 q_2 + p_2 p_3 q_1$$

? OREB

$$d) P(A) = P(C)$$

$$Q(t) = (p_1 t + q_1)(p_2 t + q_2)(p_3 t + q_3)$$

coef. lui t⁰ (termenul liber)

$$2. p = \frac{2}{10}, q = \frac{8}{10}$$

$$a) P(8; 4, 4) = C_8^4 \cdot \left(\frac{2}{10}\right)^4 \cdot \left(\frac{8}{10}\right)^4$$

$$b) P(8; 5, 3) = C_8^5 \cdot \left(\frac{2}{10}\right)^5 \cdot \left(\frac{8}{10}\right)^3$$

$$c) P(C) = \sum_{k=0}^8 P(8; k, 8-k)$$

$$k=6$$

d) x - "cel puțin 3 de succesuri"

$$3 \ 4 \ 5 \ 6 \ 7 \ 8$$

Y - "minimum 2 ou plus composés" (6 > 4 > 2)

$$P(X=1|Y) = \frac{P(X=1, Y)}{P(Y)} = \frac{\sum_{k=2}^6 P(1, k, 2-k)}{\sum_{k=2}^6 P(1, k, 2-k)}$$

e) M - "10 composés mais plus de 4 pbs"
 N - "2 ou plus composés"
 $P(E) = P(M|N) = \frac{P(M \cap N)}{P(N)} = \frac{P(N)}{P(N)} = 1$

6. $N = 49, N_1 = 6, N_2 = 43, n = 6$

$$P(6, 4, 2) = \frac{C_6^1 \cdot C_{43}^2}{C_{49}^6}$$

11. $P(A) = P("7") = \frac{1}{2} \cdot \left(\frac{1}{2}\right)^6$
 $P(B) = P("1") + \dots + P("6") = \sum_{k=1}^6 \frac{1}{2} \cdot \left(\frac{1}{2}\right)^{k-1}$
 $P(C) = \sum_{k=1}^6 P(B_k) = \sum_{k=1}^6 \frac{1}{2} \cdot \left(\frac{1}{2}\right)^{k-1}$
 $P(D) = \sum_{k=6}^{\infty} P(B_k)$