a*(b+c)=a*b+a*c
(a+b)^2=(a+b)*(a+b)=(a+b)*a + (a+b)*b=a*a+a*b+b*a+b*b=a^2+2ab+b^2
(a+b)^2=a^2+2ab+b^2
(a+b)^3=a^3+3a^2b+3ab^2+b^3
(a+b)^4=a^4+4a^3b+6a^2b^2+4ab^3+b^4

(a+b)^1=1*a+1*b
(a+b)^2=1*a^2+2*ab+1*b^2
(a+b)^3=1*a^3+3*a^2b+3*ab^2+1*b^3
(a+b)^4=1*a^4+4*a^3b+6*a^2b^2+4*ab^3+1*b^4

(a+b)^10=C(10,0)*a^10+C(10,1)*a^9b+C(10,2)*a^8b^2+C(10,3)*a^7b^3+....+C(10,10)*b^10

<u>2^10=C(10,0)+C(10,1)+C(10,2)+C(10,3)+...+C(10,10)</u>

C(1,0) C(1,1)
C(2,0) C(2,1) C(2,2)
C(3,0) C(3,1) C(3,2) C(3,3)
C(4,0) C(4,1) C(4,2) C(4,3) C(4,4)

$C_0^0$
$C_1^0$ $C_1^1$
$C_2^0$ $C_2^1$ $C_2^2$
$C_3^0$ $C_3^1$ $C_3^2$ $C_3^3$
$C_4^0$ $C_4^1$ $C_4^2$ $C_4^3$ $C_4^4$

1 1
1 2 1
1 3 3 1
1 4 6 4 1

(a+b+c+...+d)^k=P(k1,k2,...,kt)*

C(n,k)=C(n,n-k)

a^3b^1

(a+b)^4=(a+b)*(a+b)*(a+b)*(a+b)

a a a b = a^3b
a b a a = a^3b C(4,3)=4*3*2 / 3! = C(4,1)

C(4,0)=4!/4!*0!=1

a*b+b*a=
=1*a*b+1*b*a=ab*(1+1)=2ab

(a+b)^107= C(107,4)a^103b^4