Choisir k parmi n — n, k entiers

ordre ?

répétitions ?

$n!$ Choisir n parmi n en tenant compte de l'ordre.

Permutations

$$\underbrace{\overset{n}{\square}\ \overset{n-1}{\square}\ \overset{n-2}{\square}\ \overset{n-3}{\square}\ \cdots\ \overset{1}{\square}}_{n \text{ cases}}$$

A_k^n Choisir k parmi n, avec ordre sans répétitions

$$\underbrace{\overset{n}{\square}\ \overset{n-1}{\square}\ \overset{n-2}{\square}\ \cdots\ \overset{n-k+1}{\square}}_{k}$$

$$A_k^n = \frac{n!}{(n-k)!}$$

n k

$\boxed{nPr}$

A_5^{15}

$$\overset{}{\underset{15}{\square}}\ \underset{14}{\square}\ \underset{13}{\square}\ \underset{12}{\square}\ \underset{11}{\square}$$

Combinaisons

$$C_k^n = \binom{n}{k}$$

$$\underbrace{\boxed{}^{\,n}\ \boxed{}^{\,n-1}\ \boxed{}^{\,n-2}\ \cdots\ \boxed{}^{\,n-k+1}}_{k}$$

$$\boxed{\frac{n!}{(n-k)!\,k!} = C_k^n}$$

15 personnes

choisir un groupe de 5 pers.

$$\boxed{}\ \boxed{}\ \boxed{}\ \boxed{}\ \boxed{}$$

$$\frac{15 \cdot 14 \cdot 13 \cdot 12 \cdot 11}{5!}$$

n k

$\boxed{nCr}$

$$C_3^{15} = \frac{15!}{12!\,3!} = \frac{15 \cdot 14 \cdot 13}{6}$$

Arrangement $\underbrace{\text{avec répétition}}$

avec ordre

$\overline{A}_3^5 = 5^3$

$$\boxed{\overline{A}_k^n = n^k}$$

ABCDE

$\square\ \square\ \square$

$5 \cdot 5 \cdot 5$

Choisir k parmi n

$0! = 1$

	ordre	~~ordre~~
repetitions	$\bar{A}_k^n = n^k$	$\bar{C}_k^n = C_k^{n+k-1}$
~~repetitions~~	$A_k^n = \frac{n!}{(n-k)!}$	$C_k^n = \frac{n!}{(n-k)!\,k!}$

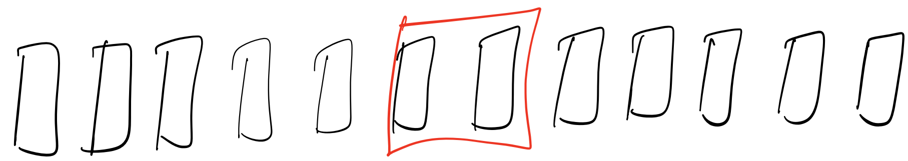
$A_n^n = n!$

$$\frac{n!}{(n-2)!} = \frac{n \cdot (n-1) \cdot \cancel{(n-2)!}}{\cancel{(n-2)!}} = n(n-1)$$

$$= n^2 - n$$

$$n! = n \cdot (n-1) \cdot \underbrace{\boxed{(n-2) \cdot (n-3) \cdot \ldots \cdot 2 \cdot 1}}_{(n-2)!}$$

$$\frac{15!}{13!} = 15 \cdot 14$$



$12 \cdot 11 \cdot 10 \cdot \quad \cdots \quad \cdot 2 \cdot 1$

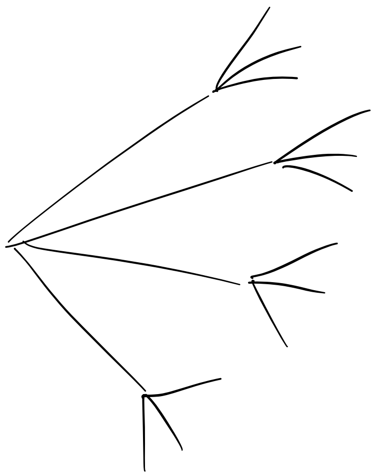
12 objets dans 12 cases ✓ $12!$

$T_1 T_2$

$11! \cdot 2!$

$T_2 T_1$

$4 \cdot 3 \cdot 50$



G	R
4	3
3	4
2	5
1	6
0	7

$$C_4^4 \cdot C_3^8 =$$

$$C_3^4 \cdot C_4^8 =$$

$$C_2^4 \cdot C_5^8 = \frac{4\cdot 3}{2} \cdot \frac{8\cdot 7\cdot 6}{3!}$$

$$C_1^4 \cdot C_6^8 = 4 \cdot \frac{8\cdot 7}{2}$$

$$C_0^4 \cdot C_7^8 = 8$$

$C_7^{12} - 8$ donne la réponse

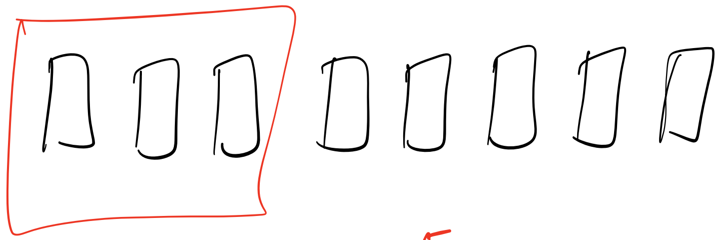
5D 10U $\quad C_5^{15} = C_{10}^{15}$

5(+) 10(1)

$$x_1 + x_2 + x_3 + x_4 + x_5 + x_6 = 10$$

$$\overline{C}_{10}^{6} = \binom{10+6-1}{10}$$

5 monsters 8 places



$$\underbrace{3 \cdot 2 \cdot 1}_{3!} \cdot C_2^5$$