A B C D

A B D C

A C D B

⋮

$4 \cdot 3 \cdot 2 \cdot 1$

$= 4!$

$\{A, B, C, D\}$

$\{A, B\}$ $\{A, C\}$, $\{A, D\}$

$\{B, C\}$ $\{B, D\}$

$\{C, D\}$

$\{A, B\} = \{B, A\}$

Subsets of size 2

$P(4, 2)$

2

AB, BA, AC, CA, AD, DA

BC, CB, BD, DB

CD, DC

$P(4, 2)$

Number of subsets of size 3?

$\{A, B, C, D\}$

$\{A, B, C\}$
$=$
$\{B, A, C\}$
$=$
$\{C, B, A\}$

1. ABC
2. ACB
3. BAC
4. BCA
5. CAB
6. CBA

$3 \cdot 2 \cdot 1 = 3! = 6$

$\{B, C, D\}$

$\{D, A, B\}$

1. BCD
2. BDC
3. CBD
4. CDB
5. DBC
6. DCB

$3 \cdot 2 \cdot 1 = 3! = 6$

$\{A, C, B\}$

$4 \cdot 3 \cdot 2 \cdot 1 =$

$4!$

$\frac{P(4,3)}{3!}$

$$C(n,r) = \frac{P(n,r)}{r!}$$ "Combination"

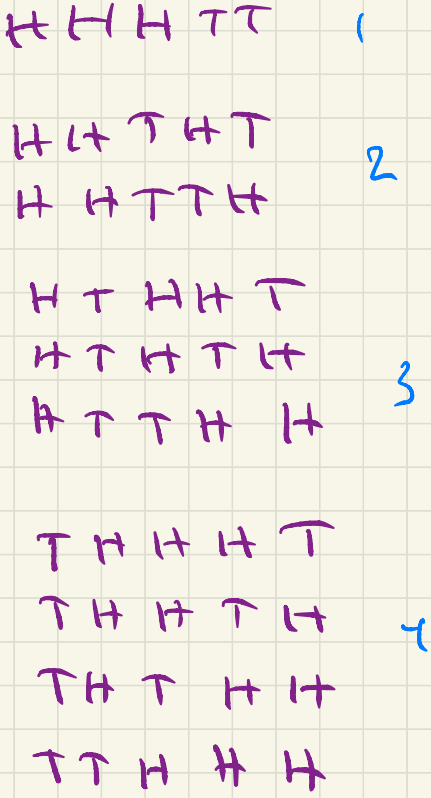
$${}_nC_r$$

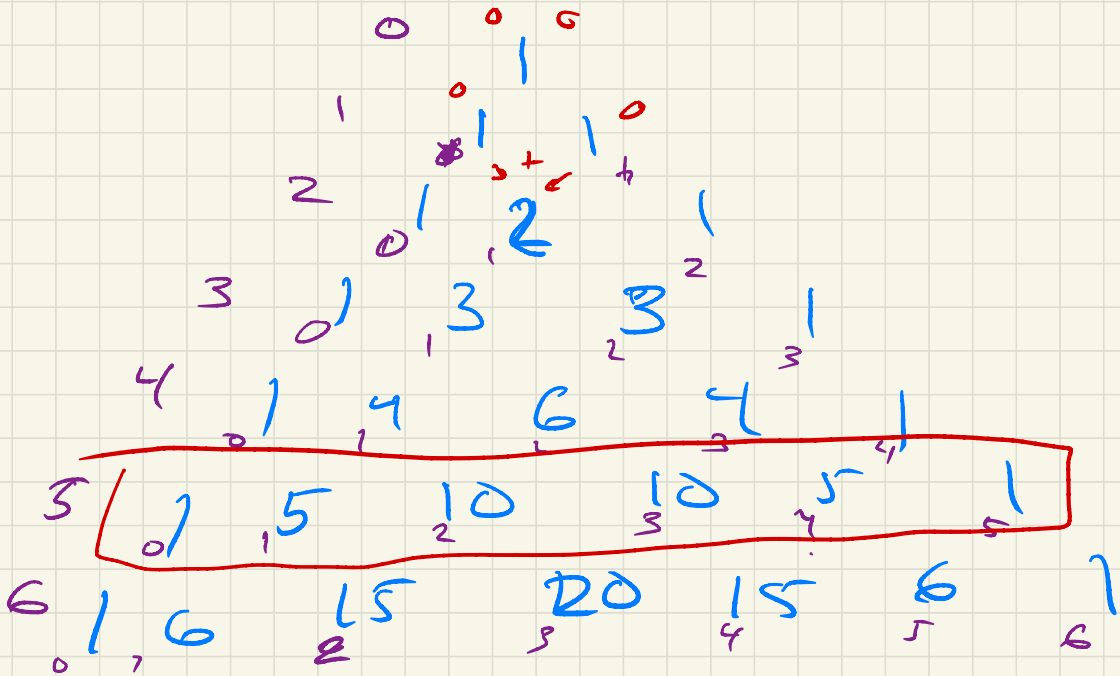
$$\binom{n}{r}$$

$$\frac{P(n,r)}{r!} = \frac{n!}{r!(n-r)!}$$

$$\binom{5}{3} = 10$$

$$\binom{5}{2} = 10$$





$$\binom{5}{2} = 10$$

$\binom{5}{0}\binom{5}{1}+\left[\binom{5}{2}+\binom{5}{3}+\binom{5}{4}+\binom{5}{5}\right]$

At least 2.

$\binom{10}{5}$ All the possible combos of 5 balls

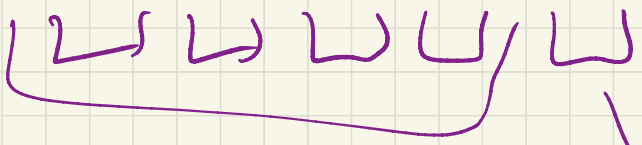
2	2	1	60
B	r	G	252

$\binom{5}{2}\cdot\binom{3}{2}\cdot\binom{2}{1}\cdot$

$10 \cdot 3 \cdot 2 = 60$

$$\binom{13}{5}\binom{4}{1}\binom{4}{1}\binom{4}{1}\binom{4}{1}\binom{4}{1}$$

- $N(\text{flushes})$ ✶
- $N(\text{straight})$ (?)



A, 2, 3, ..., K

$\binom{13}{1} \cdot \binom{12}{1}\binom{4}{1}$

624 / 2.6 m

SHC

AAA KK

$\binom{13}{2}\binom{2}{1}\binom{4}{3}\binom{4}{2}$

$78 \cdot 2 \cdot 4 \cdot 6$

$3,744 / 2.6$

$$\binom{13}{5}\binom{4}{1}$$

$$1287 \cdot 4 = 5,148$$