

Permutation and combination

Permutation = arrangements

Combination = selection / choosing

⇒ Permutation

→ In how many ways can ALLANBAD be arranged?

$$\begin{array}{c} \text{Total } \leftarrow 8! \\ \swarrow \quad \searrow \\ 3! \times 2! \quad 2! \\ \swarrow \quad \searrow \\ 3 \text{ A's} \quad 2 \text{ L's} \end{array}$$

→ Specified order

A performs before B

A

B can be in any of the spaces

A performs exactly before B

AB . . .

. AB . .

. . AB

. . . A

→ Not possible.

⇒ Combination

→ At least case

Select 5 people where atleast 3 should be girls

so $3C2B$, ~~4C1B~~ $4C1B$, $5C0B$

→ At most case

Select 5 people where atmost 3 should be girls

so $1G4B$, $2G3B$, $3G2B$, $0G5B$

→ 3 friends sitting together

→ 10 kids sitting for a photo, ABC will sit together
so we consider ABC as one.

ABC + 7 others

$$1 + 7 = 8$$

$$\therefore 8! \times 3!$$

ABC can be arranged in
diff ways.

→ 3 friends don't want to sit together

Total cases = sitting together

$$10! - (8! \times 3!)$$

→ Kohli will always play

total 16 players in a squad, you have to select 11

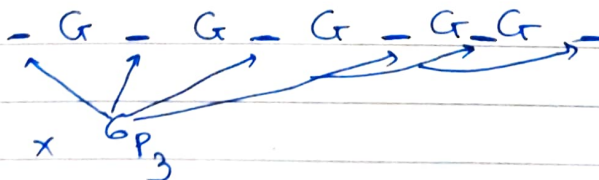
but Kohli will always play.

so $\boxed{{}^{15}C_{10}}$

→ Raina will not play

$$\boxed{{}^{15}C_{11}}$$

→ In how many ways can 5 girls and 3 boys be seated in a row
so that no two boys are together



$\leftarrow 5!$
arrangement
of 5 girls