Permutation and combination

Permutation = arrangements

Combination = selection / choosing

⇒ Permutation

→ In how many ways can ALLAHABAD be arranged?

Total $\frac{8!}{3! \times 2!}$

3 A's, 2 L's

→ 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 3G 2B , ~~4G 1B~~ 4G 1B , 5G 0B

→ At most case

Select 5 people where atmost 3 should be girls

so 1G 4B , 2G 3B , 3G 2B , 0G 5B

→ 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 ∴ $8!_0$ × $3!_0$

ABC can be arranged in diff ways.

→ 3 friends dont want to sit together

Total cases - sitting together

$10!_0$ - $(8!_0 \times 3!_0)$

→ Kohli will always play

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

but kohli will always play.

so $^{15}C_{10}$

→ Raina will not play

$^{15}C_{11}$

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

- G - G - G - G - G -

$5!_0$ × $^6P_3$

$5!_0$ ← arrangement of 5 girls