

Combinatorics

e.g., distribute 5 bills to 4 people

Combine
without replacement

$$\frac{n!}{(n-k)!k!}$$

Ans: Combine with replacement

$$\frac{(n-1+k)!}{(n-1)!k!} = \frac{(4-1+5)!}{(4-1)!5!} = 56$$

e.g. Choose 7 from 10 with 2
as Vicepres, 1 as pres & 4 reg mem

$$\text{Ans: } \frac{10!}{(10-7)! \times 4! \times 2! \times 1!} = 12600$$

or

$$\text{Ans: } C_1^{10} \cdot C_2^9 \cdot C_4^7 = 12600$$