



Studybeesofficial

Where Minds Pollinate

Class 11
Mathematics
Chapter 6
Exercise 6.3
Notes

National Book Foundation

Follow Our Socials



studybeesofficial



studybeesofficialpak



studybeesofficialpak

Exercise # 6.3

Q5. In how many ways can 11 players be chosen out of 16 if

i) There is no restriction.

No. of ways to

chose

$$\text{players} = {}^{16}C_{11} = 4368 \text{ ways}$$

ii) A particular player is always chosen.

If one player is always chosen then we have 10 players to chose from 15.

$$\therefore = {}^{15}C_{10} = 3003 \text{ ways}$$

Q6. Out of 5 men and 3 women, a committee of 3 is to be formed. In how many ways it can be formed if at least one man is selected?

$$\begin{aligned} \text{No. of ways} &= ({}^5C_1 \times {}^3C_2) + ({}^5C_2 \times {}^3C_1) + ({}^5C_3 \times {}^3C_0) \\ &= 55 \text{ ways} \end{aligned}$$

case - I M, W, W

case - I M, M, W

case - II M, M, M

Q7. A committee of 5 members is to be formed out of 6 men and 4 women. In how many ways it can be done if it has:-

i) exactly 2 women?

M, M, M, W, W

$$\begin{aligned}\text{No. of ways} &= {}^4C_2 \times {}^6C_3 \\ &= 120 \text{ ways}\end{aligned}$$

ii) at least 2 women?

W, W, M, M, M case - I

$$\begin{aligned}\text{ways} &= {}^4C_2 \times {}^6C_3 \\ &= 120 \text{ ways}\end{aligned}$$

W, W, W, M, M case - II

$$\begin{aligned}\text{ways} &= {}^4C_3 \times {}^6C_2 \\ &= 60 \text{ ways}\end{aligned}$$

W, W, W, W, M case - III

$$\begin{aligned}\text{ways} &= {}^4C_4 \times {}^6C_1 \\ &= 6 \text{ ways}\end{aligned}$$

$$\therefore \text{Total ways} = 120 + 60 + 6$$

$$= 186 \text{ ways.}$$

At most 2 women?

Case - I:- $\underline{W}, \underline{W}, \underline{M}, \underline{M}, \underline{M}$

$$\text{ways} = {}^4C_2 \times {}^6C_3$$

$$= 120 \text{ ways}$$

Case - II:- $\underline{W}, \underline{M}, \underline{M}, \underline{M}, \underline{M}$

$$\text{ways} = {}^4C_1 \times {}^6C_4$$

$$= 60 \text{ ways}$$

Case - III:- $\underline{M}, \underline{M}, \underline{M}, \underline{M}, \underline{M}$

$$\text{ways} = {}^4C_0 \times {}^6C_5$$

$$= 6 \text{ ways}$$

$$\text{Total choices} = 120 + 60 + 6$$

$$= 186 \text{ ways}$$

8. There are 10 points on a circle. Find no. of

i) Lines

$$\text{No. of lines} = {}^{10}C_2$$

$$= 45 \text{ lines}$$

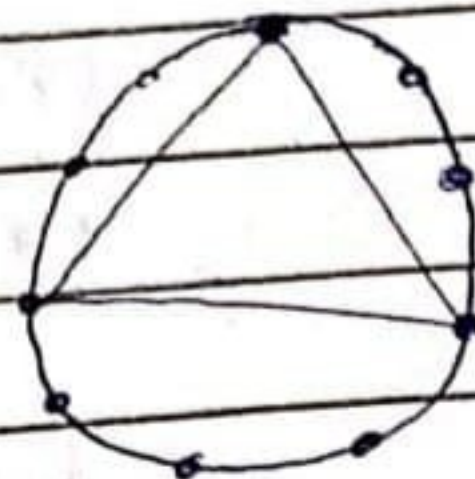


a line is formed by 2 points.

ii) Triangles can be drawn?

$$\text{No. of triangles} = {}^{10}C_3$$

$$= 120 \Delta's$$



a Δ is formed by 3 points

9. Find number of diagonals in n -sided polygon?

$$\text{No. of diagonals in } n\text{-sided polygon} = {}^nC_2 - n$$

where n represents no. of sides.

10. In how many ways a group of 10 girls can be divided into two groups of 3 and 7 girls

$$\begin{aligned} \text{No. of ways to form a group} &= {}^{10}C_3 \times {}^{10}C_7 \\ &= 14400 \text{ ways} \end{aligned}$$

11. No. of diagonals in n -sided polygon is 35. Find n .

$$\text{No. of diagonals} = 35 = {}^nC_2 - n$$

$$\Rightarrow {}^nC_2 - n = 35$$

$$\frac{n!}{(n-2)! \cdot 2!} - n = 35$$

$$\frac{n(n-1)(n-2)!}{(n-2)! \cdot 2} = 35 + n$$

$$n^2 - n = 2(35 + n)$$

$$n^2 - n = 70 + 2n$$

$$n^2 - n - 2n - 70 = 0$$

$$n^2 - 3n - 70 = 0$$

$$n^2 + 7n - 10n - 70 = 0$$

$$n(n+7) - 10(n+7) = 0$$

$$(n+7)(n-10) = 0$$

$$\Rightarrow n = -7$$

$$n - 10 = 0$$

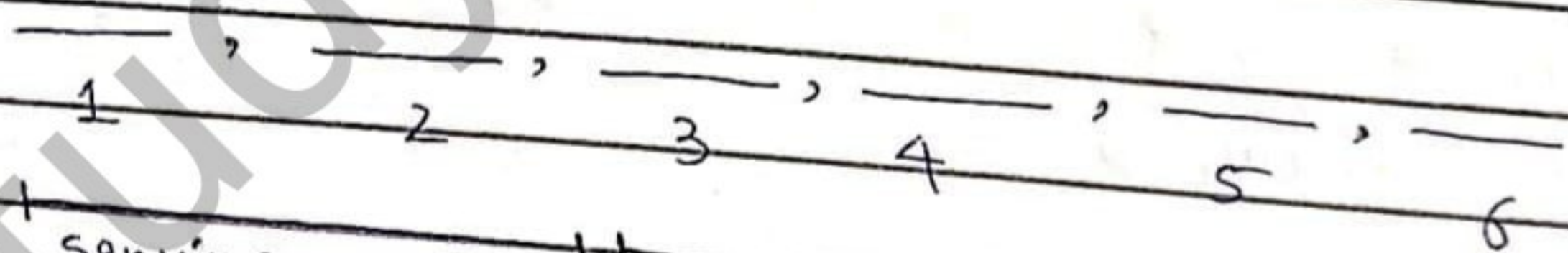
$$n = 10$$

$$n \in \mathbb{N} \mid n \in \mathbb{Z}^+$$

$$\therefore n = 10$$

No. of sides of polygon are 10.

For the post of 6 officers, there are 100 applicants, 2 posts are reserved for serving candidates and remaining for others. There are 20 serving candidates among the applicants. In how many ways this selection can be made?



serving candidates
i.e. 20 for
2 posts

Remaining applicants posts
i.e. 4 for $(100 - 20) = 80$

$$\begin{aligned} \text{No of selection ways} &= {}^{20}C_2 \times {}^{80}C_4 \\ &= 300500200 \text{ ways of selection.} \end{aligned}$$

13. In an examination, a candidate has to pass in each of 6 subjects. In how many ways he cannot qualify the exam?

$$\begin{aligned}\text{No. of ways he can't} &= \dots = {}^6C_1 + {}^6C_2 + {}^6C_3 + {}^6C_4 + {}^6C_5 + {}^6C_6 \\ &\text{qualify exam} \\ &= 63 \text{ ways he will not qualify exam}\end{aligned}$$

14. A question paper has three parts A, B and C each containing eight questions. If a student has to choose five questions from A, three from B and C. In how many ways he can choose questions.

$$\begin{aligned}\text{No. of ways to choose} &= {}^8C_5 = 56 \text{ ways} \\ \text{questions from A}\end{aligned}$$

$$\begin{aligned}\text{No. of ways to choose} &= {}^8C_3 = 56 \text{ ways} \\ \text{questions from B}\end{aligned}$$

$$\begin{aligned}\text{No. of ways to choose} &= {}^8C_3 = 56 \text{ ways} \\ \text{questions from C}\end{aligned}$$

$$\text{Total ways} = (56)^3 = 175616 \text{ ways}$$