20/1/2021   Tutorial 1

Pb-6 There are total 14 player
Number of bowlers = 5
Remaining players = 14 - 5 = 9

Number of ways to select 11 players such
that there are atleast 3 bowlers.

Therefore, there are 3 possibilities
① team with 3 bowlers.
② team with 4 bowlers.
③ team with 5 bowlers.

Case 1 : No. of ways = $^5C_3 \cdot {}^9C_8$

Case 2 : No. of ways = $^5C_4 \cdot {}^9C_7$

Case 3 : No. of ways = $^5C_5 \cdot {}^9C_6$

∴ Total number of ways = case1 + case 2 + case 3

$\# = {}^5C_3 \cdot {}^9C_8 + {}^5C_4 \cdot {}^9C_7 + {}^5C_5 \cdot {}^9C_6$

∴ $\# = 90 + 180 + 84$

$\# = 354$ total number of ways of
         selecting 11 players given the
         req. conditions.

Pb 8 There are total 10 points in a plane.

If all the 10 points are non-collinear

∴ Total number of lines = $^{10}C_2$ ——— ①

It is given that out of 10 points, 4 points are collinear

Number of lines formed using these 4 collinear points = $^4C_2$ ——— ②

However these 4 points results in the same line

∴ Total number of lines = $^{10}C_2 - ^4C_2 + 1$

∴ Total number of lines = $45 - 6 + 1$

∴ Total number of lines = 40

Pb - 9   Set given $\{0, 1, 2, 3, 4, 5\}$

We have to form at 4-digit number (repetition of digit is not allowed).

1. For the first digit we have 5 options (0 not included)

2. For the 2nd digit, since repetition not allowed, and it can be 0, so 5 options

3. For the 3rd and 4th digit we have 4 and 3 options respectively.

$$\square \quad \square \quad \square \quad \square$$
$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$
$$5 \quad 5 \quad 4 \quad 3$$
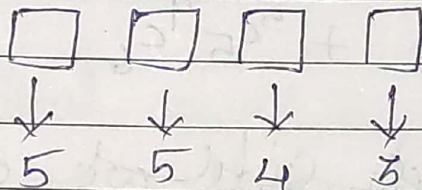
∴ 4-digit different numbers that can be formed $= 5 \times 5 \times 4 \times 3$

$$= 300$$