Day -06

① 3 student be seated in a row?

$$3! = 3 \times 2 \times 1 = \underline{6\ ways}$$

② A box contains 5 different colored balls. How many ways can you pick 1 ball?

→ 5 ways

③ arranging letter in "CAT": $3! = 3 \times 2 \times 1 = 6$

$$\underline{6\ ways}$$

④ choosing 2 fruits from 4 : $C(4,2) =$

$$4!/(2! \times 2!) = \underline{6\ ways}$$

⑤ 2-digit number from 1. 2. 3 : $p(3,2) = 3!/(3-2)$

$$= \underline{6\ ways}$$

⑥ 2-digit number from 1. 2. 3. 4, 5 (even)

$$2 \times p(4,3) = 2 \times 24 = \underline{48\ ways}$$

⑦ 3-digit numbers from 1. 2, 3. 4.

$$p(4,3) = 4!/(4-3)! = 24\ ways.$$

⑧ Passwords from A. B. C. D :

$$p(4,3) = 7!/(3! \times 4!) = \underline{35\ ways}$$

⑨ Committee of 3 from 7 people

$$c(7,3) = 7!$$

⑩ Probability of picking a green ball from
3 red, 2 green

Total = 5   green = 2

$$= \underline{2/5}$$

(11) How many 3-digit No from 1, 2, 3, 4 without
repedation
First digit 4 choices. Second 3. third = 2.

$$4 \times 3 \times 2 = 24$$

(12). — Ways to choose 3 from 7 people (Committee)

$$7C3 = \underline{35} \text{ ways}$$

(13) = Probability of drawing a King from
52 card

Kings = 4

$$= 4/52 = 1/13$$

(14) ways to arrange 5 books on a shelf?

$$5! = \underline{120} \text{ ways}$$

(15) Probability of black ball from 6 white &
4 black?
Total = 10, black = 4

$$= 4/10 = 2/5$$

(16). Password from A, B, C, D taken 3 at a time
order matter $= 4P3 = 4 \times 3 \times 2 \underline{= 24}$

(17) probability of getting even number when
die is rolled?

even No = 2, 4, 6 → 3 outcomes

$$= 3/6 = 1/2.$$

(18) ways to choose 2 letters from "MATH"?
All 4 letters are different →

$$= 4C2 = 6 \text{ ways}$$

(19) Probability of heart from standard deck?

13 hearts out of 52

$= 13/52 = 1/4$

(20). ways to arrange 4 people around a circular table?

Circular permutation: $(n-1)!$

$= 3! = 6$ ways

(21) 4-digit even number using 1, 2, 3, 4, 5. Without repetition. Even number end in 2 @ 4

Case 1 (ends in 2): Remaining: 1, 3, 4, 5 → $3! = 6$
Case 2 (ends in 4): Remaining: 1, 3, 2, 5 → $3! = 6$

Total $= 6 + 6 = \underline{12}$

(22) probability both balls are green (3R, 4B, 5G)?

Total balls = 12.

way to choose 2 green $= 5C2 = 10$

Total ways $= 12C2 = 66$

$= 10/66 = 5/33$

(23) ways to arrange 5 student such that 2 don't sit together?

Total ways without restriction =

$5! = 120$

Treat 2 as one unit: $4! \times 2! = 48$

Not together $= 120 - 48 = 72$ ways

(24) From 10 men & 8 women. Committee of 4 with at least 2 women?

Total with

2W, 2m $= 8C2 \times 10C2 = 28 \times 45 = 1260$

3W, 1m $= 8C3 \times 10C1 = 56 \times 10 = 560$

4. women $= 8C4 = 70$

$\dfrac{}{\text{Total}} = 1260 + 560 + 70 = 1890$ ways

25. Die rolled twice. probability Sum = 7?

$\dfrac{}{\text{Total}}$ outcomes $= 6 \times 6 = 36$

pairs $(1,6), (2,5), (3,4), (4,3), (5,2), (6,1) \rightarrow$

<u>6 outcomes</u>

$= 6/36 = \underline{\underline{1/6}}$