

# Permutation & Combination

1. Find number of different teams of 4 players that can be formed from a set of 10 players.
2. Find the number of different triangles that can be formed by joining vertices of a convex octagon.
3. Given a triangle PQR with 4, 5, 5 points on side QR, RP, PQ respectively. Find total number of triangles that can be formed by joining these points.
4. There is a convex polygon of 10 sides. Find the number of triangles joins its vertices such that no side of triangle is same as any side of polygon.
5. Given a convex polygon of 9 sides, find its total number of diagonals.
6. Given numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11. Find number of ways of selecting three numbers by taking at least one even number
7. From a pack of playing card, 7 cards are to be selected taking at least one "Ace". Find the number of ways of selection.

8. Given letters a, b, c, d, e, f, g, h, i. Find number of ways of selecting three different letters such that a & c are never included & g is always included.

9. There are 12 men & 15 women. A committee of 5 men & 9 women is to be formed. Find number of committees if two particular men refused to work together in the same committee.

10. There are 12 men & 15 women. A committee of 5 men & 9 women is to be formed. Find number of committees if a particular man can't be part of committee if a particular woman is already there in committee.

11. There are 9 married couples. A mixed doubles lawn tennis match is to be organized such that no husband & wife playing in the same match. Find number of ways of organizing the match.

12. There are 6 batsmen, 5 bowlers & 3 wicketkeepers. A team of 11 players taking at least 5 batsman & at least 4 bowlers. Find the number of such teams.

13. There are 6 different bowls & 3 different boxes. Find the number of ways of putting bowls into boxes such that no box is empty.

14. There is a rectangular grid of size  $7 \times 5$ . Find total number of rectangles including squares in the picture shown in video.

15. There is a rectangular grid of size  $7 \times 5$ . Find total number of squares in the picture shown in video.

16. There is a rectangular grid of size  $7 \times 5$ . Find the number of rectangles including only those squares whose both side lengths are even units

17. Find number of divisors of 1800.

18. Find number of proper divisors of 1800.

19. Find number of odd divisors of 1800.

20. Find number of odd proper divisors of 1800.

21. Find number of divisors of 1800 which are divisible by 12

### Arrangements

22. Arrange three letters A, N, D in a row.

23. How many five digit numbers formed by using these digit 1, 2, 3, 4, 6, 7, 9 such that repetition is not allowed.

24. How many five digit EVEN numbers formed by using these digit 1, 2, 3, 4, 6, 7, 9 such that repetition is not allowed.

25. How many five digit numbers greater than 30000 that can be formed by using these digit 1, 2, 3, 4, 6, 7, 9 such that repetition is not allowed.



26. How many five digit EVEN numbers greater than 30000 can be formed by using these digit 1, 2, 3, 4, 6, 7, 9 such that repetition is not allowed.

27. How many five digit numbers greater than 47000 can be formed by using these digit 1, 2, 3, 4, 6, 7, 9 such that repetition is not allowed.

28. Find total number of different digit odd numbers less than ten thousand that can be formed by using digits 1, 2, 3, 4, 6, 7, 9 (repetition is not allowed).

29. Find total number of five digit numbers formed by 0, 1, 2, 3, 5, 7, 8, if repetition is not allowed.

30. Find total number of five digit EVEN numbers formed by 0, 1, 2, 3, 5, 7, 8, if repetition is not allowed.

31. Find total number of five digit numbers divisible by 4 formed by using digits 0, 1, 2, 3, 5, 7, 8, if repetition is not allowed.

32. How many five digit numbers formed by using these digit 1, 2, 3, 4, 6, 7, 9 such that repetition is allowed.

33. How many five digit numbers formed by using these digit 1, 2, 3, 4, 6, 7, 9 such that number have at least one repeated digit and repetition is allowed.

34. Find total number of five digit numbers formed by using 0, 1, 2, 3, 5, 7, 8 which are greater than 50000 if repetition is allowed.

35. How many six digit numbers can be formed such that no consecutive digits are identical?

36. Find sum of all numbers that can be formed by using all digits 1, 2, 4, 5, 7.

37. 5 students A, B, C, D, E are ranked in every possible manner such that no two students can have same rank. Find number of ways of ranking such that B has better rank than C.

38. In how many ways 5 persons can be seated on 8 different seats in a row?

39. Find total number of words using 3 different vowels & 2 different consonants from the letter of word 'INVOLUTES'.

40. Find number of 7 letter words by arranging all letters of word "STRANGE" if vowels occupy even places only.

41. In a school there are 7 periods of different subjects including P,C,M. Find number of ways of conducting school if math is done after P & C is done after M.

42. How many numbers like 'XYZUV' can be formed such that  
(i)  $X > Y > Z > U > V$  (ii)  $X < Y < Z < U < V$

### Dictionary

43. If all letters of word 'VIRGO' are arranged to form every possible word & these words are arranged as in dictionary, then find rank of word 'RIVOG'.

44. If all letters of word 'AGAIN' are arranged in form of dictionary then find the 44<sup>th</sup> word in dictionary.

### Box Method is not applicable

45. Find total number of words formed by arranging all letters of 'PARALLEL'.

46. How many 7 digit numbers can be formed by using 1, 0, 5, 0, 1, 6, 5.

47. How many 5 digit number can be formed by using 1, 2, 3 only such that sum of digits is 11.

48. There are 6 East-West roads & 5 North-South roads as shown in the video. Find number of shortest routes from A to B.

49. Find total number of 4 letter words that can be formed by using letters of word 'INFINITE'.



50. Find number of ways of arranging letters a, b, c, d, e, f, g in a row if b, d, g are together (adjacent).

51. How many words can be formed by using all letters of word 'PARALLEL' if all 'L's are adjacent.

52. There are 3, 4, 4 different books of math, physics, & chemistry respectively. In how many ways those books can be arranged if all books of same subjects are together.

53. Find number of ways of arranging letters a, b, c, d, e, f, g if b, d, g can not be all together.