

Combinations Question Bank

1. From a class of 12 boys and 10 girls, 10 students are to be chosen for a competition, at least including 4 boys and 4 girls. The 2 girls who won the prizes last year should be included. In how many ways can the selection be made? Ans: 104874
2. An examination paper consists of 12 questions divided into parts A and B. Part A contains 7 questions and part B contains 5 questions. A candidate is required to attempt 8 questions selecting at least 3 from each part. In how many ways can the candidate select the questions? Ans: 420
3. A committee is to be formed from 9 ladies and 8 gentlemen. In how many ways can a committee of 5 be formed so as to command a lady majority? Ans: 3486
4. Everybody in a room shakes hands with everybody else. The total number of handshakes is 66. Find the total number of persons in the room. Ans: 12
5. Find n if i) $n_{C_{n-2}} = 28$ ii) $3 \cdot n_{C_6} = 2 \cdot n_{C_4}$
6. If $n_{C_8} = n_{C_2}$, find the value of n and n_{C_5}
7. If $n_{C_8} = n_{C_6}$, find the value of n and n_{C_2}
8. Determine n if i) $2n_{C_5} : n_{C_5} = 12:1$ ii) $2n_{C_5} : n_{C_5} = 11:1$
9. Find r if i) $50_{C_{r+8}} = 50_{C_{3r+2}}$ ii) $18_{C_4} = 118_{C_{r+2}}$ iii) $n_{P_r} = 24 \cdot n_{C_r}$
10. Find n and r if $n_{P_2} = 272$ and $n_{C_r} = 136$
11. If $n+1_{C_r} : n_{C_r} : n-1_{C_r} = 11:6:3$, find n and r
12. If $n_{C_{r-1}} = 36$, $n_{C_r} = 84$ and $n_{C_{r+1}} = 126$, find n and r. [ans: n = 9; r = 3]
13. If $15_{C_r} : 15_{C_{r-1}} = 11:5$, find r
14. If $n+2_{C_8} : n-2_{P_4} = 57:16$, find the value of n.
15. In how many ways a team of 3 boys and 3 girls be selected from 5 boys and 5 girls?
16. What is the number of ways of choosing 4 cards from a pack of 52 cards?
In how many of these
 - i) four cards of the same suit
 - ii) four cards belong to different suits
 - iii) are face cards
 - iv) two are red cards and two are black cards
 - v) cards of the same colour.
17. A polygon has 54 diagonals.
 - i) Find the number of sides of the polygon
 - ii) Find the total number of distinct triangles that can be formed using its vertices.[Ans:220]
18. (i) There are 27 points in a plane. 5, 10 and 15 points are collinear on distinct lines. By joining these points, how many distinct lines can be formed? [ans: 194]

(ii) How many distinct triangles can be formed whose vertices are the given 27 points.

[ans: 2340]

19. A test consists of 10 multiple choice questions each having four alternative answers of which exactly two are correct. A student has to mark two answers and his answer is considered correct only if both the selected answers are correct. Find the number of ways of getting exactly 8 correct answers by a student answering all the questions. [ans: 1125]
20. A student is to answer 10 out of 13 questions in an examination such that he must choose at least 4 from the first five questions. Find the number of choices available to him [ans: 196]