

## PERMUTATIONS & COMBINATIONS

Determine whether each situation involves a permutation or a combination. Then find the number of possibilities.

1. From a standard deck of 52 cards, how many ways can 7 cards be drawn?
2. Seating 8 students in 8 seats in the front row of the school auditorium
3. From a group of 10 men and 12 women, how many committees of 5 men and 6 women can be formed?
4. How many hockey teams of 6 players can be formed from 14 players without regard to position played?
5. Introducing the 5 starting players on the Blue Devil's basketball team at the beginning of the next basketball game
6. Checking out 4 library books from a list of 8 books for a research paper.
7. Choosing 5 movies to rent if you want at least 2 Westerns. The store has 8 Westerns and 12 Science Fiction films.
8. Choosing the first, second, and third-place finishers in a race with 10 competitors
9. Electing 4 candidates to a municipal planning board from a field of 7 candidates
10. Choosing 3 side-dishes from a menu that offers 6 vegetable side-dishes and 4 starches if you want at least one of each.
11. An arrangement of the letters in the word RHOMBUS
12. Selecting 2 of 8 possible different brands of orange juice at the store.
13. Placing a red rose bush, a yellow rose bush, a white rose bush, and a pink rose bush in a row in a planter.
14. Selecting 2 orange tabbies from 9 kittens at an animal rescue shelter
15. An arrangement of the letters in the word ISOSCELES
16. Selecting a 4-person bobsled team, if one of the team members must be from a group of 9 football players and the other 3 may be from a group of 8 other athletes.

17. Arranging 4 charms from 6 possible, on a bracelet that has a clasp, a front, and a back
18. Selecting 3 desserts from 10 possible choices displayed on the dessert cart at a restaurant.
19. Forming a 4-person sales team from a group of 12 salesmen and 8 saleswomen, if you want at most 2 women on the team.
20. Making a 5-sided polygon by choosing any of 5 of 11 points located on a circle to be the vertices.
21. Seating 5 men and 5 women alternately in a row, beginning with a woman.
22. Farmington High is planning its academic festival. All math classes will send 2 representatives to compete in the math bowl. How many different groups of students can be chosen from a class of 16 students.
23. A photographer is taking pictures of a bride and groom and their 6 attendants. If she takes photographs of 3 people in a group, how many different groups can she photograph?
24. An airline is hiring 5 flight attendants. If 8 people apply for the job, how many different groups of 5 attendants can the airline hire?
25. A school librarian would like to buy subscriptions to 7 new magazines. Her budget however, will allow her to buy only 4 new subscriptions. How many different groups of 4 magazines can she choose from the 7 magazines?
26. Your school newspaper has an editor-in-chief and an assistant editor-in-chief. The staff of the newspaper has 12 students. In how many ways can students be chosen for these two positions?
27. Five representatives from a senior class of 280 students are to be chosen for the student council. In how many ways can students be chosen to represent the senior class on the student council?
28. In how many ways can you pick 5 cards if you must choose a Queen, then a King and, then 3 other cards if every card is drawn one at a time.