

Using Permutations and Combinations

Contemporary Math (MAT-130)

Evaluate each expression.

1. ${}_5C_2$
2. ${}_4P_3$
3. ${}_8C_1$
4. ${}_6P_6$
5. ${}_{10}C_5$
6. ${}_{11}P_4$

Decide whether each is a combination or permutation.

7. A locker combination.
8. A hand of poker.
9. A committee of people.
10. A student ID number.
11. Placement of six people in a race.

Use permutations to solve the following problems.

12. How many ways can five people line up for a photograph?
13. How many ways can ten swimmers medal (gold, silver, bronze)?
14. How many ways can a president and secretary be chosen from a club of six people?

Use combinations to solve the following problems.

15. How many five person committees can be made from a group of 7 people?
16. How many ways are there to get a spade flush in poker (all five cards are spades)?
17. How many ways are there to pick a set of five different letters?

Use any method to solve the following problems.

18. There are nine players in a batting rotation. How many batting orders are possible on a 15 man baseball team?
19. How many ways are there to schedule four days a week to go to work?
20. How many ways are there to mark a 5 question true or false test if you answer every question?
21. How many ways are there for three people to sit in a row of seven chairs?
22. How many ways are there to choose a 5 letter password if no letter may be used more than once?
23. A lottery game is played by choosing five different numbers in any order from 1-39 and a separate single ball from 1-19. How many different tickets can be selected?
24. Radio station call letters in the United States all start with the letters K or W. The other letters have no restrictions. How many four letter call letters are possible if no letters are repeated?
25. A company tests a shipment of 20 calculators by testing five of them. How many different samples can be chosen?

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Solutions:

1. 10
2. 24
3. 8
4. 720
5. 252
6. 7920
7. Permutation
8. Combination
9. Combination
10. Permutation
11. Permutation
12. 120
13. 720
14. 30
15. 21
16. 1287
17. 65780
18. 1816214400
19. 35
20. 32
21. 210
22. 7893600
23. 10939383
24. 27600
25. 15504