

## 4.E: Combinations (Optional Exercises)

Do the following problems using combinations.

1. How many different 3-people committees can be chosen from ten people?	2. How many different 5-player teams can be chosen from eight players?
3. In how many ways can a person chose to vote for three out of five candidates on a ballot for a school board election?	4. Compute the following: a. ${}^9C_2$ b. ${}^6C_4$ c. ${}^8C_3$ d. ${}^7C_4$
5. How many 5-card hands can be chosen from a deck of cards?	6. How many 13-card bridge hands can be chosen from a deck of cards?
7. There are twelve people at a party. If they all shake hands, how many different hand-shakes are there?	8. In how many ways can a student choose to do four questions out of five on a test?
9. Five points lie on a circle. How many chords can be drawn through them?	10. How many diagonals does a hexagon have?
11. There are five team in a league. How many games are played if every team plays each other twice?	12. A team plays 15 games a season. In how many ways can it have 8 wins and 7 losses?
13. In how many different ways can a 4-child family have 2 boys and 2 girls?	14. A coin is tossed five times. In how many ways can it fall three heads and two tails?
15. The shopping area of a town is a square that is six blocks by six blocks. How many different routes can a taxi driver take to go from one corner of the shopping area to the opposite cater-corner?	16. If the shopping area in the previous problem has a rectangular form of 5 blocks by 3 blocks, then how many different routes can a taxi driver take to drive from one end of the shopping area to the opposite kitty corner end?
17. A team of 7 workers is assigned to a project. In how many ways can 3 of the 7 workers be selected to make a presentation to the management about their progress on the project?	18. A real estate company has 12 houses listed for sale by their clients. In how many ways can 5 of the 12 houses be selected to be featured in an advertising brochures?
19. A frozen yogurt store has 9 toppings to choose from. In how many ways can 3 of the 9 toppings be selected ?	20. A kindergarten teacher has 14 books about a holiday. In how many ways can she select 4 of the books to read to her class in the week before the holiday?

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