

14-2

Skills Practice

Permutations and Combinations

Determine whether each situation involves a *permutation* or *combination*. Explain your reasoning.

- dinner guests seated around a table
- a pattern of different widths of bars and spaces for a bar code
- selecting two yellow marbles out of a sack of yellow and blue marbles
- placing one can of each of 15 different types of soup along a store shelf
- selecting four candles from a box of ten
- the placement of the top ten finishers in a school's spelling bee
- choosing two colors of paint out of twenty to paint the walls and trim of a bedroom
- choosing a set of twelve pencils from a selection of thirty-six

Evaluate each expression.

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| 9. ${}_5P_2$ | 10. ${}_6P_4$ | 11. ${}_7P_3$ |
| 12. ${}_9P_4$ | 13. ${}_7P_5$ | 14. ${}_5P_3$ |
| 15. ${}_6C_2$ | 16. ${}_9C_7$ | 17. ${}_8C_4$ |
| 18. ${}_7C_5$ | 19. ${}_{12}C_2$ | 20. ${}_{13}C_7$ |
| 21. ${}_{11}C_2$ | 22. ${}_5P_4$ | 23. ${}_{14}C_5$ |
| 24. ${}_{11}C_6$ | 25. $({}_4P_2)({}_3P_2)$ | 26. $({}_8C_6)({}_5P_1)$ |