

Practice 79

FOR USE WITH SECTION 12.3

Calculate each expression.

1. a. $5!$ b. $2! + 3!$ 2. a. $8!$ b. $3! + 5!$ 3. a. $3(4!)$ b. $12!$
 4. a. $7!$ b. $(4!)(5!)$ 5. a. $6(5!)$ b. $6!$ 6. a. $5(2!)$ b. $2(5!)$

Simplify.

7. ${}_7P_4$ 8. ${}_8P_3$ 9. ${}_6P_5$ 10. ${}_9P_2$

Simplify.

11. $\frac{8!}{4!}$ 12. $\frac{9!}{3! 3!}$ 13. $\frac{10!}{2! 3! 3!}$ 14. $\frac{(n+1)!}{(n-2)!}$

Give an expression for the number of distinguishable permutations of the letters of each word. Then evaluate the expression.

15. BANANA 16. VANILLA 17. POSSESSOR
18. Five cards are turned up from the top of a standard 52-card deck. In how many different ways could the sequence of cards turn out?
19. a. In how many ways can all the letters of the word QUIET be arranged in order?
 b. In how many ways can all the letters of the word QUIET be arranged, if the letters Q and U must occur together in the order QU?
 c. In how many ways can all the letters of the word QUIET be arranged, if the letters Q and U must occur together in either the order QU or the order UQ?
20. The Lunch Pail, a restaurant that features 6 appetizers, 7 main dishes, and 8 desserts, advertises: "You could eat at the Lunch Pail every day for a year and never have the same meal twice." Assuming that you have one appetizer, one main dish, and one dessert at every meal, is this true?
21. In how many ways can you answer a 10-question true-false test?
22. A high-school football league has 8 teams. In how many different orders can the teams finish the season, excluding the possibility of ties for a place in the standings?
23. In a school election with 7 candidates, the candidate getting the most votes will be president of the Student Council, the candidate getting the second most votes will be vice-president, and the candidate getting the third most votes will be treasurer. How many different slates of Student Council officers are possible?