13.3 EXERCISES

HOMEWORK KEY

= **WORKED-OUT SOLUTIONS** on p. WS1 for Exs. 7 and 25

= **TAKS PRACTICE AND REASONING** Exs. 14–19, 25, and 28

SKILL PRACTICE

1. VOCABULARY Copy and complete: A(n) ___?___ is a selection of objects in which order is not important.

2. WRITING *Explain* how a combination differs from a permutation.

EXAMPLE 1 on p. 856 for Exs. 3, 4

3. COMBINATIONS How many combinations of 3 letters from the list A, B, C, D, E, F are possible?

4. ERROR ANALYSIS *Describe* and correct the error in listing all of the possible combinations of 2 letters from the list A, B, C.

AB BA CA
AC BC CB

EXAMPLE 2 on p. 857 for Exs. 5–15

5. ERROR ANALYSIS *Describe* and correct the error in evaluating ${}_9C_4$.

$${}_9C_4 = \frac{9!}{(9-4)!} = \frac{9!}{5!} = 3024$$

COMBINATIONS **Evaluate the expression.**

6. ${}_5C_1$ **7.** ${}_8C_5$ **8.** ${}_9C_9$ **9.** ${}_8C_6$

10. ${}_{12}C_3$ **11.** ${}_{11}C_4$ **12.** ${}_{15}C_8$ **13.** ${}_{20}C_5$

14. TAKS REASONING What is the value of ${}_{10}C_6$?

(A) 7 (B) 60 (C) 210 (D) 151,200

15. TAKS REASONING You have the first season of your favorite television show on a set of DVDs. The set contains 13 episodes. You have time to watch 3 episodes. How many combinations of 3 episodes can you watch?

(A) 286 (B) 572 (C) 1716 (D) 589,680

TAKS REASONING **In Exercises 16–19, tell whether the question can be answered using *combinations* or *permutations*. *Explain* your choice, then answer the question.**

16. Four students from your class of 120 students will be selected to organize a fundraiser. How many groups of 4 students are possible?

17. Ten students are auditioning for 3 different roles in a play. In how many ways can the 3 roles be filled?

18. To complete an exam, you must answer 8 questions from a list of 10 questions. In how many ways can you complete the exam?

19. In how many ways can 5 people sit in a car that holds 5 passengers?

20. WRITING Which is greater, ${}_6P_r$ or ${}_6C_r$? *Justify* your answer.

21. REASONING Write an equation that relates ${}_nP_r$ and ${}_nC_r$. *Explain* your reasoning.

22. CHALLENGE Prove that ${}_nC_r = {}_nC_{n-r}$. *Explain* why this makes sense.