

Name \_\_\_\_\_

**13-4B Lesson Master****Questions on SPUR Objectives**

See Student Edition pages 934–937 for objectives.

**SKILLS** Objective C

- Write as a factorial:  $1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 \cdot 6$  \_\_\_\_\_
- Write as a quotient of factorials:  $14 \cdot 15 \cdot 16 \cdot 17$  \_\_\_\_\_
- Write  $\frac{42!}{37!}$  as a product of five numbers. \_\_\_\_\_
- For what value of  $n$  does  $123 \cdot n! = 123!?$  \_\_\_\_\_
- For what value of  $n$  does  $n \cdot 4! = 6!?$  \_\_\_\_\_

**SKILLS** Objective D**Multiple Choice** In 6 and 7, which of the following is equal to

- ${}_{34}C_9?$  \_\_\_\_\_  
 A  $\frac{34!}{9!25!}$       B  $\frac{34!}{9 \cdot 25}$       C  $\frac{34!}{25!}$       D  $\frac{34!}{9!}$
- ${}_6C_1?$  \_\_\_\_\_  
 A  $\frac{1!}{5 \cdot 1}$       B  $\frac{6!}{4!}$       C  $\frac{6!}{1!}$       D  $\frac{6!}{5!1!}$
- Write each of the following using factorials.
  - ${}_{15}C_6$  \_\_\_\_\_
  - ${}_6C_3$  \_\_\_\_\_
  - ${}_{30}C_4$  \_\_\_\_\_
  - ${}_{145}C_6$  \_\_\_\_\_
  - ${}_xC_4$  \_\_\_\_\_
  - ${}_{31}C_a$  \_\_\_\_\_
- Evaluate.
  - ${}_{12}C_5$  \_\_\_\_\_
  - ${}_{12}C_7$  \_\_\_\_\_
  - ${}_{14}C_6$  \_\_\_\_\_
  - ${}_{1220}C_{1220}$  \_\_\_\_\_

**USES** Objective H

- How many permutations are there of the letters in the word "PEAT"? List those that are also words in English.  
 \_\_\_\_\_
  - How many three-letter permutations are there of the letters in the word "PEAT"? List those that are also words in English.  
 \_\_\_\_\_
- Jennie has 12 close friends, but her mother will allow her to invite only 6 of them for a dinner party. In how many different ways can she make up her guest list? \_\_\_\_\_

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**13-4B**

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12. Paul wants to take some DVDs on a bus trip to Washington, D.C. His carrying case holds 16 DVDs. In how many ways can he choose the 16 DVDs from his collection of 74 DVDs? \_\_\_\_\_
13. Consider 10 points in a plane such that no three are collinear.
- How many segments have these points as endpoints? \_\_\_\_\_
  - How many triangles have these points as vertices? \_\_\_\_\_
  - Look at your answers to Parts a and b. Since each triangle has three sides, why are there not three times as many segments as there are triangles?  
\_\_\_\_\_  
\_\_\_\_\_
14. Home Harvest Nursery carries 88 varieties of flowers: 12 varieties of ground cover and 31 varieties of vegetables. The company is planning a newspaper advertisement.
- Page 1 of the advertisement will show 8 different types of flowers. In how many different ways can the flowers be chosen? \_\_\_\_\_
  - Page 2 will show 4 different types of ground cover. In how many different ways can the ground cover be chosen? \_\_\_\_\_
  - Page 3 will show vegetables. How many different displays of at least one type of vegetable are possible? \_\_\_\_\_
- In 15 and 16, use this information: Mason has a collection of 16 compact discs, five of which are by the group *MATH-MANIA*.**
- How many different ways can Mason choose 6 CDs from all the discs in his collection? \_\_\_\_\_
  - How many mini-collections of 3 CDs could be formed from the *MATH-MANIA* CDs? \_\_\_\_\_
- In 17 and 18, use this information: Julia has a stamp collection with 10 particularly valuable stamps from Portugal and 8 from Spain.**
- Write an expression to show how many ways she can choose 10 of these valuable stamps. \_\_\_\_\_
  - How many possible displays of three stamps can be made up entirely of stamps from Spain? \_\_\_\_\_
    - How many possible displays of 7 stamps can be made up entirely of stamps from Portugal? \_\_\_\_\_