SECONDARY MATH III
STATISTICS UNIT
WS 12.4 PERMUTATIONS AND COMBINATIONS

NAME_____
DATE_____
CLASS_____

Permutations and Combinations

Evaluate each expression.

1. $P(8, 6)$
2. $P(9, 7)$
3. $P(3, 3)$
4. $P(4, 3)$
5. $P(4, 1)$
6. $P(7, 2)$
7. $C(8, 2)$
8. $C(11, 3)$
9. $C(20, 18)$
10. $C(9, 9)$
11. $C(3, 1)$
12. $C(9, 3) \cdot C(6, 2)$

Determine whether each situation involves a *permutation* or a *combination*. Then find the number of possibilities.

13. selecting a 4-person bobsled team from a group of 9 athletes

14. an arrangement of the letters in the word *Canada*

15. arranging 4 charms on a bracelet that has a clasp, a front, and a back

16. selecting 3 desserts from 10 desserts that are displayed on a dessert cart in a restaurant

17. an arrangement of the letters in the word *annually*

18. forming a 2-person sales team from a group of 12 salespeople

19. making 5-sided polygons by choosing any 5 of 11 points located on a circle to be the vertices

20. seating 5 men and 5 women alternately in a row, beginning with a woman

21. **STUDENT GROUPS** Farmington High is planning its academic festival. All math classes will send 2 representatives to compete in the math bowl. How many different groups of students can be chosen from a class of 16 students?

22. **PHOTOGRAPHY** A photographer is taking pictures of a bride and groom and their 6 attendants. If she takes photographs of 3 people in a group, how many different groups can she photograph?

23. **AIRLINES** An airline is hiring 5 flight attendants. If 8 people apply for the job, how many different groups of 5 attendants can the airline hire?

24. **SUBSCRIPTIONS** A school librarian would like to buy subscriptions to 7 new magazines. Her budget, however, will allow her to buy only 4 new subscriptions. How many different groups of 4 magazines can she choose from the 7 magazines?