Name _____ Date _____

8.6 Extra Practice

In Exercises 1–3, find the number of ways that you can arrange (a) all of the letters and (b) 2 of the letters in the given word.

1. SMILE   2. POLITE   3. WONDERFUL

In Exercises 4–9, evaluate the expression.

4. $_6P_4$ 5. $_{12}P_1$ 6. $_{10}P_7$

7. $_{11}P_0$ 8. $_{25}P_2$ 9. $_{20}P_6$

10. You have textbooks for 7 different classes. In how many different ways can you arrange them together on your bookshelf?

11. You make wristbands for Team Spirit Week. Each wristband has a bead containing a letter of the word COLTS. You randomly draw one of the 8 beads from a cup. Find the probability that COLTS is spelled correctly when you draw the beads.

In Exercises 12 and 13, count the possible combinations of r letters chosen from the given list.

12. P, Q, R, S, T, U; $r = 2$ 13. G, H, I, J, K, L; $r = 4$

In Exercises 14–19, evaluate the expression.

14. $_9C_1$ 15. $_7C_7$ 16. $_{10}C_4$

17. $_{13}C_7$ 18. $_{14}C_8$ 19. $_{25}C_5$

In Exercises 20 and 21, tell whether the question can be answered using *permutations* or *combinations*. Explain your reasoning. Then answer the question.

20. Ninety-five tri-athletes are competing in a triathlon. In how many ways can 3 tri-athletes finish in first, second, and third place? (Assume there are no ties.)

21. Your band director is choosing 6 seniors to represent your band at the Band Convention. There are 44 seniors in the band. In how many groupings can the band director choose 6 seniors?

In Exercises 22–24, use the Binomial Theorem to write the binomial expansion.

22. $(x + 3)^4$ 23. $(2m - 5)^3$ 24. $(3s + t)^5$