Name _____ Date _____

LESSON 6.1

Practice A

For use with the lesson "Use Combinations and the Binomial Theorem"

Find the number of combinations.

1. ${}_7C_4$ **2.** ${}_6C_5$ **3.** ${}_8C_3$ **4.** ${}_{10}C_1$

5. ${}_{12}C_0$ **6.** ${}_9C_4$ **7.** ${}_{12}C_6$ **8.** ${}_{16}C_{10}$

Find the number of possible 5-card hands that contain the cards specified. The cards are taken from a standard 52-card deck.

9. 5 black cards

10. 3 aces and 2 kings

11. 2 face cards (kings, queens, or jacks) and 3 cards that are not face cards

12. 5 red cards or 5 black cards

13. At most 1 ace

Use the binomial theorem to write the binomial expansion.

14. $(x + 3)^4$ **15.** $(x - 5)^5$ **16.** $(x - 9)^3$ **17.** $(2x + 1)^5$

18. $(3x + y)^3$ **19.** $(x - 4y)^5$ **20.** $(x^2 - y)^3$ **21.** $(3x^3 + y)^4$

22. Find the coefficient of x^5 in the expansion of $(x - 3)^6$.

23. Find the coefficient of x^2 in the expansion of $(x - 7)^5$.

24. Find the coefficient of x^7 in the expansion of $(3x + 4)^{11}$.

25. Find the coefficient of x^4 in the expansion of $(2x - 5)^7$.

26. **Ice Cream** The flavors of ice cream served at an ice cream shop are given at the right. You would like a dish with 2 scoops of different flavors. How many different dishes can you pick?

Ice Cream Flavors

vanilla, chocolate, cookie dough, cherry vanilla, butter pecan, rocky road, peach, mint chocolate chip, and strawberry vanilla

27. **Pizza** A pizza parlor offers ten different toppings. How many different five-topping pizzas can be formed with the ten toppings? (Assume no topping is used more than once.)

28. **Academic Contests** A teacher must choose four students from the 20 students in your chemistry class to represent your school in an Academic Challenge. How many different combinations of 4 students can the teacher choose?