

**LESSON  
6.1****Practice B***For use with the lesson "Use Combinations and the Binomial Theorem"***Find the number of combinations.**

1.  ${}_6C_4$

2.  ${}_8C_5$

3.  ${}_7C_3$

4.  ${}_9C_7$

5.  ${}_{13}C_9$

6.  ${}_{10}C_6$

7.  ${}_{12}C_8$

8.  ${}_{14}C_{10}$

**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 red cards
10. 4 spades and 1 card that is not a spade
11. 3 face cards (kings, queens, or jacks) and 2 cards that are not face cards
12. 2 aces and 3 cards that are not aces
13. At most 1 diamond
14. At least 1 king

**Use the binomial theorem to write the binomial expansion.**

15.  $(x - 2)^4$
16.  $(x + 3)^3$
17.  $(2x + 5)^5$
18.  $(4x - 1)^6$
19.  $(x + 6y)^3$
20.  $(x - 5y)^5$
21.  $(3x - y)^6$
22.  $(8x + y)^4$
23. Find the coefficient of  $x^6$  in the expansion of  $(2x + 3)^{10}$ .
24. Find the coefficient of  $x^4$  in the expansion of  $(3x - 1)^{11}$ .
25. Find the coefficient of  $x^7$  in the expansion of  $(2x - 5)^9$ .
26. Find the coefficient of  $x^3$  in the expansion of  $(3x + 2)^{12}$ .
27. **School Musical** A teacher is holding tryouts for the school musical. There are 15 students trying out for 7 identical chorus parts. In how many ways can the teacher select the chorus members?
28. **Soccer Starters** A youth indoor soccer team has 6 starting players. The starting players must consist of 3 boys and 3 girls. There are 7 boys and 6 girls on the team. Each player can play each position. In how many ways can the coach select players to start the game?
29. **Football Cards** You have a plastic sheet that holds 9 trading cards. You want to fill the sheet with football cards consisting of 4 quarterbacks, 3 running backs, and 2 wide receivers. In your collection of cards, you have 10 quarterbacks, 7 running backs, and 8 wide receivers. In how many different ways can you select the cards?