Name_____ Class_____ Date_____

12-6 Practice

Form K

Permutations and Combinations

1. A four-character secret code can begin with any two of the five vowels and end with any two numerals, from 0 to 9.

a. How many possible choices are there for each of the first two characters? For each of the last four characters?

b. How many different four-character secret codes are possible?

2. The baseball coach is selecting from 9 starters who will be the first three batters. How many different batter lineups can the coach consider for the first three up?

3. There are 5 books to be arranged on the bookshelf. How many different ways can the books be arranged on the bookshelf?

Find the value of each expression.

4. ${}_4P_2$ **5.** ${}_6P_4$ **6.** ${}_7P_3$ **7.** ${}_9P_3$

8. ${}_{10}P_2$ **9.** ${}_5P_4$ **10.** ${}_3P_2$ **11.** ${}_{13}P_3$

12. There are 60 songs on your music player. In how many different ways can you arrange 5 songs to listen to while exercising?

Find the value of each expression.

13. ${}_3C_1$ **14.** ${}_7C_5$ **15.** ${}_4C_3$ **16.** ${}_8C_4$

17. ${}_9C_5$ **18.** ${}_7C_6$ **19.** ${}_6C_2$ **20.** ${}_9C_3$

12-6 Practice (Continued)

Form K

Permutations and Combinations

21. There are 20 marbles in a bag. Each marble has a different design or color. How many ways can you draw 8 marbles from the jar?

Explain whether each situation is a combination problem or a permutation problem.

22. Your friends borrowed 5 different movies from the library. In how many different orders can they watch the movies?

23. There are 100 comic books to choose from at the local hobby store. How many different sets of 10 comic books could you choose to buy?

24. An ATM machine requires a 4-digit PIN. The digits in the PIN can be selected from the digits 0 through 9 and can be reused. How many possible PINs are there?

25. You have 10 pictures to arrange in the scrapbook. How many different ways can you arrange 6 of the pictures on a single page?

26. A basketball coach chooses his 5 starters from 12 players. How many different groups of starters are there?

Find the value of each expression.

27. ${}_{18}P_2$ **28.** ${}_{18}C_2$ **29.** ${}_{8}C_5$ **30.** ${}_{8}P_5$