Name _____ Class _____ Date _____

12-6 Practice

Form G

Permutations and Combinations

1. A six-character license plate number can begin with any two letters and end with four one-digit numbers.

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

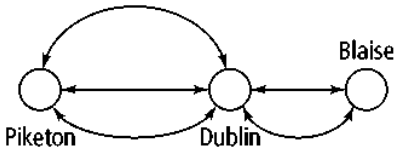
b. How many different six-character license plate numbers are possible?

2. Use the map at the right and the Multiplication Counting Principle to find each of the following:

a. the number of routes from Piketon to Dublin

b. the number of routes from Piketon to Blaise

c. the number of routes from Blaise to Piketon



3. Six runners are available for the 400-meter relay. Four runners are needed to run 100 m a piece, in a specified order. How many different runner lineups can the coach consider for the relay with one of each?

4. A restaurant's menu offers 8 different sandwiches and 5 side dishes. How many lunch combinations can you order?

Find the value of each expression.

5. ${}_5P_2$ **6.** ${}_4P_3$ **7.** ${}_9P_3$ **8.** ${}_{10}P_3$

9. ${}_9P_4$ **10.** ${}_6P_3$ **11.** ${}_5P_3$ **12.** ${}_{11}P_2$

13. ${}_8P_5$ **14.** ${}_5P_4$ **15.** ${}_6P_5$ **16.** ${}_{100}P_2$

17. There are 100 songs on your music player. In how many different ways can you arrange 20 songs to listen to while exercising?

Find the value of each expression.

18. ${}_5C_2$ **19.** ${}_{10}C_8$ **20.** ${}_5C_4$ **21.** ${}_9C_4$

22. ${}_6C_3$ **23.** ${}_7C_5$ **24.** ${}_4C_3$ **25.** ${}_8C_4$

26. ${}_6C_5$ **27.** ${}_5C_4$ **28.** ${}_7C_3$ **29.** ${}_{10}C_3$

Name_____ Class_____ Date _____

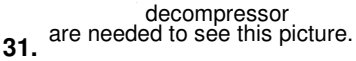
12-6 Practice (continued) *Form G*

Permutations and Combinations

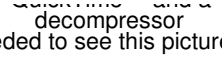
30. There are 15 slips of paper in a jar. Each slip has a different name on it. How many ways can you draw 5 names from the jar?

Find the number of combinations of numbers taken four at a time can be formed from each set of cards.

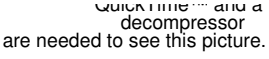
31.



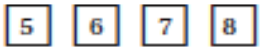
32.



33.



34.



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

35. Your friends rented 6 different video games. In how many different orders can you play the 6 games?

36. There are 20 games to choose from at the local game store. How many different sets of 4 games could you choose to rent?

37. The Aluru family has a garage door that opens with a 4-digit PIN. They decide to base the code on Mrs. Aluru's birthday: 01/24/63. How many PINs are there that use four of the digits in Mrs. Aluru's birthday?

38. You have 10 photographs to choose from. How many different ways can you arrange 5 of the photographs in a single row above the sofa?

39. There are 6 class periods in the school day. There are 10 subjects to choose from. How many different class schedules are possible?

Determine which value is greater.

40. ${}_9P_6$ or ${}_6P_3$ **41.** ${}_9C_6$ or ${}_9C_5$ **42.** ${}_{10}C_4$ or ${}_{10}C_6$ **43.** ${}_{10}P_4$ or ${}_6P_6$