NAME _____ DATE _____ PERIOD _____

Practice

Permutations with Repetitions and Circular Permutations

How many different ways can the letters of each word be arranged?

1. *members*

2. *annually*

3. *Missouri*

4. *concert*

5. How many different 5-digit street addresses can have the digits 4, 7, 3, 4, and 8?

6. Three hardcover books and 5 paperbacks are placed on a shelf. How many ways can the books be arranged if all the hardcover books must be together and all the paperbacks must be together?

Determine whether each arrangement of objects is a linear or circular permutation. Then determine the number of arrangements for each situtation.

7. 9 keys on a key ring with no chain

8. 5 charms on a bracelet with no clasp

9. 6 people seated at a round table with one person seated next to a door

10. 12 different symbols around the face of a watch

11. ***Entertainment*** Jasper is playing a word game and has the following letters in his tray: QUOUNNTAGGRA. How many 12-letter arrangements could Jasper make to check if a single word could be formed from all the letters?