

**LESSON
11.2****Practice B***For use with the lesson "Find Probabilities Using Permutations"*

Find the number of ways you can arrange (a) all of the letters in the given word and (b) 2 of the letters in the word.

1. TACK

2. MAR

3. GAMER

Write the meaning of the notation in words.

4. ${}_{14}P_3$

5. ${}_{24}P_{10}$

6. ${}_{30}P_{20}$

Evaluate the expression.

7. $6!$

8. $9!$

9. $11!$

10. $\frac{8!}{3!}$

11. $\frac{12!}{9!}$

12. $\frac{15!}{14!}$

13. ${}_6P_3$

14. ${}_4P_4$

15. ${}_{15}P_3$

16. ${}_8P_7$

17. ${}_{10}P_6$

18. ${}_5P_0$

Complete the statement using $>$, $<$, or $=$.

19. ${}_6P_4$ $\underline{\hspace{1cm}}$ ${}_4P_1$

20. ${}_8P_6$ $\underline{\hspace{1cm}}$ ${}_{10}P_8$

21. ${}_3P_0$ $\underline{\hspace{1cm}}$ ${}_6P_5$

22. ${}_6P_3$ $\underline{\hspace{1cm}}$ ${}_4P_1$

23. ${}_{24}P_1$ $\underline{\hspace{1cm}}$ ${}_4P_4$

24. ${}_7P_5$ $\underline{\hspace{1cm}}$ ${}_{12}P_3$

- 25. Summer Reading List** At the beginning of the summer, you have 6 books to read. In how many orders can you read the books?
- 26. Air Conditioning Repair** An air conditioner repair person has repairs to make at 7 different homes. The destinations are all so close, it doesn't matter the order in which the repairs are made. In how many orders can the repairs be made?
- 27. Boat Racing** You are in a boat racing competition. In each heat, 4 boats race and the positions of the boats are randomly assigned.
- In how many ways can a position be assigned?
 - What is the probability that you are chosen to be in the last position?
Explain how you found your answer.
 - What is the probability that you are chosen to be in the first or second position of the heat that you are racing in? *Explain* how you found your answer.
 - What is the probability that you are chosen to be in the second or third position of the heat that you are racing in? *Compare* your answer with that in part (c).
- 28. Math Exam** On an exam, you are asked to list the 6 steps to solving a particular kind of problem in order. You guess the order of the steps at random. What is the probability that you choose the correct order?