Name _____ Date _____

Practice C

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) 3 of the letters in the word.

1. VIDEO   **2.** TARP   **3.** MASTER

4. Describe a real-world situation where the number of possibilities is given by $_6P_2$.

Evaluate the expression.

5. $_7P_4$ **6.** $_{10}P_{10}$ **7.** $_8P_2$

8. $_{13}P_0$ **9.** $_5P_1$ **10.** $_{20}P_3$

11. $_{14}P_6$ **12.** $_{12}P_5$ **13.** $_{25}P_5$

14. $2\left(_8P_5\right)$ **15.** $\frac{1}{4}\left(_{10}P_4\right)$ **16.** $\frac{3}{5}\left(_7P_3\right)$

17. $_4P_2 + {}_2P_1$ **18.** $_{15}P_4 - {}_7P_5$ **19.** $\dfrac{_6P_5}{_3P_3}$

Complete the statement using >, <, or =.

20. $_6P_4 \underline{\ \ ?\ \ } {}_8P_6$ **21.** $_{110}P_1 \underline{\ \ ?\ \ } {}_{11}P_2$ **22.** $_4P_4 \underline{\ \ ?\ \ } {}_5P_2$

23. Roofing A roofing company has 8 roofing jobs to complete so far in the upcoming season. In how many orders can the jobs be completed?

24. Soapbox Racing You are in a soapbox racing competition. In each heat, 7 cars race and the positions of the cars are randomly assigned.

  a. In how many ways can a position be assigned?

  b. What is the probability that you are chosen to be in the last position? *Explain* how you found your answer.

  c. 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.

  d. 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).

25. Battle of the Bands Your band is one of 12 bands competing in a battle of the bands. The order of the performances is determined at random. The first 6 performances are on a Friday night and the next 6 performances are on the following night.

  a. What is the probability that your band gives the last performance on Friday night and a rival band performs immediately before you?

  b. What is the probability that your band does not give the last performance?