Probability and Counting

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Evaluate the expression.

1) $8!$ 1) _____

2) ${}_6P_4$ 2) _____

3) ${}_6P_5$ 3) _____

4) ${}_{12}C_2$ 4) _____

5) ${}_{28}C_1$ 5) _____

Solve the problem.

6) There are 11 members on a board of directors. If they must form a subcommittee of 3 members, how many different subcommittees are possible? 6) _____

7) The library is to be given 7 books as a gift. The books will be selected from a list of 19 titles. If each book selected must have a different title, how many possible selections are there? 7) _____

8) How many ways can an IRS auditor select 4 of 10 tax returns for an audit? 8) _____

9) A state lottery involves the random selection of six different numbers between 1 and 21. If you select one six number combination, what is the probability that it will be the winning combination? 9) _____

10) 8 basketball players are to be selected to play in a special game. The players will be selected from a list of 27 players. If the players are selected randomly, what is the probability that the 8 tallest players will be selected? 10) _____

11) The organizer of a television show must select 5 people to participate in the show. The participants will be selected from a list of 28 people who have written in to the show. If the participants are selected randomly, what is the probability that the 5 youngest people will be selected? 11) _____

12) How many 3-digit numbers can be formed using the digits 1, 2, 3, 4, 5, 6, 7 if repetition of digits is not allowed? 12) _____

13) How many ways can 6 people be chosen and arranged in a straight line if there are 8 people to choose from? 13) _____

14) A musician plans to perform 5 selections. In how many ways can she arrange the musical selections? 14) _____

15) A pollster wants to minimize the effect the order of the questions has on a person's response to a survey. How many different surveys are required to cover all possible arrangements if there are 6 questions on the survey? 15) _____

16) There are 7 members on a board of directors. If they must elect a chairperson, a secretary, and a treasurer, how many different slates of candidates are possible? 16) _____

17) A tourist in France wants to visit 12 different cities. How many different routes are possible? 17) _____

18) A tourist in France wants to visit 11 different cities. If the route is randomly selected, what is the probability that she will visit the cities in alphabetical order? 18) _____

19) In a certain lottery, five different numbers between 1 and 31 inclusive are drawn. These are the winning numbers. To win the lottery, a person must select the correct 5 numbers in the same order in which they were drawn. What is the probability of winning? 19) _____

20) A class has 8 students who are to be assigned seating by lot. What is the probability that the students will be arranged in order from shortest to tallest? (Assume that no two students are the same height.) 20) _____

Answer Key
Testname: PROBABILITY AND COUNTING.TST

1) 40,320
2) 360
3) 720
4) 66
5) 28
6) 165
7) 50,388
8) 210
9) $\frac{1}{54,264}$
10) $\frac{1}{2,220,075}$
11) $\frac{1}{98,280}$
12) 210
13) 20,160
14) 120
15) 720
16) 210
17) 479,001,600
18) $\frac{1}{39,916,800}$
19) $\frac{1}{20,389,320}$
20) 0.0000248