Compute.

1. $_8P_3$

2. $_6P_6$

3. $_7P_0$

4. $_{10}P_1$

Find the number of distinguishable permutations for the following words.

5. MATHEMATICS

6. SALT LAKE CITY

7. CHEMISTRY

8. You just received 7 new movies in the mail. You only have time to watch 3 this weekend. How many ways can you watch the movies this weekend?

9. The Discriminants are giving a short evening performance. Their latest CD has 14 songs on it; however they only have enough time to perform 8 songs. How many distinct performance can they give?

Compute

1. $_{11}C_6$

2. $_{32}C_0$

3. $_{65}C_{62}$

4. $_{100}C_{96}$

5. Four members from a group of 18 on the board of directors at the Fa La La School of Arts will be selected to go to a convention (all expenses paid) in Hawaii. How many different groups of 4 are there?

6. You are the manager of a new clothing store. You need 5 new employees and have 20 qualified applicants. How many ways can you staff the store?

Solve the following.

7. There are 14 black pens and 8 blue pens in a drawer. If 3 pens are chosen at random, what is the probability that they are all blue?

8. Sam has 9 pairs of socks in a drawer: 5 white pairs and 4 gray pairs. If he chooses three pairs at random to pack for a trip, find the probability that he chooses exactly two white pairs.

9. A bag contains 14 cherry, 15 lime, and 10 grape suckers. Find the probability of picking 3 cherry suckers and 2 grape suckers if 5 suckers are chosen at random.

10. Barbara has a collection of 28 movies, including 12 comedies and 16 dramas. She selects 3 movies at random to lend to a friend. What is the probability of her selecting 3 comedies?

11. Five books are chosen at random from a best-seller list that includes 12 novels and 6 biographies. Find the probability of selecting 3 novels, and 2 biographies.

12. Beth and Shayna each purchase one raffle ticket. If a total of eleven raffle tickets are sold and two winners will be selected, what is the probability that both Beth and Shayna win?

14. A six-sided die is rolled six times. What is the probability that the die will show an even number exactly two times?

13. A fair coin is flipped ten times. What is the probability of the coin landing heads up exactly six times?

15. A basketball player has 50% chance of making each free throw. What is the probability that the player makes at least eleven out of the twelve free throws?