

Pre-calculus – 11.1 Homework

Name _____ period _____ date _____ score _____

Solve each problem.

1. There are 6 different packages available for school pictures. In addition, the studio offers 5 different backgrounds and 2 different finishes. How many different options are available?
2. How many 7-digit phone numbers can be formed if the first digit can't be 0 or 1, and digits can be repeated?
3. How many 5-digit *even* numbers are there that have an *odd* number as the first digit?
4. How many 6-character passwords can be formed if the first and last characters are numbers and the remaining characters are letters? Assume that any character can be repeated.
5. A Mexican restaurant offers chicken, beef, or vegetarian fajitas wrapped with either corn or flour tortillas, and topped with either mild, medium, or hot salsa. Customers can choose a fajita with or without cheese. How many different choices of fajitas does a customer have?
6. How many possible sets of outcomes are there when a standard 6-sided die is rolled ten times in a row?

Evaluate each expression without a calculator using the formulas for permutations and combinations.

7. ${}_7P_3$

8. ${}_9P_2$

9. ${}_4P_1$

10. ${}_4P_4$

11. ${}_{15}C_2$

12. ${}_{20}C_{18}$

13. ${}_8C_1$

14. ${}_8C_7$

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

15. MONDAY

16. COMPUTER

17. SUMMER

18. PROBABILITY

Determine whether each situation involves a *permutation* or a *combination*. Then find the number of possibilities.

19. How many ways can a four-person bobsled team be selected from a group of 9 athletes?

20. How many ways are there to arrange 8 students in 8 seats in the front row of the school auditorium?

21. The high school choir has been practicing 12 songs, but there is time for only 5 of them at the spring concert. How many different orderings of 5 songs are possible?

22. A photographer is taking pictures of a bride and groom and their 6 attendants. If she takes photographs of 3 people in a group, how many different groups can she photograph?
23. A softball team has 15 players on its roster. There are 9 distinct positions in which these players can be placed. How many lineups can be fielded?
24. How many ways are there to choose 4 charms from a group of 8 and arrange them on a charm bracelet?
25. Timmy has a list of 30 excuses for not doing his homework. He figures he will need 17 of them this week. How many different sets of excuses are possible?
26. From a group of 10 men and 12 women, how many committees of 5 men and 6 women can be formed?
27. There are 25 apples in a crate, 10 of which are rotten.
- How many samples of 5 apples can be selected in which all 5 are rotten?
 - How many samples of 5 apples can be selected in which 3 are good and 2 are rotten?