

Pre-Calculus CP 1 – 9.6 ICE
Combinations & Permutations

Name: _____

1. You have 10 packages of M&Ms and 15 packages of Skittles. In how many ways can you pick 8 and have 3 be M&Ms?
2. In how many ways can you line up the letters in the word "REARRANGE"?
3. A password consists of 3 digits, repetition is not allowed, followed by 2 letters, repetition is allowed. What is the total number of possible passwords?
4. Forty students apply for a scholarship awarded by the headmaster. One is for \$5000, one is for \$1000, and the last is for \$500. In how many ways can the recipients be selected if the same student can't win more than one scholarship?
5. In how many ways can ten students from a class of twenty line up?
6. You are ordering a new bike. You have 5 wheel choices, 3 color choices and 2 seat choices. How many possible bikes can you design?
7. In how many ways can you arrange six items on a circular display?
8. In how many ways can the batting order for the 9 starting players in a baseball game be announced?

9. DS Pizza Shop offers 4 different cheeses and 10 different pizza toppings. How many ways can you order a pizza with 1 type of cheese and 2 different toppings?
10. In how many ways can 3 brunettes and 3 blonds be seated in a line if hair color must alternate?
11. A student relations committee of a college consists of 2 administrators, 3 faculty members, and 5 students. 4 administrators, 8 faculty members and 20 students are eligible to serve. How many different committees are possible?
12. How many different 9 letter words can be formed from the letters in the word ECONOMICS?
13. A combination lock displays 50 numbers. To open it, you turn to a number then rotate clockwise to the 2nd number, then counterclockwise to the third number. How many different combinations are there?

14. How many four digit numbers can be formed if the first digit cannot be zero,

a. if repeated digits are not allowed?

b. if repeated digits are allowed?

15. A bag contains 15 red balls and 10 white balls. 5 balls are selected. In how many ways can the 5 balls be drawn from the total of 25 balls,

a. if all 5 balls are red?

b. if 3 are red and two are white?

c. if at least four are red balls?