

For each problem, decide if it represents a permutation or combination, then answer each question.

- 1) In a contest in which there are 8 participants, in how many ways can 5 distinct prizes be awarded?

- 2) A church has 7 bells in its bell tower. Before each church service 5 bells are rung in sequence. No bell is rung more than once. How many possible sequences are there?

- 3) A work 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?

- 4) From a group of 8 people, 5 will each win \$1,000. How many different winning groups are possible?

- 5) How many arrangements can be made using 2 letters of the word HYPERBOLAS if no letter is to be used more than once?

- 6) Of a classroom filled with 20 students, 2 will be selected to stay after school and correct homework for extra credit. How many combinations are possible?

- 7) To win the lottery, one must correctly select 6 numbers from a collection of 50 numbers (one through 50). The order in which the selection is made does not matter. How many different selections are possible?

8) A test is administered with 15 questions. Students are allowed to answer any ten. How many choices of ten questions are there?

9) A club elects a president, vice-president, and secretary-treasurer. How many sets of officers are possible if there are 15 members and any member can be elected to each position? No person can hold more than one position.

10) Five students from the 90 students in your class will be selected to answer a questionnaire about participating in school sports. How many groups of 5 students are possible?

11) Eleven students are trying out for 5 different positions in the school band. In how many ways can the 5 positions be filled?

12) To complete a quiz, you must answer 4 questions from a list of 12 questions. In how many ways can you complete the quiz?

13) Five students from your class of 100 students will be selected to be sent on to a leadership conference. How many groups of 5 students are possible?

14) Ten students try out to be in one of the 4 different positions of your track's relay team. In how many ways can the 4 positions be filled?

15) How many different 3-digit numbers can be made from the digits 4, 5, 6, 7, 8 if a digit can appear just once?