

Permutations and Combinations Worksheet

I. Evaluate the following:

1) $5!$	2) $\frac{10!}{8!}$	3) $\frac{7!}{6!}$
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II. Permutations

- 4) Evaluate: a) ${}_7P_4$ b) ${}_{10}P_2$ c) ${}_6P_6$
- 5) In how many different ways can 7 floats line up for the homecoming parade.
- 6) In how many ways can 4 of 7 different kinds of bushes be planted along a walkway?
- 7) Four processes are involved in assembling a certain product and they can be performed in any order. The management wants to test each order to determine which is the least time consuming. How many different orders will have to be tested?
- 8) A club with 10 members is to choose 3 officers- president, vice-president and secretary. If each office is to be held by 1 person and no person can hold more than one office, how many ways can these offices be filled?
- 9) A corporation has 10 members on its board of directors. In how many different ways can it elect a president, vice-president, secretary and treasurer?
- 10) For a segment of a radio show, a disc jockey can play 7 songs. If there are 13 songs to choose from, in how many ways can this segment be arranged?
- 11) Suppose you are asked to list, in order of preference, the three best movies you have seen this year. If you saw 20 movies, in how many ways can the 3 best be chosen and ranked?
- 12) How many arrangements of 4 letters from the word COMBINE if no letter is used more than once?

III. Combinations

- 16) Your friend is having a party and has 15 games to choose from. There is enough time to play 4 games. In how many ways can you choose 4 games to play?
 - 17) There are 20 members in a club. Five people are selected to go to the state conference. In how many ways can the five members be selected?
 - 18) Your English teacher asked you to read 3 novels from a list of 10. In how many ways can you choose which books to read?
 - 19) The general manager of a fast-food restaurant chain must select 6 restaurants from 11 for a promotional program. How many possible ways can this selection be done?
 - 20) How many ways are there to select 3 bracelets from a box of 20?
 - 21) How many different ways can a theatrical group select 2 musicals and 3 dramas from 11 musicals and 8 dramas?
- IV. Determine whether the problem requires combinations or permutations to find the answer. Then find the answer.
- 30) Eight members of a school marching band are auditioning for 3 drum majors positions. In how many ways can students be chosen to be drum majors?
 - 31) Your school yearbook has an editor-in-chief and an assistant editor-in-chief. The staff of the yearbook has 15 students. In how many ways can students be chosen for these 2 positions?
 - 32) A relay race has 4 runners who run different parts of the race. There are 16 students on your track team. In how many different ways can your coach select students to compete in the race?
 - 33) You must take 6 elective classes to meet your graduation requirements for college. There are 12 classes that you are interested in. In how many ways can you select your elective classes?