

21.2 Permutations

Name _____

Date _____ Period _____

1. A lock contains 3 dials with 10 digits each. How many possible sequences are there if the digits can repeat?
2. Use the same lock in #1 if the digits cannot repeat.
3. Four students are going to be chosen from a class of 20 to be class president, vice-president, secretary, and treasurer. In how many ways can this be accomplished?
4. How many different 6 number license plates can be made from the digits 0-9 if:
 - a. repetitions are allowed
 - b. repetitions are not allowed
 - c. repetitions are allowed and an odd digit must come first
 - d. repetitions are not allowed and an odd digit must come first.
5. How many ways can the letters be arranged in the word:
 - a. MATH
 - b. DEED
 - c. GEOMETRY
 - d. PROBABILITY
 - e. STATISTICS

21.3 Combinations

1. Six Flags will have 10 roller coasters when it opens HARLEY QUINN crazy coaster this year. In how many ways can you choose 4 of the roller coasters to ride during your visit to the park?
2. Mr. Wall has asked you to select 4 novels from a list of 11 to read as an independent project. In how many ways can you choose which books to read?
3. A standard deck of cards has 52 playing cards. How many different 5-card hands are possible?
4. Eight seniors on the football team are being considered as team captains. If there will be 3 captains, how many different ways can the seniors be chosen as captains?

For 5-8, **first** decide if the problem involves permutations or combinations and then solve accordingly.

5. Twelve skiers are competing in the final round of the Olympic freestyle skiing aerial competition. In how many ways can three of the skiers finish first, second, and third to win the gold, silver, and bronze medals?
6. Eight speed skaters are competing in the 1500-meter race. Only the top two skaters will advance to the next round. In how many ways can two of the skaters advance?
7. Find the number of possible committees of four people that can be chosen from a class of 30 students.
8. Find the number of possible officers (president, vice-president, secretary, and treasurer) that can be chosen from a class of 30 students.