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Module 20 Solving Problems Using Probability,
Statistics, and Discrete Math

Lesson 1 Finding Permutations and Combinations



**guided
notes**

Lesson Objectives

- Use a tree diagram.
- Use the Fundamental Counting Principal.
- Evaluate factorials.
- Find permutations and combinations.

A tree diagram is a diagram that uses branches to show all the possible
_____ of objects in a set.

The _____ states if there are
_____ ways to make the first choice, and _____
ways to make the second choice, then there are _____ ways to
make the two choices one after the other.

- 1** Suppose a meal consists of an appetizer, an entrée, and a dessert. Find the total number of different meals from which you can choose if there are five appetizers, three entrées, and six desserts.

$n!$ is read as “ n factorial.” $n! =$ _____

A permutation is an arrangement where order _____.

The same two objects arranged in a different order is considered two different choices.

_____ is read as, “the number of permutations of n different objects taken r at a time”.

$${}_n P_r = \frac{n!}{(n-r)!}$$

A combination is an arrangement where order _____.

The same two objects arranged in a different order is *not* considered two different choices.

$${}_nC_r = \frac{n!}{r!(n-r)!}$$

- 2 A band director must choose five drummers, out of nine, to march in a parade. In how many different ways can the director line up the five drummers, choosing from nine drummers?

- 3 The Mr. Smoothie's shop has five different types of fresh fruit available. A Supreme smoothie is a blend of three different fruits. How many different Supreme smoothies are possible?
