

LESSON
11.3**Math and History Application***For use with the lesson "Find Probabilities Using Combinations"*

History Combinations started to be written about around 300 B.C., but they were barely mentioned. Around 510 A.D. Boethius was the first to give a rule for finding the combinations of n things taken two at a time which was $\frac{1}{2}n(n - 1)$. His writings on arithmetic and geometry were standard texts for many centuries. His book on arithmetic was roughly a translation of another book with some additional material. These math books were considered to be poor in quality.

Around 1150, Bhaskara gave rules for the permutation of n things taken r at a time, with and without repetition, and the number of combinations of n things taken r at a time without repetition. In 1321, Levi ben Gerson gave rules for the permutation of n things taken all together and also taken r at a time, and from the combination of n things taken r at a time.

A few years later, Nicole Oresme wrote about combinations of six things taken 1, 2, 3, 4, and 5 at a time. For six items taken two at a time, he wrote ${}_2C_6$, which transposes the numbers compared to how they are written now.

The first writer to give the general rule we use today for finding combinations of n things taken r at a time was Herigone in 1634. Jacques Bernoulli was the first person to focus an extended work on combinations. The work contained the main part on the theory of combinations that is known today.

Math Combinations have been very useful for solving problems in different fields. They are also useful in finding probabilities for many different situations.

1. From a group of 25 people, a jury of 12 people is selected. In how many different ways can a jury of 12 people be selected?
2. A magazine editor must choose 6 letters from readers for this month's issue from 29 submissions. In how many ways can the editor choose this month's letters?
3. In order to conduct an experiment, 10 people are randomly selected from a group of 20 people. How many different groups of 10 people are possible?
4. In a state lottery, you must select 5 numbers (in any order) out of 39 correctly to win the top prize. In how many different ways can the 5 numbers be selected?