

# Algebra 2

## Permutations

### YAY MATH!

The video covers the following exercises. Work along with the class!

Suppose there are three runners in a race, listed below. How many different finishes exist for these three runners?

Jack  
Jill  
“Gerard”

Suppose there are five performers at a festival, listed below. How many different lineups exist for the festival?

Taylor Swift  
Sublime  
Red Hot Chili Peppers  
Dave Matthews  
Dave Chapelle

How many arrangements exist for seven books on a shelf?

$$\frac{10!}{6!} =$$

$$\frac{10!}{8!} =$$

$$\frac{200!}{199!} =$$

Permutation definition – an arrangement in which the order *matters*.

Suppose 6 people are running a race, how many arrangements are there for the top 3 finishers? Does order matter? How many are there to choose from, and how many are selected?

Suppose there are 13 baseball players, and you need a lineup of 9.

How many ways can we arrange the letters in the word SET ?

How many ways can we arrange the letters in the word YAY ?

Formula for arrangements of items with possible duplicates:  $\frac{n!}{p!q!r!\dots}$

How many ways can we arrange the letters in the word YAYMATH ?

How many ways can we arrange the letters in the word MISSISSIPPI ?