

## 11-1 Combinations

A. Recall Permutation Key Words: order, arrange, distinct, sequence, line-up, placement, ... In other words, order DOES matter.

Example ~ 5 People are racing. How many possibilities are there for 1st, 2nd, and 3rd place?



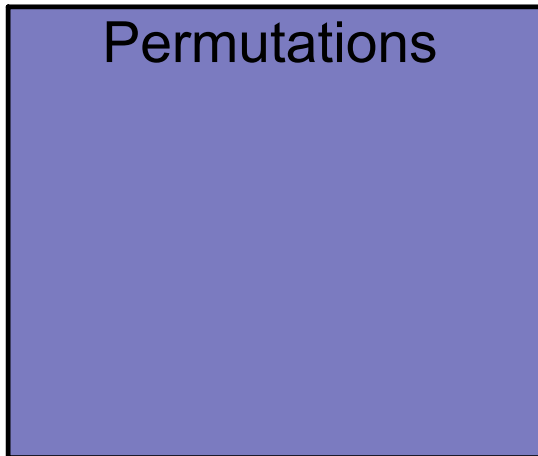
B. Combination Key Words: select, choose, pick, ...

In other words, order does NOT matter.

Example ~ Ten candidates are running for Student Council. Five slots are available. How many ways can winners be selected?



Click and drag the keyword to the appropriate section.



line-up                      placement                      pick                      positions  
random                      order                      arrange  
distinct                      sequence                      choose                      select

Using the same  $n$  and  $r$ , which is going to yield a larger result?

**Permutations**

Why? (Try to construct a mathematical explanation and a logical one.)

**Mathematically**, the resulting value of the permutation will be larger because the denominator is smaller.

**Logical Example:** If the total choices are A, B, or C...

	<u>Permutation</u>	<u>Combination</u>
Possibilities for 2	AB, AC, BA, BC, CA, CB	AB, AC, BC

Counted the same when order doesn't matter.

Practice: There are 20 possible books to choose from. How many ways can you choose 3 to read?



Practice: There are 20 possible books to choose from. How many ways can you sequentially read 3?

