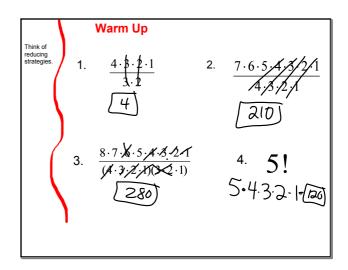
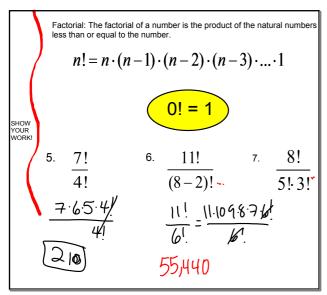
## 11.1 Permutations and Combinations.....page #

GOAL: Solve problems involving permutations and combinations.



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Feb 7-12:16 PM

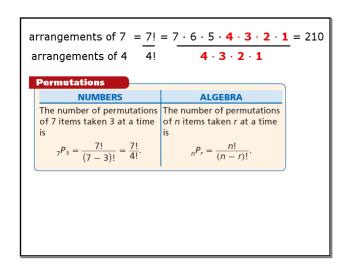
A **permutation** is a selection of a group of objects in which order is important.

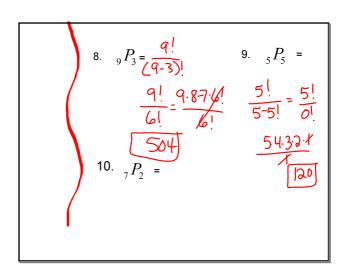
A family of 3 plans to sit in the same row at a movie theater. How many ways can the family be seated in 3 seats?

List all possible groupings.

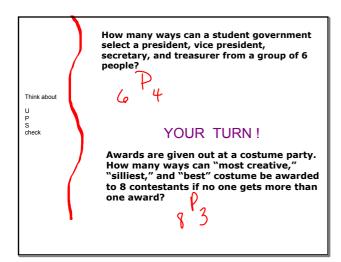
There are six different ways the family can sit.

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A **combination** is a grouping of items in which order does not matter. There are generally fewer ways to select items when order does not matter. For example, there are 6 ways to order 3 items, but they are all the same combination:

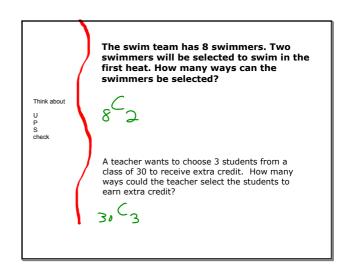
6 permutations  $\rightarrow$  {ABC, ACB, BAC, BCA, CAB, CBA}

1 combination  $\rightarrow$  {ABC}

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Combinations	
NUMBERS	ALGEBRA
The number of combinations of 7 items taken 3 at a time is ${}_{7}C_{3}=\frac{7!}{3!(7-3)!}.$	The number of combinations of $n$ items taken $r$ at a time is ${}_{n}C_{r} = \frac{n!}{r!(n-r)!}.$
${}_{9}C_{4} = \frac{9!}{(9-4)!} {}_{.4}! \qquad {}_{6}C_{2} = \frac{6!}{4! {}_{.} {}_{2}!} \frac{3}{2! {}_{.} {}_{2} {}_{3}!} \frac{3}{2! {}_{.} {}_{2} {}_{3}!} \frac{3}{2! {}_{.} {}_{2} {}_{3}!} \frac{3}{2! {}_{.} {}_{2} {}_{3}!} \frac{3}{2! {}_{2} {}_{3}!} \frac{3}{2! {}_{2} {}_{3}!} \frac{3}{2! {}_{2} {}_{3}!} \frac{3}{2! {}_{2}!} $	

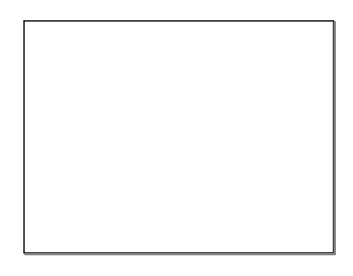
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Feb 18-3:27 PM

Assignment:

11.1 Day 1 Wkst



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