12-2 Permutations and Combinations

Permutations: When a group of objects are in a certain order and order **DOES** matter. (telephone numbers)

P(n, r) = (n-r)!

Picking

*n total objects picking rat a time

Example 1: Eight people entered a pie contest. How many ways can blue, red, and white be awarded?

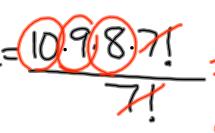
order matters P(8,3) = 8!

8/16/5-4-3-2-1 = 336 5-43-2-1 ways

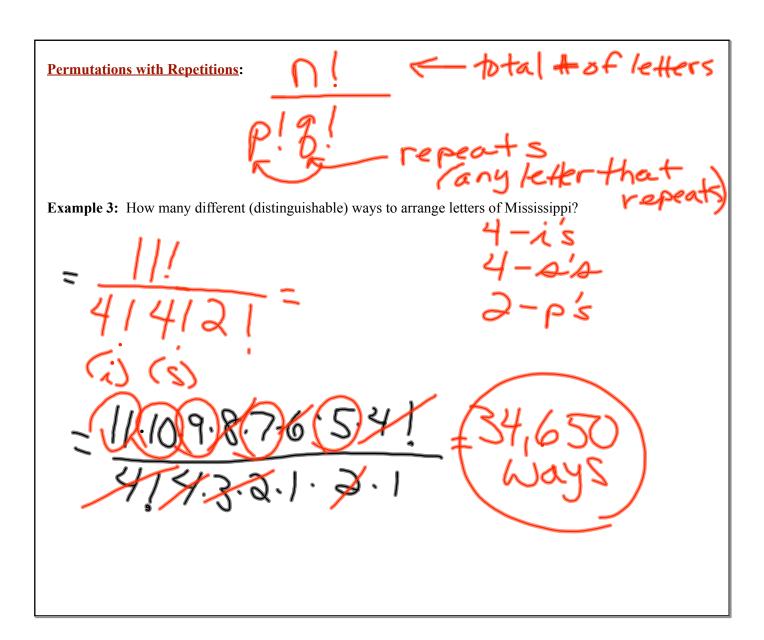
Example 2: There are 10 finalists in a skating competition. How many ways can gold, silver, and bronze be awarded?

Order matters

 $P(0,3) = \frac{10!}{7!}$



720 Ways



Combinations: Order is <u>NOT</u> important. (committee members)
Combinations: Order is NOT important. (committee members) $C(n,r) = (n-r)!r!$ Thousing "r" at a time.
$C(n,r) = \frac{1}{(n-r)!r!}$ That in a "r" at a
Example 4: Twenty people are at a birthday party. Three people need to pick up the pizza. How many ways to choose the people?
C(20,3) = 20! = 20(19) 18:11 = 1,140 mys
Example 5: Six cards are drawn from a deck of cards. How many hands consist of two hearts and four spades?
order does not matter =
$C(13.2) \cdot C(13.4) = 78.715$
Example 6: Seven students in a group and 2 students need to present their project. How many ways can the students
be chosen? order does not matter
$(72) = \frac{7!}{5!2!} = \frac{7.6.8!}{812!} = \frac{42}{2} = 21$
Example 7: Five cards are drawn from a deck of cards. How many hands consist of 3 clubs and 2 diamonds?
Clubs · diamonds
C1002 20001101162
((13))
>112/2) ((12/2) /
130/ - 0 = (22 308)
286.78=(22,308)
oncalcular
13 Moth PRB [nCv] [3] =286
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