

Monday January 9, 2012
 HW#28 (last HW)
 Apm: How do we use permutations and combinations to solve problems?
 1/17/2012: Folder, Notebook, HW, Textbook, Final Exam.
 Do Now: A family of 3 plans to sit in the same row at the theater. How many ways can the family be seated in 3 seats?

<u>Seat 1</u>	<u>Seat 2</u>	<u>Seat 3</u>	
$\begin{matrix} \text{A} \\ \text{B} \\ \text{C} \end{matrix}$	$\begin{matrix} \text{A} \\ \text{B} \\ \text{C} \end{matrix}$	$\begin{matrix} \text{A} \\ \text{B} \\ \text{C} \end{matrix}$	= 6
A	B	C	$P(A) = \frac{2}{6}$
B	C	A	$\frac{2}{6}$
C	A	B	$\frac{2}{6}$

$3! = 3 \cdot 2 \cdot 1 = 6$
 $3P_3 = 3 \cdot 2 \cdot 1 = 6$
 $5P_2 = 5 \cdot 4 = 20$

Jan 9-8:43 AM

I. Permutations vs. Combinations

1) Ingrid is stringing 3 different types of beads on a bracelet. How many ways can she use one bead (Red, Green, Brown) of each type to string the next 3 beads?

2) Felipe wants to order a sandwich with two of the following ingredients: mushrooms, eggplant, tomato, and avocado. How many different sandwiches can Felipe choose?

Permutations

3 beads: $3! = 3P_3 = 6$

2 beads: $2! = 2P_2 = 2$

1 bead: $1! = 1P_1 = 1$

only two beads: $2P_2 = 2$ (GR)

Combinations

Ingr1: 4
 Ingr2: 3 = 12

$nCr = \frac{n!}{r!(n-r)!}$
 $4C_2 = \frac{4!}{2!(4-2)!} = \frac{4 \cdot 3 \cdot 2 \cdot 1}{2 \cdot 2} = 6$

Jan 9-10:04 AM

3) Ana has 6 autographed baseballs and room for 4 in her display case. How many arrangements can she make? **combinations**

b ₁	SPACE	SP2	SP3	SP4
b ₂	6	5	4	3
b ₃	(b ₁	b ₂	b ₃	b ₄)
b ₄	(b ₄	b ₃	b ₂	b ₁)
b ₅	Is this the same?			
b ₆				

Jan 10-8:50 AM