

Your Task: For each set of letters, figure out how many **DIFFERENT ARRANGEMENTS** you can make with those letters.

Set 1

C A T
D O G
E E L • Note that the 2 E's cannot be distinguished.
N E W T
D E E R • Note that the 2 E's cannot be distinguished.
K I W I • Note that the 2 I's cannot be distinguished.

Set 2

W H A L E
K O A L A
L L A M A

Set 3

C O U G A R
P U F F I N
B A B O O N
A L P A C A

4.6 Combinations and Permutations Day 1 Summary

1. Describe your strategy for figuring out the number of arrangements for the animals N E W T or W H A L E.

2. Describe your strategy for figuring out the number of arrangements for the animals D E E R or K O A L A?

3. Why were these strategies different?

4. Figure out how many different arrangements can be made out of the letters in L I O N.

5. Figure out how many different arrangements can be out of the letters in U C O N N.

$n!$ is read as n factorial.

Define how to calculate $n!$

Calculate

$4! =$

$6! =$

$12! =$

Extension: The current license plate system for the state of Connecticut consists of 2 letters (excluding I, O, and Q), followed by 5 numbers.

How many different possibilities of license plates (with no repeating letter or number) are there, with these rules.

Homework 4.6A Combinations and Permutations (Day 1)

Calculate the following:		
1. $7! =$	2. $\frac{8!}{5!} =$	3. $\frac{10!}{(7!)(3!)} =$

Answer the following questions:	
4. A locker code has 4 digits , each between 0-9. How many total codes are possible?	7. How many different arrangements can be made from the letters in P R O B L E M ?
5. How many ways can 5 people line up to take a photo if order matters?	8. Mr. Miller has a small class of 8 students. If he needs to have 5 students present their work, how many different arrangements can be made from this class if order matters?
6. How many ways can 7 children sit on a bench if order matters?	9. Twelve horses are running in a race. The first three horses finish on the podium - that is, receive the prize of first place, second place, and third place, respectively. How many arrangements of 3 horses (out of the 12) can finish on the podium?