Precalculus Section 9.1 Notes - Day 4 Combinations and Permutations Practice

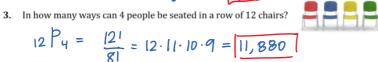


1. A couple has narrowed down the choice of a name for their new baby to three first names and five middle names. How many different first- and middle- name arrangements are possible?



a. So that no two men nor two women are seated next to each other?

b. If one specific couple <u>must</u> be in the middle?



a. All face cards? 4 Snits - 3 face cards ⇒ 12 total face cards

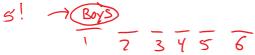
$$12C_5 = \frac{12!}{5!7!} = \boxed{792}$$

b. No face cards?

c. At least one face card?



- $\textbf{5.} \quad \text{Five boys and five girls stand in a line. How many arrangements are possible if:} \\$
 - a. All of the boys stand in succession?



b. The boys and girls stand alternately?

6. How many distinguishable arrangements can be formed from the letters in TALLAHASSEE?

$$\frac{11!}{3!2!2!2!} = 831,600$$



5!.6! = 86400

- Out of a group of 5 sophomores and 7 juniors, a committee of 4 students is being formed to help plan Hinsdale Central's Graduation ceremony.
 - a. How many committees are possible?

$$12 C_4 = \frac{121}{4181} = \frac{495}{12}$$

b. What if the committee is to be comprised of only juniors?

$$7C_{4} = \frac{7!}{4!3!} = 35$$

c. What if the committee must have either all juniors or all sophomores?

$$5C_{4} = \frac{5!}{4!!!} = 5$$
 $35+5 = 40$

 $d. \quad What \ if \ the \ committee \ must \ have \ at \ least \ one \ sophomore?$

$$12^{C_{1}} - 7^{C_{1}} = \boxed{460}$$