Homework: W2

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Math 113: Discrete Structures

Due September 9th, 2020

Problem 1

a.

Since we do not care about the ordering of the boards we only have 8 seats to fill. Thus the answer is 8! since we have 8 choices for the first seat, 7 for the second, so on and so forth. We then want subsets of 2, so then for ordered subsets we get, $8!/6! = 8 \cdot 7 = 56$

b.

First we must decide the ordering of the boards, which is 4!, similar to reasoning in a. Now we need to choose pairs out of 8 where the ordering does not matter, thus $\frac{8!}{6!2!}$. Now all together $\frac{8!4!}{6!2!} = 8 \cdot 7 \cdot 4 \cdot 3 = 672$

Problem 2

Since rotations do not matter we can consider them lining up. For the first seat there is 13 choices, 12 for the second, so on and so forth. Thus there is 13! ways.