

9. Complete the following assignment prior to Meeting #12:
- A. Study our notes from Meeting #12.
  - B. Comprehend Jim's sample response to Quiz 12.
  - C\*. Solve Lunar's problem and display your computation (As usual upload the resulting pdf document on the appropriate Canvas Assignment link):

The Osceola jail contains a row of 10 cells. Each of 10 inmates is randomly assigned to exactly one of those side-by-side cells. None of the 10 prisoners are exhibiting symptoms of the COVID-19 disease. However, unbeknownst to the correction officers who manage the jail, 5 of the 10 prisoners are carriers of the COVID-19 virus. Lunar would like to determine the probability of the event that no uninfected person occupies a cell next to an uninfected person.

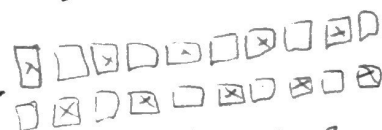
- E. From the Video Page of Canvas, view with comprehension the video "permutations."
- F. Comprehend Jim's sample responses to the homework prompts that are posted on Canvas.

$$P(\text{no uninfected is next to uninfected}) = ?$$

$${}_{10}P_{10} = 10!$$

we know that there are  $10!$  possible orderings.

$$120 + 120 + 120 + 120 = 480$$



These are the only 2 options, but people can be in any spot...

$$\begin{array}{r} 5! \cdot 5! = 14400 \text{ for the first option} \\ + 14400 \text{ for second option} \\ \hline 28800 \end{array}$$

$$P(\text{no uninfected next to uninfected}) = \frac{28800}{10!} = \boxed{.008}$$

I needed to look at your sample solution to see how to use the  $5!$ .

I knew that somehow I would need to count all the ways they could be arranged in the 2 ways, but I wasn't sure how to count that as a permutation.