2.

Mid Term due Mar 4, 2020 05:29 IST *Completed*

A Drunk Person at the Theater

0.0/4.0 points (graded)

There are n people in line, indexed by $i = 1, \ldots, n$, to enter a theater with n seats one by one. However, the first person ($i = 1$) in the line is drunk. This person has lost her ticket and decides to take a random seat instead of her assigned seat. That is, the drunk person decides to take any one of the seats 1 to n with equal probability. Every other person $i = 2, \ldots, n$ that enters afterwards is sober and will take his assigned seat (seat i) unless his seat i is already taken, in which case he will take a random seat chosen uniformly from the remaining seats.

Suppose that $n = 3$. What is the probability that person 2 takes seat 2?

(Enter a fraction or a decimal accurate to at least 3 decimal places.)

1/2 ✖ **Answer:** 2/3

Suppose that $n = 5$. What is the probability that person 3 takes seat 3?

(Enter a fraction or a decimal accurate to at least 3 decimal places.)

1/3 ✖ **Answer:** 3/4

STANDARD NOTATION

Solution:

1. $\mathbf{P}\left(\text{Person 2 takes seat 2}\right) = \mathbf{P}\left(\text{Person 1 takes seat 1 or 3}\right) = \frac{2}{3}$.

2.
$$\begin{aligned} & \mathbf{P}\left(\text{Person 3 takes seat 3}\right) \\ = \ & \mathbf{P}\left(\text{Person 1,2 does not take seat 3}\right) \\ = \ & \mathbf{P}\left(\text{Person 1 takes seat 1 or 4 or 5}\right) \cdot 1 + \mathbf{P}\left(\text{Person 1 takes seat 2}\right) \cdot \mathbf{P}\left(\text{Person 2 does not take seat 3}\right) \\ = \ & \frac{3}{5} \cdot 1 + \frac{1}{5} \cdot \frac{3}{4} = \frac{3}{4}. \end{aligned}$$

Submit You have used 2 of 3 attempts

Answers are displayed within the problem

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? answer are 1/2 for both 2
answer are 1/2 for both, could you check it please. Because you ask about the probability that person 2 takes places two - and that consider that per...

Why the probability of person 2 taking seat 2 when n=3 is 2/3 4

? If n=3, probability of choosing seat 2 is 1/2. See explanation below 6
Person 1 could takes seat 1 : We have the posible sequence P1S1-P2S2-P3S3 Person 1 takes seat 2 : We could have either P1S2-P2S1-P3S3 or P1S2-P2...

? STAFf: Would it be incorrect to approach problem 2 like this? 3
I put my answer as 1/2 because of the four possibilities: Seat 1 Seat 2 Seat 3 1 2 3 3 2 1 2 1 3 3 1 2 There are four possibilities, 2 of which person 2 is i...

? Haven't been able to understand this question 7

Solution to Part 2 2
In the second part, shouldn't the P(Person 2 does not take seat 3) be 2/3 and not 3/4? My reasoning goes like this: since the first (drunk) person has t...

? [To Staff] Saved Answers to Q2 not Submitted 3
I just found that my saved answers to mid-term Q2 were not successfully submitted. I remember I did click the button, when I did the same for some ...

My reasoning for Q2 18

? When will the solutions be posted? 2
When will the solutions be posted?

It is only after I got 0 that I re-read the question and understood my mistake 3
Despite all the fuzz about faculty, staff, students and other personal stories; it was distraction that made much more damage in my case :) I thought t...

My Answers 1
Q1 - 2/3 Q2 - 3/4 For the two questions, I computed the probability that person2/person3 do not get their assigned seats and the answer would be 1 ...

? [Staff] I cannot see my progress and the answers to the questions 2
Hello, I cannot see the progress bar graph under the "Progress" tab. Also, I am unable to see the detailed answers to the questions, the way we can s...

My answers to Q2 2 new 7

Please check the answers again 1
Please check the answers again, I think my all answers are correct. There is some error