

Q M 2610

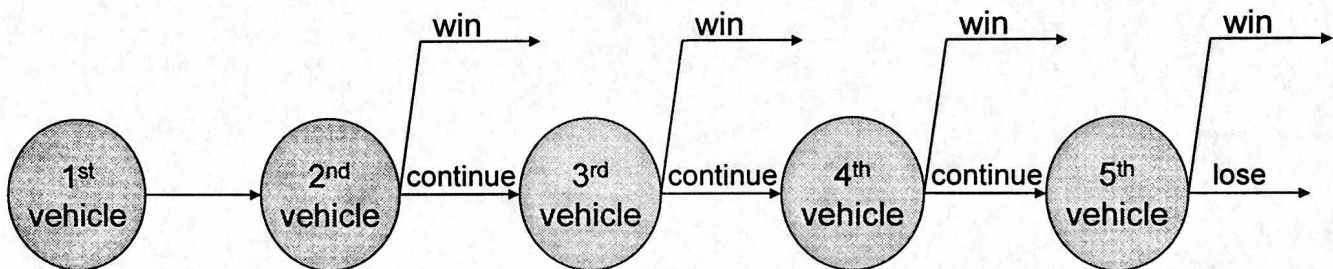
Segment 2

Extra Test Points Problem

This problem deals with the last 2 digits on a license plate. If a license plate does not contain 2 digits (e.g. a vanity plate), then it is not used or counted.

Randomly pick a vehicle in a parking lot. Look at the last 2 digits on the license plate. This is the first number. Pick a different vehicle. If the last 2 digits on that vehicle's license plate match those on the first, you win. If no match, then pick a 3rd vehicle (different from the other 2) and check to see if the last 2 digits of the 3rd vehicle match either of the first two vehicles. If there is a match, you win. If not, then pick a 4th vehicle (different from the other 3) and the game continues. You lose if you pick the n^{th} vehicle (different from the previous $n - 1$) and still do not match. For 10 extra test points, use Excel to find the smallest value of n that makes the probability of winning this game exceed .85.

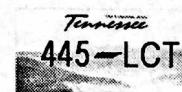
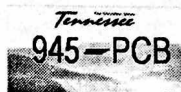
Example: Suppose $n = 5$



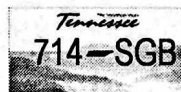
Examples for $n = 5$:



You win at the 4th vehicle. The last two digits of the 4th vehicle match the last two digits of the 2nd vehicle.



You win at the 5th vehicle. The last two digits of the 5th vehicle match the last two digits of the 1st vehicle.



You lose. There were no matching values among the last two digits for the five vehicles. Note that 14 is not the same as 41.