

The Confused and Confusing Traveler

THIS ISSUE'S PUZZLES

Puzzle 1. An airplane has exactly 80 passenger seats. Eighty passengers are in a single line to get on board, and each has a reserved assigned seat. Each passenger gets on one at a time to select his or her seat. However, the first passenger does not look at the assigned seat number and randomly selects a seat on the plane. Thereafter, each passenger takes his or her assigned seat—if it is already taken, he/she randomly selects another unoccupied seat. Again, what is the probability that the last person on board will get his/her originally assigned seat?

Puzzle 2. The two confused and confusing travelers. This puzzle has the same conditions as the previous puzzle. How-

ever, on this flight, the first two passengers on line each randomly select an unoccupied seat, disregarding their reserved seat numbers. Thereafter, each passenger takes his or her assigned seat—if it is already taken, he/she randomly selects another unoccupied seat. Again, what is the probability that the last person on board will get his/her originally assigned seat?

Please submit the answers via e-mail to Puzzles@aol.com or by mail to c/o Puzzles, 17 Ravine Rd., Great Neck, NY 11023. No solution is required. Please submit your answer as soon as possible to make the solvers list.

ANSWER TO LAST ISSUE'S PUZZLES

1. Cave problem. 4 people are in a treacherous cave and need to get to the other



side. They can travel at most 2 at a time but need the sole flashlight to make their journey across the narrow path. They know the flashlight has only 12 hours of power. They are aware that all of them travel at different speeds: one travels either way in 1 hour; another takes 2 hours; another takes 4 hours; and another takes 5 hours.

How do they do it?

THE ANSWER IS: 1 & 2 go (2 hours); 1 returns (1 hour); 4 & 5 go (5 hours); 2 returns (2 hours); 1 & 2 go (2 hours). (There is a second similar solution.)

2. Penny for your thoughts random generator. You are taking a difficult examination. At one point you decide your best strategy is to take a purely random guess between two alternative choices. You reach in your pocket and pull out a penny, but you suspect that this is most likely a biased coin. Can you derive a good strategy to use to determine a 50/50 random selection using this coin?

Note that, though not indicated, this problem assumed that successive coin tosses are independent.

This problem generated very interesting solutions that I would like to briefly discuss. Several readers suggested that since you do not know the direction of bias of the coin, then regardless of your guess of a specific outcome [and using such as a choice], the outcome would be random. The problem with that solution is that it assumes that there is a 50/50 chance of bias either way. Another approach was that by taking a random 50/50 guess—of the coin's outcome, one is able to ensure a random result despite the coin's bias. This would work, but the

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problem here is how to attain the 50/50 guess—for if such was humanly attainable, then no coin would be necessary. A few readers cleverly suggested using the coin's date as a basis for decision—but here again there is the problem of possible coin bias.

AS FOR THE CORRECT SOLUTION:

This is obtainable by basically equalizing the coin's bias by using the coin itself. The simplest solution is: Decide in advance that one choice will be heads/tails and the other tails/heads. Flip twice. Disregard heads/heads or tails/tails. The chance of heads/tails will equal the chance of tails/heads. The probability of each of these events occurring is $p(1-p)$, where p is the probability of a heads.

So, next time you need to flip a coin, perhaps you should flip twice—or twice again, or . . .

NOVEMBER/DECEMBER SOLVERS

Jeffrey Adams, Bob Bartholomew, Robert Giambo, David Scherr, Al Spooner, Doug Szper, Karl Whitmarsh

JANUARY/FEBRUARY SOLVERS:

Jon Abraham, Mike Brassil, Bob Bartholomew, Francis Bernardi, Dick Botteli, Tom Bowden, Doug Brooks, Rebecca Burton, Lois Cappellano, William Carroll, Kevin Cleary, John Crooks, Bill Cross, Andrew Dean, Jim Dexter, Richard Diamond, Nate Epstein, Chris Fievoli, Bob Gardner, Don Glick, Brian Goldberg, Greg Hansen, Ina Harris, John Herder, Michael Hluska, Harold Ingraham, Jason Israel, Tim Kelley, Roman Kelly, Stephen Kossman, Frank Krlinski, Donna Lawry, Warren Leisinger, Robert Link, George Ludwig, Doug McKenzie, June Meimban, Stephen Mendelsohn, Stephen Meskin, Ron Miller, Chris Noble, Don Onnen, Lazio Pentek, Mike Preston, David Promislow, Michael Promislow, Paul Ralph, Edward Scher, Conrad Siegel, James Sincovec, Al Spooner, Wayne Sun, Tim Swankey, Kevin Trapp, Jack Turnquist, David Uhland, Pat Uhrig, Richard Virgile, Kimberly Ward, Blake Warneke, David Weinsier, Pete Weisenberger, Karl Whitmarsh

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