DTP-Math-Circle: Session 2—Probability

Sept 16 2022

11   School bus seating

There are four children who go to school by a minivan that holds four of them, apart from the driver. Each of them has an assigned seat in the minivan, so the first boy has seat 1, second has seat 2 and so on.

The first boy is in a bad temper on Monday, and instead of sitting on his assigned seat, goes and randomly sits at some seat without checking (so it could be his or not, he doesn't care). The other three children are careful and when they enter, they try to sit in their own seat if available, or if not, they sit on one of the available seats randomly.

What is the probability that the last child gets his own seat?

Can you repeat this for a larger school van with 5 children, and for an even larger van with 6 children?

Can you generalize your solution to a big school bus with assigned seating?

Now, go back to the first situation with the four children. What is the probability that the second-last child gets his own seat? And the third-last?

Can these answers also be generalized?