## 1145-60-2574Tingting Ou\* (tou2@jhu.edu), 3700 N Charles St, Apt 3B, Baltimore, MD 21218, and Michelle<br/>Shu (mshu1@jhu.edu), 1 E University Parkway, #604, Baltimore, MD 21218. Probabilistic<br/>Counting-Out Game on a Line. Preliminary report.

Our research focuses on a novel problem posted on a question-and-answer website. There are n people in a line at positions  $1, 2, \ldots, n$ . For each round, we randomly select a person at position k, where k is odd, to leave the line, and shift the people at position i such that i > k to position i - 1. We continue to select people until there is only one person left, who then becomes the winner. We are interested in two questions: which initial position has the greatest chance to win and which has the longest expected time to stay in the line. We have derived recursions to solve for exact values of the winning probabilities and expected time, the exact formula for the winning probabilities, and the asymptotic behaviors of the expected survival time. We have also considered a variation of the problem, where people are grouped into triples, quadruples, etc., and the first person in each group is at the risk of being selected. We will also present various sequences we have discovered while solving the variations, as well as other possible extensions and related findings concerning this problem. (Received September 25, 2018)