

Meeting: 1003, Atlanta, Georgia, MAA CP X1, MAA General Contributed Paper Session, I

1003-X1-1076 **Yana Kortsarts*** (ykortsarts@mail.widener.edu), Computer Science Department, Widener University, One University Place, Chester, PA 19013. *Teaching a power of randomization - innovative approach.* Preliminary report.

We consider the following game. The first player chooses an integer number x . The goal for the second player is to guess an integer $y \geq x$. The second player tries to find a good answer by giving a series of guesses. For a given guess y_i the first player either says “at least as large as my number” ending the game, or “smaller than my number” and the game continues. The series of choices of the second player gives a tuple $y_1 < y_2 < \dots < y_n$ with $y_n \geq x$ and $y_j < x$ for $j < n$. The value of the game is defined as $\sum_j y_j/x$.

We show that any deterministic strategy has a worst case value of at least 4 for this game. In contrast, we show a randomized strategy with expected value $e < 2.72$. This depicts the power of randomization in a relatively simple scenario. (Received October 03, 2004)