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*Lower Bounds on Rectangular Ramsey Numbers.* Preliminary report.

The probabilistic method pioneered by Paul Erdős provides lower bounds for Ramsey numbers. In a similar manner the probabilistic method is utilized for the game of  $Rec(j, l_1, l_2, \dots, l_d)$  to find lower bounds on rectangular Ramsey numbers. Applying the probabilistic method a random variable is defined for the coloring of the positions of an  $d$ -dimensional combinatorial hyper-rectangle. Similarly, a different random variable is defined to count the number of monochromatic  $d$ -dimensional combinatorial hyper-rectangle after the game has been played randomly. Relevant theorems are proven for  $Rec(j, l_1, l_2, \dots, l_d)$  regarding rectangular Ramsey numbers. Lower bounds are generated given the dimension of the game board and size of the combinatorial hyper-rectangles. The game has interesting results in combinatorics, and further provides questions regarding rectangular Ramsey numbers and various winning conditions. (Received September 17, 2019)