1067-05-2277 **Crystal L. Bennett*** (clbennet@ncat.edu), 1401 Cunningham Street, Unit D, Greensboro, NC 27401, and **Joshua Chukwuka** and **Kenneth Berg** (krb@math), Department of Mathematics, Mathematics Building, University of Maryland, College Park, MD 20742. *Winning strategy for Chomp Grid with 0, 1, 2, or 3 pieces in the 3rd row.*

The objective of this summer REU project portion is to design and implement a winning strategy for chomp grid with up to three pieces in the 3rd row. The take-away game Chomp is played on a rectangular grid with m number of rows and n number of columns. The grid is divided into squares. Two players alternate removing pieces from the grid. The lower right hand piece is poison and the player who removes this piece loses. By expanding the standard version of Chomp of 2 rows and 5 columns to 3 rows and indefinitely many columns, we would like to investigate if we can come up with a way to find all the losing positions of a chomp grid when there are 3 rows and 0, 1, 2, or 3 pieces in the top row. Losing positions are members of the set L. All other positions are considered winning and a member of the set W. If a player can force the game to alternate from a position in W to a position in L and back to a position in W making the game go "W, L, W, L", the other player will lose. We have developed theorems for common conditions in chomp so that the player can manipulate the game as such. (Received September 22, 2010)