1086-VN-1843 **Taylor Kindred*** (tkindred@students.kennesaw.edu). *Total Domination on the Triangular Honeycomb Chessboard.* Preliminary report.

A set $S \subseteq V$ is a dominating set of a graph $G = (V, E)$ if each vertex in V is either in S or is adjacent to a vertex in S. A vertex is said to dominate itself and all its neighbors. The domination number, $\gamma(G)$, is the minimum cardinality of a dominating set of G. When translated to a chessboard puzzle, the domination question is how to threaten or occupy every square on the board with the fewest number of pieces. In the 1996 MAA publication, *Which Way Did the Bicycle Go?*, Konhauser, Velleman, and Wagon defined the triangular honeycomb chessboard of side n. In 2012, DeMaio and Tran computed domination numbers on the triangular honeycomb board.

A set $S \subseteq V$ is a total dominating set of a graph $G = (V, E)$ if each vertex in V is adjacent to a vertex in S. The total domination number, $\gamma_t(G)$, is the minimum cardinality of a total dominating set of G. Translated to the chess board, occupying a space is no longer sufficient. Every space must be threatened. This talk begins the analysis of total domination numbers for the triangular honeycomb chessboard. (Received September 24, 2012)