1077-H1-2861 **Rebecca E Field*** (fieldre@math.jmu.edu), MSC 1911, James Madison University, Harrisonburg, VA 22807, and **Beth Arnold**, **Steve Lucas** and **Laura Taalman**. *Minimal connected Shidoku symmetry groups.*

There are two basic ways to rearrange a Sudoku board to produce another Sudoku board which is essentially the same as the initial board. The first way is by using physical symmetries such as rotating a board 180 degrees or switching the bottom two rows. The second is by relabeling the entries, such as turning all of the ones into twos and vice versa. We will discuss the ways that these two types of Sudoku symmetries interact for the special case of Shidoku, the four by four equivalent of Sudoku. We will also discuss how these are used, along with Burnside's lemma, to count the number of essentially different Sudoku/Shidoku boards. (Received September 22, 2011)