1023-M1-70   **Carlos Arcos**, **Gary Brookfield** and **Mike Krebs*** (`mkrebs@calstatela.edu`), Department of
          Mathematics, 5151 State University Drive, Los Angeles, CA. *Beaucoup de Sudoku.*

Given a Sudoku, there are some easy ways to create a new Sudoku from it—e.g., switch the top two rows, or rotate the grid ninety degrees. We then say that the old Sudoku and the new one are "essentially the same." Are all Sudokus essentially the same?

Working mathematicians will not be surprised to hear that the theory of groups is tailor-made for such a question. Undergraduate math majors, however, may well find that applying these recently-learned methods to a familiar, concrete example brings the abstract theory to life.

Finding the number of essentially different 9x9 Sudokus is probably too difficult to be an assignment in an Algebra class. (Jarvis and Russell have found over five billion but needed a computer for this computation.) The case of 4x4 Sudokus, however, is much more tractable. In this talk, we follow our paper "Groups and mini-Sudokus," which discusses a quick and easy way to determine when two "mini-Sudokus" are essentially the same. Along the way, we make use of Lagrange's theorem, equivalence relations, and Burnside's Lemma, as well as the ubiquitous technique of finding invariants to distinguish equivalence classes of objects. A preprint is available at

http://www.calstatela.edu/faculty/gbrookf/pubs/beaucoupsudoku.pdf. (Received September 12, 2006)