

Meeting: 1003, Atlanta, Georgia, MAA CP F1, MAA Session on Mathlets for Teaching and Learning Mathematics

1003-F1-862 **Steven Schlicker*** (schlicks@gvsu.edu), Department of Mathematics, 2307 MAK, 1 Campus Drive, Grand Valley State University, Allendale, MI 49401. *Visualizing Concepts in Group and Ring Theory.*

Students often have difficulty creating appropriate visual images of the many abstract concepts they encounter in modern algebra. Among the important ideas with which students struggle are those of isomorphisms and quotient structures. In this session we will present Java applets that help students to visualize and understand these two concepts within the context of ring theory (isomorphisms) and group theory (normal subgroups and quotient groups). The applets create color-coded operations tables for many familiar rings and groups. By manipulating the tables in several ways students are able to identify and illustrate isomorphisms, and to construct cosets, recognize normal subgroups, and illustrate quotient groups. (Received September 30, 2004)