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Kathleen Melhuish*, kmelhuish@teachersdg.org. *The State of Student Understanding in Introductory Group Theory: Results from the Group Concept Inventory.*

The Group Concept Inventory (GCI) was developed to assess student understanding of key introductory level group theory topics such as subgroups, quotient groups, and isomorphism. A concept inventory is a multiple-choice test that aimed to assess students' conceptual coherence in a given subject area. The GCI was designed with the goal of maximize validity through incorporating textbook analysis, expert consensus protocols and evaluations, and extensive field-testing with students. Each multiple-choice question began as an open-ended question allowing for genuine student responses to become the options in the closed-form version. Through three rounds of field testing (one open-ended and two closed-form), over 800 students, representing all undergraduate institution types, responded to a set of 17 group theory questions. Thirty of these students were also interviewed in order to establish validity for answer-choice interpretations. In this report, I will present several questions from the GCI along with corresponding national results, student interview excerpts, and discussion of how this instrument could be leveraged by instructors and researchers. (Received September 05, 2015)