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Ira Gerhardt* (ira.gerhardt@manhattan.edu), Dept of Mathematics and Computer Science, Manhattan College, 4513 Manhattan College Parkway, Riverdale, NY 10471. *The ALARM Experiment*. Preliminary report.

During a recent semester, an experiment was performed to test the theory that the greatest difficulty students must overcome in completing an introductory Calculus course is being ill-prepared in terms of their comfort with basic algebraic and arithmetic concepts and techniques. It appears the most blatant cause of this discomfort is the reliance on calculators and the hesitancy of instructors during the students' junior high and high school years to reinforce sufficiently concepts such as order of operations as well as techniques for working with fractions, negative numbers, and radicals. The experiment found that nearly 40% of students sacrificed at least one-third of a letter grade specifically to these algebraic and arithmetic mistakes (rather than to difficulty with Calculus or carelessness). (Received August 15, 2010)