

Abstract Submitted
for the NEF09 Meeting of
The American Physical Society

What do Seniors Remember from Freshman Physics? ANALIA BARRANTES, ANDREW PAWL, DAVID E. PRITCHARD, Massachusetts Institute of Technology — We have given a group of 56 MIT seniors who took mechanics as freshmen a written test similar to the final exam they took in their freshman course, plus the MBT and C-LASS standard instruments. Students in majors unrelated to physics scored 60% lower on the written analytic part of the final than they did as freshmen. The mean score of all students on conceptual multiple choice questions included on the final declined by approximately 50% relative to the scores of freshmen. The mean score of all participants on the MBT was insignificantly changed from the posttest taken as freshmen. More specifically, however, the students' performance on 9 of the 26 MBT items (with 6 of the 9 involving graphical kinematics) represents a gain over their freshman pretest score (a normalized gain of about 70%, double the gain achieved in the freshman course alone), while their performance on the remaining 17 questions is best characterized as a loss of approximately 50% of the material learned in the freshman course. Attitudinal survey results indicate that almost half the seniors feel the specific mechanics course content is unlikely to be useful to them, a significant majority (75-85%) feel that physics does teach valuable skills, and an overwhelming majority believe that mechanics should remain a required course at MIT.

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Date submitted: 07 Oct 2009

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