THE "MATHEMATICS A" REGENTS:

WRONG ASSESSMENT FOR MOST COLLEGE BOUND-STUDENTS

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I am currently a mathematics teacher and United Federation of Teachers chapter leader at Humanities Preparatory Academy, a New York City public high school in Manhattan. I have taught mathematics in New York City public schools since 1996, and previously taught social science at the college level. I hold three degrees from Columbia University: a bachelors, an M.A., and a Ph.D. In my doctoral dissertation, I applied the theory of self-regulating systems to human motivation, cognition, and behavior; designed research and collected original survey data; and analyzed the data using multiple regression, factor analysis, and other advanced statistical methods. In 1995, this work was published in the peer-reviewed journal *Political Psychology*. Other publications of mine have appeared in the *San Francisco Chronicle*, *Bulletin of the Atomic Scientists*, and various professional journals and newsletters.

About ninety percent of the students who graduate from my school (Humanities Preparatory Academy) attend college, and nearly eighty percent attend four-year colleges. Like other schools in the New York Performance Standards Consortium, Humanities Prep historically had a system of graduation requirements based on senior projects and portfolios in lieu of the Regents Exams (except the English Language Arts Regents, which we administered). In 2001, New York State Education Commissioner Richard Mills, disregarding the advice of a panel of psychometricians that he himself appointed, discontinued the Consortium schools' variance from Regents exams. I will discuss in this statement the adverse effects on my students of this decision—which made five Regents exams mandatory for high school graduation—and the urgency of reinstating alternative systems of assessment for high school students.

Like the Sequential I Mathematics Regents Exam before it, the Mathematics A Regents is geared to a set of skills that provide a foundation for pre-calculus and calculus courses. This may be considered a relevant graduation requirement for the minority of students who will go on to major in mathematics, science or engineering in college. The majority of college-bound students, however, are much more likely to take statistics courses in college, rather than calculus courses. Students majoring in mathematics, science or engineering will also be required to take statistics, along with calculus. But students in the humanities, social sciences, business, and other less mathematical fields will only be required to study statistics, not calculus.

In fact, statistics—not calculus—has been the branch of mathematics most universally required of college students in the United States for two decades or more. And yet today's Regents

curriculum almost completely ignores this reality. While covering quadratic equations, coordinate geometry, trigonometry, and other mathematical knowledge relevant to calculus, the statistics topics on the Regents A are limited to mean, median, mode and a few other elementary topics that constitute a completely inadequate preparation for college statistics courses. The Regents A does not address the normal distribution, statistical hypothesis testing, and other topics that are at the heart of college statistics courses, and does not address the standard deviation in the context of these topics.

If the Regents Math A exam were optional for high school graduates, I would have no objection to its pre-calculus orientation. It would then be one way that students headed for mathematically intensive fields could demonstrate preparedness for such study in college. Making this exam a universal requirement for all high school graduates in New York State, however, is an inappropriate policy for the majority of college-bound students. It means forcing these students into an academic track that is largely irrelevant to their future, while depriving them of the kind of high school mathematics instruction that really does meet their needs but which is "not on the Regents Exam."

I speak from experience. For the last two years I have taught a statistics course at Humanities Prep to the cohort of students who are still covered by our school's earlier waiver from the Math A Regents. This course includes an introduction to the most important mathematical tools needed to design, conduct, and evaluate statistical research. Students build their own social theories and test them using data from the General Social Survey, an online professional research database. They present their findings in a final paper that demonstrates an understanding of relevant topics in probability and statistics, including the chi-square test. In lieu of the Math A Regents exam, juniors and seniors presented and defended their papers before a panel of two Humanities Prep math teachers and an evaluator from outside the school. Samples of these papers and course materials are available upon request.

This kind of project-based work in statistics prepared our students for similar work required in college better than the Regents A curriculum possibly can. Because of courses like this, Humanities Preparatory Academy has earned a reputation in New York City and nationally as an outstanding college preparatory school. And yet the academic achievement of students at our school taking courses such as this now goes completely unrecognized by the New York State Education Department, because the skills they have developed—however relevant to college—are "not on the Regents Exam." We are now being forced to prepare all of our students for the Regents A, which leaves little time or resources to continue offering the statistics course that has served our college-bound students so well.

One size does not fit all. The Regents Exams may be suitable assessments for some students in some schools, but requiring them for all students in New York State undermines appropriate high school instruction for hundreds of thousands of college-bound students. Rigorous, alternative assessments should be an option for all students.