



To: David Steiner
Cc: David Abrams, John King, Dan Koretz, Alan Ray
From: Howard T. Everson¹
Date: July 1, 2010
RE: Relationship of Regents ELA and Math Scores to College Readiness Indicators

At the Spring, 2010 meeting of the NYSED's Technical Advisory Group (the TAG), you asked Dan Koretz and me to develop evidence to address the issue of whether the NYSED assessments in Mathematics and English Language Arts (ELA) could be benchmarked empirically assessments against college readiness indicators. During the course of those discussions the TAG outlined three types of evidence we believed could be developed quickly with existing assessment data supplemented by both NAEP scores and data from the City University of New York (CUNY). In particular, Dan Koretz and I set out to examine: (a) the relationship between the proficiency cut-scores on the State's 8th grade tests in ELA and Mathematics and subsequent Regents high school exam scores in those same disciplines; (b) the relationship between the State's 8th grade ELA and Mathematics cut-scores and performance on the NAEP; and (c) the relationship of the Regents high school examination scores in both ELA and Mathematics to CUNY students' SAT scores and subsequent performance in first-year courses at CUNY.

Dan Koretz agreed to provide preliminary analyses focusing on both issues a and b, above, while I set out to examine the pattern of relationships among and between the Regents high school exams, SAT verbal and math scores and performance in CUNY.

Regents Math A & Math B

Beginning in 2007-08² any student applying for admission to the City University of New York and presenting a New York State Regents Mathematics A or B score of 75 or higher was, in most instances, exempted from taking remedial, non-credit courses in Mathematics (e.g., courses in Arithmetic, Elementary Algebra and Intermediate Algebra)³. In May of 2010 the CUNY Office of Institutional Research and Assessment released results that took a close look at the performance of recent graduates of New York City Public high schools who entered CUNY in the Fall of 2008 with Math A and/or Math B Regents test scores. This study included analyses of 12,289 students presenting Regents Math A exam scores, and an additional 3,229 students

¹ Note: the text in the body of this document is the text that Howard Everson sent to NYSED staff on July 1, 2010. The memo was later reviewed by CUNY officials on July 19 who, in consultation with Howard Everson, made several revisions. These revisions are reflected in footnotes in this document.

² This policy began in 1999.

³ Intermediate Algebra is considered a remedial course in some CUNY colleges and a credit-bearing, developmental course in others.

presenting Regents Math B exam scores. These students applied to one or more of CUNY’s senior and/or two-year colleges. Table 1 presents the initial placements into CUNY’s Mathematics course sequence for these two groups of students.

Table 1
Initial Math Course Placement by Indicators of High School Math Preparation:
Recent Graduates of NYC Public High Schools Entering CUNY in Fall 2008

	Total	Arithmetic	Elementary Algebra	Intermediate Algebra	College Algebra	Precalculus	Calculus I	Total
<i>Math Regents A</i>								
Less than 55	290	68.3	29.7	1.4	0.7	0.0	0.0	100.0
55 to 59.9	643	62.8	34.2	2.5	0.3	0.2	0.0	100.0
60 to 64.9	684	60.1	33.3	5.0	1.3	0.3	0.0	100.0
65 to 69.9	2,680	38.9	44.7	9.7	4.8	1.8	0.1	100.0
70 to 74.9	2,206	25.3	41.0	16.8	11.9	4.2	0.8	100.0
75 to 79.9	1,951	2.8	6.0	43.6	32.0	12.6	3.0	100.0
80 to 84.9	1,490	0.9	4.0	27.4	33.6	26.7	7.5	100.0
85 to 89.9	1,260	0.6	1.3	14.8	27.1	38.9	17.3	100.0
90 to 94.9	717	0.0	0.3	4.9	15.5	44.1	35.3	100.0
95 and Higher	368	0.0	0.0	1.9	7.1	29.6	61.4	100.0
Total	12,289	21.9	23.0	17.7	16.3	13.8	7.2	100.0
<i>Math Regents B</i>								
Less than 55	872	7.5	19.7	28.2	27.9	14.4	2.3	100.0
55 to 59.9	190	2.6	10.5	22.6	31.1	31.1	2.1	100.0
60 to 64.9	134	2.2	6.0	15.7	35.1	32.1	9.0	100.0
65 to 69.9	605	1.2	2.8	10.6	34.4	39.8	11.2	100.0
70 to 74.9	315	0.3	1.9	8.3	27.0	44.1	18.4	100.0
75 to 79.9	384	0.3	0.8	5.7	18.0	47.4	27.9	100.0
80 to 84.9	270	0.0	0.0	1.5	13.0	49.3	36.3	100.0
85 to 89.9	230	0.0	0.0	0.4	6.1	32.6	60.9	100.0
90 to 94.9	176	0.0	0.0	0.0	5.1	17.6	77.3	100.0
95 and Higher	53	0.0	0.0	0.0	1.9	15.1	83.0	100.0
Total	3,229	2.5	7.0	13.2	23.8	32.1	21.3	100.0

CUNY designates Mathematics courses in Arithmetic, Elementary Algebra and Intermediate Algebra as remedial, non-credit bearing courses.⁴ In contrast, College Algebra, Pre-Calculus and Calculus I are offered as college-level, credit-bearing courses throughout CUNY. More than half (53%) of the entering students scored below 75 on the Regents Math A exam, and nearly 2/3 of those with Math B scores did not meet the CUNY exemption criterion (a score ≥ 75).

In general, students with Regents Math A or Math B scores below 75 are required to take the CUNY Mathematics Placement Test (ACT’s online *COMPASS Exam*).⁵ The Mathematics Departments at the various CUNY colleges then place students into the appropriate course sequences based on the *COMPASS* placement testing scores. The resulting course placement patterns (percentages of students) are displayed by Regents test score levels (at intervals of 5 scale score points) in Table 1.

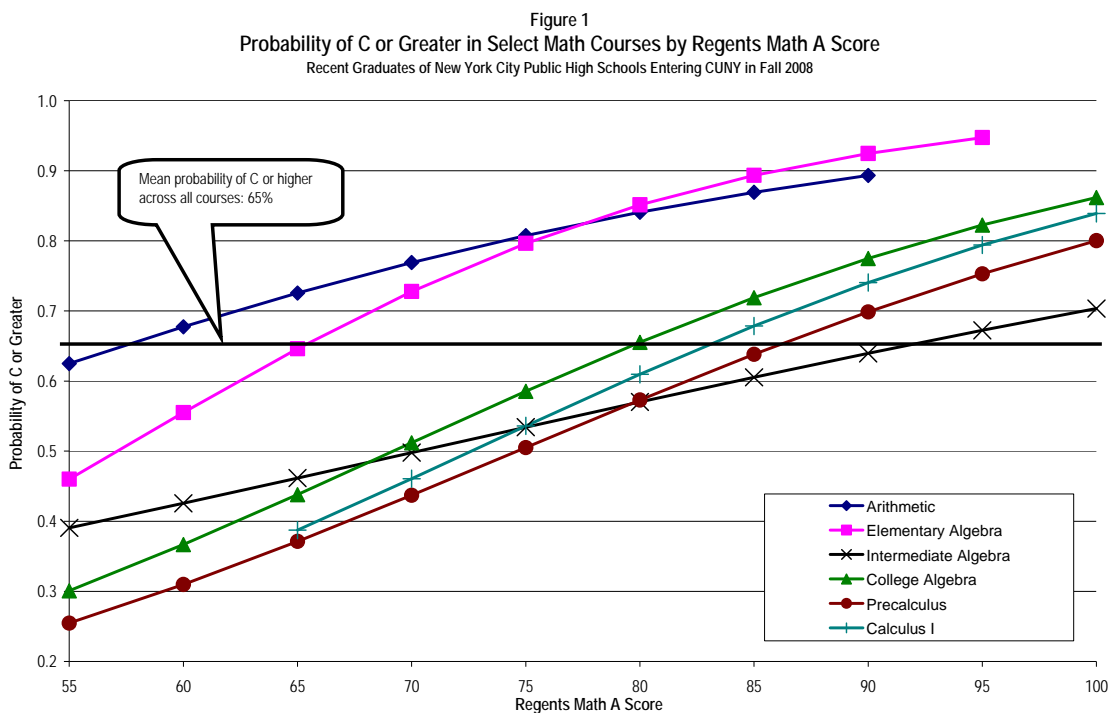
Of the 6,500 or so students with Regents Math A scale scores below 75, nearly 90% were placed into remedial courses at CUNY. In contrast, of the 5,786 students with Regents Math A scale scores of 75 or higher, approximately 70% were placed into college-level math courses.

⁴ Again, Intermediate Algebra is remedial at some CUNY colleges and credit-bearing at others.

⁵ All CUNY students are required to take the CUNY Mathematics Placement Test.

Looking at the Regents Math B scores, of the 2116 students with scores below 75, about 1/3 of them were placed into remedial courses. Of those with Math B scores at or above 75, approximately 89% were placed into college level mathematics courses at CUNY.⁶

Turning to Figure 1, we get a clearer picture of the relationship between the Regents Math A scores and the students' performance in CUNY Mathematics courses. With a focus on college-readiness, we look at the trajectories for the three college-level courses (i.e., College Algebra, Pre-Calculus and Calculus I). These plot lines suggest that students with Regents Math A scores between 80-85 (the more advanced students in the 9th and 10th grade cohorts) have roughly a 65% probability of earning a grade of "C" or higher in these college-level mathematics courses. In contrast, those high school students with a Mathematics Regents A score of 75, the presumptive proficiency score, have about a 50% probability of earning a grade of "C" or higher in CUNY's college-level mathematics courses.

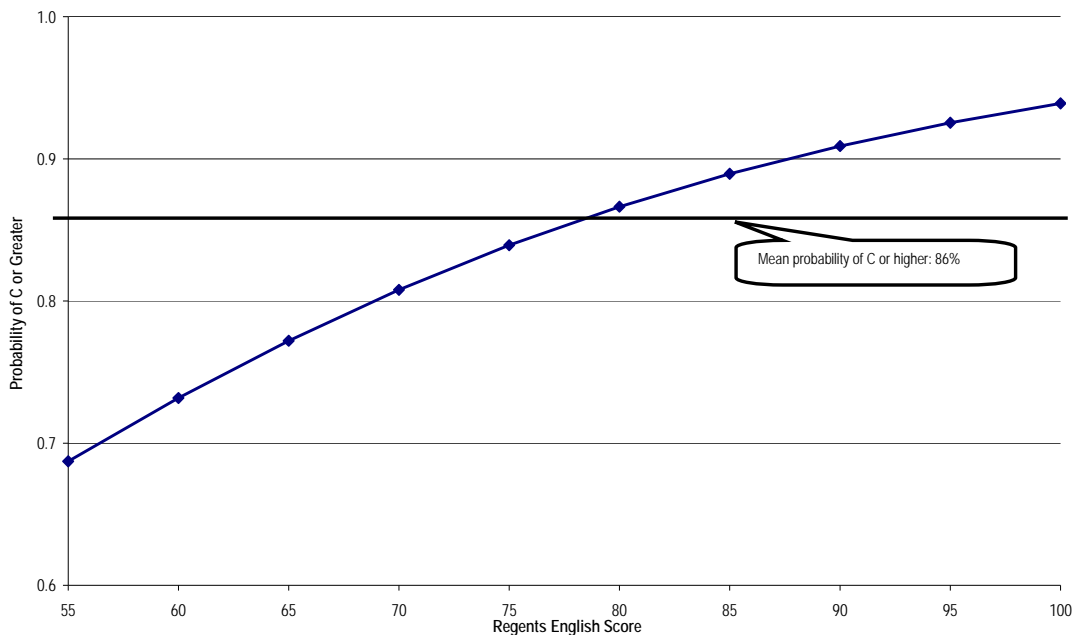


Regents English Language Arts

⁶ If these numbers were recalculated to reflect the diversity of CUNY placement practices to exclude Intermediate Algebra entirely, treating it neither as a remedial nor a college-credit course, these sentences would be rewritten as follows: "Of the 6,500 or so students with Regents Math A scale scores below 75, 81% were placed into remedial courses at CUNY. In contrast, of the 5,786 students with Regents Math A scale scores of 75 or higher, approximately 70% were placed into college-level math courses. Looking at the Regents Math B scores, of the 2116 students with scores below 75, about 14% of them were placed into remedial courses. Of those with Math B scores at or above 75, approximately 97% were placed into college level mathematics courses at CUNY."

Looking at the same cohort of students entering CUNY in the Fall of 2008 in terms of their Regents ELA exam scores (N= 11,616), we see that those students presenting an Regents ELA score of 65, have a probability of about 75% of earning a grade of “C” or higher in the University’s Freshman Composition courses. The probabilities approach 85% for earning a grade of “C” or higher those with Regents ELA scores ranging between 75 - 80 who are placed into those same freshmen Composition courses.

Figure 2
 Probability of C or Greater in Freshman Composition by Regents English Score
 Recent Graduates of New York City Public High Schools Entering CUNY in Fall 2008



Regents Exam Scores & SAT Performance

The College Board’s SAT test is another widely recognized indicator of college readiness. SAT scores, more often than not the SAT Verbal and Mathematics scores, are used by most colleges and universities as benchmarks for admission. About 1.4 million college bound seniors sit for the SAT each year, and the average SAT Verbal and Mathematics scores for the 2009 cohort were 501 and 515, respectively, on a scale of 200-800.

For purposes of this exercise, we used SAT verbal and mathematics scores in the range of 500-549 as the benchmark for college readiness. CUNY’s Office of Institutional Research provided cross-tabulated Regents exam scores by SAT scores from the Fall 2003 entering cohort of first-time freshmen. These data were further disaggregated by type of Regents exam (English, Math 1, and Math A) and SAT Verbal and Math.

Regents English & SAT Verbal. CUNY reported SAT and Regents ELA scores for 8,662 students broken down by 5 point ELA score bands and 50 point SAT scale score bands. Approximately 75% of the students entering with ELA scores of 80 or lower had reported SAT Verbal scores below 500. Of those entering with ELA scores above 80, approximately 60% had SAT Verbal scores above 500.

Regents Math 1 & SAT Math. For the entering Fall 2003 cohort at CUNY, 6,738 students submitted both Regents Math 1 and SAT Math scores. Again, the student level data were broken down by 5 point Math 1 score bands and 50 point SAT scale score bands. Approximately 70% of the students entering with Math 1 scores of 80 or lower had reported SAT Math scores below 500. In contrast, of those entering with Math 1 scores above 80, approximately 70% had SAT Math scores above 500.

Regents Math A & SAT Math. CUNY reported that 2,246 students submitted both Regents Math A and SAT Math scores. Again, the student level data were broken down by 5 point Math A score bands and 50 point SAT scale score bands. For this group, 71.7% of the students entering with Math A scores of 80 or lower had reported SAT Math scores below 500; while for those students entering with Math A scores above 80, approximately 81.8% had SAT Math scores above 500.

Conclusion

We see that students with Regents Math A passing scores of 65 typically do not meet the CUNY cut-score for placement into college-level Mathematics courses. Indeed, these students may have only a little better than a 50-50 chance of earning a grade of “C” or higher in CUNY’s remedial Mathematics courses. The empirical relationship between the Regents English Language Arts exam, typically taken in the 11th grade, is somewhat less clear—largely because the CUNY data are not sufficient for a closer look. We do see, however, that when we look at those students who were placed into freshman level English Composition courses at CUNY, we estimate that students with a Regents ELA score of 65 (marginally proficient) have about 75% chance of earning a grade of “C” or higher in those college-level courses. Those with Regents ELA scores at or above 80 have about an 80-85% chance of earning a “C” or higher grade in these college-level writing courses.

When we look at the SAT as a benchmark of college readiness, we see much the same pattern. Approximately 75% of the students entering with ELA scores of 80 or lower had reported SAT Verbal scores below 500. For students entering with Math A scores of 80 or lower, a large proportion had reported SAT Math scores below 500; while for those students entering with Math A scores above 80, more than 80 % had SAT Math scores above 500. Similarly, roughly 70% of the students entering with Math 1 scores of 80 or lower had reported SAT Math scores below 500.

In general these data—though preliminary—suggest that the Regents examination “passing” scores may be set below the college readiness standards in place at the City University of New York.