COLLEGE AND WORKFORCE TRAINING READINESS

EPAS® State of the Nation Report 2007: Mathematics

The purpose of this report is to examine results in mathematics for the ACT Educational Planning and Assessment System (EPAS) in schools nationwide. EPAS consists of three programs: EXPLORE® (for students in grade 8 or 9), PLAN® (for students in grade 10), and the ACT® test (for students in grade 11 or 12). The following questions are addressed:

- Has the mathematics achievement of high school graduates improved between 2003 and 2007?
- Are 2007 high school graduates better prepared than 2003 graduates for college-level mathematics?
- What factors affect the academic achievement and college readiness of high school students in mathematics?
- Are 2007 eighth and tenth graders more likely than 2003 students to be on target to graduate from high school ready for college-level mathematics?
- How ready for college-level mathematics are students in the educational pipeline across grades 8, 10, and 12?
- What is the relationship between college readiness in mathematics and college success for high school graduates?

Most of these questions are examined for all high school graduates, for racial/ethnic minority students (defined here as African American, American Indian, and Hispanic students combined), for White students, and by gender.

In 2007, 13 percent of eighth graders nationally (about 545,200 students) took EXPLORE and 22 percent of tenth graders (about 939,500 students) took PLAN. In 2007, 42 percent of high school graduates nationally (about 1.3 million students) took the ACT.*

Of ACT-tested 2007 high school graduates, 52 percent were female students and 20 percent were racial/ethnic minority students (of the latter, 59 percent were African American, 5 percent were American Indian, and 36 percent were Hispanic). Approximately 30 percent of 2007 ACT-tested high school graduates were from the East, 38 percent from the Midwest, 13 percent from the Southwest, and 19 percent from the West (Appendix, Table 1).

ACT®

* National counts for 2006–07 public school eighth- and tenth-graders were obtained from the National Center for Education Statistics website (http://nces.ed.gov/programs/projections/tables/table_03.asp). Total counts for eighth- and tenth-graders were estimated using the public school counts and the ratio of projected 2006–07 total graduates to public-school graduates obtained from *Knocking at the College Door: Projections of High School Graduates by State, Income and Race/Ethnicity* © 2003 by the Western Interstate Commission for Higher Education. Estimated total counts for 2007 high school graduates were also obtained from this publication.

Q. Has the mathematics achievement of high school graduates improved between 2003 and 2007?

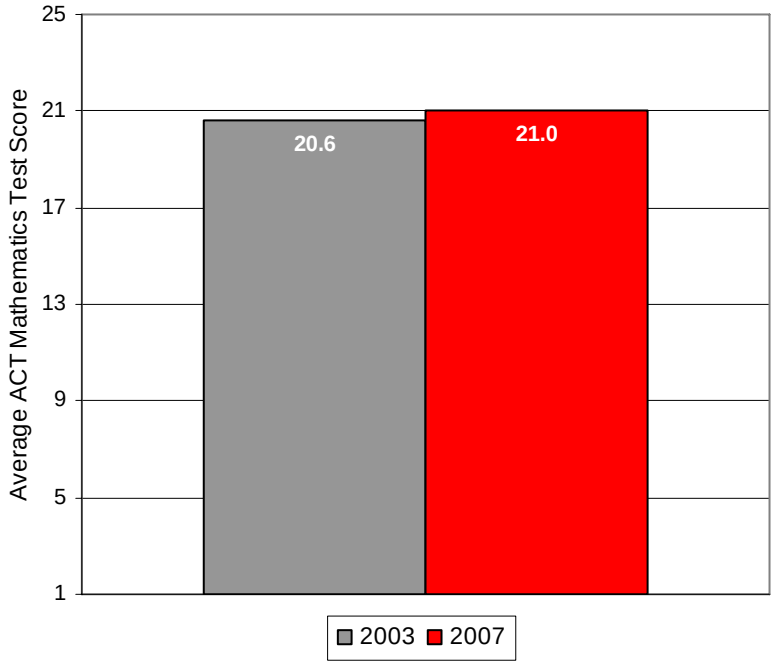
A. Yes. Since 2003, the average ACT Mathematics score of high school graduates increased. This increase is particularly impressive given that 11 percent more high school graduates took the ACT in 2007 than in 2003.

Supporting Data

Between 2003 and 2007, the average ACT Mathematics score of high school graduates increased.

- The average ACT Mathematics score of high school graduates increased by 0.4 point between 2003 and 2007 (Figure 1).

Figure 1: Average ACT Mathematics Scores of High School Graduates



- Female, male, racial/ethnic minority, and White students showed improvements in mathematics achievement (Appendix, Table 2).

Q. Are 2007 high school graduates better prepared than 2003 graduates for college-level mathematics?

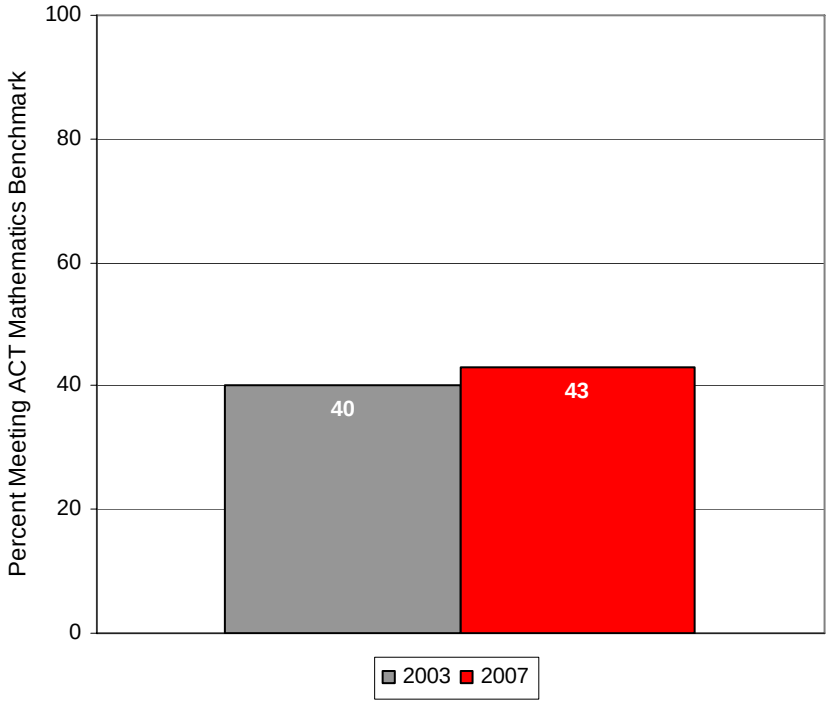
A. Yes. High school graduates have slightly improved their ACT College Readiness Benchmark attainment in mathematics.*

Supporting Data

Between 2003 and 2007, high school graduates slightly improved their ACT College Readiness Benchmark attainment in mathematics.

- Between 2003 and 2007, the percentages of high school graduates who met the ACT College Readiness Benchmarks in Mathematics increased by 3 percentage points (Figure 2).

Figure 2: Percentages of High School Graduates Meeting the ACT College Readiness Benchmark in Mathematics

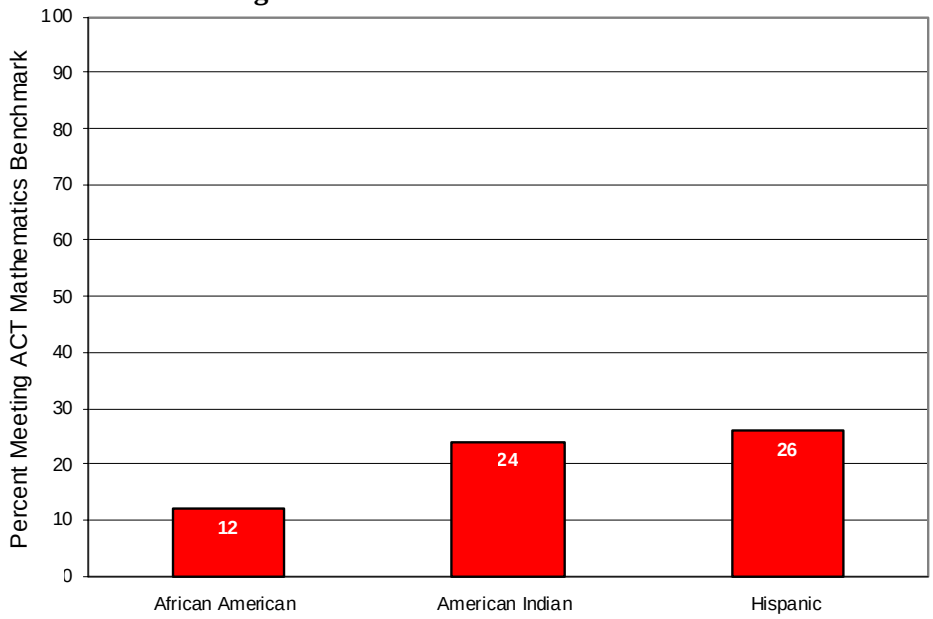


- Improvements in Benchmark attainment were larger for White students than for racial/ethnic minority students (Appendix, Table 3).

* ACT has developed its College Readiness Benchmarks to identify students who are prepared for college-level coursework. The ACT Mathematics Benchmark (Mathematics Test score of 22) reflects at least a 50 percent chance of achieving a B or higher grade, or at least a 75 percent chance of a C or higher grade, in an entry-level, credit-bearing College Algebra course.

- Among racial/ethnic minority students, a greater percentage of Hispanic students met the Mathematics Benchmark than either African American or American Indian students (Figure 3).

Figure 3: Percentages of Racial/Ethnic Minority Students Meeting the ACT College Readiness Benchmark in Mathematics



- In 2007, there were still many high school graudates nationally who were not ready for college-level mathematics: 57 percent of students did not meet the Mathematics Benchmark.

Q. What factors affect the academic achievement and college readiness of high school students in mathematics?

A. Taking the ACT-recommended core curriculum* appears to improve the college readiness of high school students in mathematics. In addition, taking higher-level mathematics courses beyond Algebra II appears to increase average ACT Mathematics scores for high school graduates, and also to improve Benchmark attainment in mathematics.

Even when students' achievement levels are taken into account, high school students gain from taking higher-level mathematics courses. This holds true for both low-achieving students and high-achieving students.

Fewer than one-third of students taking only Algebra I, Geometry, and Algebra II are ready for first-year College Algebra. This finding suggests that there may be a need to evaluate the content and rigor of high school mathematics courses.

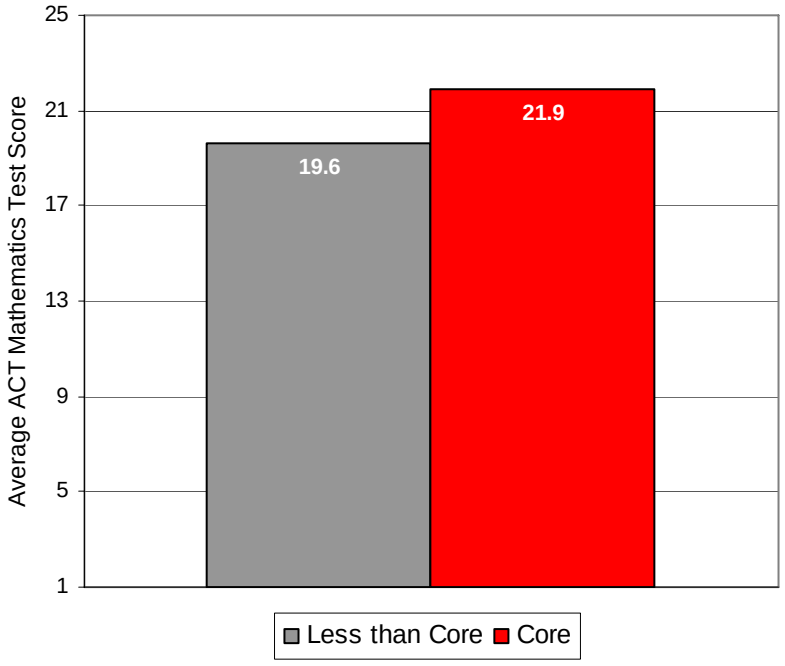
* The ACT-recommended core curriculum includes four or more years of English and three or more years each of mathematics, science, and social studies (4-3-3-3).

Supporting Data

Taking the ACT-recommended core curriculum (4-3-3-3) appears to improve, but not ensure, the college readiness of high school graduates in mathematics.

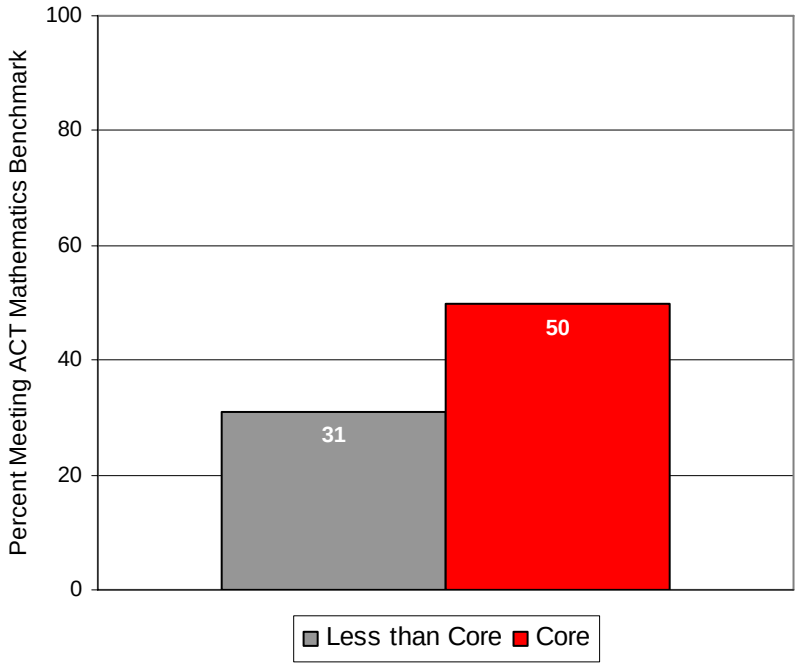
- The average ACT Mathematics score of 2007 graduates taking or planning to take the ACT-recommended core curriculum was 2.3 points higher than that of students taking less than the core curriculum (Figure 4).

Figure 4: Average ACT Mathematics Scores of 2007 High School Graduates, by Core Taking



- 2007 high school graduates who took the ACT-recommended core curriculum were more likely to meet the ACT College Readiness Benchmark in Mathematics than non–core takers (Figure 5; difference of 19 percentage points).

Figure 5: Percentages of 2007 High School Graduates Meeting the ACT College Readiness Benchmark in Mathematics, by Core Taking

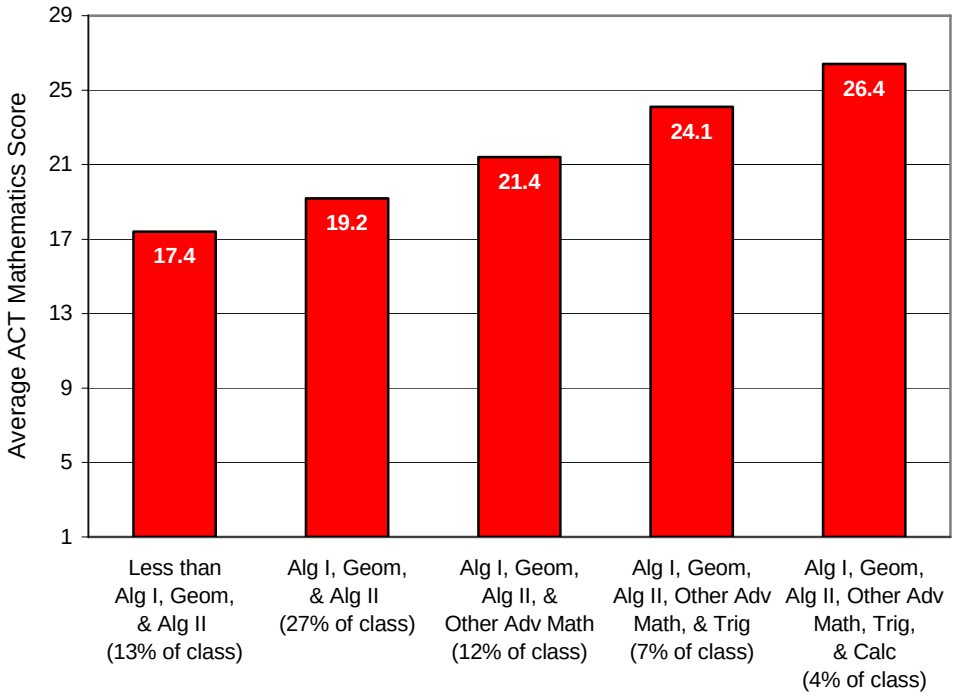


- However, even those students who took the core curriculum were not necessarily ready for first-year college mathematics coursework: one-half did not meet the Mathematics Benchmark.

Taking higher-level mathematics courses beyond Algebra II appears to increase the average ACT Mathematics score of high school graduates, and to improve Benchmark attainment in mathematics.

- In 2007, the average ACT Mathematics score of high school graduates taking Algebra I, Geometry, and Algebra II was 1.8 points higher than that of students taking less than these three courses (Figure 6). Average ACT Mathematics scores of high school graduates taking mathematics coursework beyond Algebra II were 2.2 to 7.2 points higher than that of students taking only Algebra I, Geometry, and Algebra II.

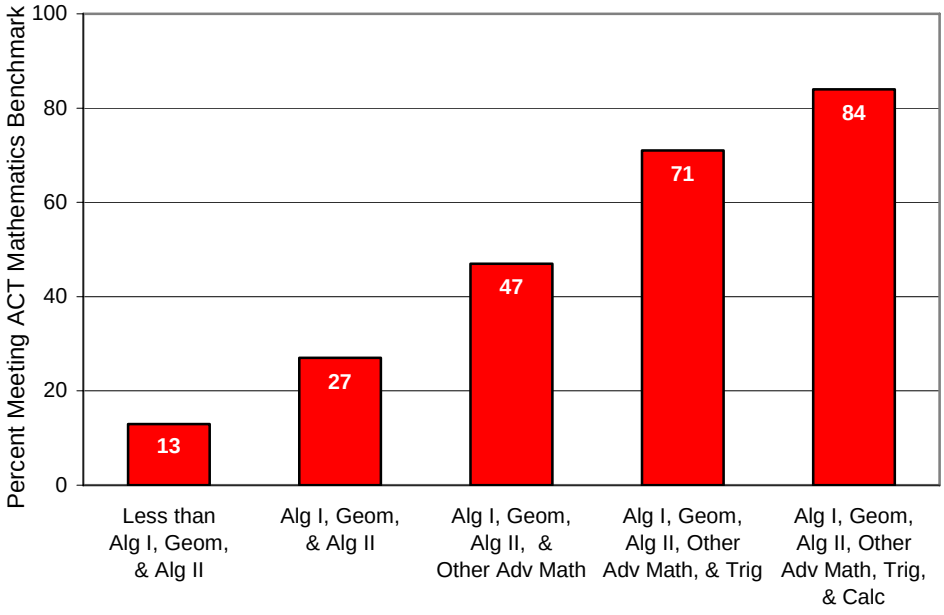
Figure 6: Average ACT Mathematics Scores of 2007 High School Graduates, by Mathematics Course Sequence[1,2]



[1] Course sequences taken by time of ACT testing. These sequences are different from the mathematics course sequences taken/planned that are reported in ACT's High School Profile Report.
[2] Percentages of students taking mathematics course sequences are shown; these percentages do not sum to 100 due to other mathematics course sequences not shown. In addition, 16 percent of students nationally did not complete the mathematics portion of ACT's High School Course/Grade Information Section.

- In 2007, 27 percent of high school graduates taking only Algebra I, Geometry, and Algebra II were ready for a first-year College Algebra course. High school graduates taking mathematics courses beyond Algebra II were more likely to meet the ACT Mathematics Benchmark than students taking Algebra I, Geometry, and Algebra II (Figure 7, by 20 to 57 percentage points).

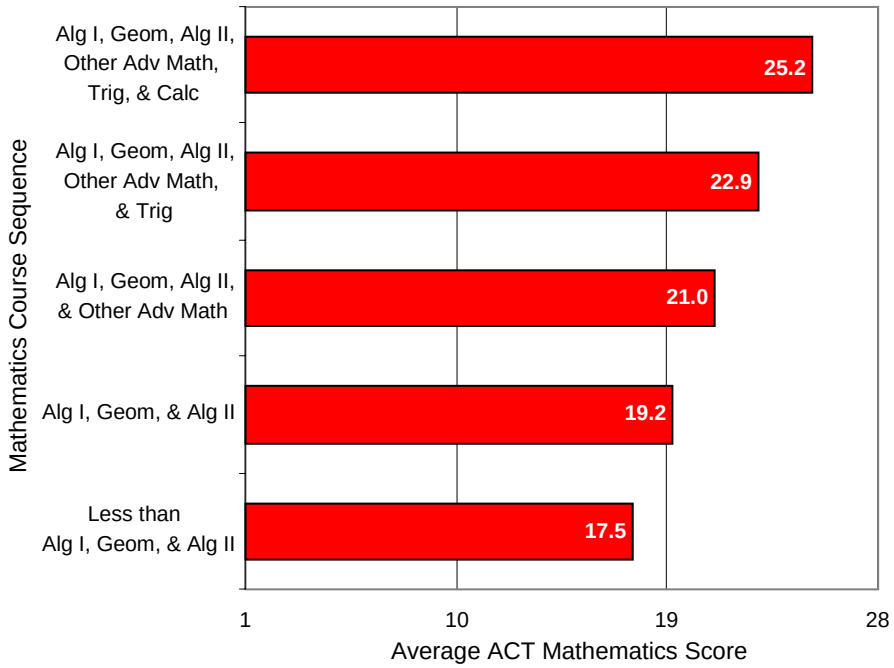
Figure 7: Percentages of 2007 High School Graduates Meeting ACT Mathematics Benchmark, by Mathematics Course Sequence



Even when students' achievement levels are taken into account, taking higher-level mathematics courses beyond Algebra II appears to increase the average ACT Mathematics score of high school graduates.

- After controlling for students' high school grade point average (GPA) and grade level, the average ACT Mathematics score of 2007 high school graduates who took Algebra I, Geometry, and Algebra II was 1.7 points higher than that of students who took less than these three core courses, and average ACT Mathematics scores of students taking additional mathematics courses beyond these three courses were 1.8 to 6.0 points higher than that of students taking only these three core courses (Figure 8). In other words, these are the expected differences in ACT Mathematics scores between any two students with the same high school GPA and grade level, where one takes a higher-level mathematics course sequence and the other takes a lower-level course sequence. These score-point differences are substantial, given that ACT scores range from 1 to 36.

Figure 8: Average ACT Mathematics Scores of 2007 High School Graduates by Mathematics Course Sequence, Controlling for Student Achievement[1,2]



[1] Analyses statistically controlled for students' high school GPA and grade level.
[2] Course sequences taken by time of ACT testing.

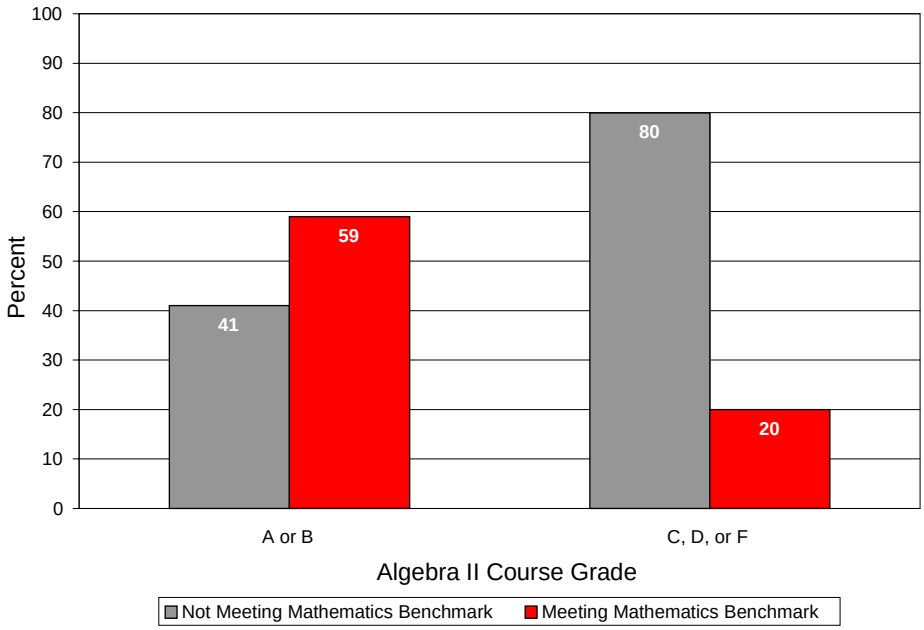
- Similar patterns of average score increases were found for low-achieving and high-achieving students.*

- The substantial increases in average ACT Mathematics scores associated with taking higher-level courses in mathematics held true for all high school students, both low achieving and high achieving. It appears that students who take higher-level mathematics courses are more likely to be ready for college-level mathematics.

- However, fewer than one-third of high school graduates taking only Algebra I, Geometry, and Algebra II are ready for first-year College Algebra (Figure 7). Obviously, the rigor of the courses is a strong determinant of student readiness for college and workforce training. This finding suggests that there may be a need to evaluate the content and rigor of these mathematics courses. About 4 in 10 ACT-tested 2007 high school graduates who earned a grade of A or B in high school Algebra II did not meet the ACT College Readiness Benchmark for Mathematics (Figure 9).

* Low- and high-achieving students were identified as those with high school GPAs of 0.0 to 2.99 and 3.00 to 4.00, respectively.

Figure 9: ACT Mathematics Benchmark Attainment by Algebra II Course Grade (2007 High School Graduates)



Q. Are 2007 eighth and tenth graders more likely than 2003 students to be on target to graduate from high school ready for college-level mathematics?

A. Yes, for eighth graders. Between 2003 and 2007, the average EXPLORE Mathematics score of eighth graders increased. Moreover, higher percentages of eighth graders appear to be on target to graduate from high school ready for college in mathematics.

Supporting Data

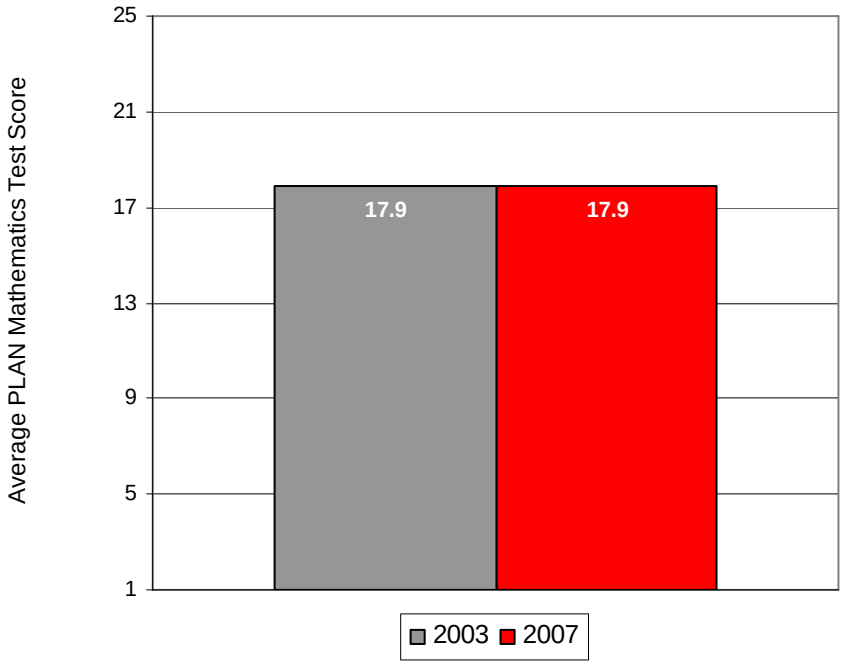
Between 2003 and 2007, the mathematics achievement of tenth graders who participated in PLAN remained the same.

- The number of tenth graders taking PLAN increased from 775,284 in 2003 to 939,502 in 2007. The number tested in 2007 represented 22 percent of tenth graders nationally.[*]
- Between 2003 and 2007, the average PLAN Mathematics score of tenth graders did not change (Figure 10).[**]

[*] Approximately 23 percent of 2007 PLAN-tested students were from the East, 45 percent from the Midwest, 16 percent from the Southwest, and 15 percent from the West.

[**] These results may be due, in part, to the 21 percent increase in the number of students taking PLAN (from 775,284 in 2003 to 939,502 in 2007).

Figure 10: Average PLAN Mathematics Scores of Tenth Graders



- Improvements in mathematics achievement of tenth graders were seen for male students and racial/ethnic minority students (Appendix, Table 4).*

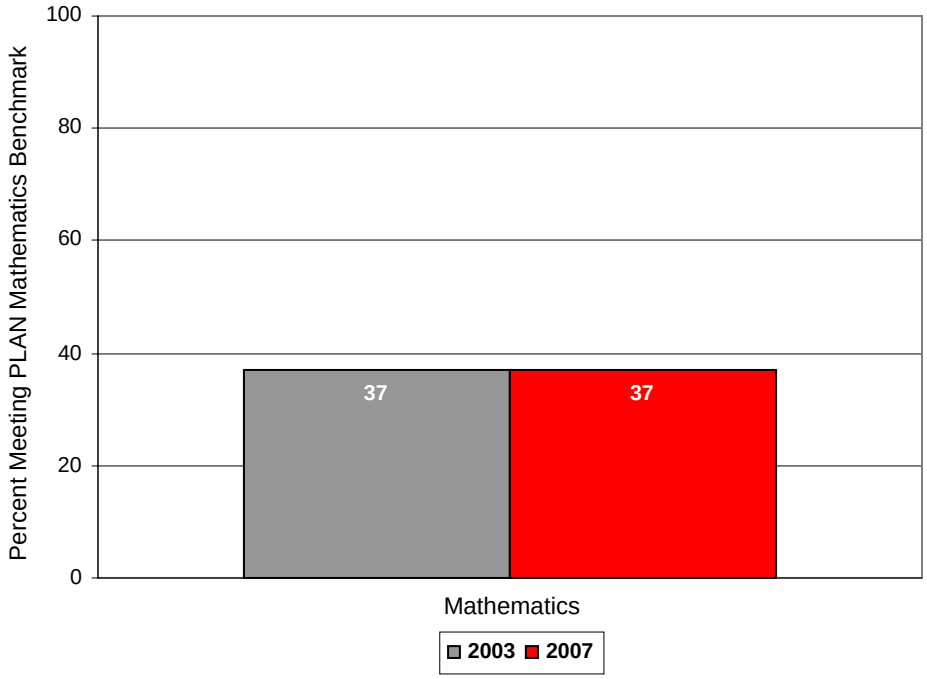
Between 2003 and 2007, tenth graders who participated in PLAN did not improve their College Readiness Benchmark attainment in mathematics.

- Between 2003 and 2007, the percentage of tenth graders who met the PLAN Mathematics Benchmark did not change (Figure 11).**

* Between 2003 and 2007, there were slight increases in the percentages of racial/ethnic minority students and of students reporting their membership in racial/ethnic groups listed here, with a corresponding decrease in the percentage of White students.

** Tenth-grade students who meet the PLAN College Readiness Benchmarks are on target to graduate from high school ready for first-year college coursework. The PLAN Mathematics Benchmark is 19.

Figure 11: Percentages of Tenth Graders Meeting the PLAN College Readiness Benchmark in Mathematics



- However, improvements in PLAN Mathematics Benchmark attainment were seen for male students and racial/ethnic minority students (Appendix, Table 5).

Between 2003 and 2007, eighth graders who participated in EXPLORE slightly improved their academic achievement in mathematics.

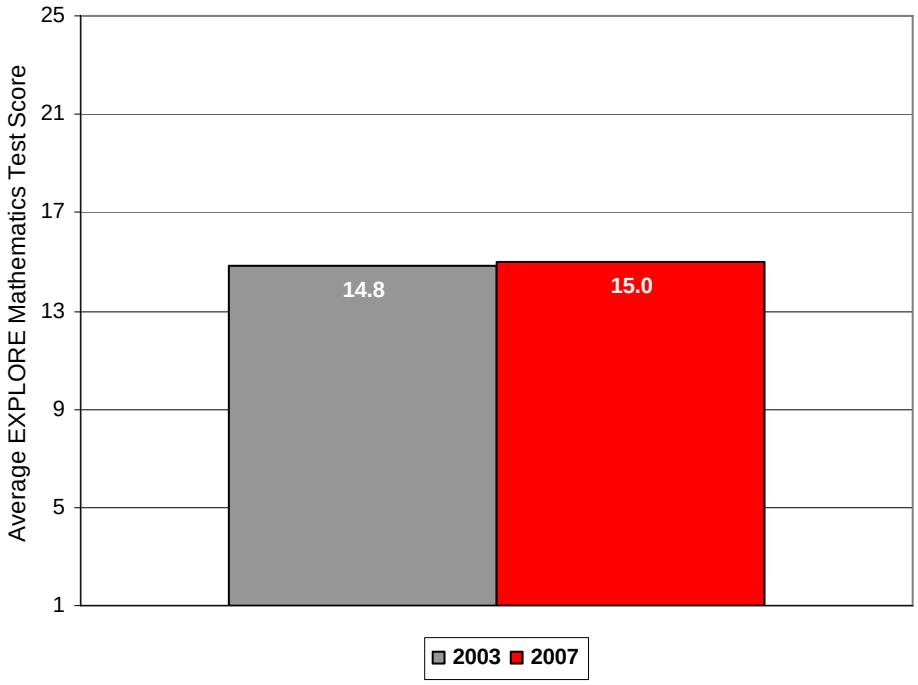
- The number of eighth graders taking EXPLORE increased from 373,637 in 2003 to 545,210 in 2007. The number tested in 2007 represented 13 percent of eighth graders nationally.[*]

- Between 2003 and 2007, average EXPLORE Mathematics scores of eighth graders increased (Figure 12).[**]

[*] Approximately 23 percent of 2007 EXPLORE-tested students were from the East, 42 percent from the Midwest, 27 percent from the Southwest, and 7 percent from the West.

[**] These results may be due, in part, to the 46 percent increase in the number of students taking EXPLORE (from 373,637 in 2003 to 545,210 in 2007).

Figure 12: Average EXPLORE Mathematics Scores of Eighth Graders



- The increase in average EXPLORE Mathematics score was larger for racial/ethnic minority students than for White students (Appendix, Table 6).[*]

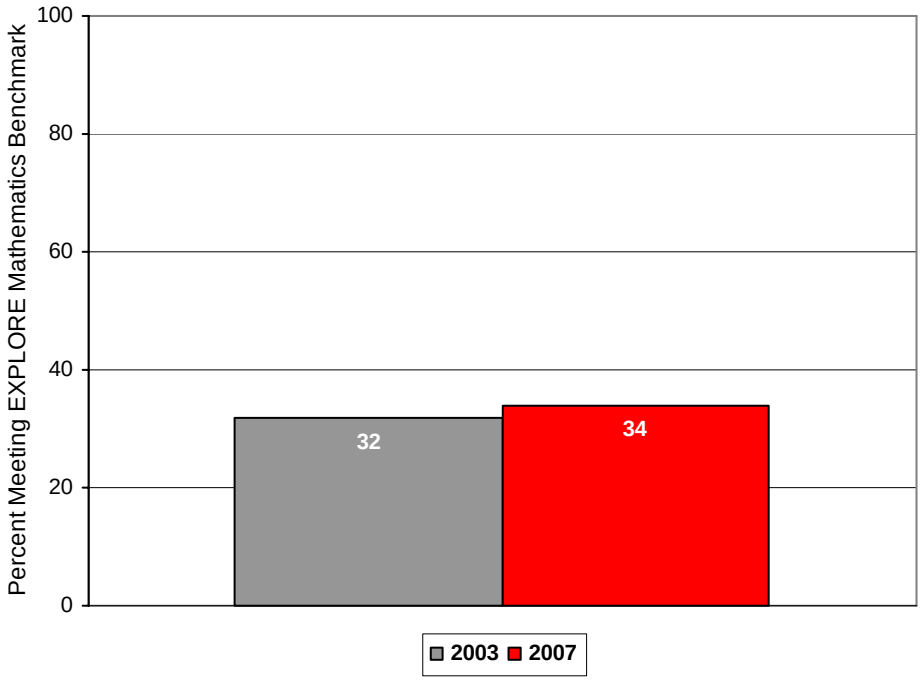
Between 2003 and 2007, eighth graders who participated in EXPLORE slightly improved their College Readiness Benchmark attainment in mathematics.[**]

- Between 2003 and 2007, the percentage of eighth graders who met the EXPLORE Mathematics Benchmark increased by 2 percentage points (Figure 13).

[*] Between 2003 and 2007, there was a slight increase in the percentage of racial/ethnic minority eighth graders (particularly African American students) and a 10 percentage point increase in students reporting their membership in racial/ethnic groups listed here. There was also an increase in the percentage of White students.

[**] Eighth-grade students who meet the EXPLORE College Readiness Benchmarks are on target to graduate from high school ready for first-year college coursework. The EXPLORE Mathematics Benchmark is 17.

Figure 13: Percentages of Eighth Graders Meeting the EXPLORE College Readiness Benchmark in Mathematics



- In general, similar results were seen across gender and racial/ethnic groups (Appendix, Table 7).

- In 2007, 66 percent of eighth graders did not meet the EXPLORE Mathematics Benchmark. This result suggests there is a need to intervene now to ensure that even more students are ready for college-level mathematics by the time they graduate from high school.

Q. How ready for college-level mathematics are students in the educational pipeline across grades 8, 10, and 12?

A. Many high school graduates who take EXPLORE, PLAN, and the ACT appear ready for college-level mathematics. However, fewer students are ready for college-level mathematics by the time they graduate from high school than expected based on their performance in eighth grade. This finding raises questions about the type and quality of the mathematics courses students take in high school.

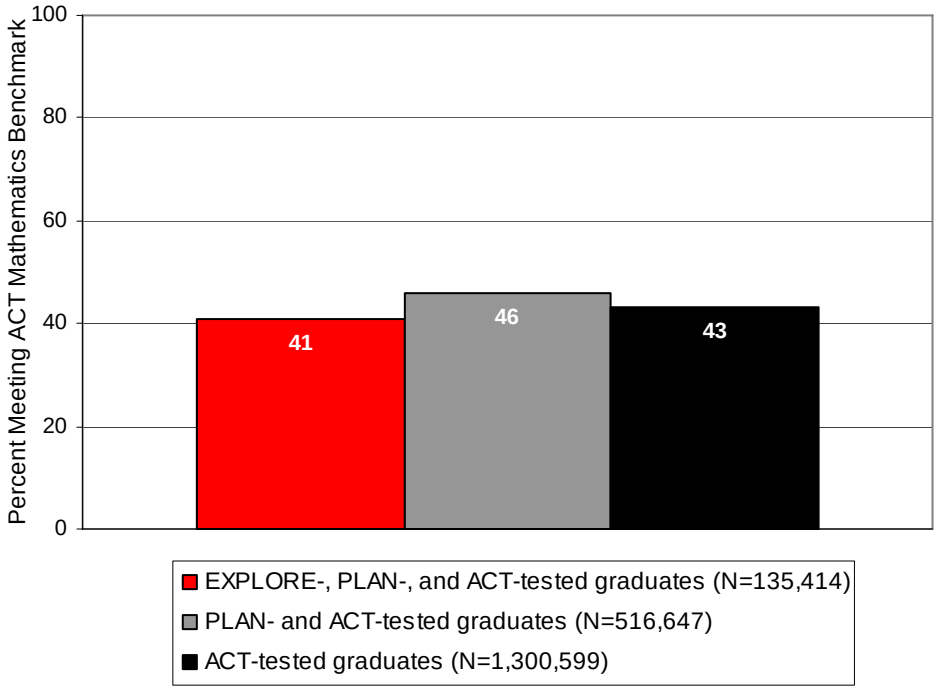
Supporting Data

More ACT-tested 2007 high school graduates who also took PLAN met the ACT College Readiness Benchmark in Mathematics than did either high school graduates who also took both EXPLORE and PLAN or who took only the ACT.

- Of ACT-tested 2007 high school graduates, 40 percent also took PLAN and 10 percent took both EXPLORE and PLAN.

- 2007 high school graduates who took both PLAN and the ACT had higher average ACT scores (Appendix, Table 8) and were more likely to be ready for college-level mathematics coursework (Figure 14) than either 2007 high school graduates who took EXPLORE, PLAN, and the ACT or 2007 high school graduates who took only the ACT.

Figure 14: Percentages of 2007 High School Graduates Meeting the ACT College Readiness Benchmark in Mathematics, by EPAS Participation[1]

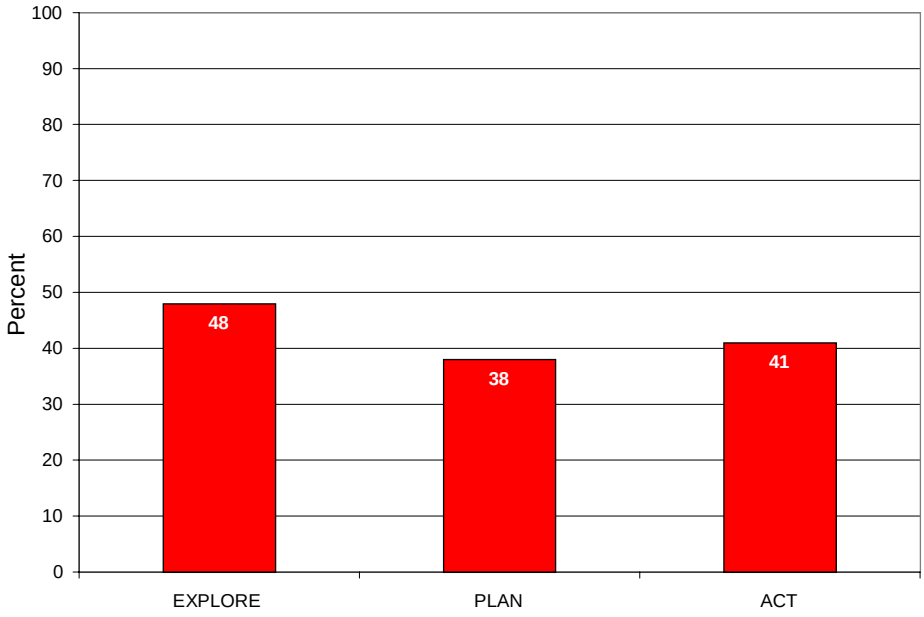


[1] The number of high school graduates included in each of the three overlapping EPAS participation groups is shown in the figure legend.

Fewer students are ready for college-level mathematics by the time they graduate from high school than expected based on their performance in eighth grade.

- ACT-tested 2007 high school graduates who also took EXPLORE and PLAN improved their Mathematics Benchmark attainment between grades 10 and 12: 38 percent of tenth graders were on target to graduate from high school ready for first-year College Algebra, and when these students took the ACT, 41 percent of them met the ACT Mathematics Benchmark. However, the percentage of graduates meeting the ACT Mathematics Benchmark was smaller than expected given their performance in eighth grade, when 48 percent were on target to be ready for college-level mathematics (Figure 15).

Figure 15: Percentages of EPAS-Tested 2007 High School Graduates Meeting EXPLORE, PLAN, and ACT College Readiness Benchmarks in Mathematics (N=135,414)



Q. What is the relationship between college readiness in mathematics and college success for high school graduates?

A. High school graduates who are ready for college-level mathematics are more likely than those who are not to enroll in college directly after high school and to re-enroll at the same college their second year.*

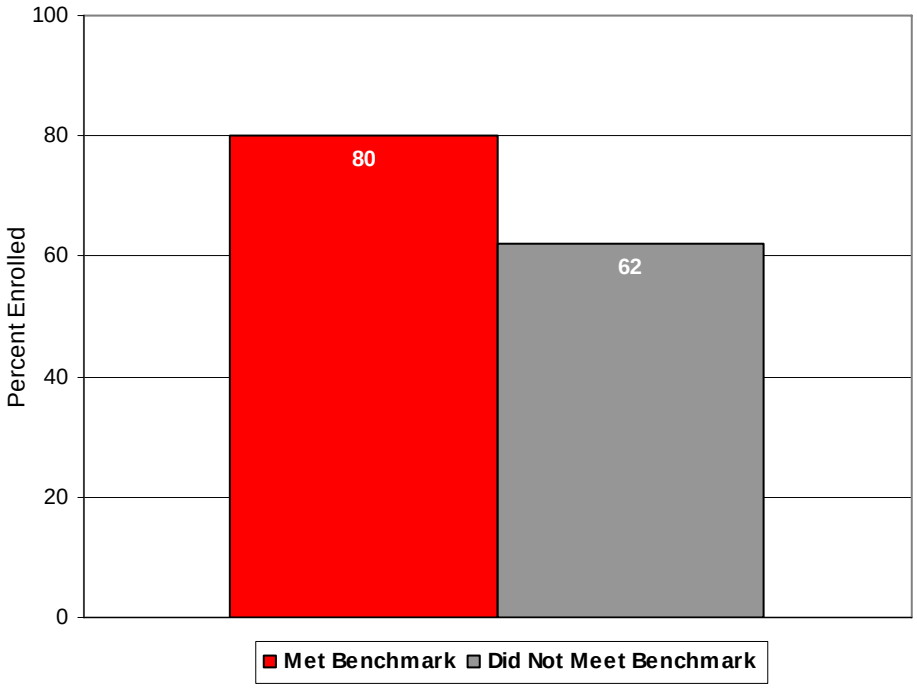
Supporting Data

High school graduates nationally who were ready for college-level mathematics were more likely to enroll in college the fall following graduation.

- 2005 high school graduates nationally who met the ACT College Readiness Benchmark in Mathematics enrolled in college the fall following graduation at a higher rate than those who did not meet the Mathematics Benchmark (Figure 16).

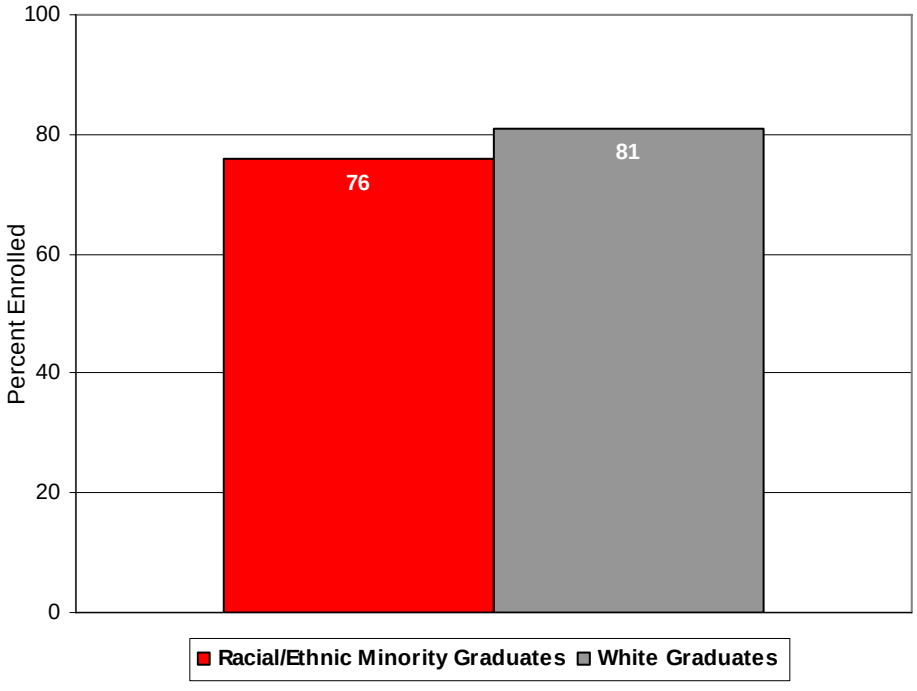
* College enrollment and retention rates for 2005 high school graduates are based on National Student Clearinghouse data. Colleges include two-year and four-year postsecondary institutions.

Figure 16: College Enrollment Rates for 2005 High School Graduates, by ACT College Readiness Benchmark Attainment in Mathematics



- Enrollment rates were comparable for White and racial/ethnic minority students who met the Mathematics Benchmark (Figure 17).

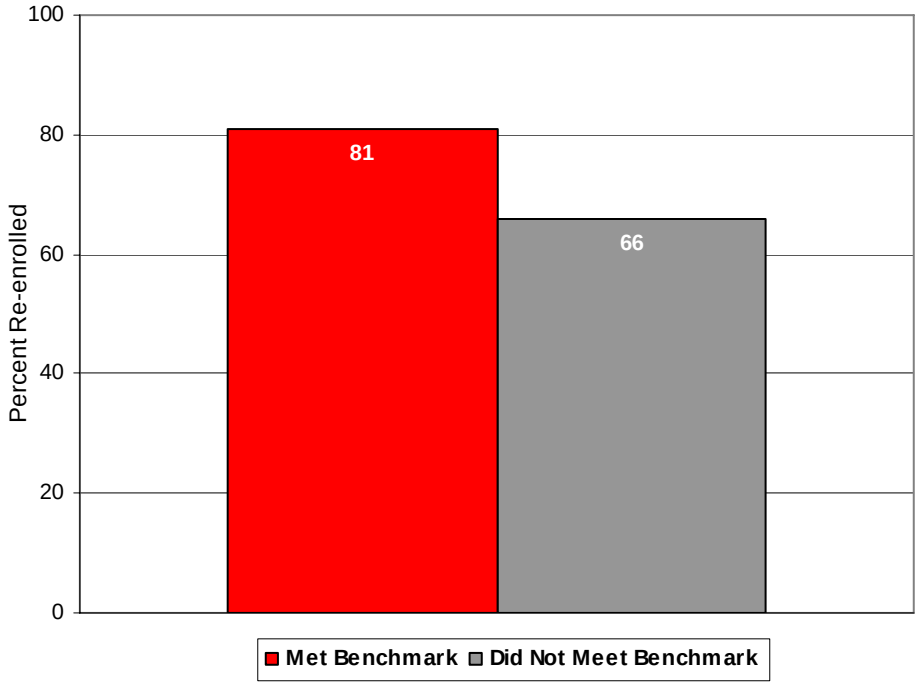
Figure 17: College Enrollment Rates for 2005 High School Graduates Meeting the ACT College Readiness Benchmark in Mathematics, by Race/Ethnicity



High school graduates nationally who were ready for college-level mathematics were more likely to re-enroll at the same postsecondary institution their second year.

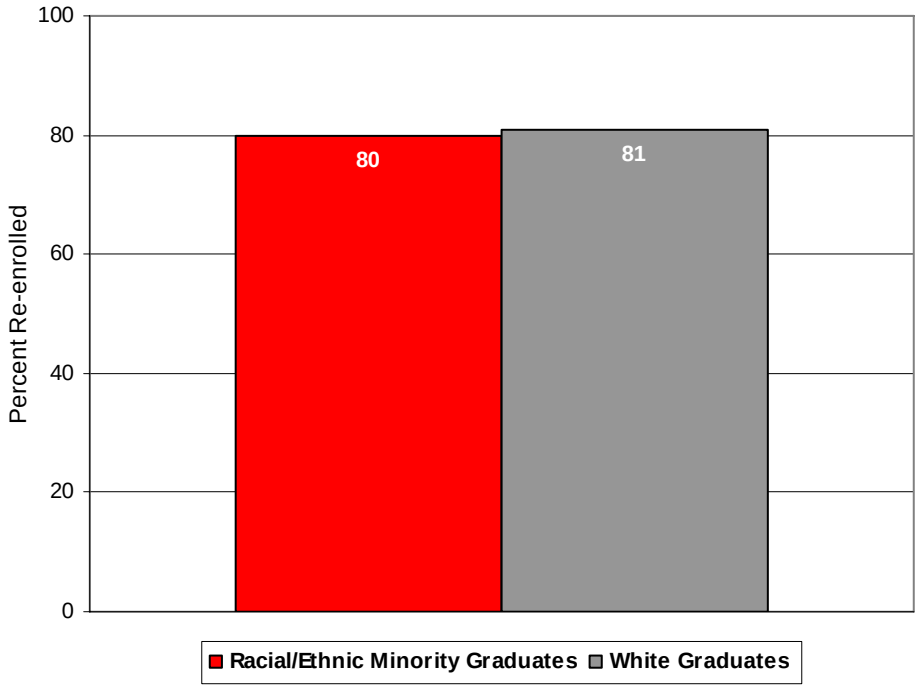
- 2005 high school graduates nationally who met the ACT College Readiness Benchmark in Mathematics re-enrolled at the same college their second year at a higher rate than those who did not meet the Mathematics Benchmark (Figure 18).

Figure 18: College Retention Rates for 2005 High School Graduates Who Enrolled in College the Fall Following Graduation, by ACT College Readiness Benchmark Attainment in Mathematics



- Retention rates were similar for racial/ethnic minority and White students who met the Mathematics Benchmark (Figure 19).

Figure 19: College Retention Rates for 2005 High School Graduates Meeting ACT College Readiness Benchmark in Mathematics, by Race/Ethnicity



Recommendations

In the past five years, students nationally have experienced encouraging improvements in academic achievement and college readiness. However, there are still many students who are not ready for college-level mathematics. Based on these findings, we offer the following recommendations for continuing to improve the college and workforce readiness in mathematics of students nationally:

1. *Continue to encourage more students to take the core curriculum and higher-level mathematics coursework.* The percentage of students taking the ACT-recommended core curriculum has decreased; only about 50 percent of ACT-tested 2007 high school graduates report taking the core curriculum. Further, given that only about 40 percent of high school graduates are ready for college in mathematics, we recommend that schools continue to encourage their high school students, including racial/ethnic minority students, to take higher-level mathematics courses beyond Algebra II. ACT research shows that increases in coursework preparation are directly related to academic achievement and college and workforce training readiness and success.

2. *Review and evaluate the rigor and content of high school courses in mathematics.* ACT research shows that students who take higher-level mathematics coursework in high school achieve higher ACT Mathematics Test scores and are more likely to meet the ACT College Readiness Benchmark in Mathematics than students who do not take

these courses. However, only about one-fourth of high school graduates taking Algebra I, Geometry, and Algebra II are ready for a first-year College Algebra course. The rigor of the courses is a strong determinant of student readiness for college and workforce training. Evaluation of course rigor in mathematics courses could include such activities as comparing the content of these courses to those described in *On Course for Success: A Close Look at Selected High School Courses That Prepare All Students for College* and the ACT College Readiness Standards™.

Across the nation there is an increasing trend toward establishing stringent graduation requirements, including graduation examinations, for high school students. One of the essential features of such examinations is that they must be aligned with the expectations of postsecondary education and thus require a level of proficiency that demonstrates students' readiness for college and workforce training. ACT's QualityCore™ program includes a series of rigorous end-of-course examinations for courses in mathematics. These examinations are based on end-of-course objectives that are rigorous, empirically based, derived from the syllabi of course offerings at high-performing United States high schools serving predominantly minority and Title I–funded populations, and validated by a selection of teachers at high-performing high schools across the U.S. (for more information, visit www.act.org/qualitycore). We encourage schools, districts, and states to examine QualityCore offerings as part of their efforts to strengthen the quality of the mathematics courses students take in high school.

3. *Establish high expectations for all students, monitor their progress through high school at becoming ready for college, and encourage all students to take the ACT in their junior year.* In making the decision to administer the ACT to all students in their junior year, several states have given their students the opportunity to identify academic strengths and weaknesses, explore educational and career interests, set high standards for academic achievement, and prepare to meet their educational and career goals. We recommend that students also take EXPLORE and PLAN. EXPLORE test results can be used to identify students' strengths and weaknesses early in eighth grade, so that appropriate individual learning plans can be developed and appropriate interventions made while there is still time for improvement before graduation. Progress can again be evaluated with PLAN in the tenth grade. ACT stands ready to work with schools, districts, and states to provide professional development support to teachers on how to interpret and use information from EXPLORE, PLAN, and the ACT to strengthen course content and improve student readiness for college and workforce training. We also recommend that more students be encouraged to take the ACT in their junior year, and again early in their senior year, to gauge their progress in becoming ready for college.

4. *Provide student guidance.* Given the discrepancy between the educational aspirations of students nationally and the high school coursework they plan to take, we recommend that schools evaluate both their current educational and career guidance programs and the courses students take in high school, especially in eleventh and twelfth grades.

Through the ACT Interest Inventory and the World-of-Work Map, students can explore their educational and career interests as early as grade 8. Counselors, teachers, and parents can use this information to help guide students toward occupations and postsecondary education and training programs that are aligned with their interests, and help students plan coursework for grades 8 through 12 that includes rigorous courses through grade 12 (another reason for encouraging students to take the ACT during their junior year).

ACT's Educational Planning and Assessment System (EPAS), which includes EXPLORE, PLAN, and the ACT, provides a longitudinal approach to educational and career planning that begins in middle school and provides all students, including those who have never before considered going to college, with an opportunity to explore their educational and career interests. EXPLORE is designed to stimulate career exploration and facilitate development of a plan for the student's high school academic program (for more information, visit www.explorestudent.org). PLAN is designed to improve student planning and preparation for education, training, work, and career after high school and offers guidance to students about course-taking between grades 10 and 12 (for more information, visit www.planstudent.org). Each EPAS program, including the ACT, helps students explore career options based on their own skills, interests, and aspirations. Using a longitudinal system such as EPAS to its full potential, schools can assist their middle school and high school students in assessing their interests and skills early, in order to help them make important career and educational decisions. ACT research shows that using EPAS promotes educational and career planning (see *EPAS: A System that Works* at http://www.act.org/research/policymakers/pdf/epas_works.pdf for further evidence).

5. *Use EPAS data at the classroom level to facilitate needed interventions with students who are falling behind.* Several states continue to administer EXPLORE and/or PLAN on a state-funded voluntary basis. As a result, there have been improvements in academic preparation, academic achievement, and college readiness in these states. In order to make EPAS work even better in schools, ACT can conduct in-service workshops to help teachers and administrators to better utilize EXPLORE, PLAN, and ACT data—for example, by offering students individual information about their academic strengths and weaknesses, or by evaluating the rigor of high school courses.

6. *Continue to evaluate and align the mathematics curriculum with both high school standards and college and workplace readiness standards*. Based on the strong association between college readiness in mathematics and college success for high school graduates, we recommend that schools continue to evaluate and align their mathematics curricula with both high school state standards and college and workplace standards. Being ready for college-level mathematics improves students' chances of enrolling in college, staying in college, and succeeding in first-year courses, and reduces the likelihood of their needing to take remedial courses.

ACT's College-to–High School Success Reports can provide valuable insights into how well graduates from each high school are doing in college. ACT can conduct specific training sessions for teachers and administrators about how best to use these reports.

Summary

ACT research shows that students who participate in EPAS are more likely to enroll in college and re-enroll at the same college their second year. Results for high school students nationally show that positive developments are occurring. By sustaining and extending these efforts, we can help ensure that students make even greater progress toward their academic goals.

APPENDIX

Table 1: Demographic Counts (N) and Percentages of 2007 ACT-Tested High School Graduates, PLAN-Tested Tenth Graders, and EXPLORE-Tested Eighth Graders Nationwide

Student Group	ACT-Tested High School Graduates		PLAN-Tested Tenth Graders		EXPLORE-Tested Eighth Graders	
	N	Percentage	N	Percentage	N	Percentage
All	1,300,599	100	939,502	100	545,210	100
Gender[1]						
Female	674,636	52	476,938	51	269,140	49
Male	544,522	42	448,827	48	268,258	49
Race/Ethnicity[2]						
Racial/Ethnic Minority[3]	259,593	20	205,833	22	165,898	30
African American	152,412	12	116,484	12	95,003	17
American Indian	14,044	1	14,399	2	9,759	2
Hispanic	93,137	7	74,950	8	61,136	11
White	779,147	60	615,169	65	311,544	57
Asian American	42,257	3	29,504	3	13,426	2

[1] Percentages do not sum to 100 due to missing responses.
[2] Percentages do not sum to 100 due to missing responses or responses indicating membership in racial/ethnic groups not listed here.
[3] Racial/ethnic minority students include African American, American Indian, and Hispanic students.

Table 2: Average ACT Mathematics Test Scores of High School Graduates Nationwide

ACT Mathematics	2003	2004	2005	2006	2007	Difference between 2003 and 2007
All Students						
Mean	20.6	20.7	20.7	20.8	21.0	0.4
N	1,175,059	1,171,460	1,186,251	1,206,455	1,300,599	
Female Students						
Mean	20.1	20.2	20.2	20.3	20.4	0.3
N	656,587	653,158	660,870	646,688	674,636	
Male Students						
Mean	21.2	21.3	21.3	21.5	21.6	0.4
N	509,969	508,835	515,398	517,563	544,522	
Racial/Ethnic Minority Students[1]						
Mean	17.4	17.6	17.6	17.7	17.8	0.4
N	217,083	223,016	236,106	238,549	259,593	
White Students						
Mean	21.3	21.4	21.5	21.6	21.7	0.4
N	804,858	787,870	781,581	760,084	779,147	

[1] Racial/ethnic minority students include African American, American Indian, and Hispanic students.

Table 3: Percentages of High School Graduates Nationwide Meeting the ACT College Readiness Benchmark in Mathematics

ACT Mathematics Benchmark[1]	2003	2004	2005	2006	2007	Difference between 2003 and 2007
All Students						
Percent	40	40	41	42	43	3
N	1,175,059	1,171,460	1,186,251	1,206,455	1,300,599	
Female Students						
Percent	36	36	37	37	38	2
N	656,587	653,158	660,870	646,688	674,636	
Male Students						
Percent	45	45	46	47	47	2
N	509,969	508,835	515,398	517,563	544,522	
Racial/Ethnic Minority Students[2]						
Percent	15	16	16	17	17	2
N	217,083	223,016	236,106	238,549	259,593	
White Students						
Percent	45	46	47	48	49	4
N	804,858	787,870	781,581	760,084	779,147	

[1] The ACT College Readiness Benchmark in Mathematics is 22.
[2] Racial/ethnic minority students include African American, American Indian, and Hispanic students.

Table 4: Average PLAN Mathematics Test Scores of Tenth Graders Nationwide

PLAN Mathematics	2003	2004	2005	2006	2007	Difference between 2003 and 2007
All Students						
Mean	17.9	18.1	18.0	18.1	17.9	0.0
N	775,284	785,490	817,085	881,976	939,502	
Female Students						
Mean	17.8	17.8	17.8	18.0	17.6	-0.2
N	402,231	408,148	423,905	455,004	476,938	
Male Students						
Mean	17.9	18.3	18.2	18.3	18.2	0.3
N	371,392	375,123	390,026	422,981	448,827	
Racial/Ethnic Minority Students[1]						
Mean	15.2	15.3	15.5	15.4	15.4	0.2
N	147,417	151,991	161,939	177,516	205,833	
White Students						
Mean	18.7	18.9	18.8	19.0	18.7	0.0
N	517,563	515,426	541,173	583,957	615,169	

[1] Racial/ethnic minority students include African American, American Indian, and Hispanic students.

Table 5: Percentages of Tenth Graders Nationwide Meeting the PLAN College Readiness Benchmark in Mathematics

PLAN Mathematics Benchmark[1]	2003	2004	2005	2006	2007	Difference between 2003 and 2007
All Students						
Percent	37	36	33	35	37	0
N	775,284	785,490	817,085	881,976	939,502	
Female Students						
Percent	36	33	32	33	34	-2
N	402,231	408,148	423,905	455,004	476,938	
Male Students						
Percent	38	39	36	37	40	2
N	371,392	375,123	390,026	422,981	448,827	
Racial/Ethnic Minority Students[2]						
Percent	13	13	12	12	14	1
N	147,417	151,991	161,939	177,516	205,833	
White Students						
Percent	44	43	40	42	44	0
N	517,563	515,426	541,173	583,957	615,169	

[1] The PLAN College Readiness Benchmark in Mathematics is 19.
[2] Racial/ethnic minority students include African American, American Indian, and Hispanic students.

Table 6: Average EXPLORE Mathematics Test Scores of Eighth Graders Nationwide

EXPLORE Mathematics	2003	2004	2005	2006	2007	Difference between 2003 and 2007
All Students						
Mean	14.8	15.0	15.0	15.1	15.0	0.2
N	373,637	362,560	375,318	470,896	545,210	
Female Students						
Mean	14.9	15.0	15.1	15.2	15.1	0.2
N	184,453	179,041	185,321	230,933	269,140	
Male Students						
Mean	14.8	14.9	14.9	15.0	15.0	0.2
N	184,123	177,344	184,747	231,429	268,258	
Racial/Ethnic Minority Students[1]						
Mean	13.0	13.1	13.2	13.2	13.3	0.3
N	103,156	85,934	97,905	126,921	165,898	
White Students						
Mean	15.9	16.0	15.8	16.0	15.9	0.0
N	189,812	192,963	218,160	271,858	311,544	

[1] Racial/ethnic minority students include African American, American Indian, and Hispanic students.

Table 7: Percentages of Eighth Graders Nationwide Meeting the EXPLORE College Readiness Benchmark in Mathematics

EXPLORE Mathematics Benchmark[1]	2003	2004	2005	2006	2007	Difference between 2003 and 2007
All Students						
Percent	32	34	34	35	34	2
N	373,637	362,560	375,318	470,896	545,210	
Female Students						
Percent	32	34	34	35	34	2
N	184,453	179,041	185,321	230,933	269,140	
Male Students						
Percent	33	35	34	35	35	2
N	184,123	177,344	184,747	231,429	268,258	
Racial/Ethnic Minority Students[2]						
Percent	15	15	15	15	16	1
N	103,156	85,934	97,905	126,921	165,898	
White Students						
Percent	43	44	43	45	44	1
N	189,812	192,963	218,160	271,858	311,544	

[1] The EXPLORE College Readiness Benchmark in Mathematics is 17.
[2] Racial/ethnic minority students include African American, American Indian, and Hispanic students.

Table 8: Average ACT Mathematics Test Scores of ACT-Tested 2007 High School Graduates Nationwide

ACT Mathematics	EXPLORE-, PLAN-, and ACT-Tested Graduates	PLAN- and ACT-Tested Graduates	ACT-tested Graduates
All Students			
Mean	20.8	21.4	21.0
N	135,414	516,647	1,300,599
Females			
Mean	20.3	20.8	20.4
N	74,628	286,583	674,636
Males			
Mean	21.5	22.1	21.6
N	60,769	229,989	544,522
Racial/Ethnic Minority Students[1]			
Mean	18.0	18.1	17.8
N	25,067	91,604	259,593
White Students			
Mean	21.4	22.1	21.7
N	101,643	384,230	779,147

[1] Racial/ethnic minority students include African American, American Indian, and Hispanic students.

Table 9: Percentages of ACT-Tested National 2007 High School Graduates Meeting the ACT College Readiness Benchmark in Mathematics

ACT Mathematics Benchmark[1]	EXPLORE-, PLAN-, and ACT-Tested Graduates	PLAN- and ACT-Tested Graduates	ACT-tested Graduates
All Students			
Percent	41	46	43
N	135,414	516,647	1,300,599
Females			
Percent	37	41	38
N	74,628	286,583	674,636
Males			
Percent	47	51	47
N	60,769	229,989	544,522
Racial/Ethnic Minority Students[2]			
Percent	18	19	17
N	25,067	91,604	259,593
White Students			
Percent	46	52	49
N	101,643	384,230	779,147

[1] The ACT College Readiness Benchmark in Mathematics is 22.
[2] Racial/ethnic minority students include African American, American Indian, and Hispanic students.