

**Needham Public Schools
2007 MCAS Results - An Overview**

The Massachusetts Comprehensive Assessment System (MCAS) tests are part of the Commonwealth’s Education Reform initiative to improve the achievement of every child. These tests are based on state curriculum frameworks which set high standards for what students are expected to know and be able to do. Last spring, the MCAS tests were administered for the tenth time since they were introduced in 1998. The school system recently received results for the 2007 MCAS tests, and this report provides a general overview.

What tests were administered?

A total of twenty MCAS tests in English Language Arts, Mathematics, and Science and Technology were administered to students across eight grade levels. In addition, four new tryout tests were introduced. All four assessed science at the High School level: Biology, Chemistry, Introductory Physics, and Technology/Engineering. The results for the operational tests will be released later in the fall. The table below shows the 2007 tests administered at each grade level.

Grade 3	English Language Arts (ELA) Mathematics
Grade 4	ELA Mathematics
Grade 5	ELA Mathematics Science and Technology/Engineering
Grade 6	ELA Mathematics
Grade 7	ELA Mathematics
Grade 8	ELA Mathematics Science and Technology/Engineering
Grade 9/10	Biology Tryout Chemistry Tryout Introduction to Physics Tryout Technology/Engineering Tryout
Grade 10	ELA Mathematics

How are the results reported?

At grades 4 through 10, MCAS results are reported according to four performance levels:

<i>Advanced (A)</i>	Students at this level demonstrate a comprehensive understanding of challenging subject matter and provide sophisticated solutions to complex problems.
<i>Proficient (P)</i>	Students at this level demonstrate a solid understanding of challenging subject matter and solve a wide variety of problems.
<i>Needs Improvement (NI)</i>	Students at this level demonstrate a partial understanding of subject matter and solve simple problems.
<i>Warning/Failing (W)</i>	Students at this level demonstrate a minimal understanding of subject matter and do not solve simple problems.

There has been a change in the reporting of 3rd grade results this year. They are now reported using four performance definitions instead of three as in the past. The new level is:

Above Proficient (P+) Students at this level demonstrate mastery of challenging subject matter and construct solutions to challenging problems.

The other three levels (***Proficient, Needs Improvement*** and ***Warning***) are the same as above.

Individual student scores are reported as scale scores ranging from 200-280 using the following ranges:

<i>Advanced</i>	260-280
<i>Proficient</i>	240-258
<i>Needs Improvement</i>	220-238
<i>Warning/Failing</i>	200-218

The Department of Education no longer reports scaled score averages for schools or districts; rather, they now provide schools with comparative data using average ***Proficiency Index Results***. Proficiency points are awarded to a school or district for each student in the MCAS test group using the following scale:

MCAS Performance Level	Scale Score	Proficient Index Points per Student
Proficient or Advanced	240-280	100
Needs Improvement (High)	230-238	75
Needs Improvement (Low)	220-228	50
Warning/Failing (High)	210-218	25
Warning/Failing (Low)	200-208	0

The **No Child Left Behind** law has a goal that all students be ***Proficient*** by 2014. The **Composite Proficiency Index (CPI)** average is designed to give schools a means to measure their progress. A score of 100 would indicate that all students had scored Advanced or Proficient. The average CPI scores are used to rate schools using the following scale:

Performance Ratings

Rating	Proficiency Index Average
Very High	90 – 100
High	80 – 89.9
Moderate	70 – 79.9
Low	60 – 69.9
Very Low	40 – 59.9
Critically Low	0 – 39.9

How did Needham students perform?

Grade 10

Students in the Class of 2009 are required to earn a "competency determination" as well as meet local graduation requirements in order to earn a diploma from Needham High School. To earn a competency determination a student must pass both the grade 10 MCAS English Language Arts (ELA) and Mathematics tests by earning a score of *Needs Improvement* or above. Over 99% of all 10th grade Needham High School students passed the test on the first try.

Students who failed the test will be given a retest in November. All of these students were identified during the summer based on raw score data and have already been offered individualized tutoring to prepare them for the retest. It should be noted that all current Needham High School seniors have achieved “competency determination” by passing both tests, except for a few students who moved to Needham as seniors and have not yet taken the test.

It is possible to compare the recent results with the previous four years.

**Six-Year Comparison of High School Performance Level Results
(% of students)**

Grade 10	Advanced	Proficient	Needs Improvement	Failing	CPI
2002 English Language Arts	43	48	8	1	95.0
2003 English Language Arts	43	47	9	1	96.0
2004 English Language Arts	40	49	10	0	96.7
2005 English Language Arts	47	43	8	1	96.3
2006 English Language Arts	39	53	6	1	97.1
2007 English Language Arts	50	45	5	1	98.2
2002 Mathematics	44	36	17	3	91.7
2003 Mathematics	48	34	17	2	92.5
2004 Mathematics	57	30	12	1	95.4
2005 Mathematics	67	24	7	1	96.5
2006 Mathematics	76	17	6	1	96.9
2007 Mathematics	74	17	8	1	97.9

The CPI increased on both tests, indicating that Needham is making progress towards having all students score in the Advanced or Proficient range. Over 90% of students score at Advanced or

Proficient in Mathematics, and 95% scored at these levels in ELA. There was also a substantial jump in the percentage of students achieving Advanced scores in English.

For the first time, we have results from the high school science tests. There were four test possibilities, and students were able to choose which test to take. Needham students participated in only two of the tests, and it is interesting to compare their participation rates with the state. While 100% of our 9th graders took the Biology test, the statewide percentage was 54%. At the 10th grade level, 99% of our students took the Physics test, while the percentage was 3% at the state level. The participation rates reflect the sequencing of our high school science curriculum.

Because we have no trend data available, our only comparison group is the state:

**Needham and Massachusetts Performance Levels
(% of students)**

9th Grade Biology	Advanced	Proficient	Needs Improvement	Failing	CPI
Needham	31	57	11	1	95.5
Massachusetts	8	34	34	24	68.2
10th Grade Physics					
Needham	27	45	20	8	87.0
Massachusetts	14	24	30	22	71.5

While less than half of the students in the state achieved an Advanced or Proficient score on these tests, a significant majority of Needham students did score at these levels. 88% of Needham students were Advanced or Proficient in Biology, and 72% of 10th graders were at least Proficient in Physics.

Grade 8

All 8th grade students were tested in three areas. Mathematics and Science & Technology/Engineering have been given for a number of years, and ELA was added for the first time in 2006.

**Six-Year Comparison of Grade 8 Mathematics Performance Level Results
(% of students)**

Grade 8	Advanced	Proficient	Needs Improvement	Warning	CPI
2002 Mathematics	22	37	30	12	81.6
2003 Mathematics	25	38	28	9	83.4
2004 Mathematics	29	39	24	8	84.7
2005 Mathematics	31	35	22	12	83.0
2006 Mathematics	31	42	17	10	87.3
2007 Mathematics	39	35	19	8	87.6

After a slight dip in the CPI in 2005, the percentage of students in the Advanced and Proficient ranges continued to increase this year. Also, the highest percentage ever (39%) scored at the Advanced level, and students with a Warning score equalled the low of 8% in 2004.

**Five-Year Comparison of Grade 8 Science and Technology/Engineering Results
(% of students)**

Grade 8	Advanced	Proficient	Needs Improvement	Warning	CPI
2003 Science	10	51	30	9	82.5
2004 Science	18	48	25	9	85.2
2005 Science	11	50	27	12	81.6
2006 Science	13	53	26	8	86.6
2007 Science	10	53	31	6	85.3

The CPI declined slightly in Science due to fewer students scoring in the Advanced range. The percentage of students receiving a Warning was the lowest ever.

**Two-Year Comparison of Grade 8 ELA
(% of Students)**

Grade 8	Advanced	Proficient	Needs Improvement	Warning	CPI
2006 English Language Arts	22	67	8	3	97.0
2007 English Language Arts	25	69	5	1	97.9

Needham's 8th grade had 94% of its students in the Advanced or Proficient range on this test administration. More students achieved an Advanced score, and fewer received a Warning.

Grade 7

The ELA test has been given at the 7th grade level for a number of years, and this is the second year for the Mathematics assessment.

**Six-Year Comparison of Grade 7 Performance Levels in ELA
(% of students)**

Grade 7	Advanced	Proficient	Needs Improvement	Warning	CPI
2002 English Language Arts	16	69	13	1	95.7
2003 English Language Arts	16	72	11	1	96.1
2004 English Language Arts	16	72	11	1	95.5
2005 English Language Arts	25	64	7	3	96.9
2006 English Language Arts	23	67	9	1	96.4
2007 English Language Arts	21	67	9	2	95.5

There was a slight decline in the CPI score, but it is not considered statistically significant (2.5 points). The decline is due to fewer students scoring in the Advanced range, and 1% more in the Warning range. This score should be watched carefully, however, because the percentage of students in the Advanced and Proficient range in the state increased by 4 points.

**Two-Year Comparison of Grade 7 Performance Levels in Mathematics
(% of students)**

Grade 7	Advanced	Proficient	Needs Improvement	Warning	CPI
2006 Mathematics	35	37	20	7	87.3
2007 Mathematics	38	40	16	6	90.0

There was a significant increase in the CPI (2.7 points) due to the higher number of students scoring in the Advanced and Proficient range (78% as compared to 72% in 2006). It should be noted that there was similar increase across the state (46% as compared to 40% in 2006).

Grade 6

Sixth graders were assessed in ELA and Mathematics. Below is a comparison of the Mathematics scores with the previous four years.

**Six-Year Comparison of Grade 6 Mathematics Performance Levels
(% of students)**

Grade 6	Advanced	Proficient	Needs Improvement	Warning	CPI
2002 Mathematics	47	30	16	7	89.6
2003 Mathematics	43	35	15	7	89.4
2004 Mathematics	47	29	19	5	89.5
2005 Mathematics	44	33	17	6	89.8
2006 Mathematics	43	32	18	7	89.0
2007 Mathematics	32	46	18	4	91.1

Despite a decline at the percentage of students in the Advanced range, the overall CPI increased because there were more students in the Proficient range. The increased percent (3 points) was slightly less than the 6-point increase for 6th Grade students across the state in Mathematics.

Sixth graders were tested for the second time in ELA.

**Comparison of 6th Grade ELA Performance Levels
(% of students)**

Grade 6	Advanced	Proficient	Needs Improvement	Warning	CPI
2006 English Language Arts	30	59	9	2	96.5
2007 English Language Arts	17	71	12	1	95.7

The percentage of students at the Advanced and Proficient level declined slightly from 89% to 88%. The percent of 6th grade students in Massachusetts at these levels improved by 3 points from 64% to 67%.

Grade 5

Fifth graders have been given a science test since 2003, but this is only the second year for the ELA and Mathematics tests at this grade level.

Five- Year Comparison of Grade 5 Science and Technology/Engineering Performance Levels (% of students)

Grade 5	Advanced	Proficient	Needs Improvement	Warning	CPI
2003 Science	31	41	24	5	89.4
2004 Science	29	45	24	2	89.9
2005 Science	24	42	30	4	88.4
2006 Science	26	39	32	2	87.9
2007 Science	25	46	26	2	89.6

The Sciences scores have remained remarkably consistent over all five years of test administration. This year the CPI did increase slightly due to more students moving to the Proficient range from the Needs Improvement category. State scores remained relatively static this year.

Two-Year Comparison of Grade 5 ELA Performance Levels (% of students)

Grade 5	Advanced	Proficient	Needs Improvement	Warning	CPI
2006 English Language Arts	33	53	12	2	95.3
2007 English Language Arts	37	50	11	2	95.3

The CPI remained exactly the same this year in Needham. In Massachusetts, the Advanced and Proficient levels increased by 4 percentage points (from 59% to 63%).

Two-Year Comparison of Grade 5 Mathematics Performance Levels (% of Students)

Grade 5	Advanced	Proficient	Needs Improvement	Warning	CPI
2006 Mathematics	30	39	24	7	87.2
2007 Mathematics	40	40	16	4	91.5

The increase in CPI for 5th grade Mathematics (4.3points) was the largest for any test given this year. The increase is associated with a significant increase in the percentage of Advanced students along with an associated decrease in Needs Improvement and Warning. The increase in Advanced and Proficient students in Needham was 10 percentage points; it was 8 in all of Massachusetts.

Grade 4

Fourth graders are tested in both ELA and Mathematics:

**Six-Year Comparisons of Grade 4 ELA Performance Level Results
(% of students)**

Grade 4	Advanced	Proficient	Needs Improvement	Warning	CPI
2002 English Language Arts	14	60	22	3	NA
2003 English Language Arts	24	57	18	1	93.5
2004 English Language Arts	24	54	21	1	92.8
2005 English Language Arts	22	48	27	3	89.5
2006 English Language Arts	22	56	21	2	92.3
2007 English Language Arts	17	60	21	2	91.3

These scores show a slight decrease in students scoring in the Advanced range, plus more students scored in the lower half of the Needs Improvement range. Needham's percentage of students in the Advanced and Proficient range decreased slightly from 78% to 77% at a time when the Massachusetts level increased by 6 points (from 50% to 56%).

**Six-Year Comparisons of Grade 4 Mathematics Performance Level Results
(% of students)**

Grade 4	Advanced	Proficient	Needs Improvement	Warning	CPI
2002 Mathematics	25	41	27	7	NA
2003 Mathematics	19	41	36	4	85.4
2004 Mathematics	32	36	29	3	88.5
2005 Mathematics	25	38	34	3	87.4
2006 Mathematics	29	38	31	3	87.5
2007 Mathematics	30	33	34	3	86.7

The percent of students at the Advanced and Proficient level decreased from 67% to 63%. This decrease is significant because the percentage in the state increased by eight points (from 43% to 51%).

Grade 3

Third grade students were tested in ELA and, for the second time, in Mathematics. This is only the second year the *Performance+* rating has been used.

**Six-Year Comparison of 3rd Grade Reading Performance Levels
(% of students)**

Grade 3	Proficient +	Proficient	Needs Improvement	Warning	CPI
2002 English Language Arts	NA	78	20	2	NA
2003 English Language Arts	NA	73	23	4	90.7
2004 English Language Arts	NA	78	19	3	91.7
2005 English Language Arts	NA	80	19	1	93.9
2006 English Language Arts	32	46	21	1	93.2
2007 English Language Arts	26	54	18	2	92.9

Although the CPI remained very similar to the 2006 score, there was a decline in the percent of students receiving a Proficient+ score. The state scores also remained relatively unchanged.

**Two-Year Comparison of 3rd Grade Mathematics Performance Levels
(% of students)**

Grade 3	Proficient +	Proficient	Needs Improvement	Warning	CPI
2006 Mathematics	9	68	20	2	92.5
2007 Mathematics	32	50	15	3	92.7

The percent of students in the Proficient and Proficient+ range increased by 5 percentage points (from 77% to 82%). The percent point change in the state was +8, from 52% to 60%.

Adequate Yearly Progress (AYP)

The *No Child Left Behind Act (NCLB)* has set a requirement that all students attain proficiency on the MCAS by 2014. Each year the Department of Education issues AYP determinations for each school and district. AYP determinations are made separately for English Language Arts (ELA) and Mathematics. For each subject, there are multiple AYP determinations for students in the aggregate as well as for student subgroups. Student groups for whom AYP determinations are made include special education students, students with limited English proficiency, economically disadvantaged students (eligible for free or reduced school lunch), and African American, Hispanic, Asian, White, and Native American students. Students are counted in *each* group to which they belong. Subgroups that do not make up at least 5% of the overall population are reported, but Performance Targets are not listed because the data are not considered statistically significant.

AYP determinations for districts, schools, and student subgroups are based on answering “Yes” to three of four questions:

A. Are at least 95% of students taking part in MCAS?

In Needham 100% of our students participate.

B. Has the district met the state’s target Composite Performance Index for the current review period?

This year, the state’s target CPI is 85.4 in English Language Arts and 76.5 in Mathematics. (See the charts below.)

C. Is the rate of improvement on target to reach 100% proficiency by 2014?

(See the charts below.)

D. Does the attendance meet the state’s 92% attendance rate?

The attendance rate in Needham is 96.7%.

In the summer of 2006, the U.S. Department of Education allowed Massachusetts to revise its approach for identifying districts in need of improvement. Under the revised method, a district will be identified for corrective action only when the district fails to make AYP in the same subject area for each of the elementary, middle, and high school grade spans.

ENGLISH LANGUAGE ARTS						
Student Group	Performance			Improvement		AYP 2006
	N	CPI	Met Target	CPI Change	Met Target	
Aggregate	2595	95.0	Yes	0.6	Yes	Yes
Lim. English Prof.	38	77.2	-	-	-	-
Special Education	326	81.1	No	2.3	No	No
Free Lunch	97	80.2	-	-	-	-
Afr. Amer./Black	76	82.6	-	-	-	-
Asian or Pacif. Isl.	186	95.1	Yes	0.6	Yes	Yes
Hispanic	70	83.9	-	-	-	-
Native American	2	-	-	-	-	-
White	2256	95.8	Yes	0.5	Yes	Yes

Three of the four reported groups made AYP for 2007. While Special Education students had the largest CPI gain, they fell short of their gain target of 81.4 by 0.3.

There are still significant achievement gaps among the various racial, ethnic, and economic groups. Black (82.6), Hispanic (83.9), Special Education (81.1), Free Lunch (80.2) and Limited English Proficient (77.2) all lag behind White (95.8) and Asian (95.1) students.

MATHEMATICS						
Student Group	Performance			Improvement		AYP 2006
	N	CPI	Met Target	CPI Change	Met Target	
Aggregate	2589	90.8	Yes	1.3	Yes	Yes
Lim. English Prof.	39	79.3	-	-	-	-
Special Education	327	69.9	No	3.5	No	No
Free Lunch	96	68.0	-	-	-	-
Afr. Amer./Black	76	70.7	-	-	-	-
Asian or Pacif. Isl.	186	96.0	Yes	0.6	Yes	Yes
Hispanic	71	72.9	-	-	-	-
Native American	2	-	-	-	-	-
White	2250	91.6	Yes	1.2	Yes	Yes

In Mathematics, again three out of four of the subgroups made AYP. However, the gap between various groups is even greater than it was in ELA. The gaps between White and Asian students and other subgroups can exceed 20 points. As in ELA, Special Education students made the largest CPI gain, but their 3.5 increase was still 3.1 from their target.

What do these results tell us?

The performance of Needham students on this one measure continues to be very good; indeed, the scores are among the best in the Commonwealth. A very high percentage of our High School students (over 99%) continue to achieve the Competency Determination on their first attempt by passing both the ELA and Mathematics tests at the 10th grade level, which is necessary for them to be awarded a diploma. To date, no Needham High School student has failed to graduate due to the MCAS requirement.

The 2007 scores remain very similar to previous years. In ELA, the average CPI change for all classes was -0.1 for the seven classes that were assessed. Two of the classes registered increases, four had decreases, and one remained the same. However, none of the changes is considered statistically significant. They ranged from a +1.1 to a -0.9. The Mathematics scores were more positive. There was an average CPI increase of 1.4, and six of seven classes showed improvement. In Mathematics, the increases for the 5th Grade (+4.3) and 7th Grade (+2.7) are considered statistically significant. The only decrease (0.8) is not considered statistically significant.

Any comparisons with prior years should be done with caution. Different students took the tests, and our experience tells us that different classes can vary greatly in ability and achievement. In addition, these tests change yearly, and there are questions about the reliability of the results from year to year. In particular, increases or decreases in Needham that are mirrored by significant changes in scores across the state raise questions about the reliability of the results.

What are we doing with the results?

Staff at the High School has been studying item analysis results for 10th grade since the summer. For those students who failed a test, we have developed individual remediation plans and have already begun services. It is possible to take a retest this November, and it is our goal to provide help for at-risk students as soon as possible.

Curricular leaders and classroom teachers at all levels will now begin analyzing the results for all students to identify anyone who may need additional help as well as to look for changes which we may need to make in our curriculum or instruction. Individual Remediation Plans are developed for all students who fail, as well as for many students who do not work up to expectations.

During the coming weeks, curricular leaders and teachers will examine item analysis reports in an attempt to gain a better understanding of what these results mean. These reports allow us to determine how our students perform with different types of questions (multiple choice, short answer, open response) as well as how they do on questions assessing a particular skill or fact.

George Johnson
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