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To: Melrose Instructional Staff, Specialists, Paraprofessionals, Administrators, School Committee, and Interested Community Members
From: Pat Muxie
Re: ***District-Wide*** MCAS Results for Spring 2008
October 22, 2008

Attached please find the *district-wide* MCAS results for the Spring 2008 testing period. It is important that we analyze and share district-wide results each year. Our elementary schools can compare their specific school data to the performance of the district as a whole, and look at transitions from elementary to middle school. The Middle and High school staff can compare their performance to the state, and look at transitions from middle to high school. You may notice similar strengths and weaknesses in your comparisons. You may also notice differences or gaps that set your school apart. Analyzing results in this way will enable us to make informed decisions that will influence instruction and student achievement, purchasing and personnel.

As I reviewed Adequate Yearly Progress (AYP) data, you can take pride in knowing that **we are maintaining our classification in the eyes of the state as having a Very High Performance Rating in the area of English Language Arts. In Mathematics, we are maintaining our classification as a High Performance district.** We do however, need to examine the performance of two subgroups: students with disabilities and those of low-income status. There is an achievement gap for these two groups at both the elementary and middle school levels. We need to increase our professional dialogue about this, face it head on, and find real solutions that will bring achievement up.

As always, I have included summary pages at the end of the analysis to highlight some of my thoughts as I synthesized the data for the district as a whole. I hope you will use the information contained not only in the summary but in the text of the document as well, at your grade-level and department meetings to generate good discussion leading to even greater student achievement.

Sincerely,

Pat Muxie

Cc Joseph F. Casey, Greg Zammuto, Patti White-Lambright, ETFs, Principals, Vice-Principals, Department Chairs

GRADE 3 MCAS ANALYSIS-SPRING 2008
READING and MATH

Number of Students Assessed

Reading: Total: 286 (99%)
52 Students with Disabilities, 2 Alt. Assessments
6 Limited English Proficient
31 Low-Income

Math: Total: 286 (99%)
52 Students with Disabilities, 2 Alt. Assessments
6 Limited English Proficient
31 Low-Income

Performance Level Percents

Note: Numbers **in parentheses** indicate actual number of students. Proficient category includes Proficient and Above Proficient categories.

READING:

	Melrose						State					
	2003	2004	2005	2006	2007	2008	2003	2004	2005	2006	2007	2008
Proficient	76%	77%	70%	68%	67%	70%	63%	63%	62%	58%	59%	56%
Needs Imp.	22%	22%	28%	30%	29%	25%	30%	30%	30%	34%	32%	33%
Warning	2%	1%	2 %	2%	4% (8)	5% (13)	7%	6%	6%	8%	9%	11%

MATH:

	Melrose			State		
	2006	**2007**	**2008**	**2006**	**2007**	**2008**
Proficient	58%	76%	74%	52%	60%	61%
Needs Imp.	32%	17%	20%	32%	24%	25%
Warning	10% (29)	8% (19)	7% (17)	16%	16%	14%

Performance Level Notes

READING:

1) Our number of proficient students increased this year, however, the number of students in the warning category also slightly increased. It is interesting to note that since the inception of the test in 2003, the state has seen a 7% decrease in the proficient level. This is similar to our 6% decrease since the test's inception. Students who receive a rating of warning are considered for Reading Specialist services unless they are already receiving services through an individual education plan. Through our curriculum review cycle, we are in the first year of implementing a new early literacy program. This program, Harcourt StoryTown, has both a strategic and intensive intervention component which should help us effectively address the needs of our struggling readers.
2) We were higher than the state in the proficient category and lower than the state in the needs improvement and warning categories in Reading.

MATH:

Note: Spring of 2006 was the first year that Grade 3 was assessed in the area of Math with actual scaled score results being reported.

1) Although our percentage of proficient students has dropped slightly, our scores have improved greatly in comparison to student performance in 2006.
2) We were much higher than the state in the proficient category and much lower than the state in the warning category.

Performance Level Results for Selected Subgroups

READING

The percent of low income and/or students with disabilities who scored at the Proficient or Above Proficient range decreased this year. Subsequently, our CPI points decreased. We are hoping our new early literacy program has an impact on these two subgroups.

MATH

The percent of low income and/or students with disabilities who scored at the Proficient or Above Proficient range in Math decreased this year. We need to encourage students to access our Math program at home once current grade level accounts have been set up. However, the percentage of low-income students in the warning category decreasedl, with many moving into the Needs Improvement category.

(continued)

Subject Area Subscores: (average % of points attained)

READING	District **2007**	**2008**	State **2007**	**2008**
Language	83%	87%	81%	77%
Literature	78%	75%	73%	70%
Item Type				
Multiple Choice	83%	85%	79%	78%
Open Response	63%	54%	58%	50%

MATH	**District** **2006**	**2007**	**2008**	**State** **2006**	**2007**	**2008**
Number Sense	76	75	77	75	71	73
Patterns, Relations and Algebra	83	87	83	84	81	79
Geometry	75	82	79	70	74	71
Measurement	70	80	83	71	77	77
Data Analysis, Statistics and Probability	84	87	84	81	81	78

In the area of reading, the most significant difference was the decrease in the percentage of Open Response points. This was reflected at the state level as well. In Math, performance in the strands of measurement has increased steadily since 2006. This year, our weakest strand was number sense.

***See Test Item Analysis below for specific questions that proved difficult for our Grade 3 students and for target actions to address them. (A quick test item analysis sheet can now be retrieved using our TestWiz program. See your building principal for the representative from your building who has a TestWiz account.)**

TEST ITEM ANALYSIS: GRADE 3 ENGLISH LANGUAGE ARTS 2008

LITERATURE

Criteria: More than 25% of our students got these answers incorrect:
An asterisk indicates that our average item score was LOWER than the state average.
#16 Nonfiction: Why does Cole ask herself the question?
#38 Grammar: How is the word, "dropped" used? (verb)
#39 Comprehension of nonfiction text
#40 Comprehension of nonfiction text
#41 Nonfiction inference: What does the word, "circle" in the title suggest?

OPEN RESPONSE

Criteria: Fewer than half of our students got a 3 or 4.
#21 Nonfiction inference: Why are Cole's books successful?
#34 Fiction inference: What makes visiting Nana's and Poppy's house so special? Give examples from the story.

GRADE 3 MATH

MULTIPLE CHOICE

Criteria: For multiple choice: More than 25% of our students got the following questions incorrect.
An asterisk indicates that our average item score was LOWER than the state's.
#28 SP Interpret a line plot: Count data points less than a given value

SHORT ANSWER

Criteria: Close to or more than half of our students left it blank or received a score of 0.
#29 SA ME Convert yards to feet

OPEN RESPONSE

Criteria: Our average was less than 1.5 out of 2.
#16 GE Identify parallel and perpendicular lines
* #23 ME Compute and draw area
*#30 NS Determine the fraction of one shape to all shapes used
#35 SP Use information given to supply the missing bar on a bar graph
(continued)

TARGET ACTIONS BASED ON TEST ITEM ANALYSIS
GRADE 3

READING:

1) Give students plenty of opportunities to read and discuss nonfiction texts. Talk to your library media specialist about specific nonfiction texts you can incorporate into your curriculum to support different content areas and increase comprehension in this genre.

MATH:

1) Give students lots of hands-on experiences in computing area, especially prior to the test.
2) Let students use geoboards and rubber bands to demonstrate their understanding of parallel and perpendicular lines.
3) Students are improving their interpretation of bar graphs. To strengthen their understanding, have them **create** colorful bar graphs using given data.

Areas Showing Strength and/or Improvement:

READING

1) Students continued to show improved understanding of the symbolism within poetry. They are also increasing their competency in their ability to infer information. Thank-you for your continued effort in these areas.
2) Questions focusing on vocabulary development and fiction comprehension received high scores overall.

MATH

1) Students continued to show improved understanding of the interpretation of tally charts.
2) Students did very well on the questions involving symmetry, perimeter, and extending tables. These were all mentioned in last year's report.
3) Students showed increased performance on questions involving measurement**.**

GRADE 4 MCAS ANALYSIS- SPRING 2008
ENGLISH LANGUAGE ARTS AND MATH

NUMBER OF STUDENTS ASSESSED

English Language Arts: 267 Total (100%), 53 students with disabilities, 5 limited English proficient, 34 low-income
Math: 267 Total (100%), 52 students with disabilities, 5 limited English proficient, 34 low-income

PERFORMANCE LEVEL PERCENTS

Note: Numbers in parentheses indicate actual number of students.

MELROSE	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**STATE**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
ELA													
Advanced	18	16	11	8	12	10		10	11	10	8	10	8
Proficient	53	52	47	45	53	49		45	45	40	42	46	41
Needs Imp.	26	28	38	42	32	37		34	35	40	39	34	39
Warning	3(8)	4 (10)	4 (10)	5 (13)	4 (10)	5 (12)		10	9	11	12	10	13

MATH	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Advanced	12	12	17	14	21	24	12	14	14	15	19	20
Proficient	35	32	31	37	36	31	28	28	26	25	29	29
Needs Imp.	43	47	41	39	38	39	43	44	44	45	39	38
Warning	10 (29)	9(23)	10 (29)	10(24)	5 (10)	7 (18)	16	14	15	15	14	13

PERFORMANCE LEVEL NOTES

1) In English Language Arts, we see a 6% decrease in the proficient and advanced categories with a reflective increase in the needs improvement and warning categories. Numbers have declined in general since 2003. The percentage of students in the warning category, although lower than the state's, has remained between 4% and 5% since 2004.
2) In Math, we see an increase in the advanced category, but a slight increase in the warning category as well.

PERFORMANCE LEVEL RESULTS FOR SELECTED SUBGROUPS

English Language Arts: The performance of our low-income subgroup improved this year but the performance of all other AYP subgroups declined slightly.

Math: The highest percentage of all major subgroups in Math this year, fell into the needs improvement category. The percent of girls and boys in the proficient and advanced categories was back to approximately even this year. The performance of our students with disabilities did not continue to increase as we were hoping, based on last year's much improved performance.

SUBJECT AREA SUBSCORES

We surpassed the state in all subject area subscores for ELA and Math with the exception of the short answer questions in Math.

In English Language Arts, proper use of English grammar and good sentence construction was again strength. Percentages for topic development stayed flat for the third year and matched the statewide average.
In Math, patterns, relations and algebra was our strongest area, with data analysis a close second. Measurement was our lowest area.

ITEM TYPE

In English Language Arts, multiple choice and writing prompt questions continue to receive higher scores than open response questions. This was mirrored at the statewide level as well. Our grade level teams need to create a bank of open-response questions from previously released MCAS tests and give them to our students on a consistent basis, using the MCAS rubric. Looking at student work samples as a group will also be an interesting collegial activity which will give us a fresh perspective on the state's expectations and will ultimately improve our students' success rate. Continue to help students: 1) identify what open response questions are asking them, 2) think about the content area information they need in order to answer the question, 3) organize the information, 4) add details with interesting word choices, and 5) create the answer.

In Math, multiple choice and open response questions received higher scores than short answer questions.

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GRADE 4 TEST ITEM ANALYSIS
MCAS SPRING 2008

ENGLISH LANGUAGE ARTS
LITERATURE
Criteria: More than 25% of our students got these questions incorrect.
An asterisk indicates that our average item score was LOWER than the state's.
0
LANGUAGE
0
OPEN RESPONSE
Criteria: Fewer than 50% of our students got a 3 or 4.

#8 Describe how Fenway workers help the fans enjoy the park
#17 Myth: Explain how a current emperor chooses a new emperor
#26 Fiction: Explain how Tom's feelings change in the selection
#35 Nonfiction: Describe, based on the story, the challenges the main character faces throughout life

TARGET ACTIONS BASED ON ELA TEST ITEM ANALYSIS

1) We need to continue to use direct instruction in terms of helping students understand how to craft answers to open response questions for the highest number of points. Several staff members from each school now have access to TestWiz.net. If you are new to our district and do not yet know about this tool, teachers may use this to actually see the scoring rubric for each open response question. Here are the directions from the TestWiz folks: For Open Response items, when you click on the link to the item through the test item analysis report, you will see another link in blue: Scoring Guide. Click on Scoring Guide and you will see the rubric used for scoring that item with the various point values available. Click on any one of the point values and you will see a student example of a response worthy of that point value. Students would enjoy and learn a lot from seeing the examples from other students and the differences in the complexity of responses as they move up in point value. *(Note: If you do not see the link to the scoring guide when you click on the test item, it is because DataMetrics, which is the company that owns TestWiz, is still waiting for the Department of Education to get the information up on the DOE website.)* Your principals also have access to your students' actual compositions via the MCAS Service Center website. Choose one student who received a high score and one who received a low score, then create transparencies without names for the students to view and critique.

Areas Showing Strength and/or Improvement:

1) For the second year, students showed strength in answering questions that involved overall comprehension of text (*both fiction and nonfiction*), and comprehension of poetry. Poetry is an area that we have been focusing efforts on for the past 2 years and it seems we are seeing improvement in this area. Continue to expose students to, and discuss, a large quantity of poetry.
2) Performance on questions involving understanding of vocabulary in context was also strong.

MATH
MULTIPLE CHOICE
Criteria: For multiple choice: More than 25% of our students got the following questions incorrect.
An asterisk indicates that our average item score was LOWER than the state's.

*# 7 GE Determine the least number of blocks to travel between 2 points
*#14 NS Choose the decimal equivalent of a number in word form
*#16 SP Select the spinner most likely to land on the section indicated
#22 NS Using 2 rectangles, select the correct fractional relationship
#23 ME Measure the line segment and add two inches
#35 SP Use earnings graph and pay rate to calculate number of hours worked

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OPEN RESPONSE

Criteria: More than 50% of our students got less than a 3 or 4.
*#10 ME Calculate perimeter!
#13 NS Use estimation to compare and group given populations
#17 GE Work with labeled triangles to make and identify shapes

SHORT ANSWER

Criteria: Close to or more than half of our students left it blank or received a score of 0.
*#12 NS Write the decimal equivalent of a given fraction
*#30 NS Write the fraction representing the point on a number line

TARGET ACTIONS BASED ON MATH TEST ITEM ANALYSIS

1) Calculations involving perimeter are still difficult for our students. The use of manipulatives and full-body movement will help students to understand not only this concept but the concepts listed for numbers 17 and 30 listed above.

2) Give students plenty of practice changing fractions to decimals and vice versa.

Areas Showing Math Strength and/or Improvement

1) Students improved their performance on double-digit multiplication questions this year. Thank-you for your efforts to introduce it in a timely fashion so that our students feel competent in this skill.

2) Students' performance on questions involving beginning algebra, symmetry, place value, multiplication and division, and congruency was strong.

GRADE 5 MCAS ANALYSIS- SPRING 2008
ENGLISH LANGUAGE ARTS, MATH, SCIENCE AND TECHNOLOGY/ENGINEERING

NUMBER OF STUDENTS ASSESSED

ELA: 297 Total, 72 students with disabilities, 9 English language learners, 43 low-income, 1 alt. assessment
Math: 298 Total, 72 students with disabilities, 9 English language learners, 43 low-income, 1 alt. assessment
SCI.: 299 Total, 72 students with disabilities, same as above

PERFORMANCE LEVEL PERCENTS

Note: Numbers in parentheses indicate actual number of students.

ENGLISH LANGUAGE ARTS:

	Melrose			State		
	2006	**2007**	**2008**	**2006**	**2007**	**2008**
Advanced	28	21	15	15	15	13
Proficient	43	57	56	44	48	48
Needs Improvement	24	18	25	31	28	30
Warning	5 (12)	4 (8)	4 (11)	9	9	8

MATH:

	Melrose			State		
	2006	**2007**	**2008**	**2006**	**2007**	**2008**
Advanced	25	11	22	17	19	22
Proficient	29	37	33	26	32	30
Needs Improvement	33	39	32	34	31	30
Warning	13 (33)	14 (36)	13(38)	23	18	17

SCIENCE and TECHNOLOGY/ENGINEERING:

	Melrose						State					
	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Advanced	32	35	19	24	11	17	18	20	16	17	14	17
Proficient	40	37	46	35	45	39	33	35	35	33	37	33
Needs Improvement	23	25	29	35	39	35	34	33	38	39	37	38
Warning	5 (13)	4 (10)	5(13)	6 (15)	5 (13)	9(25)	15	13	12	11	12	12

PERFORMANCE LEVEL NOTES

English Language Arts

1) The percent of students scoring advanced has steadily decreased since 2006, although the **total** percentage of students scoring proficient or advanced has remained the same. We want to stop the decline of students in the advanced category while at the same time, *decreasing* the percentage of students in the needs improvement category. The highest number of students scoring warning was in the 216-218 band.

Math

1) Conversely, in Math we see a nice increase in the percentage of students scoring advanced, with many students moving up out of the needs improvement and proficient categories. Again, the highest number of students scoring warning was in the 216-218 band.

Science and Technology/Engineering

1) While we see some nice movement of students into the advanced category in relation to last year, our overall performance since the inception of the Science test in 2003 has declined.

PERFORMANCE LEVEL NOTES FOR SELECTED SUBGROUPS

ELA: We did not see the continued improvement of our subgroups that we saw last year in this subject area. In fact the performance of all subgroups declined this year at this grade level. This negatively impacted our AYP standing for selected subgroups.

MATH: Conversely in Math, the performance of all our subgroups *improved* over last year. Male vs. female performance was fairly even again in this subject area at this grade level.

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SCIENCE AND TECHNOLOGY/ENGINEERING:
While the performance of our students with disabilities remained flat with the highest percentage scoring needs improvement, the performance of our low-income students decreased quite dramatically. Boys slightly outperformed girls this year in Science and Technology/Engineering, whereas performance was even last year.

SUBJECT AREA SUBSCORES

1) We matched or exceeded the state in both ELA and Science and Technology/Engineering subject area subscores. In Math, our score in Number Sense and Operations was 1% below the state. All other Math areas exceeded the state.
2) In ELA, students performed better, in terms of average percent correct, in the category of Language than in Reading and Literature.
3) In Math, geometry was our highest area, while measurement was lowest.
4) In Science, earth and space science was our weakest area with physical sciences being our strongest.

ITEM TYPE
Students performed better on multiple choice than open response questions. ELA open response questions were the strongest of all three subject areas tested. Open response questions in the area of Math were the most difficult ones for our students at this grade level. We saw this last year as well.

***See Test Item Analysis below for questions that proved difficult for our Grade 5 students. Target Actions to address them follow.**

TEST ITEM ANALYSIS
GRADE 5: MCAS SPRING 2008

ELA:
Multiple Choice
Criteria: Over 25% of our students got the following answers incorrect.
An asterisk indicates our average item score was LOWER than the state's.
#11 LT: Poetry interpretation and inference: What does hitting homers most likely represent?
#15 LT Drama comprehension: Why must Jim leave right away?
#16 LT Drama inference: What is the best clue that Araminta will assist slaves?
#21 LT Fiction inference: Why doesn't the old man answer the boy?
#22 LT Fiction comprehension: How is, "Sink Stone" used?
Open Response
Criteria: Over 50% of our students did not receive a 3 or 4.
#8 LT Nonfiction: Describe how this house is designed for flexibility.
*#18 LT Drama inference: Why does the main character stay and how does she help Jim?
#27 LT Fiction: Explain the challenges the boy faces.
#35 LT Nonfiction- Author's purpose: Explain why the author makes a statement about hypothermia.

ELA TARGET ACTIONS

1) Students still need additional practice answering inference questions. Inferential questions cause students to, "…..think about and go beyond the information given." (DePaul Center for Urban Education, 2002). They support and ensure strong comprehension of the material being read.
When you ask students to:
   - Make comparisons
   - Make predictions
   - Draw conclusions based on events or a character's action in the story
   - Make connections between events, characters, and actions
   - Identify motives and/or emotions and the reason behind them

you are asking inferential questions. Ask these types of questions throughout the day within all genres and in all content areas. A*t times, model the thinking process for deciding an appropriate answer. This modeling can be a critical component in a student's ability to perform the process independently.*

2) Make sure students are exposed to the genre of drama, and know its characteristics. (continued)

MATH:

Multiple Choice:

Criteria: More than 25% of our students got the following questions incorrect.
*#8 NS Find the greatest common denominator
#15 PR Compute earning using a given ratio
#16 NS Choose the expression that best matches the product of 2 numbers
*21 NS Choose the figure whose shading matches a given fraction
#23 SP Determine the probability of rolling a certain number on a dice
*#24 NS Add 2 mixed numbers
#25 PR Use a proportion to solve a problem
#32 GE Choose the figure that shows a 90 degree rotation
#33 NS Express the power of ten in words
#34 PR Given a pattern and rule, determine a new number
#35 ME Find length, given area and width
*#36 NS Multiply a fraction by a whole number
#37 PR Given a price rate, find how many can be purchased with a given amount
#38 SP Interpret a double bar graph
*#39 NS Identify the value NOT equivalent to 40%

Short Answer:

Criteria: Over half of our students left the answer blank or received a score of 0.
#30 ME Given 2 angles, compute the 3rd

Open Response:

Criteria: Over 50% of our students did not receive a 3 or 4.
#17 PR Extend pattern and write the rule
*#27 ME Work with surface area and volumes of rectangular prisms
*#31 NS Work with a fraction of a whole

MATH TARGET ACTIONS

1) With the exception of 1 question, all of the questions indicating an average *lower* than the state, involved working with fractions in some fashion. We need to strengthen our students' conceptual understanding of fractions and bring that conceptual understanding to a wide array of mathematical activities involving fractions (e.g., adding mixed numbers, multiplying fractions, working with shaded figures, etc.)
2) Volume and surface area computations are still challenging our students. Continue to make sure you give students many opportunities to practice these computations prior to the test.
3) In # 39, many of our students were tricked into choosing the only answer that did NOT contain a four. Using this example is a good opportunity to re-enforce good test-taking strategies. Tell students that before making a final choice, they should actually compute the values of all the choices if possible, so that they can choose the answer that makes the most sense.

SCIENCE and TECHNOLOGY/ENGINEERING

Multiple Choice:

Criteria: Over 25% of our students got the following answers incorrect.
An asterisk indicates our average item score was LOWER than the state's.
#4 PS How do solids differ from liquids?
*#6 LS Match the behavior with chicks pecking out of shells
#9 ES Which picture shows motion of planet and moon?
#11 LS Which picture shows development of tadpole to adult?
#13 TE Which object does NOT have a wedge?
#15 LS How many plants will inherit a chewed leaf pattern?
#16 LS Which event involves food chain producer and consumer?
*#23 LS What explains bird migration?
#24 ES How does bacteria make soil fertile?
*#25 ES What type of precipitation is formed as illustrated?
#27 ES What explains the motion of stars in night sky?
*#30 ES What drawings show sequence of moon phases?
#32 ES What type of rock forms when hot lava cools? (continued)

Open Response:
Criteria: Over half of our students did not receive a 3 or 4
#19 ES Identify properties of minerals and how to test for them
*#38 TE Give 2 methods for recording the design of an object

SCIENCE TARGET ACTIONS

1) Last year, it was recommended that students create a science word bank or dictionary related to the different themes/strands that you study in order to build strong scientific vocabulary. You could use this same suggestion to enable students to illustrate critical scientific concepts related to their study (e.g., phases of the moon, the development of the tadpole).

2) Continue to make sure students are exposed to hands-on activities that will lead to an understanding of the properties of rocks and minerals prior to the test (e.g., color, hardness, luster etc.). Allow them to test rocks and minerals for each of those properties if possible. Include kits specifically for this purpose in your grade level budget expenditures that you submit to your building principal each year. This concept has consistently been on the Grade 5 test.

AREAS OF STRENGTH/IMPROVEMENT
ELA: Students continue to exhibit strong comprehension in fiction, nonfiction, myths, and poetry. Thank-you for your sustained efforts to interpret and analyze all these genres. Vocabulary was also strong.

MATH: Students did well in answering short answer questions in Math at this grade level. They also got high scores when analyzing input-output tables, evaluating equivalent expressions, and determining congruent figures. Their ability to interpret a line plot also improved this year.

SCIENCE AND TECHNOLOGY/ENGINEERING: Students did well on questions involving concepts of energy, sound, and magnetism.

Note! Students did not receive full History results, however, school districts did receive test item analysis reports in this area. Our test item analysis reports at this grade level indicated stronger scores in the area of North American geography and weaker scores in the strand of American History for the 2nd year. Teachers need to make sure that students have a strong understanding of the content and creation of the Bill of Rights.

GRADE 6 MCAS ANALYSIS- SPRING 2008
ENGLISH LANGUAGE ARTS AND MATH

NUMBER OF STUDENTS ASSESSED

ELA: 287 Total, 55 students with disabilities, and 8 English language learner, 42 low-income (100%)
MATH: 286 Total, 54 students with disabilities, 8 English language learners, 41 low-income (100%)

PERFORMANCE LEVEL PERCENTS

Note: Numbers in parentheses indicate actual number of students.

ENGLISH LANGUAGE ARTS

MELROSE	2006	2007	2008	**STATE**	2006	2007	2008
Advanced	17	8	18		10	9	15
Proficient	63	69	56		54	58	52
Needs Improvement	18	20	21		28	25	24
Warning	2 (3)	3 (8)	5 (13)		8	7	8

MATH

MELROSE	2003	2004	2005	2006	2007	2008	**STATE** 2003	2004	2005	2006	2007	2008
Advanced	16	21	20	27	23	23	16	17	17	17	20	23
Proficient	34	27	38	29	38	34	26	26	29	29	32	33
Needs Improvement	32	32	27	26	28	27	32	32	30	29	28	26
Warning	17(46)	19(56)	14 (36)	17(42)	11(28)	16(44)	26	25	23	25	20	18

PERFORMANCE LEVEL NOTES

1) In English Language Arts, we see our highest percent of advanced students since the inception of the test. However, we also see a slight increase in the number of students receiving a score of warning.
2) In Mathematics, our percentage of students in the advanced category remained the same this year and reflects the state percentages. The number of students in the warning category increased.

PERFORMANCE LEVEL RESULTS FOR SELECTED SUBGROUPS

In English Language Arts, our students with disabilities accounted for 11 out of the 13 students who received a score of warning. We need to increase our efforts of ensuring that ALL students are being exposed to benchmark concepts and that if an alternate assessment is given, the teacher is knowledgeable about what makes a successful portfolio.
Girls outscored boys this year in ELA, whereas last year, performance was about even.

In Math, girls attained a greater percent of scores in the proficient and advanced categories for the second time in 4 years. Two specific subgroups struggled with this year's Grade 6 math test and were well below the CPI for AYP. They were our students with disabilities and our African American students.

SUBJECT AREA SUBSCORES

ELA: Our percentage of points attained was higher once again in the area of Language; however, we surpassed the state in both Language and Literature.
MATH: Data Analysis, which was our lowest subject area subscore last year, was our highest this year, with number sense and patterns, relations, algebra both tie for second. Measurement was our weakest area. This was reflected at the state level as well.

ITEM TYPE

ELA and MATH: Out of the total number of points possible, students got a higher percentage of points answering the multiple choice questions than the open response questions. Students maintained last year's improved performance on the open response questions in Mathematics. Performance on short answer questions in math also improved greatly.

. **Test item analysis and specific target actions are listed on the next two pages.**

TEST ITEM ANALYSIS
GRADE 6: MCAS SPRING 2008

ENGLISH LANGUAGE ARTS

MULTIPLE CHOICE

Criteria: Over 25% of our students got the following questions incorrect.
An **asterisk** indicates that our average item score was LOWER than the state's average.

#19 LT Author's Purpose: Why were the words, "Full" and "All wrong" repeated?
#14 LT Poetry: What does the poet mean by, "contrast"?
#30 LT Comprehension: Which quilt is based on an original design?

OPEN RESPONSE

Criteria: Over half of our students did not receive a 3 or 4.
#8 LT Nonfiction: describe Asimov's qualities
#18 LT Poetry: Why is the kitchen memory important?
#27 LT Fiction: Describe the setting and tell why it is important in the story
*#35 Nonfiction: What did people learn from quilts?

ELA TARGET ACTIONS BASED ON TEST ITEM ANALYSIS: GRADE 6, 2008

1) As we have seen for the past 2 years, the highest percentage of our students received a 2 on the majority of our open response questions in ELA. This pattern was evident again in ALL of the open response questions at this grade level. Let's try to move students up a notch by making sure they are competently reviewing the question and are able to paraphrase what they need to find in, or infer from, the text in order to answer the question appropriately. Scoring rubrics for open response questions will soon be available using Testwiz.net. All principals and designated teachers at each building can obtain the scoring guide for any specific open response question to enable staff members and students to see what scorers were looking for. We should be examining these guides and sharing them with students so that they too can become more familiar with the criteria for assessment.
2) Make sure that students understand the term, "contrast." This concept appeared on last year's test and proved difficult for our students. Give students both visual, auditory, and written examples.
3) When reading pieces of literature, discuss the setting of the story and have students explain how it is key to the characters or events that unfold.

MATH

MULTIPLE CHOICE

Criteria: Over 25% of our students got the following questions incorrect.
An **asterisk** indicates that our average item score was LOWER than the state's average.
#8 PR Choose the equations that match
*#9 GE Choose the correct description of a transformation shown
*#16 PR Choose the graph that shows a constant rate of change
*#22 NS Choose the fraction that is equivalent to a given percent
*#25 NS Solve a problem using the least common multiple
*#26 PR Determine equivalency in a balanced scale context
*#33 NS Problem solve with mixed and whole numbers
#36 PR Choose the expression that represents the total number of items
#38 SP Calculate the probability of a given situation

SHORT ANSWER

Criteria: Over half of our students left the answer blank or received a score of 0.
#28 PR Evaluate an expression when given a value for a variable
*#29 NS Calculate the sum of 2 mixed numbers
*#30 NS Determine a percent from a given ratio

OPEN RESPONSE

Criteria: More than half of our students did not receive a 3 or 4.
*#31 ME Work with volumes and surface areas of rectangular prisms (continued)

MATH TARGET ACTIONS BASED ON TEST ITEM ANALYSIS

1) Give direct instruction to students in the test-taking skill of reading the question carefully and disregarding any extraneous information. In number 22, many of our students chose an answer based on their use of information that was not critical to the answer.
2) Mixed numbers seem to be difficult for our students to work accurately with (at more than this grade level). Have students complete some board work with mixed numbers so that you can analyze exactly where their thinking is incorrect and what steps they need to take to correct it.
3) Additional **hands-on** work to understand the concepts and process for accurately finding volume and surface area is needed. If you need manipulatives for this purpose, please see Mr. Babineau, your Department Chairperson.

AREAS SHOWING STRENGTH AND/OR IMPROVEMENT

ENGLISH LANGUAGE ARTS
Students are getting much more competent at inferring information from all types of texts, including nonfiction, drama and poetry. Your efforts to utilize higher level questioning techniques as an integral part of your instruction are paying off. Vocabulary was also strong.

MATH

1) Students did an excellent job again this year in answering open response Math questions. On 4 out of 5 questions, students scored either a 3 or 4. Thank-you for your continued efforts to have students practice solving multi-step problems, while creating visual displays of their work.
2) Last year's report asked you to give students additional opportunities to plot/work with points on a number line as well as find the mean, median, and mode of an array of numbers. Students scored much higher this year on questions involving those concepts.

GRADE 7 MCAS ANALYSIS - SPRING 2008
ENGLISH LANGUAGE ARTS AND MATH

NUMBER OF STUDENTS ASSESSED

ELA: 249 Total, 46 students with disabilities, 5 limited English proficient, 40 low-income, (99%)
MATH: 251 Total, 47 students with disabilities, 5 limited English proficient, 41 low-income, (100%)

PERFORMANCE LEVEL PERCENTS

Note: Numbers **in parentheses** indicate actual number of students.

ENGLISH LANGUAGE ARTS

	MELROSE						STATE					
	2003	2004	2005	2006	2007	2008	2003	2004	2005	2006	2007	2008
Advanced	9	8	10	15	14	12	8	9	10	10	9	12
Proficient	65	73	69	66	69	68	57	59	56	55	60	57
Needs Improvement	20	17	17	15	13	17	28	25	27	26	23	23
Warning	5 (14)	2 (5)	4 (11)	4(8)	4 (7)	2(6)	7	7	8	9	8	8

MATH

	MELROSE			STATE		
	2006	2007	2008	2006	2007	2008
Advanced	12	24	16	12	15	15
Proficient	37	33	35	28	31	32
Needs Improvement	31	28	31	33	30	29
Warning	20 (48)	15(38)	17(43)	28	24	24

PERFORMANCE LEVEL NOTES

ELA: 80% of our Grade 7 students are either proficient or advanced, compared to 69% at the state level. We saw some students moving down to the Needs Improvement category from advanced and proficient.
MATH: Unfortunately, the improvement we saw in Math last year did not repeat itself this year. Students filtered down from advanced into the lower categories.

Note: The percentage of students classified as low-income nearly tripled at this grade level from last year's figures.

PERFORMANCE LEVEL RESULTS FOR SELECTED SUBGROUPS

ELA: Students with disabilities had the majority of their scores in the Needs Improvement and Proficient categories. Our low-income subgroup had the highest percentage of their scores in the proficient range. Girls again had the highest percentage of students in the advanced range in this content area.
MATH: The Grade 7 Math test was very difficult for our low-income students and students with disabilities. Their number of composite performance index points was well below what they needed to make AYP. Girls had the highest percentage of students in the advanced category this year and fared better in terms of CPI points achieved.

SUBJECT AREA SUBSCORES:

1) We surpassed the state in all subject area subscores at this grade level.
2) In English Language Arts, our topic development statistics in the area of composition have remained flat and continue to be our lowest area. The actual compositions of your students are available to you through the mcasservicecenter website (accessible to your building principal). Creating transparencies of compositions (with names deleted) and regularly reviewing them in light of the composition scoring rubric, will help students analyze and evaluate their own work. Accurate self-evaluation is an important life-long skill that we can nurture in students through this activity.
3) In Math, measurement was our lowest scoring area. Data analysis/statistics/probability was our strongest strand for the second year.

ITEM TYPE

In English Language Arts, open response items continue to be our weakest item type. The improvement seen last year where the majority of students received a 3 on a scale of 0-4, did not repeat itself. Our students are averaging a score of 2 out of 4 possible. In Math, students were most successful in answering short answer questions. This was reflected at the state level as well.

Note: *Grade 7 students were given another preliminary test in History and Social Science this year. Students did not receive individual home reports. Schools, however, received test item analysis report summaries. This year, the area of Ancient History was much improved and our strongest area. Conversely, World Geography 2 (the study of Europe, Africa, and South America) was our weakest area .* (continued)

TEST ITEM ANALYSIS
GRADE 7 MCAS SPRING 2008
ENGLISH LANGUAGE ARTS AND MATH

ENGLISH LANGUAGE ARTS

LITERATURE

Criteria: Over 25% of our students got these answers incorrect.
An asterisk indicates an average item score LOWER than the state's.

#28 LT Main idea of paragraph 1

LANGUAGE

#25 LA What does the phrase, "names die over time" mean?

OPEN RESPONSE

Criteria: Fewer than half of our students got a 3 or a 4.

#8 LT Nonfiction: Explain why Rico is a special dog
#17 LT Drama: Explain the relationship between 2 characters
#26 LT Fiction: Explain why an event has a powerful effect
#35 LT Nonfiction: Describe the qualities that help Elizabeth rule

MATH

Criteria: Over 25% of our students got these answers incorrect.
An asterisk indicates an average item score LOWER than the state's.

MULTIPLE CHOICE

*#4 NS Given an integer, select the equivalent scientific notation
*#6 SP Interpret a tree diagram to select probability
*#11 ME Select the description that could be a square measure
#14 NS Select the expression to find a given fraction of a number
*#16 SP Interpret a Venn diagram
#17 NS Calculate the equivalent of an expression with an absolute value
#18 NS Estimate percent
#25 NS Given a table of numbers, select the lowest decimal
*#26 SP Interpret an organized list to predict probability
#30 SP Interpret a table to determine a fraction
*#32 PR Choose the correct expression that represents a statement
*#33 PR Select the graph that represents a positive rate of change
*#36 NS Calculate unit price per pound given oz. information
#37 GE Given a description of the faces, select name for 3-D figure

SHORT ANSWER

Criteria: Over half (or close to half) of our students left the answer blank or received a score of 0.

#7 GE Identify 2 congruent angles

OPEN RESPONSE

Criteria: Over half of our students did not get a 3 or 4.

#39 GE Draw, then list coordinates for translated, reflected images

See the following page for target actions based on test item analysis.

(continued)

TARGET ACTIONS BASED ON TEST ITEM ANALYSIS: GRADE 7, MCAS 2008

ENGLISH LANGUAGE ARTS

1) If our number of points was based strictly on multiple choice questions, our grade 7 students would have done very well. However, the majority of our students received a 2 on 4 out of 5 open response questions, and this makes all the difference. Last year , the majority of students received a 3 on 3 out of 4 open response questions. Your Department Chairperson will be distributing the scoring guides for the open response questions from this year's test as soon as they are available. Study and discuss these guides in relation to each open response question with your students. Create some full-class activities where students or groups of students are creating high quality answers based on the criteria of the scoring guide.

MATH

1) As we have seen in other grade levels, fractional relationships, especially those involving symbols and tables, are difficult for our students to understand.
2) Although stem and leaf plot concepts are seeing consistent improvement, tree diagrams have been consistently challenging. Pull tree diagram questions from previous test administrations and work through them with students collaboratively. Then have students create tree diagrams of their own and share them with the class explaining the rules and development of the tree as they go. Verbalization of the explanation in their own words will help the concept become more concrete.
3) Scientific notation was a weakness both this year and last year. Make sure you are giving ample time to the coverage of this concept prior to the test. As you work on the concept, looking at the specific step where students are making their errors will be helpful in correcting their confusions. If you need additional curriculum support materials or activities, please see your Department Chairperson.

Areas Showing Strength/Improvement

English Language Arts:

1) Students continue to do VERY well on answering questions that involved identifying and analyzing characters and events from fiction, nonfiction, myths, and now drama genre selections. Inference within the context of these genres is also improving. Thank-you for your consistent efforts in this area.
2) Students have steadily improved in their ability to interpret poetry.
3) On the majority of the questions involving vocabulary, over 80% of our students chose the correct response. Continue to systematically enrich the word bank students have to draw on and encourage them to use new vocabulary in their writing. We may be considering the use of WordMasters, a program that challenges students to learn new vocabulary through analogies. This action would support that effort.

Math:

1) Students did a great job of answering the open response questions in Math again this year. On 4 out of 5 questions, the majority of students received a score of 3 or 4. These questions involved working with percents, problem solving with various units of measure, creating tables and graphing linear relationships, determining range and measures of central tendency.
2) There were several questions involving stem and leaf plots again this year. Students' performance on these questions continued to show improvement. Thank-you for your efforts.
3) Students performance on questions relating to algebraic expressions, order of operations, and proportion was strong.

GRADE 8 MCAS ANALYSIS- SPRING 2008
ENGLISH LANGUAGE ARTS, MATH, SCIENCE AND TECHNOLOGY/ENGINEERING

NUMBER OF STUDENTS ASSESSED

English Language Arts: 268 Total, 52 students with disabilities, 3 limited English proficient, 25 low-income, 1 alt. assessment (100%)
Math: 270 Total, 53 students with disabilities, 3 limited English proficient students, 26 low-income, 2 alt. assessments (100%)
Science and Technology/Engineering: same as Math above

PERFORMANCE LEVEL PERCENTS Note: Numbers **in parentheses** indicate actual number of students.

MELROSE

ENGLISH LANGUAGE ARTS	**MELROSE**	**2006**	**2007**	**2008**
Advanced		14	19	16
Proficient		72	69	70
Needs Improvement		12	11	10
Warning		1 (3)	1(2)	3(7)

MATH	2003	2004	2005	2006	2007	2008
Advanced	11	10	19	14	17	30
Proficient	27	30	44	39	36	28
Needs Imp.	36	39	21	28	29	26
Warning	27(68)	21(57)	16(41)	19 (51)	18(46)	16 (40)

STATE

ENGLISH LANGUAGE ARTS	**STATE**	**2006**	**2007**	**2008**
Advanced		12	12	12
Proficient		62	63	63
Needs Improvement		19	18	18
Warning		7	6	7

MATH	2003	2004	2005	2006	2007	2008
Advanced	12	13	13	12	17	19
Proficient	25	26	26	28	28	30
Needs Imp.	30	32	30	31	30	27
Warning	35	29	31	29	25	24

SCIENCE AND TECH./ENGINEERING	2003	2004	2005	2006	2007	2008
Advanced	4	4	2	3	4	3
Proficient	31	36	35	30	40	49
Needs Improvement	45	37	46	56	42	39
Warning	20 (50)	23 (63)	17 (44)	12 (32)	14(36)	9(23)

STATE:	2003	2004	2005	2006	2007	2008
Advanced	4	5	4	4	3	3
Proficient	28	28	29	28	30	36
Needs Improvement	37	36	41	43	44	39
Warning	31	31	26	25	24	22

PERFORMANCE LEVEL NOTES

English Language Arts

We see a decrease in the percentage of students in the advanced category with a resulting increase in the lower categories. Still 86% of our students are proficient or advanced compared to 75% at the state level. Five out of the seven students in the warning category were within 4 points of Needs Improvement.

Math

We see a large increase in the percent of students reaching the advanced category. All three lower categories decreased as students moved up. This is excellent news. Over half of the students receiving warning fell in the highest end of that category.

Science and Technology/Engineering

This year, we again see a good increase in the total percentage of students reaching advanced or proficient in Science and Technology/Engineering. Needs Improvement and Warning decreased as students moved up. 52% of our students are proficient or advanced compared to 39% at the state level. Again, the highest numbers of students in the warning category were within 4 points of Needs Improvement.

PERFORMANCE LEVEL RESULTS FOR SELECTED SUBGROUPS

English Language Arts

The performance of all of our subgroups at this grade level fell this year in ELA. Girls outperformed boys as they have for the past two years.

Math,

In Math, although in relation to total CPI points, most of our subgroup scores (with the exception of our African American subgroup) improved, we are still far short of AYP targets for all subgroups. Boys outperformed girls.

Science and Technology/Engineering

Although their performance improved over last year, students with disabilities had the highest percentage of students in the warning category. Achievement improved for most of our subgroups in this content area. This test was the most difficult for our African American subgroup. Boys outperformed girls as they have done for the past two years.

SUBJECT AREA SUBSCORES

We surpassed the state in ALL subject area subscore categories.

In English Language Arts: Whereas last year Language and Reading/Literature were almost equally strong, this year we did better in the Language category.

In Math at this grade level, Number Sense and Data Analysis/Statistics/ Probability were tie for our strongest areas. Geometry and measurement were our weakest strands as they were for students across the state for the third year.

In Science, This year, students' performance in physical science improved in comparison to last year's scores. Our weakest area was earth and space science. Our strongest was life science. This was reflected at the state-wide level as well.

(continued)

ITEM TYPE

In ELA: Although performance was down slightly, still, on 3 out of 4 open response questions, more than 50% of our students received a score of 3 or 4. Middle School English Department meetings should designate some time to **writing down** and sharing success strategies for open response questions across content areas and grade levels.

In Math, we again see improved performance on open response questions with the highest percentage of students receiving a 3 or 4 on the majority of questions. Multiple-choice questions received the highest number of points.

In Science, open response question performance improved this year with more than half the students scoring 3 or 4 on 4 out of 5 questions. Thank-you for your efforts. The Earth and Space Science open response question was the most difficult for our students. This could have affected the overall Earth and Space Science category score. Multiple choice questions still had the highest percent of answers correct.

* **See Test Item Analysis below for specific questions that proved difficult for our Grade 8 students. Target actions to address them have also been listed.**

TEST ITEM ANALYSIS
GRADE 8 MCAS SPRING 2008 ENGLISH LANGUAGE ARTS

Multiple Choice

Criteria: More than 25% of our students got the following incorrect.
An asterisk indicates our performance was LOWER than the state's.
#13 LT Thematic inference: What does the incident with the moon symbolize
#22 LT Understanding of author's language: Which sentences contribute to the development of mood?
#40 LT Character analysis in a myth: What conclusion can be drawn about Achilles?

Open Response

Criteria: Over half of our students did not get a 3 or 4
#28 LT Fiction: Explain the importance of the setting to the story

MATH

Multiple Choice

Criteria: More than 25% of our students got the following incorrect.
An asterisk indicates our total was LOWER than the state average.
*#2 PR Calculate the slope of a line given table values
#3 SP Calculate the probability of making the same selection 2 times
*#4 PR Extend a linear graph to determine an additional data value
#5 NS Select the list that shows 4 ascending percentages
#6 NS Select the expression that has a designated value
#11 NS Select the % that is a portion of the whole
#12 ME Given a graph of time/distance, determine rate
*#14 PR Select the expression that models a graphed linear relationship
#16 NS Evaluate a square root expression
#18 NS Which statement involving absolute value is true?
#25 ME Calculate the area of a square with given portions REMOVED
#27 PR Choose the true statement about circles with different areas
#31 NS Choose the greatest common divisor of a given number
#32 PR Choose the correct equivalent expression
#34 ME Choose the value in kilometers that is closest to the value in miles
#35 SP Interpret a histogram to calculate percent

Open Response

Criteria: Over half of our students did not get a 3 or 4.
#9 PR Given an equation, complete a table and interpret parameters
#29 ME Calculate height and volume of a cylinder

Short Answer

Criteria: Over half of our students did not get a 1
#19 GE Find the diameter, given inscribed rectangular dimensions

(continued)

SCIENCE AND TECHNOLOGY/ENGINEERING
MULTIPLE CHOICE
Criteria: Over 25% of our students got the following questions incorrect.
An asterisk indicates that our average item test score was LOWER than the state's.

Physical Science
#14 Choose the common property of given earth and moon objects
#15 What is the mass of a given beaker AFTER the ice melts?
#21 Choose the appropriate unit for measuring given lengths
#29 What happens when heated metal is immersed in cool water?

Life Science
#10 In which reproduction form is there the most difference in offspring/parent?
#17 What is the greatest effect of removing decomposers from the ecosystem?
*#36 Which statement about chicken and turtle enmbryos is true?

Earth and Space Science
#9 Why does the tilt of the earth cause seasonal warmth/cold?
#11 Which picture shows moon during a solar eclipse?
*#13 Why does MA bedrock appear scraped and polished?
*#22 Name one way earth is different from moon?
#30 Which is evidence that glaciers were present?
#33 Name the layer that covers earth's crust and upper mantle
#35 Which energy source drives all weather events?

Technology and Engineering
#6 Choose the element of a universal systems model
#16 What is the next step in a bridge building project?
#23 name the process of checking manufactured goods for correctness

OPEN RESPONSE
Criteria: Over half of our students did not get a 3 or 4.
#37 ES Name and describe features caused by earth's plate movement

GRADE 8 MCAS ANALYSIS: SPRING 2008
TARGET ACTIONS BASED ON TEST ITEM ANALYSIS

ENGLISH LANGUAGE ARTS
Our students are doing well in ELA at this grade level. A good test-taking strategy is to have students THINK like an author as they are considering the answers to the questions. Doing this would have helped them on 3 out of the 4 questions which proved difficult for them (development of mood, symbolism of an event, deliberate choice of story setting).

MATH
1) There are several areas of difficulty that we saw repeated from last year:
- Determining absolute value
- Working with histograms
- Figuring out the slope of a linear equation
- Working with areas of circles and cylinders
- Determining square roots

The middle school math department needs to:
a) examine their sequence of instruction to see where the above concepts fall for the purpose of making sure that students are exposed to the concept and have enough opportunities to practice it before the test (continued)

b) make sure students know the test taking strategy of reading each question carefully to find out exactly what the question is asking the student (For example, in the histogram question (#35), over 90% of our students chose the answer which represented the NUMBER of students shown by the graph….not the PERCENT of students shown by the graph.)

c) make sure that students know the test-taking strategy of looking for patterns. Sometimes, even if a student isn't knowledgeable about a concept, being able to determine a pattern and the *rule* for the pattern, can help them solve a problem. (This would have helped them in both #2 and #4. On both of these questions, the average score was below the state's average.)

2) I would again highly recommend having students start a math terminology notebook for definitions, formulas, and examples of concepts you study throughout the school year.

SCIENCE AND TECHNOLOGY/ENGINEERING

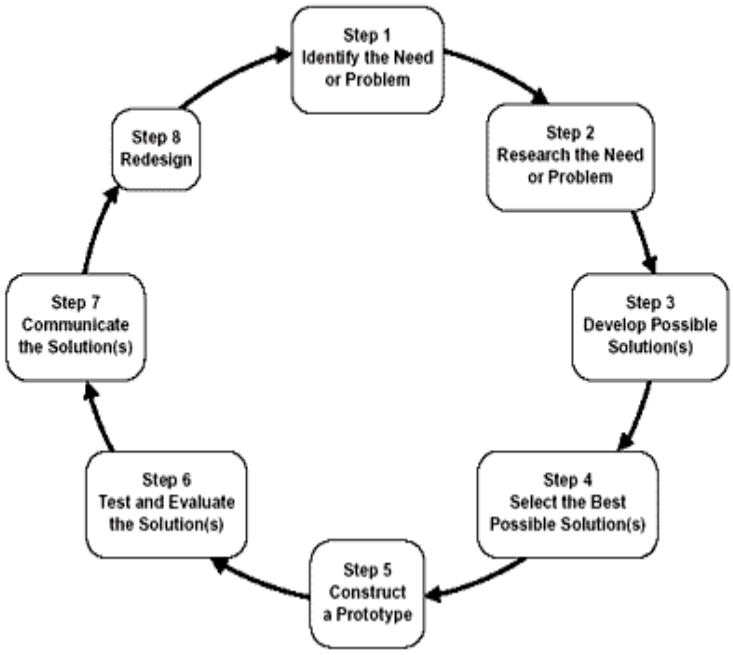
1) **In the area of Life Science:**
   a) Have students create a visual display of an ecosystem, complete with labels identifying and explaining the roles of all organisms within it
   b) Make sure that students understand the concept of heredity in relation to reproduction.

2) **In the area of Earth Science**:
   a) Make sure students can correctly draw and label diagrams relating to the structure of the earth (e.g., upper mantle)
   b) Have students create graphic displays illustrating: solar and lunar eclipses, as well as glacial movement and its effects

3) **In the area of Physical Science:**
   a) The concepts relating to mass are challenging for our students. Pull out MCAS questions from the last several years relating to mass and use them as springboards for discussion and clarification.

4) **In the area of Technology/Engineering:**
   a) Have students list and give examples of all of the elements of a universal systems model: inputs, processes, outputs, feedback
   b) Display an incomplete diagram of the engineering design process (which can be found below and in the STE Frameworks).
   Have students fill in the missing labels.

Figure 1
Steps of the Engineering Design Process



(continued)

Areas Showing Strength/Improvement:

English Language Arts:
Students again showed evidence of strong understanding of vocabulary in context. Their performance on questions requiring comprehension and analysis of drama, fiction, nonfiction, poetry, and myths, was also strong. Many of these questions involved having students infer information based on events or a character's actions. Keep up the good work of integrating higher-level questions that necessitate analysis into your daily repertoire.

Math:
1) Work with circle and bar graphs, as well as Venn diagrams was strong.
2) Students improved their performance in determining the surface area of a cylinder. This was mentioned in last year's report.
3) Understanding of mode, congruency, and equivalent expressions/equations has improved.

Science and Technology/Engineering:
1) Students' understanding of the components and nature of cells improved this year.
2) Students also improved their performance on questions incorporating an understanding of the classification of organisms into kingdoms.

GRADE 10

MCAS ANALYSIS-SPRING 2008

NUMBER OF STUDENTS ASSESSED WHO WERE INCLUDED IN PERFORMANCE LEVEL RESULTS

ELA: 219 Total, 32 students with disabilities, 1 limited English proficient, 34 low-income (99%)
Math: 219 Total, 32 students with disabilities, 1 limited English proficient, 33 low-income (99%)
Science: 233 total from Grades 9&10, 37 students with disabilities, 8 limited English proficient, 30 low-income
US History: Trial Test for Question Validation- No Performance Levels Reported

PERFORMANCE LEVEL PERCENTS Note: Numbers **in parentheses** indicate actual number of students.

MELROSE								**STATE**						
ELA	2002	2003	2004	2005	2006	2007	2008	2002	2003	2004	2005	2006	2007	2008
Advanced	36	36	31	34	26	35	36	19	20	19	22	16	22	23
Proficient	37	43	46	40	55	50	52	40	41	44	42	53	49	51
Needs Imp.	21	15	19	19	15	12	11	27	28	27	25	24	24	21
Failure	6	7(17)	5(13)	6 (12)	3 (3)	4(9)	2 (3)	14	12	10	11	7	6	4
MATH														
Advanced	22	29	32	34	34	55	51	20	24	29	35	40	42	43
Proficient	26	36	31	31	39	30	30	24	27	28	27	27	27	29
Needs Imp.	36	22	27	25	19	11	16	31	28	28	24	21	22	19
Failure	16	13 (31)	10(26)	10 (20)	8 (13)	4 (9)	3 (5)	25	21	15	14	12	9	9

BIOLOGY	**2007**	**2008**
Advanced	14	26
Proficient	36	54
Needs Improvement	33	11
Failing	17	10 (11)

PHYSICS		
Advanced	2	2
Proficient	40	46
Needs Improvement	45	41
Failing	13	11

NOTE: Beginning with the class of 2010, high school students will be required to take and pass a test in one of the 4 major areas of Science and Technology/Engineering. In 2006, trial Science tests were given but performance levels were not reported. In 2007, performance levels WERE reported and the Department of Education stated that since performance levels were being reported, students who took the 2007 test and passed could use their score to meet the 2010 requirement. In 2007, we had 370 out of 428 Grade 9 and 10 students take and pass a Science test. This was great news for all those students who can now use their passing scores to meet their graduation requirement. In an effort to be proactive, we continue to give all eligible high school students the opportunity to take the most appropriate Science test based on their coursework. This year we had 216 out of 239 Grade 9 and 10 students take and pass either the Biology or Introductory Physics test.

PERFORMANCE LEVEL NOTES

1) In English Language Arts, we continue to see an increase in the percentage of students reaching proficient and advanced status. 88% of our students attained proficient or advanced on the ELA section of the MCAS.
2) In Math, **we have again decreased the number of students in the failing category since 2002**. 81% of our students are either proficient or advanced in Math at the Grade 10 level. All students receiving a rating of failing were in the 216-218 range.
3) We see nice upward movement in our Science areas. Student achievement in both Biology and Physics increased this year. The increase in Biology is quite dramatic and is due in part to the efforts of the Science Department as they looked at last year's test results in relation to their curriculum.

PERFORMANCE LEVEL SCORE RESULTS FOR SELECTED SUBGROUPS

In English Language Arts, the highest percentage of scores for **all** subgroups, fell into the proficient category. All subgroups met their CPI targets and this is excellent news. The English Department at the High School, through the leadership of the Department Chairperson, has made strategic efforts to collaboratively work together for the benefit of students on IEPs and this effort is having a positive impact. Girls outperformed boys by an 11% margin.

In Math, as we saw in ELA, all subgroups met their CPI targets. Girls performed better than boys in Math at this grade level as they have for the last two years. (continued)

In Biology: All subgroups with the exception of our students with disabilities had the highest percentage of their performance levels in the advanced and proficient ranges. Although half of our students with disabilities passed the Biology test, approximately half did not. Their scores however, were in the 210-218 range.
In Physics: The Physics test was a much more difficult test state-wide. The majority of all subgroups, except our African American subgroup, fell into the Needs Improvement and Proficient ranges. The majority of our African Americans fell into the Needs Improvement and Failing categories. Their scores, however, were in the highest (210-218) range.

Please continue to make sure that our IEP teams are thinking carefully about which type of assessment our students with disabilities are taking. If they are taking the standard assessment, then we need to make sure their accommodations are implemented and specifically geared to their success. If they are taking the Alternate Assessment, we need to make sure that both regular education and special education teachers who are responsible for putting together their portfolios are knowledgeable about the Department of Education's criteria and procedures for successful, passing portfolios. Both should attend the DOE's informational sessions on this topic.

SUBJECT AREA SUBSCORES
In English Language Arts, the use of standard English conventions in composition was our strongest area. Our weakest area was topic development. Our average percent correct in Language was uncharacteristically lower than the state's and we will look at the test item analysis to see why this is the case.

In Math, Measurement was our highest area. Math department efforts to examine instruction and make sure that concepts (and formulas) relating to measurement, are consistently covered and reviewed completely PRIOR to test administration are paying off. This needs to be done for concepts of geometry as well, since the improvement we saw last year in this strand did not repeat itself. Geometry was our weakest area.

In Science: *Due to the current nature of the Science test, subject area subscores are not given for Science

ITEM TYPE
ELA: This year, percentages for all types of items (multiple choice, open response, and the writing prompt) surpassed the state. Multiple choice and writing prompt points were tie for highest percentage of points earned. Our students performance on open response questions improved 10 percentage points from last year.
MATH: Short answer questions, which involved actual student computation, received the highest score in terms of percent correct again this year. Multiple choice came in second. Although open response came in last, it is worthwhile to note that on 5 of the 6 open response questions, more than half of our students scored a 3 or 4. We saw this last year as well.
SCIENCE: Not reported

TEST ITEM ANALYSIS
GRADE 10: ENGLISH LANGUAGE ARTS AND MATH
MCAS SPRING 2008

LITERATURE
Criteria: Over 25% of our students got the following questions incorrect.
An asterisk indicates that our average item test score was LOWER than the state's.
#6 LT What effect do words like, "fiddle," "gobbled," and "peek" have on the story?
#10 LT Poetry: What is the effect on the reader of having the poem written in question form?
#11 LT Poetry (inference): What is the message of the first verse of, "The Times?"
*#12 LT Poetry (analysis): Why do you think the speaker singles out senators and mothers?
*#17 LT Why does the author begin with a specific song?
#23 LT Fiction: select the main turning point of the story
#29 LT Nonfiction: What is most striking about Washington's letter?
*#33 LT Nonfiction: Which quoted sentence serves as a transition?
*#36 LT Drama: What main contrast is established in lines 1-12?

LANGUAGE
#26 LA Vocabulary in fiction: irresolute means indecisive

OPEN RESPONSE
Criteria: Over 50% of our students did not get a 3 or 4
0 Open response question performance was strong!

(continued)

MATHEMATICS
MULTIPLE CHOICE
Criteria: More than 25% of our students got the question incorrect.
An asterisk indicates that our average item score was LOWER than the state's.

*#3 SP Determine the median of values in a stem and leaf plot
#4 NS Find an equivalent expression involving an exponent (continued)
#8 PR Find the roots of a factored quadratic equation
#10 NS Simplify a polynomial expression involving exponents
#11 NS Use number properties to find an equivalent
#12 PR Math the equation of a line to its representation on a coordinate grid
#13 NS Evaluate an expression with absolute values
#14 SP Find a new data value that changes the median of a data set
*#24 PR Find the graph that shows the slope of a line equal to 0
#26 GE Identify an object NOT having a rectangular cross section
#28 SP Interpret a box and whisker plot to locate data values
#29 NS Determine which expression is equal to 0
#30 ME Compute diameter given the circumference
#32 ME Express the dimensions of a rectangular prism
#34 ME Determine the ratio of areas of 2 proportional rectangles
*#35 PR Evaluate a formula involving a rational component
*#36 GE Determine the angle that is bound by a radius and chord
#37 GE Compute the height of an equilateral triangle
#40 PR Find the linear equations that model a specific population

SHORT ANSWER
Criteria: More than half of our students either left this question blank or received a score of zero.
0

OPEN RESPONSE
Criteria: more than half of our students did not score a 3 or 4.
*#17 GE Work with the equation of a line to find other related lines

BIOLOGY
MULTIPLE CHOICE
Criteria: More than 25% of our students got the question incorrect.
An asterisk indicates that our average item score was LOWER than the state's.
GE=genetics
#2 GE Which type of inheritance produces a checkered feather pattern?
#11 GE Which does NOT occur for genes involved in lactose intolerance?
#17 GE For what enzyme is there a mutation in gene coding in the example?
#38 GE Which could be a genotype in the given example?
#39 GE Which cell process is shown?
#42 GE Which example explains why seed shape and color is not inherited together?

AP= Anatomy and Physiology
#9 AP In what body function does iron play a primary role?
#14 AP Which organ removes excess water from blood?
#27 AP In what type of substance does the kidney communicate?

BC=Biochemistry and Cell Biology
#3 BC Choose the description of the molecular structure of ovalbumin
*#6 BC Choose how the tobacco mosaic virus reproduces
#8 BC What categories of molecules are produced in lactose digestion?
#10 BC Which type of milk (soy or dairy) yields more ATP and why?
#25 BC Describe the numbers of chromosomes in each cell during meiosis
#41 BC Identify the 2 types of cells depicted (continued)

EC=Ecology
#21 EC What factor has lead to an increase in coral disease in the Caribbean?
#5 EC Which process releases primarily oxygen into the atmosphere?

EV= Evolution and Biodiversity
#36 EV What was the result of the beak structure adaptation in the Galapagos?
#4 EV To which group must birds in the same order belong?

OPEN RESPONSE
Criteria: more than half of our students did not score a 3 or 4.
#12 AP Describe the digestion and use of dairy and soy milk (Most students scored 1.)
#44 BC Describe the structure and function of a cell membrane (Most students scored 2.)

INTRODUCTORY PHYSICS
MULTIPLE CHOICE
Due to the difficulty of this test state-wide the criteria for analysis has changed. See below.
Criteria: More than 50% of our students got the question incorrect.
An asterisk indicates that our average item score was LOWER than the state's.
MF=Motion and Force
*#4 MF Describe the object's change in mechanical energy
*#11 MF Which vector shows the direction of centripetal force?
*#18 MF Calculate the average speed of the object from the position/time graph
*#19 MF Which thing caused the acceleration of the object on the inclined plane?
*#20 MF Calculate acceleration given mass and acting forces
**#22 MF Choose the object's velocity at the highest point of vertical travel
*#25 MF calculate distance traveled during deceleration
#40 MF Choose the scalar quantity

WV=Waves and Radiation
*#28 WV Which describes the frequency of waves in an oscillating rope?
*#34 WV Which is possible due to longitudinal waves?
*#9 WV Choose the property shared by infrared and x-rays
*#37 WV Calculate velocity from wavelengths and frequency
*#39 WV Which of the choices explains the apparent nearness of objects underwater?
*#41 WV Explain how one sound can be heard on radio BEFORE through the air
**#42 WV Compare the motion of sound waves in the water and in air

HT=Heat and Heat Transfer
*#10 HT What amount of heat is required to raise the given mass of copper to the melting point
*#35 HT What is the best method for obtaining samples during a heat energy experiment?

EM=Electromagnetism
*#6 EM What happens to the current when the circuit is changed as shown?
*#36 EM Choose the diagram with the greatest attractive force between charges

OPEN RESPONSE
Criteria: more than half of our students did not score a 3 or 4.
#12 MF Discuss the energy available to the waterwheel generator
*#32 MF Draw force diagrams and calculate net forces
*#23 HT describe heat energy transfer in mixed liquids
*#45 EM Explain how bulbs in an electric circuit with switches behave

(continued)

GRADE 10 TARGET ACTIONS BASED ON TEST ITEM ANALYSIS

ENGLISH LANGUAGE ARTS

1) This year, many of the questions that were difficult for our students involved having a good understanding of the **author's purpose and craft** (e.g., Why does the author start with a song?" "Why is the poem written in question form?" "Which word does the author use to provide an effective transition?" "What effect do words like *fiddle* and *gobble* have on the story?") For pieces of literature where this is particularly relevant, incorporate these questions into your instruction. Students will begin to see that authors make many deliberate choices while writing that add strength to the *reason behind the piece of literature*. When students are writing their OWN original pieces of work, encourage them to pay attention to this fact and incorporate it into their writing. It's a great opportunity to let students explore and develop their own creativity!

2) Students are maintaining their improvement in regard to the skills of character analysis and inference. Continue your efforts in this area. Remember our discussion from last year: "When we think about it, questions that require character analysis (e.g. How does this character feel? Why does he/she feel this way? How is the character seeing things from his/her point of view? What in the story leads you to that conclusion?) not only lead to a better understanding of the text, but also connect to an important life skill for our students. In our daily interactions, we often need to infer how others are feeling or how they are seeing things. We often need to infer and anticipate what they may or may not do based on their feelings and/or emotions. Being able to do this effectively will help our students become successful adults who have empathy and foresight."

MATH

1) *We need to examine our instructional sequence and materials in regard to the following concepts*, which have come up consistently as weak areas for our students for the second and in some cases, third year in a row:

- Compute the height and area of an equilateral triangle
- Determine the slope of a line
- Solve and/or find the roots of quadratic equations
- Find the median of a stem and leaf plot

Use of graph paper, manipulatives, and a formula journal would support the teaching of these concepts.

2) An abstract concept that was difficult for our students this year was absolute value. Choices of answers for this particular number were scattered for close to 30% of our students indicating a lack of foundational understanding. Make sure the term is clearly defined and multiple examples modeled prior to having students solve equations on their own.

4) In question #4 involving evaluating an expression with exponents, a quarter of our students forgot in their haste, to consider that 100 was really 10 to the second power. They chose answer A instead of answer B based on this oversight. Encourage students to read each question carefully and consider their prior knowledge prior to making a choice.

BIOLOGY

1) The concepts of inheritance (without being able to see a visual pattern) and genetic mutation seem to be difficult for our students. Make sure you give them many visual examples of both, and have them verbalize explanations for changes/development.

2) Make sure students are exposed to and can identify different types of cells, their structure, function, and the processes of change and reproduction.

3) Have students depict, label, and explain the process of digestion.

PHYSICS

1) The broad concepts of: a) Motion and Force and b) Waves and Radiation were the two areas that were particularly difficult for our students.

In regard to motion and force, efforts should focus on making sure students can competently calculate average speed, velocity, acceleration, and distance. Students should have a formula notebook to which they can add their own drawings and diagrams showing the steps and concepts involved in making the correct calculations. Practice and homework using these formulas should be given on a regular basis and should include having students make up real life problems depicting the concept.

In regard to waves and radiation, efforts should focus on giving students a strong understanding of the properties and characteristic behavior of waves. Hands-on lab experiments and computer simulations should be used for this purpose.

Areas Showing Strength/Improvement:

ELA:

1) Students are consistently doing a better job of answering open response questions. I know that Angela Singer has been working with the High School English Department to formulate a consistent strategy that students can use in their approach to answering this type of question. The strategy seems to be working. Let's see if we can adapt it for use at the elementary level.

2) Good performance on questions involving the skills of inference and analysis at this grade level is also being maintained. Keep up the exposure and practice in regard to these skills.

MATH:

1) Students are displaying a better and more comprehensive understanding of square roots, polynomials, parallelograms, area and volume. We can see this in the evidence of a high percentage of answers involving these concepts being correct.

2) Interpreting and comparing statistical values from charts and tables of data is also a skill that is consistently getting high scores. Thank-you for your efforts.

BIOLOGY:

Our students showed a strong understanding of the following:

- Natural selection
- Producers and consumers
- DNA composition
- Chemical reactions
- Food chains
- Environmental effects

PHYSICS

Students' performance on questions relating to momentum, wavelength in relation to electromagnetic waves, inertia, electrostaticity, and the identification/modification of light rays was strong.

SUMMARY OF THOUGHTS
SPRING MCAS 2008

ELEMENTARY SUMMARY AND SHORT-TERM GOALS

- **In English Language Arts** there has been continuous improvement in comprehension and analysis of a wide variety of genres. The most noticeable improvement has occurred in the analysis of poetry at all grade levels and in comprehension of non-fiction at the Grades 4&5 levels.
- Teachers in K- 3 need to incorporate more non-fiction into their literacy blocks so that when students take the Grade 3 test, they feel comfortable and confident in this genre. Our new Early Literacy program should help us achieve this goal since authors of the program incorporated a high percentage of non-fiction stories in student texts.
- We need to educate BOTH staff and students about what an open response question is and how to easily answer it based on the given text.

- **In Math,** if we compare scores from 2006, we will see an overall improvement in every grade level tested with a greater percentage of students reaching proficient and/or advanced.
- Specific improvement has been seen in the area of measurement, an understanding of symmetry, and in the interpretation/analysis of graphic displays such as tables and charts. The latter skill in particular, is an important one for students in today's world.
- We need to examine our coverage of the following concepts within the texts we are using and make sure they are being introduced to students in a timely fashion: computation of fractions, volume, and area.

- **In Science,** we need to budget funds to purchase some additional teacher resources to teach rocks and minerals at the 4th grade level and reinforce/review that content knowledge at the 5th grade level.

MIDDLE SCHOOL SUMMARY AND SHORT-TERM GOALS

- **In English Language Arts,** we see students who are more confident and competent in inferring information from all genres. This includes the more complex inference related to characters and events as they develop and unfold in a piece of literature. Based on the data, it seems the elementary staff is now laying a strong foundation for this and middle school staff is continuing the effort and taking students even further. Let's do the same thing as we approach the area of writing in relation to topic development and open response questions.

- **In Math,** students are showing a better understanding of algebraic expressions, mean/median/mode, and congruency. They are getting higher scores on open response Math questions, which often allow students to show graphic representations of their thinking. They are also improving in their ability to carefully analyze and interpret information from graphs, tables, diagrams, and charts. A strong understanding of fractions and fractional relationships along with volume are concepts that need strengthening in Grades 6 and 7. (We saw this weakness at the elementary level as well.) Coverage of these topics, as well as the materials we use to teach them, needs to be examined by both staffs. Grade 8 staff should focus efforts on making sure students have a strong understanding of how to determine the slope of a line, since this is coming up as a weakness at the high school level as well.

- **In Science,** We saw a nice jump in the percentage of students reaching Proficient at the middle school level. Their understanding of kingdoms and the nature of cells (their structure and function) was strong. Let them develop
  physical models to increase their understanding of ecosystems, as well as solar and lunar eclipses.
  It is interesting to note that there have recently been larger quantities of questions relating to the engineering design process in the Science test. In the MA frameworks document, there is a great circular diagram showing the steps in this process. I have reproduced it and placed it directly into this analysis document. Students should be aware of each of the steps in this process and should be able to give actual examples of an activity that would demonstrate each step.

CONTINUED

HIGH SCHOOL SUMMARY AND SHORT-TERM GOALS

- **English Language Arts**

We see a good increase in our advanced category since 2006. Inference, analysis, and open response question performance is strong. We need to make students more aware of the author's purpose and craft. If we give them increased opportunities to be authors themselves, they will be more aware of the countless deliberate choices authors make each time they create a piece of literature.

- **Math**

This year, we saw the lowest number of students in the failing category since 2002. Students are exhibiting a comprehensive understanding of polynomials, square roots, area, volume. They can analyze data from a wide variety of graphic displays. Three areas of consistent difficulty have been determining the slope of a line, solving quadratic equations, and working with absolute values.

We need to check our coverage and practice of these three concepts and use manipulatives and/or computer simulations to improve students' understanding . The TI84 calculator is being considered for purchase and use by all HS math teachers for the 2009-2010 school year.

- **Science**

In both Biology and Physics, we saw a good increase in proficient and advanced, with Biology showing the most dramatic increase (from 14 to 26% advanced and from 36-54% proficient). Students show a strong understanding of DNA, chemical reactions, food chains, momentum, inertia and many other major scientific concepts. In order to increase understanding of weaker concepts such as properties and behavior of waves, students should increase their hands-on lab experiences. Teachers should couple these with computer simulations and assessment monitoring.

AS A DISTRICT, OUR LONG-TERM GOALS SHOULD INCLUDE:

- Open response question performance improvement. This should include a district-wide systematic approach to answering this type of question along with promoting students' ability to self-evaluate their responses based on a scoring guide.

- District-wide ownership of subgroup performance through potential surveys to selected stakeholders in regard to perceived obstacles and solutions to students' success. Resulting action plan may include among other recommendations: additional training in differentiated instruction, increased communication between regular education and special education staff revolving around IEP goals and heightened expectations, increased opportunities for tutoring and an extended school day, parent support groups, etc.

- District-wide teaching of test-taking strategies

- Increased time for communication and collaboration with system-wide library media specialists to support designated curriculum-related areas (e.g., nonfiction K-3)

- Careful monitoring of the longitudinal impact of the new early literacy program which we are beginning this year with corresponding teacher support and professional development

- Consistent proactive budget planning to address and resolve the need for additional curriculum related materials when needed.

- Continued consistent district-wide implementation and monitoring of the Harcourt Math program (K-6), due to the overall increase in the percentage of our students reaching Proficient and Advanced

- Consistent movement toward Proficient and Advanced without **any** students in the Needs Improvement and Warning/Failing categories.

Thank-you for your support in helping us reach our goals!