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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 2009

October 16, 2009

Attached please find the district-wide MCAS results for the Spring 2009 testing period. While observing and analyzing our district's information prior to the formulation of our upcoming strategic plan, our consultant applauded our district's efforts to consistently analyze and communicate assessment results. She agreed it is important that we analyze and share district-wide results to drive instruction and decision-making. Our elementary schools 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 compares their performance to the state, and look at transitions from middle to high school. We notice similar strengths and weaknesses in our comparisons or we may notice differences that set schools apart. Noticing similarities and differences enables us to make informed decisions that will influence instruction, student achievement, purchasing and hiring.

There are two differences you will note as you read this year's report: 1) Close to half of the test items in Grades 3-8 were not released by the Department of Elementary and Secondary Education. In these tight budget times, this was a cost saving measure that will enable them to use previously designed test items on future tests. This made analysis more difficult, however, the standards of the non-released items that were difficult for our students were reviewed and considered in terms of their frequency of appearance. 2) In the years past, I made note of gender-based performance at the different grade levels. I did this when a pattern seemed evident after looking at several years of scores or when the difference in regard to achievement was large enough to seem significant. This year, in order to clarify patterns in relation to this topic, I made a chart by grade level and content area for the past 5 years, so that I could see all the data simultaneously. Results of this investigation are included in the last section under long-term goals.

Another thing I would like to inform you about is a new data statistic that the Dept. of ESE is now providing to districts. It is called the SGP (Student Growth Percentile). This statistic measures individual student progress on statewide assessments by tracking student progress from 1 year to the next. SGP scores can also be *aggregated* to understand growth at the district, school, grade-level, or subgroup level. For example, looking at the data from a district-wide perspective, we see that the area showing the highest growth rate is Grade 10 English. The area showing the lowest growth rate is Grade 7 and 8 Math. One of the most important benefits of having this data is the fact that it can help us explore the causes for high and low levels of growth. By examining the data, we can learn to recognize the characteristics of students performing at the opposite poles of the growth spectrum, then use this information to tailor our improvement efforts.

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, still need to focus efforts on the performance of two subgroups: students with disabilities and those of low-income status. We ARE increasing our professional dialogue about this, as we try to find real and effective solutions that will bring achievement up. This year, for example, we have moved toward a model that includes more opportunities for co-teaching. This should ensure more consistent exposure to state grade-level standards for students with disabilities.

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 2009
ENGLISH LANGUAGE ARTS and MATH**

NUMBER OF STUDENTS ASSESSED

ELA: Total: 271 (100%)

34 Students with Disabilities, 2 Alt. Assessments
12 Limited English Proficient
29 Low-Income

Math: Total: 272 (100%)

34 Students with Disabilities, 2 Alt. Assessments
12 Limited English Proficient
29 Low-Income

PERFORMANCE LEVEL PERCENTS

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

ENGLISH LANGUAGE ARTS:

	<u>Melrose</u>				<u>State</u>			
	2006	2007	2008	2009	2006	2007	2008	2009
Proficient	68%	67%	70%	66%	58%	59%	56%	57%
Needs Imp.	30%	29%	25%	27%	34%	32%	33%	33%
Warning	2%	4%(8)	5%(13)	7%(18)	8%	9%	11%	10%

MATH:

Proficient	58%	76%	74%	70%	52%	60%	61%	60%
Needs Imp.	32%	17%	20%	19%	32%	24%	25%	25%
Warning	10% (29)	8% (19)	7% (17)	11% (31)	16%	16%	14%	15%

PERFORMANCE LEVEL NOTES

ENGLISH LANGUAGE ARTS:

- 1) In grade 3, our performance in ELA dropped slightly this year. We need to make sure we are using all of the components of the newly adopted StoryTown series. We will also be checking with our special education staff to make sure they have all the intensive intervention components of the program for use with students. Fifteen of the eighteen students in the warning category were within our special education and low-income subgroups. Additional professional development focused on guided reading and the effective components of a balanced literacy program will be provided for Grade 3 staff. Students who receive a rating of warning are considered for Reading Specialist services unless they are already receiving intensive reading intervention services from a special education teacher.
- 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:

- 1) Although the percentage of students in our proficient category is still much improved since 2006, our overall performance did drop this year with a higher number of students receiving a rating of warning.
- 2) We are higher than the state in the proficient category and lower than the state in the warning category.

PERFORMANCE LEVEL RESULTS FOR SELECTED SUBGROUPS

ELA

Out of the 6 major subgroups represented at this grade level, 4 out of 6 have the majority of their population represented in the Needs Improvement category. With the exception of the low income subgroup, the percentage of students in the Proficient category has declined. Teachers, working closely with the Educational Team Facilitators, need to examine curriculum, instruction and materials for students on IEPs. Moving toward a co-teaching model may assist us in this area, but we will need to be vigilant about monitoring actual results by looking at other assessment data (e.g., DRA2 scores, running record results) on a frequent basis.

MATH

The most striking statistic from looking at the subgroup scores in Math at this grade level is that close to half of all students with diagnosed disabilities are failing the Math portion of the MCAS. Teachers, working closely with the Educational Team Facilitators, need to examine curriculum, instruction and materials for students on IEPs. Moving toward a co-teaching model may assist us in this area, but again, we need to be vigilant about monitoring actual results by looking at other assessment data (e.g., Harcourt weekly tests, quizzes, theme tests) on a frequent basis. (continued)

SUBJECT AREA SUBSCORES: (average % of points attained)

ELA	District	2007	2008	2009	State	2007	2008	2009
Language		83	87	83		81	77	79
Literature		78	75	74		73	70	70

Item Type

Multiple Choice		83	85	83		79	78	79
Open Response		63	54	53		58	50	49

MATH	District	2006	2007	2008	2009	State	2006	2007	2008	2009
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Number Sense		76	75	77	76		75	71	73	75
PR		83	87	83	81		84	81	79	78
Geometry		75	82	79	78		70	74	71	71
Measurement		70	80	83	78		71	77	77	77
Data Analysis, SP		84	87	84	82		81	81	78	80

Item Type

Multiple Choice					80					78
Short Answer					80					77
Open Response					76					71

All subject area subscores surpassed the state in both subject areas. Similar to the state, in ELA, Language scores surpassed Literature scores. Open response questions seem difficult across the state at this grade level. In Math, Data Analysis, Statistics, and Probability was our highest area. Open response question performance improved slightly in Math from last year and is better than open response performance in ELA, however, multiple choice and short answer question performance still surpassed open response performance.

***See Test Item Analysis below for specific questions that proved difficult for our Grade 3 students and for target actions to address them.**

TEST ITEM ANALYSIS: GRADE 3 ENGLISH LANGUAGE ARTS 2009

LITERATURE

Criteria: More than 25% of our students got these answers incorrect, however the Dept. of ESE has only released one of them for analysis.

*#10 S13 NF According to the selection, how was the nautilus *different* from a submarine?

The rest of these questions were not released:

#16 S12 FIC #36 S15 Style/Language

#24 S11 Theme #38 S13 NF

#31 S13 NF #39 S15 Style/Language

*#35 S13 NF #40 S14 Poetry

OPEN RESPONSE

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

*#9 S12 Explain how the storm made it difficult for Milton to get milk. Use story details.

#34 S13 Not released

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.

*#7 N3 What does a visual representation of 2 and $\frac{3}{4}$ look like using circles?

*#10 M3 Figure out the day on the calendar that represents 3 weeks from a particular date. (The correct answer went into a month that was not shown.)

*#15 P1 Figure out a number pattern that uses a number over 100

#18 G1 Not Released

#30 N4 Not Released (continued)

OPEN RESPONSE

Criteria: Fewer than half of our students got a 2.

#12 G7 Use 3 given shapes to create a rectangle and trace it. Now put the same three shapes together to make a quadrilateral that is NOT a rectangle. Trace how the shapes should fit together.

#14 N4 Understand that a fourth of something is smaller than a third or one half of something that is the same size and shape.

SHORT ANSWER

*#23 N13 Not Released

TARGET ACTIONS BASED ON TEST ITEM ANALYSIS-GRADE 3

ELA:

- 1) Give students **direct instruction** on how to read nonfiction texts for information. Model answering questions related to nonfiction texts. Use the *thinking out loud* instructional strategy, then let students try answering some on their own. Discuss the accuracy and effectiveness of their answers, making corrections that show good, better, best responses. Talk to your library media specialist about specific nonfiction texts you can incorporate into your curriculum to support different content areas, and make sure your classroom library is well-stocked with these and other nonfiction texts. Ask your building Reading Specialist or Title I Reading Tutor to share ideas about how to strengthen nonfiction comprehension.

MATH:

- 1) It seems as if the Dept. of ESE wants to ensure that students have a firm understanding of the ideas *behind* the mathematical concepts they are learning about. In question #12, they are requiring them to physically show evidence of their understanding of the terms rectangle and quadrilateral by manipulating and tracing shapes on their answer sheets. In question #14, they have to draw or explain their answer that involves fractional parts. Give students lots of opportunities to manipulate objects for the purpose of demonstrating their understanding of mathematical concepts to you in the classroom

AREAS SHOWING STRENGTH OR IMPROVEMENT

ELA

Questions requiring interpretation/understanding of fiction and figurative language showed strong scores.

MATH

Students showed strong understanding of the following concepts:

- Rounding to the nearest 10
- Completing an algebraic equation
- Inferring information from charts and graphs
- Addition with carrying
- Accurately transposing information from a line plot to a bar graph

**GRADE 4 MCAS ANALYSIS- SPRING 2009
ENGLISH LANGUAGE ARTS AND MATH**

NUMBER OF STUDENTS ASSESSED

English Language Arts: 288 Total (98%), 50 students with disabilities, 7 limited English proficient, 37 low-income
Math: 292 Total (100%), 50 students with disabilities, 7 limited English proficient, 37 low-income

PERFORMANCE LEVEL PERCENTS

Note: Numbers in parentheses indicate actual number of students.

MELROSE	2006	2007	2008	2009	STATE	2006	2007	2008	2009
<u>ELA</u>									
Advanced	8	12	10	12		8	10	8	11
Proficient	45	53	49	51		42	46	41	42
Needs Imp.	42	32	37	29		39	34	39	35
Warning	5 (13)	4 (10)	5 (12)	7(19)		12	10	13	11
<u>MATH</u>									
Advanced	14	21	24	17		15	19	20	16
Proficient	37	36	31	40		25	29	29	32
Needs Imp.	39	38	39	35		45	39	38	41
Warning	10(24)	5 (10)	7 (18)	8 (20)		15	14	13	11

PERFORMANCE LEVEL NOTES

- 1) In ELA, our percentage of Proficient and Advanced students has increased over last year by 4%. However, numbers in the warning category have increased as well.
- 2) In Math, although we see a decrease in the percentage of students in the advanced category, our percentage of students reaching Proficient or above has increased over last year. We see a slight increase in the number of students in the warning category.

PERFORMANCE LEVEL RESULTS FOR SELECTED SUBGROUPS

English Language Arts: The majority of subgroups, including low-income, had the majority of scores fall into the Proficient and Needs Improvement categories. Students with disabilities had the majority of scores evenly divided in the Needs Improvement and Warning categories.

Math: The number of CPI points for all of our major subgroups increased this year. Performance was up in Math for subgroups.

SUBJECT AREA SUBSCORES AND ITEM TYPES

In English Language Arts, proper use of English grammar and good sentence construction was again a strength. Percentages for topic development and open response were at or close to the state average. 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, data analysis, statistics, and probability was our strongest area. Measurement was our lowest area. Performance on all types of questions, including open response and short answer improved over last year.

GRADE 4 TEST ITEM ANALYSIS: MCAS SPRING 2009

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.

#1 S15 Why does the author ask questions in the first paragraph?

#11 S15 Comparison using figurative language

#15 S11 Theme- What lesson did a character learn in the story?

#23 S17 Not released

OPEN RESPONSE

Criteria: Fewer than 50% of our students got a 3 or 4.

*#9 S13 Nonfiction Use info from the selection to tell how experiences from the academy help kids understand what it is like to be in space.

*#17 S11- Fiction Why does reading to the class make Ida feel happy and scared at the same time?

#27 S17- Not released #36 S13 Not released (continued)

MATH

MULTIPLE CHOICE

Criteria: 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.

10 SP Select the best use for a line graph

*#11 NS Change a decimal to a fraction

Not Released- *#21 N.4, *#22 M.4, #27 D.6, *#30 P.1, #38 N.13, *#39 N.3

SHORT ANSWER

Criteria: Close to or more than half of our students left it blank or received a score of 0.

*#5 NS Change words to a decimal in the hundredths.

*#12 SP Calculate the number of possible combinations from a visual display (Did not meet criteria, but was lower than the state.)

Not Released - #24 M.2, #34 P.3

OPEN RESPONSE

Criteria: More than 50% of our students got less than a 3 or 4.

*#36 G.2 Not released

TARGET ACTIONS BASED ON 2009 TEST ITEM ANALYSIS

ELA

- 1) Consistently ask students questions that necessitate inferring information that is not directly stated in the selection. Then ask them to explain their answer using evidence from the story.
- 2) Take advantage of any opportunity while reading with students to discuss the author's craft and why he/she is using a particular technique in his/her writing (e.g., use of visual imagery, use of personification, use of questioning etc.)
- 3) Use questioning which causes students to analyze the characters and lessons learned in a fiction story.

MATH

- 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 STRENGTH/IMPROVEMENT

ELA

- 1) Nonfiction comprehension seems to be much stronger at this grade level. Share your ideas to increase this skill with Grade 3 teachers at your joint grade level meeting.

MATH

- 1) Students showed better performance on questions involving computing probability and flipping shapes drawn on a graph.
- 2) Percents correct for questions involving inverse operations and circle graphs were also strong.

GRADE 5 MCAS ANALYSIS- SPRING 2009
ENGLISH LANGUAGE ARTS, MATH, SCIENCE AND TECHNOLOGY/ENGINEERING

NUMBER OF STUDENTS ASSESSED

ELA: 277 Total, 53 students with disabilities, 6 English language learners, 46 low-income, 2 alt. assessment
 Math: 277 Total, 53 students with disabilities, 6 English language learners, 46 low-income, 2 alt. assessment
 STE: same as above

PERFORMANCE LEVEL PERCENTS

Note: Numbers in parentheses indicate actual number of students.

ENGLISH LANGUAGE ARTS:

	<u>Melrose</u>				<u>State</u>			
	2006	2007	2008	2009	2006	2007	2008	2009
Advanced	28	21	15	20	15	15	13	15
Proficient	43	57	56	51	44	48	48	48
Needs Improvement	24	18	25	23	31	28	30	29
Warning	5 (12)	4 (8)	4 (11)	6 (16)	9	9	8	8

MATH:

Advanced	25	11	22	29	17	19	22	22
Proficient	29	37	33	35	26	32	30	32
Needs Improvement	33	39	32	27	34	31	30	29
Warning	13 (33)	14 (36)	13(38)	9 (23)	23	18	17	18

STE:

Advanced	24	11	17	23	17	14	17	17
Proficient	35	45	39	38	33	37	33	32
Needs Improvement	35	39	35	32	39	37	38	39
Warning	6 (15)	5 (13)	9(25)	7(18)	11	12	12	12

PERFORMANCE LEVEL NOTES

ELA

We see a nice jump back up in our Advanced category this year, although the total percent of students proficient and above has remained fairly consistent. The highest number of students in the Warning category were in the 216-218 range.

MATH

We see our highest percentage of students scoring advanced or proficient and our lowest percentage in the warning category since 2006.

STE

We see a nice increase in the percent of students scoring proficient or above in STE this year.

PERFORMANCE LEVEL NOTES FOR SELECTED SUBGROUPS

ELA: The performance of all subgroups except students with disabilities improved in ELA this year.

MATH: In Math, the performance of all our subgroups improved again over last year.

STE:

The performance of our subgroups in STE this year either improved or stayed approximately the same in comparison to last year.

SUBJECT AREA SUBSCORES

- 1) We exceeded the state in ALL subject area subscores this year at this grade level.
 - 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, patterns, relations, and algebra was our highest area, while measurement was lowest. This needs to be a district-wide focus in Math for the next several years.
 - 4) In Science, as we saw last year, earth and space science was our weakest area with physical sciences being our strongest.
- (continued)

ITEM TYPE

Students performed better on multiple choice than open response questions. However, we surpassed the state on open response questions in all areas tested. In comparison to last year's performance, we also improved our open response question performance in both ELA and Math. Students' open response Math performance was greatly improved over last year. This was mentioned in last year's report. Thank-you for your concentrated efforts.

TEST ITEM ANALYSIS

GRADE 5: MCAS SPRING 2009

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.

*#7 LA Choose the best definition of organism.

#11 LT What does paragraph 1 suggest about the attic?

#13 LT Why are Caddie's cheeks flushed?

The following items were not released: *#19 S17, #31 S8, #40 S 4.

OPEN RESPONSE

Criteria: Over 50% of our students did not receive a 3 or 4.

#9 LT Based on the article, explain why fireflies are interesting.

#17 LT Describe Caddie's character traits based on the story.

The following items were not released: #27 S14, #36 S13.

ELA TARGET ACTIONS

- 1) In two out of three multiple choice questions, students had to use information from a *particular* part of the selection and base their answer **ONLY** on that part. Looking at the answers our students chose, it seemed as if they were thinking about the selection *as a whole*. Teachers need to make sure students understand that when the question asks them to refer to a particular part of the selection, they base their answer **ONLY** on that part.
- 2) Make sure that students have a bank of words they can use to define character traits (e.g., kind, selfish, mean, generous, thoughtful etc.) and understand how to pair each trait up with details from the story.

MATH:

MULTIPLE CHOICE

Criteria: More than 25% of our students got the following questions incorrect.

#6 Order of operations involving multiplication of decimals

#9 The sum of the measure of angles in a triangle is 180 degrees.

#10 Choose the correct 3-dimensional shape constructed from 5 faces.

*#15 Choose the correct point on a number line and understand that $.2 =$ one fifth.

#17 Understand how the term, "**constant speed**" is visually shown on a graph depicting the ascent of a hot air balloon.

The following items were not released: #21 N7, #29 N4, #30 P5, #31 N5, #37 N13.

SHORT ANSWER

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

None

OPEN RESPONSE

Criteria: Over 50% of our students did not receive a 3 or 4.

#25 ME Not released

#27 GE Not released

MATH TARGET ACTIONS

- 1) Constant speed is visually represented as a recurring pattern on a graph. Make sure that students can depict the concept of constant speed on a graph using graph paper, and can choose which graphs **depict** constant speed.
- 2) Many of our students chose the second dot on a section of a number line when the question asked them to locate 10.2. They did not translate the $.2$ to one fifth of that section of the number line. Make sure that students take the sections that are depicted on a number line into account and **MORE IMPORTANTLY**, understand the fractional values they represent. (continued)

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.

#2PS Identify which of 4 things carries the sound of a bell to a student (vibrating air vs. radio waves).

#9 PS Identify which of the following changes is caused by **removing** heat (a liquid changes to a solid).

*#11PS Identify which of the following materials in the diagram is acting as an insulator rather than a conductor.

#16PS Choose which of 4 things the pictured device could best be used for (a magnet).

#3 ES Understand that the term, "luster" refers to the dull or shiny quality of a mineral.

*#4ES Understand that **pressure** (not erosion) causes granite to change to gneiss.

#17 ES Understand that the gulf stream makes the temperature **warmer** not cooler.

Not released: #23 ES13, *#24ES10, #27LS6, #28ES4, #29TE2.4, #34TE1.3, #38LS3

OPEN RESPONSE

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

#18 TE Describe 2 design problems with a book case and suggest appropriate changes.

#19 LS Classify animals from a tide pool, describe their main characteristic, and describe 2 differences between them and bivalves, gastropods, and crustaceans.

#30 LS 11 Not released

#31 ES 14 Not released

SCIENCE TARGET ACTIONS

- 1) In #2, although students might associate waves with sound, the word, "radio" does not make sense in the context of the question and does not belong. This is a good test-taking strategy to teach students. Have them check to make sure that **all** parts of the answer they choose make sense.
- 2) In many of the questions above (especially the multiple choice), *hands-on investigations* would help to clarify and strengthen the concepts shown in the text. Make sure you are taking the time to incorporate hands-on experiments into your instruction. Most of you are doing this and understand that it is a critical component of science.

AREAS OF STRENGTH/IMPROVEMENT

ELA: Students continue to exhibit strong comprehension of poetry.

MATH: Students did well in answering short answer AND multi-part open response questions in Math at this grade level. They also did a great job of answering the question that involved the calculation of volume. This was mentioned in last year's report. A strong understanding of exponents, mean, and probability was also exhibited.

SCIENCE AND TECHNOLOGY/ENGINEERING: Students did very well on questions involving the water cycle, animal adaptations, and animal characteristics (including inherited characteristics).

**GRADE 6 MCAS ANALYSIS- SPRING 2009
ENGLISH LANGUAGE ARTS AND MATH**

NUMBER OF STUDENTS ASSESSED

ELA: 300 Total, 53 students with disabilities, and 4 English language learner, 52 low-income (100%)

MATH: 301 Total, 54 students with disabilities, 5 English language learners, 52 low-income (100%)

PERFORMANCE LEVEL PERCENTS

Note: Numbers in parentheses indicate actual number of students.

ENGLISH LANGUAGE ARTS

MELROSE	2006	2007	2008	2009	STATE	2006	2007	2008	2009
Advanced	17	8	18	16		10	9	15	16
Proficient	63	69	56	54		54	58	52	50
Needs Improvement	18	20	21	24		28	25	24	24
Warning	2 (3)	3 (8)	5 (13)	6 (16)		8	7	8	9

MATH

MELROSE	2006	2007	2008	2009	STATE	2006	2007	2008	2009
Advanced	27	23	23	25		17	20	23	24
Proficient	29	38	34	35		29	32	33	33
Needs Improvement	26	28	27	27		29	28	26	27
Warning	17(42)	11(28)	16(44)	13 (38)		25	20	18	16

PERFORMANCE LEVEL NOTES

- 1) In English Language Arts, we see some movement of students from Proficient and Advanced to Needs Improvement and Warning. The highest percent of those in the warning category were in the 216-218 range.
- 2) In Mathematics, our percentage of students in the Advanced and Proficient categories *increased* with the number of students in the warning category decreasing.

PERFORMANCE LEVEL RESULTS FOR SELECTED SUBGROUPS

In English Language Arts, the overall performance of our students with disabilities and low-income subgroups declined this year.

In Math, the overall performance of our students with disabilities and low-income subgroups declined. The performance of our African American population and other subgroups not related to AYP (such as male, female, non-low-income, and non-Title I) *increased*.

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 along with Patterns, Relations, and Algebra were our highest areas this year. Number sense and patterns/ relations/ algebra were both tie for second. Measurement, at both the state and local levels, was the weakest area.

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. However, we improved our performance on open response questions in BOTH content areas at this grade level. Keep up your focused efforts on comprehensively answering open response questions.

Test item analysis and specific target actions are listed on the following page.

TEST ITEM ANALYSIS, GRADE 6: MCAS SPRING 2009
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.

#4 LT Understanding text-When are siblings most often rivals?

#13 LT Understand the purpose of personification

The following items were not released:

#20 S14, *#22 S14, #26 S5, *#34S5, #38 S12

OPEN RESPONSE

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

#9 LT Based on the nonfiction article, explain how siblings can work together.

#18 LT Based on the passage about Thoreau, tell how his experiences helped him appreciate nature.

#27 S18 and #36 S13 -Not released

ELA TARGET ACTIONS BASED ON 2009 TEST ITEM ANALYSIS

- 1) Although our performance on open response questions improved, make sure that students are consistently incorporating the wording of the question into their responses (e.g., Based on the article, siblings can work together by). This will help them clarify their thinking and focus their writing.
- 2) Make sure students can identify and give examples of personification.
- 3) More collaboration and communication between regular and special education staff must take place around common academic goals for all students.

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.

#11SP Calculate the total number of outfits with a white shirt possible using the tree diagram shown.

*#14 PR Choose the graph that shows the total number of words typed and the amount of time it took.

*#15 GE Calculate the distance between two points using fractional units.

Not Released- #28 N7, *#33 N14, #34 N1, *#35 M3, #36 P7, *#37N13, #38 N15

SHORT ANSWER

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

None of the released items!

OPEN RESPONSE

Criteria: More than half of our students did not receive a 3 or 4.

None of the released items! Excellent job!

MATH TARGET ACTIONS BASED ON 2009 TEST ITEM ANALYSIS

Of the items that were released, all of the questions that proved difficult for our students this year involved using graphic displays (number lines with labels, tree diagrams etc.). Give students lots of direct instruction on how to analyze and use ALL the information in a graphic display to get the correct answer out of a variety of multiple choices (some of which are close).

AREAS SHOWING STRENGTH AND/OR IMPROVEMENT

ENGLISH LANGUAGE ARTS

Students are getting much more competent at inferring information from nonfiction, and poetry. Continue your efforts to utilize higher level questioning techniques as an integral part of your instruction. Your efforts are paying off.

Vocabulary was also strong.

MATH

Students did a good job of calculating the area of a visually displayed garden. This has been difficult for them in the past.. They also did well on questions involving estimation of distance, solving algebraic equations, finding the range of a set of numbers, and working with negative numbers on a number line.

GRADE 7 MCAS ANALYSIS - SPRING 2009
ENGLISH LANGUAGE ARTS AND MATH

NUMBER OF STUDENTS ASSESSED

ELA: 299 Total, 42 students with disabilities, 4 limited English proficient, 47 low-income, (100%)

MATH: 298 Total, 42 students with disabilities, 4 limited English proficient, 47 low-income, (99%)

PERFORMANCE LEVEL PERCENTS

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

ENGLISH LANGUAGE ARTS

	MELROSE				STATE			
	2006	2007	2008	2009	2006	2007	2008	2009
Advanced	15	14	12	17	10	9	12	14
Proficient	66	69	68	66	55	60	57	56
Needs Improvement	15	13	17	13	26	23	23	23
Warning	4(8)	4 (7)	2(6)	4(10)	9	8	8	7

MATH

	MELROSE				STATE			
	2006	2007	2008	2009	2006	2007	2008	2009
Advanced	12	24	16	10	12	15	15	16
Proficient	37	33	35	33	28	31	32	33
Needs Improvement	31	28	31	39	33	30	29	30
Warning	20 (48)	15(38)	17(43)	18 (52)	28	24	24	21

PERFORMANCE LEVEL NOTES

ELA: The percentage of Grade 7 students scoring in the advanced category continues to rise. The percentage of students in the warning category however, rose slightly as well.

MATH: This is the third year in a row that Math scores have declined at the Grade 7 level. Additional Math coaching and professional development for both regular education and special education staff should take place in the 2009-2010 school year. The National Council of Teachers of Mathematics is having their national convention in Boston this year. It will be important for Middle School staff, or at least the secondary math department chairperson to attend and bring back information to discuss and implement with regular education and special education staff.

PERFORMANCE LEVEL RESULTS FOR SELECTED SUBGROUPS

ELA: Students with disabilities had the majority of their scores in the Needs Improvement and Proficient categories; however, they had a higher percentage of students in the warning category this year than last year, thus their overall number of CPI points declined. Our low-income subgroup had the highest percentage of their scores in the proficient range. We saw this last year as well.

MATH: With the exception of our low-income students, the performance of all other AYP subgroups declined at this grade level. Thirty students with special needs were in the warning category. The Director of Curriculum will be meeting with the Director of Special Education to come up with viable solutions to address this continuing pattern.

SUBJECT AREA SUBSCORES:

- 1) We met or surpassed the state in all subject area subscores in ELA at this grade level.
- 2) In Math, we fell below the state in the following reporting categories: Number Sense, Geometry, Measurement, Short Answer, and Open Response.
- 3) In English Language Arts, our topic development statistics in the area of composition continue to be our lowest area. The actual compositions of your students are available to you through the mcasservicecenter and now the Dept. of ESE's Data Warehouse websites. (Please see your building principal for access.) Creating transparencies of compositions (with names deleted) and regularly reviewing exemplars in light of the composition scoring rubric, will help students model their own compositions after the exemplars. It will also help them analyze and evaluate their own work. Accurate self-evaluation is an important life-long skill that we can nurture in students through this activity.
- 4) In Math, measurement was our lowest scoring area. Data analysis/statistics/probability was our strongest strand for the third year. (continued)

ITEM TYPE

In English Language Arts, open response question performance improved over last year, however, it still continues to be our weakest item type.

In Math, students were most successful in answering multiple-choice questions.

TEST ITEM ANALYSIS GRADE 7 MCAS SPRING 2009

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.

#3LT Understanding nonfiction text- How does yoga tone the internal organs?

#10 LT Symbolism- What is the significance of, "the little tower of stones?"

#14 LT Inference in fiction-Why is it significant that the prisoners fought for books?

Not released: #23S14, #28S13

LANGUAGE

None!

OPEN RESPONSE

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

None! Good job!

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

#3 NS Evaluate an algebraic expression that includes a number cubed.

*#5 PR Compute the weight of a marble on a scale given other information.

*#6PR Based on information shown in a table, choose the correct statement that shows the cost of renting a canoe.

*#7NS Given a number, select its equivalent form displayed in scientific notation.

*#8NS Select an equivalent expression (involving mixed numbers) to prove an equation is true.

*#9PR Select the equation that shows the relationship depicted in the graph. (Students had to look at the number of tickets sold and the actual amount of money collected for those tickets in order to figure out the answer to this question.)

*#12PR Select the table that shows the correct prize amounts in a contest. (Students had to know how to figure out the percent of a number and then subtract it from an original number.)

*#15 SP Interpret spinners to predict the possibility of an outcome.

Not Released: *#18P5, *#20G2, *#25N4, *#26M3, *#31M1, *#34N9, #36G6, #37M1, #38N2

SHORT ANSWER

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

#4PR Evaluate an algebraic expression with one variable (involving a decimal).

*#21N1 Not released

OPEN RESPONSE

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

#14GE Calculate the degree measure of angles of a transversal.

*#17ME Calculate the area on the faces of a rectangular prism (block of wood).

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

TARGET ACTIONS BASED ON TEST ITEM ANALYSIS: GRADE 7, MCAS 2009

ENGLISH LANGUAGE ARTS

- 1) Make sure you continue to use a good balance of fiction vs. nonfiction in your instruction.
- 2) Include fiction and nonfiction texts that use *symbolism* to beautifully enhance the meaning of the story and the feelings of its characters.

MATH

- 1) On the majority of test questions that were released, our students performed at a rate lower than the state average. This pattern was seen last year as well. While subgroup performance may be a part of this issue, actual instruction and materials will be observed and analyzed this year by the secondary department chair, director of curriculum, and possibly the special education director as well. Grade 7 students should be utilizing the after-school Math help available to them.
- 2) How and when is the concept of scientific notation being taught? This needs to be an agenda item at the next middle school math department meeting to ensure that the concept is being covered in a timely and thorough fashion.
- 3) When answering questions involving graphs, encourage students to avoid the pitfall of quickly looking at the graph intervals to figure out the question. They need to look at the **labels** associated with each portion of the graph and use those labels to help them extract information from and interpret the graph correctly. (See #9 above.)
- 4) Caution students to make sure that they think about (and perhaps even write down) the *number of steps* involved in analyzing information in a table. In question #12, students had to figure out the percent of a number but then had to use subtraction as well to get the desired answers.

AREAS SHOWING STRENGTH/IMPROVEMENT

ENGLISH LANGUAGE ARTS:

- 1) Excellent job of refocusing efforts, as requested in last year's report, on increasing achievement on open response questions at this grade level. Using the scoring guides for each open response question seemed to help you achieve your goal. Continue to expose students to the scoring guides and have them work in groups or individually to write responses that reflect the criteria.
- 2) Students showed evidence of strong comprehension of non-fiction texts, and the ability to infer information from fiction texts.

MATH:

- 1) Students continue to show strong ability to use and get information from stem and leaf plots.
- 2) Understanding of the concept behind negative numbers was also strong.

GRADE 8 MCAS ANALYSIS- SPRING 2009
ENGLISH LANGUAGE ARTS, MATH, SCIENCE AND TECHNOLOGY/ENGINEERING

NUMBER OF STUDENTS ASSESSED

English Language Arts: 255 Total, 39 students with disabilities, 8 limited English proficient, 47 low-income, (99%)
 Math: 256 Total, 39 students with disabilities, 8 limited English proficient students, 47 low-income, 2 alt. assessments (99%)
 Science and Technology/Engineering: same as Math above

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

	MELROSE				STATE			
<u>ENGLISH LANGUAGE ARTS</u>	2006	2007	2008	2009	2006	2007	2008	2009
Advanced	14	19	16	21	12	12	12	15
Proficient	72	69	70	64	62	63	63	63
Needs Improvement	12	11	10	12	19	18	18	15
Warning	1 (3)	1(2)	3(7)	2 (6)	7	6	7	6
<u>MATH</u>								
Advanced	14	17	30	17	12	17	19	20
Proficient	39	36	28	36	28	28	30	28
Needs Imp.	28	29	26	32	31	30	27	28
Warning	19 (51)	18(46)	16 (40)	16(40)	29	25	24	23
<u>SCIENCE AND TECH./ENG.</u>								
Advanced	3	4	3	5	4	3	3	4
Proficient	30	40	49	38	28	30	36	35
Needs Improvement	56	42	39	46	43	44	39	40
Warning	12 (32)	14(36)	9(23)	10 (26)	25	24	22	21

PERFORMANCE LEVEL NOTES

ELA
 We see a nice increase in the percent of students scoring in the Advanced category this year in ELA, although our total percent of students proficient and above has remained fairly consistent for the past 4 years. Three of the 6 students in the Warning category were within 4 points of Needs Improvement

MATH
 While in the Spring of 2008, we saw a large *increase* in the percent of students reaching the advanced category, this past year, our percentages dropped back to scores more consistent with our performance in 2006 and 2007. Students filtered from the Advanced category back into the Proficient and Needs Improvement categories.

STE
 Science and Technology/Engineering also saw an overall decrease in the percentage of students scoring Proficient or above. Our percentage of students in the Warning category is, however, much better than the state's.

PERFORMANCE LEVEL RESULTS FOR SELECTED SUBGROUPS

ELA
 The performance of our subgroups at this grade level fell this year in ELA.

MATH
 Performance of our subgroups fell as well in math, with the exception of the following 2 subgroups: girls and non-low income. Girls outperformed boys in math this year at this grade level.

STE
 The highest percentage of scores for all subgroups this year fell in the Needs Improvement category with the exception of girls. Their highest percentage of scores fell in the Proficient category and their overall performance improved slightly, outscoring boys. Performance of all other subgroups decreased.

SUBJECT AREA SUBSCORES

As last year, we surpassed the state in ALL subject area subscore categories.

ELA: This year, our performance was once again much stronger in the Language category.

MATH: At this grade level, Number Sense and Data Analysis/Statistics/ Probability were our two strongest areas. Geometry and measurement were our weakest strands as they were for students across the state for the fourth year.

STE: Students' performance in earth and space science improved in comparison to last year's scores. This was mentioned in last year's report. Thank-you for your efforts. Our weakest area was technology and engineering and our strongest area was life science. This was reflected at the statewide level as well.

(continued)

ITEM TYPE

ELA: Although performance was down slightly, still, on 2 out of 2 open response questions that were released, 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, INCLUDING sending information to teachers at the elementary Grades 3-5 levels.

MATH: Students did not show continued improvement on open response questions this year. Performance on short answer questions, which typically involve concrete calculations, did improve however, and in fact received the highest percentage of points this year.

STE: Multiple-choice questions still had the highest percent of answers correct. It is interesting to note that the 2 open response questions that our students had the most difficulty with were in the technology/engineering strand. This obviously impacted and is related to our subject area subscore performance in technology and engineering.

* 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 2009

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.

*#4 LT Nonfiction character inference- What is the *most* likely reason that Mrs. Carpenter kept the object for so long?

#5LT Nonfiction- Author's source of information-Which of the following sources does the author rely most on?

The following items were not released: #19LT, #24LT

OPEN RESPONSE

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

None! Good job!

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.

*#1ME Find the area of a pictured parallelogram. (Many students did not divide by 2.)

*#2GE Given a pyramid, what is the total number of edges? (Many students did not use all of the information in the picture.)

*#3NS Given the mean of 4 tests, calculate their sum.

#6NS Given an expression involving a negative number, choose an equivalent one. (The majority of students who got this incorrect just put the negative sign in front of another number.)

#8NS Inverse operation question involving a fraction divided by a whole number ($4/5$ divided by $3=4/5$ times $1/3$)

*#15ME Change yards to feet.

#17ME Change feet to meters given the formula. (Many of the students who got this incorrect multiplied instead of divided. They need to be taught about examining the reasonableness of their answer given the information presented. For example, if there are, as the example states, 3.28 feet in ONE meter, your answer is NOT going to be larger than the 38 feet which the problem states the cow currently measures.)

The following items were not released: #19N.6, #21G.6, *#23D3, *#24N.4, #25P10, #26D4, *#35P.1, #36P.5, #37P.7, *#38N.10

OPEN RESPONSE

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

#11SP Calculate the probability of a spinner landing in a section where the spinner is divided into 2 equal colored sections.

#14PR Given a model situation, write an expression and inequality to represent it.

SHORT ANSWER

Criteria: Over half of our students did not get a 1.

None! Good job!

(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

*#8 Choose the container that is filled with a pure substance vs. a mixture. (Many of our students chose air rather than helium.)

#13 Given a circumstance, choose the graph that shows how the water temperature most likely changed.

#16 Tell why the picture shown CANNOT be used to tell that matter is conserved.

#18 Identify the boiling point as a property of water.

LIFE SCIENCE

#7 Classify bacteria as a decomposer.

#12 Determine how a skin cell is similar to an amoeba.

#14 Identify the purpose of chromosomes.

#17 Select the products that are a direct result of photosynthesis.

EARTH AND SPACE SCIENCE

#4 Understand the result of movement of crustal plates.

#6 Understand the term conduction in relation to the transfer of heat.

TECHNOLOGY AND ENGINEERING

None of the released test items met the criteria, however, the following items were not released and did meet the criteria:

#23LS9, #24ES12, *#26ES6, #27PS2, #28TE5.3, *#31ES2, *#32PS2, #33ES7, #34PS12, #35LS1, #37PS7.

OPEN RESPONSE

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

#9 ES Name and describe the force that is responsible for the motion/creation of the planets, then describe 2 other effects this force has in our solar system.

#19 TE Identify the properties and subsystems of a labeled scooter.

The following were not released #38PS10, #39 TE1.3.

TARGET ACTIONS BASED ON 2009 TEST ITEM ANALYSIS

ENGLISH LANGUAGE ARTS

As I stated last year, our students are doing well in ELA at this grade level.

Continue to have them infer information about characters in the stories they are reading. Also, make sure that they understand what the term, "first person accounts" refers to when it is used to indicate a resource that an author might use (as opposed to a book or written record).

MATH

Teachers need to assist students in doing the following if they are to improve their Math scores:

- Make sure they are using ALL of the information in any visual display given BEFORE they choose the correct answer.
- Make sure they know formulas and processes for changing units of measurement (e.g., yards to feet, feet to meters, finding the area of a parallelogram).
- Make sure they understand that when working with equations involving negative numbers, the negative sign cannot be changed to another number without having a resulting impact on the equation.
- Teach them to examine the reasonableness of their answer given the information presented. (See #17.)

(continued)

SCIENCE AND TECHNOLOGY/ENGINEERING: TARGET ACTIONS

1) LIFE SCIENCE

- Students should thoroughly understand the process of photosynthesis.
- Students should know the characteristics of a decomposer and be able to classify bacteria as a decomposer.
- Students should know the purpose of chromosomes and understand that information contained within them is hereditary.

2) EARTH SCIENCE:

- Students should understand the power of the force of gravity and be able to identify the effects it has on our solar system.
- Students should be able to define and demonstrate conduction in relation to heat transfer.
- Students should understand the effects of crustal plate tectonics and movement.

3) PHYSICAL SCIENCE

- Students should understand the difference between a pure substance and a mixture. They should be able to correctly classify and give examples of each.
- Students should be able to identify having a boiling point as a property of water as well as understand the effect a change of temperature will have on water.

4) TECHNOLOGY AND ENGINEERING

- Students should be able to analyze and understand the purpose and function of labeled parts of a machine then identify and relate them to the appropriate subsystems (e.g., propulsion, control, guidance, suspension).

AREAS SHOWING STRENGTH/IMPROVEMENT

ELA

In relation to the items that were released, students scored very well on vocabulary questions, comprehension questions, and questions involving the interpretation of symbolic actions by characters in the story. The latter has been mentioned in recent past reports. Thank-you for your efforts.

MATH

In relation to the items that were released, students did a good job on questions involving finding the range of ages depicted on a stem and leaf plots, changing fractions to percents, and evaluating a numeric expression that included a number cubed.

STE

In relation to items that were released, students had a strong understanding of the capabilities and advantages of CAD (computer aided design). They also understood the effect of weightlessness in space.

**GRADE 10
MCAS ANALYSIS-SPRING 2009**

NUMBER OF STUDENTS ASSESSED

ELA: 220 Total, 27 students with disabilities, 6 limited English proficient, 32 low-income (100%)

MATH: 220 Total, 27 students with disabilities, 6 limited English proficient, 32 low-income (100%)

SCIENCE: (Grade 9&10): Biology: 112 Total, 12 students with disabilities, 2 limited English proficient, 12 low-income
Introductory Physics: 139 Total, 35 students with disabilities, 3 limited English proficient, 20 low-income

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

MELROSE

ELA	MELROSE				STATE			
	2006	2007	2008	2009	2006	2007	2008	2009
Advanced	26	35	36	52	16	22	23	29
Proficient	55	50	52	42	53	49	51	52
Needs Imp.	15	12	11	5	24	24	21	15
Failure	3 (3)	4(9)	2 (3)	1(2)	7	6	4	4

MATH

Advanced	34	55	51	60	40	42	43	47
Proficient	39	30	30	21	27	27	29	28
Needs Imp.	19	11	16	13	21	22	19	18
Failure	8 (13)	4 (9)	3 (5)	5 (12)	12	9	9	8

BIOLOGY

	2007	2008	2009
Advanced	14	26	29
Proficient	36	54	52
Needs Improvement	33	11	14
Failing	17	10 (11)	5 (6)

PHYSICS

Advanced	2	2	2
Proficient	40	46	51
Needs Improvement	45	41	32
Failing	13	11	15 (21)

NOTE: Beginning with this year's graduating class, 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 106 out of 112 Grade 9 and 10 students take and pass Biology. We also had 118 out of 139 students take and pass the Introductory Physics test. Three seniors still need to pass a Science test and will be taking the test again in February and/or June of 2010.

PERFORMANCE LEVEL NOTES

- 1) In English Language Arts, we have seen consistent growth and achievement over the past 4 years. This year, 94% of our students attained proficient or advanced on the ELA section of the MCAS.
- 2) In Math, we see a nice jump in the percent of students attaining Advanced status, however our percentage of students in the failing category increased slightly as well.
- 3) Performance in Biology continues to improve for the third consecutive year. While in 2007, we had 50% of our student population reaching proficient or advanced, last year that percentage jumped to 81%.
- 4) In Physics, if we look at the percentage of students reaching Proficient or Advanced, we see an increase as well, although the number of students in the failing category also increased. (continued)

PERFORMANCE LEVEL SCORE RESULTS FOR SELECTED SUBGROUPS

ELA: The highest percentage of scores for **all** subgroups, fell into the proficient or advanced categories. All subgroups, with the exception of students with disabilities, met their CPI target of 90.2. Students with disabilities were close to meeting the target, with an 88.9. The English Department at the High School, with the leadership of the Department Chairperson, should continue to collaborate and work together with the Special Education staff for the benefit of students on IEPs. Boys improved their performance from last year, but scores were still slightly lower than girls.

MATH: Subgroup performance decreased or stayed relatively the same. Students with disabilities and African Americans had the most difficulty with this test. Performance of boys and girls was even this year.

BIOLOGY: Although only 6 out of 112 students failed, the Biology test was most difficult for students with disabilities and low-income. For all other subgroups, the majority of scores fell into the Proficient or Advanced range.

PHYSICS: The Physics test was again a more difficult one statewide. The majority of all subgroups fell into the Needs Improvement and Proficient ranges. It proved most difficult for our students with disabilities.

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 Dept. of ESE's informational sessions on this topic.

SUBJECT AREA SUBSCORES

ELA: All subject area subscores surpassed the state. With the exception of Open Response questions, all subject areas subscores also improved over last year. Open Response performance stayed the same. The use of standard English conventions in composition was our strongest area. Our weakest area was topic development, but again, performance did improve over last year.

MATH: All subject area subscores surpassed the state. Measurement was our highest area for the second year. The Math department's **continued** 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. Geometry and Patterns/Relations/Algebra were tie for our weakest areas. Use monthly department meeting time to examine the geometry strand for coverage tied to released item questions.

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

ITEM TYPE

ELA: Percentages for all types of items (multiple choice, open response, and the writing prompt) surpassed the state. Multiple choice and writing prompt points were close to tie for highest percentage of points earned for the second year. Our students' performance on open response questions stayed the same as last year (which had improved 10 percentage points from the previous year).

MATH: Your continued efforts to improve math open response performance resulted in open response questions coming in first place this year. Short answer questions, which involved actual student computation, were a close second.

SCIENCE: Not reported

(continued)

TEST ITEM ANALYSIS FOR GRADE 10: SPRING 2009 MCAS

ELA

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.

#4LT Understanding of the concept of mindfulness in a nonfiction piece

#9LT Understand the symbolism of aging snow in a story (deterioration of life)

#15LT Understand the word, "authority" and transfer its meaning to a mythical character's actions

*#24LT Be able to discern what a paragraph tells the reader about the future

#28LT Comprehension in nonfiction (What does paragraph 2 tell you about the human body?)

#38LT Why do you think the poet uses Spanish terms in the poem?

LANGUAGE

None Good job!

OPEN RESPONSE

Criteria: Over 50% of our students did not get a 3 or 4

None Open response question performance was strong again!

MATH

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.

#4PR Find the picture that represents the graph of the number line showing the stated inequality. (The inequality included an absolute value.)

#10 PR Find the expression equivalent to the difference of two polynomials. (Many of our students forgot to apply the fact that 2 negatives make a positive.)

*#12PR Given an equation, find the slope of a line.

#24PR Estimate the value of principal plus compound growth. (Many of our students forgot to figure in the compound growth factor.)

#29PR Find another point on a line, given the slope and a point on it.

#32PR Find a total number given its percentage value and percent.

#35PR Compute the slope of a line on a coordinated grid.

#37PR Find the inequality represented by a graph.

#5ME Find the *least* actual value corresponding to a rounded value.

#28ME Determine ratio of areas of two circles, given ratio of radii.

#34ME Compute the area of an irregular polygon having right angles.

#36ME Find the shape having an area equal to a parallelogram.

#6NS Find the approximate value of an expression with square roots.

#11 NS Evaluate an expression having a root and an exponent.

*#25NS Find the expression equivalent to the product of two exponentials.

#8GE Identify a polygon based on the number of its diagonals.

*#30GE Find the corresponding side of similar triangle, given the other.

#38GE Find the transformation that transforms one image to another.

#40GE Find the hypotenuse of a right triangle given its legs.

#41GE Work with points on a triangle on a coordinate grid (finding length, midpoint, and if the lines are parallel).

#26SP Find probability of selecting a point on an area model.

#27SP Use the graph to determine the number of minutes Danielle's speed was greater than 14 mph.

#39SP Find the scatterplot whose line of best fit has a slope of 2. (Many of our students chose letter A which showed a line with a slope going from 5-10. In order to correct their thinking, ask them to explain why (continued)

they chose letter A as opposed to the other choices. Show them why this was NOT the correct answer, and explain why D (which showed a line with a slope going from 6- a little more than 8) WAS the correct answer. This will prevent repeat mistakes of a similar nature in the future.)

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.

*#20NS Evaluate and compare expressions having exponents and roots.

#21PR Graph lines, find their slopes and equations.

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

#5 What percentage are patterned vs. plain offspring? (Students needed to understand the meaning and effect of something being *homozygous and dominant*.)

#19 What happens to alleles of gene pairs under Mendel's law of segregation? (Students needed to know that segregation was a key word in the question and choose the answer that included its synonym, which was separation.)

AP= Anatomy and Physiology

#30 Which statement best compares sensory & motor neuron function? (The key word in the question was **best**.)

#42 Emphysema damages which part of the respiratory system? (Many of our students said bronchi instead of alveoli.)

BC=Biochemistry and Cell Biology

#1 Understand the meaning of osmosis.

*#3 In which ways does a bacterial cell differ from animal cell?

#4 Understand how enzymes benefit cellular reactions. (They speed up the cell's reaction time.)

#7 Choose best visual representation of *prokaryotic* cell structure.

#8 Understand that lipids are primarily used for long-term energy storage.

#14 Understand the effect of photosynthesis in water under intense light.

#20 Understand that ATP is critical because it can *transfer energy*.

#31 Understand the limitation of viruses in regard to reproduction. (They can only reproduce inside the host cell.)

EC=Ecology

#18 Be able to pick out the best example of mutualism.

#25 Select the human activity that **reduces** biodiversity.

#36 Which fish population on the graph shown would most likely have declined due to acid rain? (Many students just picked the fish that had the longest bar on the graph. They had to pay attention to the information in the accompanying paragraph that spoke about the low tolerance of the minnow to withstand acidic water conditions.)

#40 Understand the effects of decomposition in relation to the release of carbon into the atmosphere.

EV= Evolution and Biodiversity

#10 Which conditions most likely existed allowing the lemur to evolve?

#21 Know that lobsters and spiders are classified in the same kingdom if they are in the same phylum.

#26 Understand that rock and water pipits are classified as **separate species** because of their inability to reproduce with each other.

#41 Understand that geographic isolation can lead to speciation due to the fact that in isolation, gene pools cannot mix.

(continued)

OPEN RESPONSE

Criteria: more than half of our students did not score a 3 or 4.

#12EV Describe scenarios that would show the evolution of a feature due to natural selection. (Most students scored 2.)

#44BC Describe mitosis and identify one function of it. (Most students scored 1.)

#45GE Explain tune deafness in the pedigree diagram shown and draw a related Punnett square. (Most students scored 2.)

INTRODUCTORY PHYSICS

MULTIPLE CHOICE

Criteria: More than 75% 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

Our average item score was LOWER than the state's on all motion and force questions.

- *#1 Which is the best example of work being done. (Many of our students chose D. They are equating work with effort. They need to realize that if there isn't any resulting motion, then it cannot be classified as work.)
- *#14 Which visual pattern of dripping oil shows a car slowing down?
- *#15 Explain how a swung golf club obeys law of conservation of energy. (Many of our students chose C. They needed to read carefully and check the reasonableness of their answer.)
- *#16 Choose the example of a vector quantity.
- *#19 Describe forces for a rolling cart per Newton's laws of motion. (Many of our students chose B and C. They needed to use information and text (specific words such as weight) directly stated in the scenario before choosing their answer.)
- *#24 How much work is done in applying a force that produces no motion? (Again, no motion equals no work.)
- *#25 Which would change a circular path to a straight-line path?
- *#26 Which movement of a weight at a rate and time requires most power? (Students needed to deduce that the child who weighed the most but climbed the stairs *in the least amount of time* would need to exert the most power or effort. Many just chose the child who weighed the most and did not pay attention to what was included in the column designating amount of time.)
- *#27 Interpret velocity graph to determine distance traveled by a car. (Many students chose an answer which indicated they did not carefully read the labels on the graph depicted.)
- *#36 What is the net force on a moving ball that is accelerating? (Students needed knowledge of a formula and the ability to apply it to a given situation.)
- *#37 Which object has the greatest momentum?
- *#38 Which describes the energy of a sled over a hilly course?
- *#43 Why is it easier to keep an object sliding than to start it? (Students needed to understand that kinetic friction is less than static friction.)

WV=Waves and Radiation

- #4 What type of wave is created in a spring wiggled sideways? (Students needed to know the difference between a longitudinal and transverse type of wave.)
- #6 Describe visible spectrum of light as seen by human eye (in relation to the color of frequencies).
- *#11 What can be inferred from electromagnetic waves reaching Earth?
- *#21 Describe an electromagnetic wave with a long wavelength (in terms of frequency and how it travels).
- *#30 What type of wave exhibits an electric field and a magnetic field? (Students needed to know the characteristics of a transverse wave.)
- *#35 Which is an example of nonharmonic motion? (nonharmonic=particles colliding)

HT=Heat and Heat Transfer

- *#3 Why is the temperature change zero for two objects in thermal equilibrium? (Students needed to know that the objects would be the SAME temperature.)
- *#8 Compare amount of heat to raise temperatures a fixed amount in metals (using a graphic display of information).
- *#9 Why do droplets form on the outside of an ice water glass on a hot day? (Use ALL of the information given to choose the correct answer. The **cold** glass was a key factor in the answer.)
- #13 What question is studied by melting wax on blocks being heated? (continued)

EM=Electromagnetism

#5 Which circuit behaves the same as a given circuit?

*#17 How would a 42V car battery be more useful than a 12V battery?

#18 Which occurs when a balloon is rubbed against a sweater? (Students needed to understand the difference in how negatively charged particles behave and how positively charged particles behave. Many of our students chose positively charged particles rather than the correct negatively charged particles.)

*#31 Which change in a circuit will result in an increase in current?

*#33 Ohm's law predicts what (in regard to the current) as voltage across a resistor is decreased?

*#39 Which circuit component converts chemical to electrical energy?

*#40 Which will most increase attraction between paint drops and a car? (Our students did not see distance as an important factor in the problem.)

#42 Which electromagnetic shock absorber provides greatest lift?

OPEN RESPONSE

Criteria: more than half of our students did not score a 3 or 4.

*#12MF Describe attractive force on various Earth satellites.

*#44MF Compare weight and power as two athletes lift weights.

*#23EM Describe forces and motion of charged objects.

*#32HT Describe energy and temperature as water is mixed.

#45WV Describe sound waves propagating in air and steel.

TARGET ACTIONS BASED ON 2009 TEST ITEM ANALYSIS

ENGLISH LANGUAGE ARTS

- 1) Continue and even increase collaboration with the Special Education staff for the benefit of all students on IEPs.
- 2) Encourage students to use context clues to verify that they have chosen the **best** answer according to the selection.
- 3) Students are maintaining their improvement in regard to the skills of character analysis and inference. Continue your efforts in this area. As stated last year, there is an added benefit to teaching this skill. 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 encourage empathy. This ties in nicely with our efforts to reduce bullying statistics at the middle and high school level as a result of looking at the Youth Risk Behavior Survey data, which was also administered in the Spring of 2009.

MATH

1) For 5 weeks prior to the MCAS, take one strand each week and review key formulas and procedures. Students should keep information from this review in a notebook **organized by strand with each page labeled with the focused skill** so that they can study at home prior to the test. Listed below are examples of the concepts by strand (from this year's analysis) which could be included in the notebook. This is by no means a complete list, but a start.

PR- How to figure out the slope of a line on a coordinated graph

How to find the slope of a line, given an equation

How to graph an inequality including an absolute value

ME- How to find the areas of irregular polygons and parallelograms

How to find area given radii

How to find the least actual value

NS- How to find the value of expressions containing square roots

How to find the value of expressions containing exponents

GE- Draw examples of transformations

Practice finding the hypotenuse

SP- Find/show the scatterplot whose line of best fit has a particular slope

Show examples of how to figure out the probability of selecting a particular point on an area model (continued)

2) Continue and even increase collaboration with the Special Education staff for the benefit of all students on IEPs.

BIOLOGY

Making sure students have a strong understanding of key concepts will allow them to transfer that understanding to more specific situations and increase their chances for success on individual questions.

Broad concepts this year which seem to need strengthening include:

GE- **Vocabulary** relating to genetic behavior (e.g., homozygous, alleles, segregation, Punnett Squares)

AP- The functional difference between sensory and motor neurons

The digestive system and the function of its parts

BC- The role of enzymes and lipids

ATP

Photosynthesis

Virus reproduction

Mitosis

EC- Mutualism

Biodiversity

Decomposition

EV An understanding of the results of isolation and/or classification

Conditions that lead to evolution

Characteristics that are a result of adapting to specific conditions.

PHYSICS

The Director of Curriculum will be meeting with the Science Dept. Chair and Physics staff to investigate why our scores in this area are for the most part, below the state average. Motion and force has again proved to be our students' most difficult area. Is the problem in alignment, materials, or test-taking skills? As indicated in the test item analysis section, the issue in many questions seemed to be in students not checking for the reasonableness of their answer, or in not using all the information that was presented in visual form. Although most of the students who took the test passed, we want to make sure our students are getting a program that is strong in all aspects.

Concepts this year which seem to need strengthening based on the item analysis include:

Motion and Force

- The concept of work related to motion
- Newton's laws of motion
- Application of formulas for figuring out distance in relation to velocity
- Figuring out net force in relation to acceleration
- An understanding of momentum
- An understanding of kinetic vs. static friction

Waves and Radiation

- The colors of frequencies
- The characteristics of different types of waves (especially transverse and longitudinal)
- Nonharmonic motion

Heat and Heat Transfer

- An understanding of thermal equilibrium
- An understanding of conduction

Electromagnetism

- An understanding of the difference in the behavior of positively vs. negatively charged particles and how that presents in everyday objects/occurrences
- An understanding of Ohm's law
- The behavior of electric currents in a variety of circuits.

(continued)

AREAS SHOWING STRENGTH/IMPROVEMENT

ELA:

- 1) Open response performance continues to improve and be strong.
- 2) There was **noticeable improvement** in better understanding the author's craft.
- 3) There was good performance on questions involving the skills of inference and character analysis. I know you have been working consistently on these.
- 4) There was evidence of good comprehension of all of the following genres: nonfiction, fiction, poetry, and myths.
- 5) There was good understanding of vocabulary in context.

MATH:

While this was a difficult test, our students showed confidence in the following skills:

- Comparing measures of an angle from a transverse line
- Using simultaneous linear equations to find an unknown
- Evaluating algebraic expressions given one value
- Working with areas of semicircles
- Finding the *sides* of a parallelogram
- Answering multi-part questions involving mean, median, and mode
- Estimating square roots
- Working with points on a triangle on a coordinated grid (Focused efforts were requested on this last year. Thank-you!)
- Given a rule, finding a designated number
- Finding the expression equivalent to a polynomial expression

It is also worthy to note that students did very well on Open Response questions in Math. On 4 out of 5 Open Response questions, over half of our students received a 3 or 4.

BIOLOGY:

Students performed well on questions that involved:

- Choosing the elements that would most likely be found in a plant tissue
- Choosing the most likely leaf pattern result of crossing two plants with codominant alleles
- Discerning what would be the consequence of the wetland's destruction
- Identifying producers and secondary consumers
- Determining the correct energy pyramid from a food web
- Understanding the role that DNA plays in helping us study evolutionary changes
- Understanding the result of mutation
- Choosing the correct statement about parental genotypes as they examined a Punnett Square
- Understanding that nerve cells emit electrochemical signals to communicate to each other
- Identifying proteases as enzymes, based on the stated purpose
- Understanding the effect that seedlings would have on the decrease of nitrogen in the soil (due to absorption).

PHYSICS

Students performed well on questions that involved:

- Calculating the speed of blocks on a frictionless surface
- Choosing the diagram that showed light reflecting from a plane mirror surface
- Determining what happens to gravitational potential energy as a pendulum swings
- Choosing the correct example of electromagnetic waves.

These same areas were strong last year as well.

SUMMARY OF THOUGHTS SPRING MCAS 2009

ELEMENTARY SUMMARY AND SHORT-TERM GOALS

- **In English Language Arts**, we see an overall incremental increase in the percent of students scoring proficient or above from grade to grade at the elementary level. This pattern actually continues through Grade 10.
- We continue to see good results of efforts to improve students' understanding of non-fiction and poetry. While all elementary grades have shown improvement, Grade 3 students still have the most difficulty with non-fiction texts. Continue to increase non-fiction exposure, especially at the Grade 3 level, and have students practice locating information from specific parts of the nonfiction text.
- When designing questions for use during reading, consistently include questions that involve character analysis and lessons learned by characters within the story. These involve higher level thinking skills and are frequently related to questions on the MCAS.
- In an effort to improve Open Response question performance at the elementary level, we will be offering some targeted professional development, hopefully by in-house secondary staff members who have had proven success in this area. Elementary staff should take advantage of this opportunity to improve student achievement on open response questions.
- **In Math**, we have seen an overall improvement of elementary Math scores since our adoption of the Harcourt Math series.
- Teachers (especially at the Grades 3&4 levels) should make sure they are using the student manipulative and reteach materials/activities for students who need support. This supports our recent focus on differentiated instruction and meeting the needs of all learners. Collaboration with special education staff to make sure they have access to and are using the same materials is imperative.
- Open response question performance in Math was very good at the Grades 4&5 level. While Grade 3 student performance was better than the state on all questions, it was still not strong. In both of the released open response questions on the Grade 3 Math test, students had to manipulate shapes and draw pictures, but they also had to have an understanding of fractional parts and what the term, *quadrilateral* meant. When covering these topics in your curriculum, make sure you are giving students opportunities to visually represent their thinking so that they can easily transfer and apply that same skill to the MCAS test.
- More practice is needed at the Grades 4&5 level in changing fractions to decimals and decimals to fractions.
- Grade 5 students should have a clear understanding of the term, *constant speed* and be able to answer questions related to it. This has appeared on the majority of the most recent Grade 5 MCAS tests and is consistently difficult for our students.
- Examine the curriculum sequence for the previous two bulleted topics to ensure that students have time to study them in depth prior to the MCAS.
- **In Science**, we saw a nice increase in the percentage of students reaching Proficient or Advanced this year.
- An increase in hands-on investigations to answer essential questions, especially in the area of earth science and electricity is needed.
- **In all content areas**, model the think out loud strategy to answer questions that prove to be difficult for our students. Encourage them to do the same for the purpose of creating pathways in their brain that they can call on in the future. Part of the process should include the ability to try something *different* if they are not successful the first time.

MIDDLE SCHOOL SUMMARY AND SHORT-TERM GOALS

- **In English Language Arts**, the overall percent of students reaching Proficient or Advanced *increased* with each grade level.
- The Middle School English Department, with the Guidance of the Department Chairperson) has worked very hard to improve open response performance and definitely met their goal. Students also showed strong skills in the areas of vocabulary development, comprehension and analysis of text (including nonfiction and poetry), inference, and interpretation of symbolic actions by characters.
- Make sure students can identify *and give* examples of personification. (continued)

- All middle school staff in all content areas should make sure that students have a good understanding of the variety of sources we use throughout our life to gather information (e.g., first hand accounts, primary sources, secondary sources). Utilize your Library Media Specialist to reinforce this concept as you have students work on assignment which involve purposeful decisions about the best resources to use for specific tasks.
- **In Math**, we see Grade 6 students outscoring the other 2 grade levels. It is interesting to note that this grade level is now using the Harcourt Math series as a result of the success of a pilot program at that level 2 years ago. Students who were in Grade 6 during the Spring 2009 testing period also had the benefit of having the program at the elementary level prior to their arrival. We had discussed purchasing the Grade 7 component of the program, but due to budget constraints, could not do it this year. We should make it a priority to continue the middle school version of the adoption as soon as possible.
- The skills included in the strands of data analysis and statistics/ probability were strong at the middle school level in Math. Students also showed good performance on stem and leaf plot questions, finding range, and working with cubed numbers.
- Upon examination of actual test questions and student responses, it seemed as if our middle school students are NOT doing two things which are negatively effecting their performance. 1) They are not checking their answers to make sure they are *reasonable* in light of the given information. 2) They are not carefully looking at and using all of the VISUAL information that is given to them in the problem. Helping students do a better job with these two skills may dramatically improve their scores.
- We recently sent a Math teacher from each middle school grade level to the National Council of Teachers of Mathematics (NCTM) Conference in Boston. Each staff member who attended should present newly acquired information to their colleagues at upcoming Math department meetings so that all staff members (and ultimately students) can benefit.
- **In Science, Technology and Engineering** this year, we did not see the same consistent growth in the percent of students reaching Proficient or Advanced that we have seen for the past 3 years. This was reflected at the State level as well, however, their percents remained the same while our decreased. While this may have been a more difficult test than in previous years, (and tied to the state's efforts to prepare middle school students to pass one of the High School Science and Technology/ Engineering tests that, starting this year, are a requirement for graduation) the following concepts were difficult for our students and should be examined in terms of curriculum sequence and coverage: photosynthesis, the study of chromosomes, materials that promote conduction of heat , and the properties/subsystems of machines.
- Students DID show improvement in their understanding of concepts related to Earth and Space science. This was mentioned in last year's report. Thank-you for your focused efforts.
- Life Science understanding was strong.
- **In all content areas assessed at this grade level** subgroup performance was low. We need to promote the current movement toward co- teaching and take a thorough inventory of the methods and materials our middle school special education staff is using with small groups.

HIGH SCHOOL SUMMARY AND SHORT-TERM GOALS

- **In English Language Arts** we AGAIN see a good increase in the percent of students reaching Proficient or Advanced since 2006. We have gone from a total of 85% to 94%!
- Performance on questions involving inference, analysis (including character analysis), comprehension of all types of texts, and vocabulary was strong.
- Open response question performance was strong.
- There was a noticeable improvement in the student's understanding of the author's craft. This was mentioned in last year's report. Thank-you for your efforts. Continue to give students opportunities to be authors themselves, so that they will be more aware of the countless deliberate choices authors make each time they create a piece of literature.
- **In Math**, we see another nice jump of students who are reaching the Advanced category. This percent has increased from 34%-60% since 2006!
- Open response question performance in Math has improved at this level due to increased efforts and positively impacts students' scores. (continued)

- Performance was also strong this year on questions involving transverse line angle measurement, linear equations, polynomial expressions, and evaluating algebraic expressions.
- Concepts that need additional focus and review include: finding the area of parallelograms and irregular polygons, evaluating expressions containing square roots and exponents, and finding the slope of lines. Pre-assessments for these specific concepts (which have come up in the past) should be given to students for the purpose of tailoring instruction to the exact area of confusion. (continued)
- For 5 weeks prior to the MCAS, High School Math staff should take one strand each week and review key formulas and procedures. Students should keep information from this review in a notebook organized by strand with each page labeled with a focus skill so that they can study at home prior to the test. See the High School Math target actions within this document for an example. Math teachers should also make efforts during this time period, to differentiate their instruction through the use of technology. Using student response clickers during Math class would help teachers assess students immediately following the review of a concept. They could then differentiate their instruction accordingly, providing extra support or advancement as necessary. The middle school may be willing to collaboratively share sets of student response clickers on a sign-out basis for HS Math staff until there are enough funds to purchase several sets for the High School Math Department..
- **Science Technology/Engineering**
- **In Biology** we see a good increase in the percent of students who are scoring Proficient or Advanced from 2007 (50-81%). This year, the number of students in the failing category also decreased.
- Broad concepts which need strengthening include: vocabulary relating to genetic behavior (e.g., homozygous, Punnett Square), the digestive system (This came up last year as well.) , the different types of cell structures, the role of enzymes, mitosis, mutualism, ATP, the difference between sensory and motor neurons, and how characteristics change as a result of adapting to specific conditions
- Students had a strong understanding of the concepts of DNA, mutation, food webs and resulting energy pyramids, environmental consequences due to stated events.
- **In Physics**, we also see a nice increase in the percent of students reaching Proficient or Advanced since 2007 (42-53%), however, the number of students in the failing category increased as well. This test was especially difficult for the students with disabilities who took it. We will need to give them additional support prior to the retest in February.
- The questions on motion and force consistently came up with scores lower than the state average. I will be meeting with the Science Dept. Chairperson and the Physics staff to investigate why this is the case. Is the problem in alignment, materials, or test-taking skills? The issue in many questions, as stated in the target action section, seemed to be in students not checking the reasonableness of their answer, or in not using ALL the information presented in visual form.
- Students performed well on questions relating to: the calculation of speed, the reflection of light, gravity, and electromagnetic waves.

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

- A movement toward co- teaching and a thorough inventory of methods and materials our special education staff is using at all levels, but especially at the middle school level to address subgroup performance
- Choosing and using supplementary materials for measurement district-wide
- Open response question performance improvement at the elementary level

This should include targeted professional development by secondary staff members who have been successful in addressing this challenge with a systematic approach to answering this type of question along with promoting students' ability to self-evaluate their responses based on a scoring guide.

- Additional professional development and materials in Science to promote hands-on Science investigations, a spirit of inquiry, and student achievement in this content area.

Winthrop School staff, who had recent professional development in this area, did extremely well in Science on the 2009 MCAS. They need to share their knowledge base and instructional strategies with other elementary and middle school staff. (continued)

- Use of the Elementary Library Media Specialist to support nonfiction comprehension efforts in K-3 classrooms
- District-wide efforts of all staff to incorporate the following test-taking strategies into their instruction:
 - a) Check the reasonableness of your answer
 - b) Analyze and use **all** information in a graphic display to get the correct answer out of a variety of answers, *some of which are close*
 - c) Write down/paraphrase the steps involved in extracting the required information from a table or chart
 - d) If a question refers you to find an answer **in a particular part of the story**, use **ONLY** that part! Do not think about the selection as a whole.
 - e) Pay attention to and read, then think about, all visual display labels.
 - f) Consider the purchase of a video series focused on test-taking strategies that teachers (especially in Grades 4-8) could incorporate into their instruction on an annual basis prior to the MCAS, based on the specific needs of each group of students. (e.g., Some students may need to focus on checking the reasonableness of their answer while other groups need to focus on paying attention to all labels in a visual display.)
- Consistent proactive budget planning to address and resolve the need for additional curriculum related materials when needed
- Consider the continuation of a new Math series at the Grades 7&8 level to replace Math in Action, in addition to infusing instruction with new methods and strategies
- Increasing teacher awareness of performance trends related to gender for the purpose of improving instruction for all students. Looking at the past 5 years of data in relation to CPI scores for male and female subgroups, the following trends were evident:
 - a) Boys in Grades 3&4 (only) did consistently better in Math.
 - b) Girls did consistently better in ELA in Grades 3-10.
 - c) Boys scored higher than girls more frequently (current year excluded for Grade 8) in Grades 5&8 Science and Technology/Engineering.
- Use the Student Growth Percentile information to monitor district, grade level, classroom, and individual growth
- As always, strive for consistent movement toward Proficient and Advanced without **any** students in the Needs Improvement and Warning/Failing categories.

We can accomplish more with collaboration than with co

We can accomplish more with collaboration than with competition.

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