



## Lincoln Public Schools

Mary L. Sterling, Ph.D.  
Assistant Superintendent of Schools

To: Becky McFall, Superintendent  
From: Mary Sterling  
Re: Recommendation for Shift in Middle School Math Program Structure  
Date: April 18, 2013

I am writing to summarize the conversations that you, Sharon Hobbs, middle school math teachers, and I have had this year regarding planning for our middle school math program and to recommend a shift in program structure.

Since 2009 when we adopted the *Impact Mathematics* program for grades 6-8, we have implemented it with fidelity and our students have produced some strong results. The Lincoln School scores on mid-term and final exams have been robust and the 2012 MCAS scores for Lincoln School 8<sup>th</sup> graders were the highest they have been in the last five years. On the Hanscom campus, the scores have not been as strong – primarily due to high turnover – but we see some positive trends in the Student Growth Percentile (SGP) for students who have been with us at least two years. We have made some adjustments in materials at Hanscom on an as-needed basis, depending on the needs of students at a given grade.

In recent years, two issues have pushed our thinking towards some shifts in program: new standards and the needs of high performing math students. As you know, in 2011-12 we began work on adjusting to a new set of state math standards, which are aligned with the National Common Core Standards. Making decisions about shifts in program to ensure good alignment has required much research, thought and time because published math programs like *Impact Mathematics* are not “lined up” with the new standards and the state has not been clear about program and assessment expectations at the grade 8 and high school levels. However this spring, we have come to the conclusion that we need to revise our grade 8 Algebra I course so that the course matches the anticipated higher level of expectations for Algebra I at the high school level. While we are not sure when the high schools will make changes in their courses, we want our students to be prepared when that time comes. This decision to increase the expectations in Algebra I at grade 8 means that we need to prepare seventh graders by offering a course with higher expectations in grade 7 and create options at grade six for entry into the grade 7 extended course.

A program structure that offers courses which extend *Impact* program beyond *Impact* program expectations for a given grade level will not only create opportunity for students to meet the higher state standards, it will also address the other issue we are concerned about: the needs of high performing math students. Over the years, we have addressed those needs in a number of ways, often by providing weekly challenge options in each grade level section (Math Forum), academic extensions (Math Counts), and extra-curricular options (Math Olympiad). Occasionally, we have tried to meet these needs through acceleration, and have arranged for a

very small number of students to skip forward to take a math course a year ahead of their current grade. This option has not worked as well as we would have liked because the scheduling is difficult and the social adjustment is problematic for some students. More importantly, the math teachers at Lincoln/Sudbury High School have not seen positive results from students who were accelerated: they see gaps in knowledge and lack of deep reasoning compared to other students in the high school courses who were not accelerated. Our conclusion is that we need to phase out the practice of acceleration and to revise our program structure to offer more challenging options in grades 6, 7 and 8 so that we will reach a broader number of students who may be able to perform at high levels and ensure strong performance and preparation for the high school.

I recommend that we continue using *Impact Mathematics* as our core mathematics program in grades 6-8 but that we change our course structure to offer more support for students to reach the standards at a given grade level and to offer more challenge to students ready to prepare for and succeed in a high school level Algebra I course in grade 8. The chart below depicts all courses possibly offered at each grade level, starting in the 2013-14 school year. On an annual basis, decisions about which courses will be offered will be made based on the achievement of students in the earlier grades.

<b>Grade 6</b>	Course 1 w/support	Course 1	Course 1 Extended with topics from Course 2
<b>Grade 7</b>	Course 2 w/support	Course 2	Course 2 Extended with topics from Course 3
<b>Grade 8</b>	Course 3 w/support or PreAlgebra at HMS	Course 3	Algebra I (High School level)

Students in grade six would be grouped in a supported Course 1 section so they can meet the course expectations, a strong grade 6 Course 1 section, or in a section that is extended with topics from the grade 7 course (*Impact* Course 2). At grade 7, three options would be offered: Course 2 with support, a strong grade 7 Course 2, and Course 2 extended with topics from *Impact* Course 3. This shift in program would continue in grade 8, and would take place over

the next two years because students would need to be prepared for the more rigorous Algebra I course for 8<sup>th</sup> graders in 2014-15.

With the involvement of math teachers on the Lincoln campus, Dr. Hobbs and I have been working on the transition plans and the placement procedures. Teachers have developed a first draft of descriptions for each course at all three grades which describe the content of the course and the characteristics of students who would find the course an appropriate challenge. We have also drafted an initial timeline depicting when teachers would describe the course offerings to students and then send recommendations for placement to families, along with the course descriptions. We are also working with the fifth grade team to develop an approach to placement and a timeline at that grade level. I have also been working with Mr. Ledebuhr to develop a placement process and timeline for students at Hanscom Middle School.

If these recommendations are accepted, we would have much work to do. We will need to finalize the course descriptions and enact a reasonable timetable to send course information and placement recommendations to families. Given the possible changes, we would want to allocate enough time this spring for students and their parents to have conversations with teachers and the principal about the placement recommendations, if desired. Also, our teachers would need time to work on the content for each course to ensure good coherence grade-to-grade a high level of demand in the courses for students who are capable of handling the extended option. As the courses are revised, the report card descriptors would also need adjustment. Finally, teachers would need time to adjust the grade level assessments to match any changes in the topics in a given course. I feel confident that if our district moves forward promptly on a decision about this proposed program structure, we can support teachers in finding time and working collaboratively on the course content and assessments both during the remainder of this school year and during the summer. We would also need to set aside time for continued collaborative work among math teachers and math specialists next year in order to sustain the changes and ensure high quality courses.