

## **Recommendation for K-5 Mathematics Program**

Stamford Public Schools has selected **Everyday Mathematics** (McGraw Hill/Wright Group) as the K-5 Mathematics Program for all 12 SPS Elementary Schools, to be implemented in two phases: grades K-2 in September 2007 and grades 3-5 subsequently. A thorough and comprehensive process was followed to arrive at this decision.

### **I. BACKGROUND**

Seven years ago, Math Central, published by Houghton Mifflin, was adopted as the SPS K-5 math program. Over time, some SPS schools chose to adopt different math programs (e.g., Voyages (Metropolitan) and Math Expressions (Houghton Mifflin)). These program adoptions were funded by individual schools, not through a district-wide adoption process. Other schools opted to integrate additional math resources into their Math Central (Houghton Mifflin) program and focused on creating CMT preparation units. The lack of a consistent math program created the potential for issues among students who transferred between schools and limited the amount of district-wide professional development in math. Based upon analysis of performance data and reports from area colleges enrolling SPS students, SPS leaders recognized the need for a math program that would prepare all SPS students for success in college mathematics.

During 2007, C&I staff used the book, Choosing a Standards Based Curriculum—developed by the K-12 Mathematics Curriculum Center at Education Development Center, Inc., and supported by a National Science Foundation grant—as a reference for selecting a math program. This book guided us through several recommended steps, and helped us structure the function and resources necessary for the steering committee.

### **II. COLLEGE BOUND DISTRICT PROGRAM**

Our College Bound District Program, funded through the generous partnership with the GE Foundation, will support common math and science curriculum implementation for all students. The College Bound outcomes include improving student conceptual understanding, and preparing all students to be successful in Algebra I by the end of eighth grade through both material selection and improved teacher content knowledge and pedagogy. The GE Foundation worked with Pearson Achievement Solutions, Steve Leinwand of AIR and other College Bound districts to design a 'world class' rigorous, standards-based program to be utilized by districts participating in the grant program. SPS participated in the design phase of this process and met with Pearson in January 2007 to review the planned pilot units. It became clear that Pearson would not be ready to provide pilot materials for use in September 2007. Given SPS's need to begin the implementation process this fall, SPS leaders immediately launched a process to adopt new math curriculum materials during the 2007-08 school year.

### **III. PILOT VERSUS IMPLEMENT**

The term “piloting,” according to the Education Development Center that published the guide for Choosing a Standards Based Mathematics Program, can mean the early stages of implementation OR the early stages of the selection process. We have chosen to use the term to mean the early stages of implementation in which we will monitor carefully the early efforts of our teachers in K-2. Working first with K-2 staff, we will prepare for a full –scale implementation in subsequent years.

Also, because we have visited numerous sites and interviewed dozens of users in other districts—providing us with a veritable naturalistic laboratory—we have selected a program and gone directly to the implementation phase. At this time we will be able to focus more heavily on making the curriculum work instead of having to decide whether the curriculum will work. Much research has demonstrated that most of the programs we reviewed can be successful if proper implementation and teacher support are provided. We feel we have enough information to make the selection without taking a year or more to try out each program in Stamford.

We will see the materials in action with our students and identify areas needing supplementary materials and support, build teacher familiarity with the materials and processes of the curriculum, identify needs and build professional development capacity, and create a cadre of lead teachers. We expect the enthusiasm that K-2 teachers will share will be inspirational to the upper grade teachers who will be required to build on the foundation the lower grades will establish.

### **IV. STRATEGIES USED TO SELECT A MATH PROGRAM**

During the first months of the 2006-07 school year, the C & I staff worked together to review preliminary SPS Standards and Grade level expectations for grades K-8. Preliminary documents were reviewed by PIMMs (Project to Increase Mastery in Mathematics at Wesleyan University) and the GE College Bound Best Practice Task Force and Steering committees. Final drafts of the document were completed in February 2007 and were submitted with the RFPs and shared with K-5 staff in the Professional Development for both K-5 and 6-8.

## Towards a Common Math Curriculum

	<b>K-5 Math Steering Committee</b>	<b>Math Professional Development</b>	<b>Best Practice Task Force</b>
January 2007	<ul style="list-style-type: none"> <li>▪ January meeting with Pearson highlights need to open search process to additional developers</li> </ul>	<ul style="list-style-type: none"> <li>▪ Plan 6-12 hours of K-5 content PD based on CMT outcomes, to be provided by PIMMS</li> <li>▪ Sessions planned to cover Estimation &amp; Approximation; Fractions and Algebraic Reasoning</li> </ul>	<ul style="list-style-type: none"> <li>▪ Analyze and discuss student math data</li> <li>▪ Review TIMMS instructional video and compare teaching methods in several countries</li> </ul>
February 2007	<ul style="list-style-type: none"> <li>▪ Research and planning</li> </ul>	<ul style="list-style-type: none"> <li>▪ Plan 6-12 hours of content PD based on CMT outcomes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Key instructional strategies from CSDE Math Handbook</li> <li>▪ Review &amp; analyze SPS grade-level standards and expectations</li> </ul>
March 2007	<ul style="list-style-type: none"> <li>▪ RFP issued for standards-based math program for all SPS elementary schools; five bids received</li> <li>▪ Open posting to apply for Committee membership</li> <li>▪ Selection committee identifies teacher, administrator and parent members</li> </ul>	<ul style="list-style-type: none"> <li>▪ March 26: Estimation &amp; Approximation Part I with PIMMS facilitators. All K-5 teachers for 1-2 hours</li> </ul>	<ul style="list-style-type: none"> <li>▪ Begin reading and review of <i>From Standards to Success</i>: A Guide for School Leaders, by Mark R. O'Shea. This book, being used by the C &amp; I team as well, provides a framework for implementation of a standards based curriculum. Explains what 'standards-based' means and how it differs from traditional content-based lessons.</li> </ul>
April 2007	<ul style="list-style-type: none"> <li>▪ April 9: Training in Standards Based Materials Selection process – Mari Muri</li> <li>▪ April 26: Vendor presentations, followed by committee assessment of programs using criteria.</li> <li>▪ Programs responding to the RFP were:               <ol style="list-style-type: none"> <li>1. Everyday Mathematics (McGraw Hill/Wright Group)</li> <li>2. Math Expressions (Houghton Mifflin)</li> <li>3. Math Trailblazers (Kendall Hunt)</li> <li>4. Investigations in Number, Data and Space (Scott Foresman)</li> <li>5. Growing with Math (McGraw Hill/Wright Group)</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>▪ April 11: Estimation &amp; Approximation Part II</li> <li>▪ Based upon teacher response, remaining sessions redesigned to be delivered by SPS staff, concentrating on standards.</li> <li>▪ April 25: SPS grade-level standards and expectations Part I</li> </ul>	<ul style="list-style-type: none"> <li>▪ Education Trust presented Standards in Practice protocol (tools for evaluating and improving standards-based lessons and instructions)</li> <li>▪ Nineteen teacher attended the National Council of Teachers of Mathematics Annual Meeting. Focused on differentiation and standards-based instruction workshops</li> </ul>
May 2007	<ul style="list-style-type: none"> <li>▪ Vendor presentations, followed by committee assessment of the programs using criteria previously established</li> <li>▪ May 8 – Vendor Presentation and debriefing</li> <li>▪ Site visits to CT, NY and NJ schools to see programs in action</li> <li>▪ May 24 – Reports on Site visits, using a protocol, and summary evaluations submitted by committee members</li> </ul>	<ul style="list-style-type: none"> <li>▪ May 9: SPS grade-level standards and expectations Part II</li> <li>▪ May 16: All K-5 teachers invited to review math materials from all candidate programs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Recap year's study and research</li> <li>▪ Read and analyze Fullan's "<b>Leadership at the District Level</b>" from <b>Leadership &amp; Sustainability—Systems Thinkers in Action</b> in anticipation of implementation in September 2007</li> </ul>

	<b>K-5 Math Steering Committee</b>	<b>Math Professional Development</b>	<b>Best Practice Task Force</b>
June 2007	<ul style="list-style-type: none"> <li>▪ Everyday Mathematics selected by committee members</li> <li>▪ Decision informed by teacher feedback from review of math materials on May 1<sup>6</sup>th, Materials Criteria Sheets from committee members and Site visit reports.</li> <li>▪ Key factors in the decision included long track record of EM in urban districts; responsiveness of publishers to teacher feedback; rigor of program; support for differentiation; support for teacher development and content learning.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Negotiate PD provided by Everyday Mathematics</li> <li>▪ Half-day introductory PD for grades K, 1 and 2 on June 11<sup>th</sup> and 12<sup>th</sup> with additional PD plan developed for the 2007-08 school year.</li> <li>▪ Training for CASD and school based math support personnel in schools</li> <li>▪ RFP issued for consultant to provide additional support at school and Central levels to support implementation</li> </ul>	<ul style="list-style-type: none"> <li>▪ Debrief successes/opportunities for change</li> <li>▪ Plan for 2007-2008</li> </ul>
July-August 2007		<ul style="list-style-type: none"> <li>▪ SPS coaching model informs PD needed for existing elementary level (e.g., curriculum associates for staff development) to support Everyday Mathematics implementation</li> <li>▪ Training for School-based Administrative Staff about program implementation and evaluation of teachers</li> </ul>	<ul style="list-style-type: none"> <li>▪ (Summer hiatus)</li> </ul>

## V. COMPREHENSIVE MATH PROGRAM

The Everyday Mathematics curriculum represents an important component of the full SPS math program, which will also include professional development, instruction and assessment. Implementation of Everyday Mathematics in grades 3-5 will follow, along with a common math curriculum at the middle school level. In 2007-2008, middle schools will introduce intervention programs that will prepare students for success in algebra.

## VI. ELEMENTARY MATH IMPLEMENTATION PLAN 2007-08 SCHOOL YEAR

- A. C & I team and Elementary Math Curriculum Associate will work with the publishers to design an implementation packet consisting of a pacing guide that lists the order and timeline for teaching each of the units, a detailed review of each of the objectives in each grade level's curriculum and where they are covered in the new program, and a sample set of lesson plans for the first twenty days of school. Each lesson plan will include a list of materials needed and references to the teacher manual for detailed lesson instructions. This will be distributed to all K-2 teachers at the Math PD on August 28<sup>th</sup>.
- B. On August 28, the full day of district professional development, K-2 teachers will meet by grade level to continue the planning for the first month of school. The sessions will be led by the publisher's trainers who provided the initial orientation in June.

- C. Teachers in Grades 3-5 will receive orientation on August 28 to the new program components for their grade level even though they will not be implementing the program this year. Teachers will have access to vocabulary and some strategies in the new program that may be employed during this school year. They will also be encouraged to try lessons that fit with their existing program.
- D. Parent communication plan will be developed. This will include written communication with K-2 parents, along with district-wide and school-based meetings for interested parents. Meetings for parents to develop their understanding of the new program will be held during September (prior to open house nights if possible), and then at additional times during the school year.
- E. An on-going Math Steering Committee, with representation from all schools, including administrators and teachers, will be established. The work of this committee will include the planning for implementation for Grades 3-5, the preparation of pacing guides, teacher resources and other materials having to do with the adoption of Everyday Math, and the design of district-wide common assessments.
- F. At least once a month, Wednesday PD time will be devoted to on-going planning and assistance in implementing the new program for grades K-2 or for standards-based instruction in grades 3-5. Planning for this PD will be done through input from the Math Steering Committee, building administration, building staff developers and the C & I math team.
- G. Building-based support by the Everyday Math publishers' trainers will occur monthly in each building from Oct. through May. Timing and training focus will be determined by C & I team, building administration and math support personnel.

## VI. ADDITIONAL INFORMATION

Critiques of Everyday Math previous editions, and other constructivist programs:

<http://www.lilinoisloop.org/mathprograms.html>

<http://www.nychold.com/em.html>

Implementation Stories:

<http://www.comap.com/elementary/projects/arc/implementation.htm#everyday>

Background Information on Math Instruction:

[http://www.air.org/news/documents/Singapore%20Report%20\(Bookmark%20Version\).pdf](http://www.air.org/news/documents/Singapore%20Report%20(Bookmark%20Version).pdf)

## VII. APPENDICES

- A. SPS K-8 Grade Level Standards and Student Expectations (DRAFT)
- B. K-5 Math Request For Proposal (RFP)
- C. K-5 Steering Committee Posting
- D. K-5 Steering Committee Membership List
- E. Mari Muri's Steering Committee Training
- F. Schedule of Presentation Dates
- G. Materials Selection Criteria Form
- H. Site Visit and Contact Information
- I. Site Selection Questionnaire
- J. Invitation: Mathpalooza Materials Preview
- K. Teacher Materials Evaluation Form
- L. Summary of Teacher Feedback
- M. Municipalities Currently Using Everyday Mathematics

**STAMFORD PUBLIC SCHOOLS**  
**MATHEMATICS GRADE-LEVEL STANDARDS AND EXPECTATIONS\***  
**KINDERGARTEN – GRADE EIGHT**

---

**GRADE K**

**Numerical and Proportional Reasoning**

Place Value

- Identify and match sets of objects to the numerals 1-10.
- Count to and past 10 to 20, then to 30, and group and count objects by 10.
- Identify ordinal position of objects, first through fifth, and last.
- Use numbers to locate, order, label and measure.

Number Sense

- Compare sets using the terms “more,” “less” or “the same” and order sets from least to greatest.
- Act out story problems and solve practical problems using objects.
- Identify, name, and count pennies and dimes.
- Estimate the number of objects in a set using 10 as a benchmark

Fractions

- Use a variety of models to identify a whole and a half of an object and recognize that two halves can be put together to make a whole.
- Share a set of objects by forming smaller sets that have equal amounts.
- Identify sets and numbers, which are equal and one more.

**Geometry and Measurement**

Geometry

- Identify, sort and compare two- and three-dimensional shapes and such as triangles, squares, rectangles, circles, cubes, spheres, cylinders and cones.
- Describe the position, location and direction of objects using terms such as inside, outside, top, bottom, close, closer, etc.
- Compare and sequence small sets by size, length, area and volume.

Measurement

- Locate a date on the calendar (yesterday, today and tomorrow) and sequence events using terms like before and after.
- Explore nonstandard units to estimate and measure length, area and capacity.
- Compare two objects using a balance scale to identify which is heavier.

**Working With Data: Probability and Statistics**

Working With Data

- Explore ways to collect, record and organize data using tallies and lists.
- Construct real graphs and picture graphs and describe the data using the terms more, less and same.
- Identify visual, auditory and physical patterns and extend to make predictions.

**Algebraic Reasoning: Patterns and Functions**

- Sort and classify objects by a variety of attributes and describe the reason for the sort.
- Copy and extend patterns in a variety of contexts and describe the rule of the pattern.

**STAMFORD PUBLIC SCHOOLS**  
**MATHEMATICS GRADE-LEVEL STANDARDS AND EXPECTATIONS\***  
**KINDERGARTEN – GRADE EIGHT**

---

**GRADE 1**

**Numerical and Proportional Reasoning**

Place Value

- Identify, read and write numerals to 100 and beyond.
- Identify ordinal position of objects, first through tenth.
- Represent two-digit numbers using models and on number lines.
- Determine and compare values and trade with sets of pennies, nickels and dimes.

Number Sense

- Group and skip count by 2s, 5s and 10s.
- Estimate and describe quantity with benchmark amounts such as 0, 10 and 100.
- Identify 1 more and 1 less and 10 more and 10 less than a number.
- Write number sentences and use objects and pictures to model and solve addition and subtraction story problems.
- Develop, describe and use a variety of strategies to add and subtract one-digit and two-digit numbers.
- Explore concept of odd and even numbers.

Fractions

- Make a whole of equal-sized parts and identify half of a small set of objects.
- Identify and represent halves, thirds, fourths, and identify portions that are not halves, thirds or fourths.

**Geometry and Measurement**

Geometry

- Sort, name and describe common two- and three-dimensional objects.
- Create and explore shapes and designs with a line of symmetry.
- Use 2-D shapes to compose and decompose 3-D shapes.

Measurement

- Use the calendar to identify dates, days, weeks and months.
- Tell time to the hour with analog and digital clocks.
- Use estimation, physical referents, nonstandard units, and standard units of inch and centimeter to measure and compare objects for length.

**Working With Data: Probability and Statistics**

Working With Data

- Pose questions and collect, organize, record and describe data using tallies, lists, systematic counting, real graphs, picture graphs, and bar graphs.
- Use comparative language to describe the data in tables and graphs.

Probability

- Describe and explain the likelihood of various events in the students' world.

**Algebraic Reasoning: Patterns and Functions**

- Sort, classify and order objects and numbers based on one and two attributes and describe the rule used.
- Recognize, extend, describe and create a variety of patterns.

**STAMFORD PUBLIC SCHOOLS**  
**MATHEMATICS GRADE-LEVEL STANDARDS AND EXPECTATIONS\***  
**KINDERGARTEN – GRADE EIGHT**

---

**GRADE 2**

**Numerical and Proportional Reasoning**

Place Value

- Use place value models and pictures to represent, locate, label, order, compose and decompose two- and three-digit numbers. Identify 10 more and 10 less and 100 more and 100 less than a number.
- Determine and compare values of sets of pennies, dimes, nickels, quarters and dollars.

Number Sense

- Recall basic addition and subtraction facts.
- Explore and describe various strategies for representing, estimating, adding and subtracting two two-digit numbers with and without regrouping.
- Recognize when an estimate is appropriate and use estimation strategies that result in identifying a reasonable answer to a problem.
- Compare and round numbers to the nearest 10.
- Explore multiplication by extending number patterns, skip counting, combining repeated addends, building models of groups the same size and using arrays and pictures.

Fractions

- Model and describe equal parts of a whole as unit fractions  $\frac{1}{2}$  through  $\frac{1}{10}$ .
- Use models and familiar objects to estimate, compare and order simple unit fractions, including equivalent fractions.
- Recognize that the denominator of a fraction tells how many equal parts and the numerator tells how many of the parts are being considered.

**Geometry and Measurement**

Geometry

- Describe and identify plane and solid shapes and real objects found in the environment.
- Compose and decompose 2-dimensional and 3-dimensional shapes.
- Build and identify shapes that have one or more lines of reflective symmetry or that can be divided into two congruent parts.

Measurement

- Use the calendar to write and solve problems involving time.
- Tell time to the half-hour, and explore time to the quarter-hour (analog and digital).
- Develop, identify reasonable estimates, and use nonstandard referents and standard benchmarks to estimate and measure length, area, weight, capacity and volume.

**Working With Data: Probability and Statistics**

Working with Data

- Pose questions and systematically collect, sort, organize, record and analyze data using tables, charts and picture and bar graphs.
- Determine patterns, and make predictions from data using comparative terms.

Probability

- Discuss the likelihood of various events, state possibilities, make predictions and conduct probability experiments.

**Algebraic Reasoning: Patterns and Functions**

- Describe and classify data and objects based on more than one attribute.
- Explore a variety of ways to describe and write rules for patterns.

**STAMFORD PUBLIC SCHOOLS**  
**MATHEMATICS GRADE-LEVEL STANDARDS AND EXPECTATIONS\***  
**KINDERGARTEN – GRADE EIGHT**

---

- Explore and describe various increasing/decreasing or repeating number patterns including odd and even numbers.
- Use patterns and the rules that describe them to identify a missing object, objects with common or different attributes, and the complement of a set of objects.

**GRADE 3**

**Numerical and Proportional Reasoning**

Place Value

- Use models to compose and decompose representations of two- and three-digit numbers.
- Compare and round numbers to the nearest 10 and 100.
- Locate, label, compare and order whole numbers to 1000.
- Use coins and bills to show different ways to make a given amount and/or equivalent amounts of money; record using decimal notation.

Number Sense

- Use models and pictures of sets and arrays to represent multiplication and division of two- and three-digit numbers by one-digit numbers.
- Use commutative and associative properties to solve problems.
- Recall the multiplication and division facts with factors of 1, 2, 3, 4, 5 and 10.
- Write and solve multiplication and division story problems and match to number sentences (equations).
- Estimate, add and subtract with two- and three- digit numbers using a variety of strategies.
- Use estimation strategies to determine and justify the reasonableness of a computational answer, including over- and under-estimates.

Fractions, Decimals & Ratios

- Use models and pictures to represent fractions and label parts with words and symbols.
- Identify a whole as a fraction with the same numerator and denominator.
- Estimate common fractional values and measure to the nearest half unit with the aid of number lines and rulers.
- Construct and use models to identify equivalent fractions and to compare and order fractions with like and unlike denominators of 2, 3, 4, 5, 6 and 8.
- Identify patterns with equivalent ratios such as 3 out of 6 crayons are red or 4 out of 8 crayons are red are the same as 1 out of 2 crayons is red.
- Construct and use models to add and subtract fractions with like denominators and record as fraction sentences.

**Geometry and Measurement**

Geometry

- Describe, analyze, and classify 2-dimensional shapes, including number of angles and sides.
- Draw simple 2-dimensional geometric shapes and figures.
- Sort polygons and solids by the relationship of sides (parallel, perpendicular), kinds of angles (acute, right and obtuse), symmetry and congruence.
- Draw and interpret simple maps using coordinate systems.

Measurement

- Tell time to 15 minute intervals and solve problems involving time, elapsed time (15 minute increments) and calendars.
- Draw and measure lengths to the nearest inch or centimeter.
- Develop and explain strategies for using nonstandard and standard referents to estimate measurements of length, area, weight, temperature, volume and capacity.

**STAMFORD PUBLIC SCHOOLS**  
**MATHEMATICS GRADE-LEVEL STANDARDS AND EXPECTATIONS\***  
**KINDERGARTEN – GRADE EIGHT**

---

**Working With Data: Probability and Statistics**

Working With Data

- Pose questions and use a variety of ways to collect, organize and analyze data from samples and surveys.
- Display, read, interpret and draw conclusions from data collected from samples and surveys that are represented in tables, charts, lists, diagrams, line plots or bar graphs.

Probability and Statistics

- Make predictions and test them by conducting probability experiments and recording results.

**Algebraic Reasoning: Patterns and Functions**

- Sort and classify the same set of objects in more than one way and explain the reason for each sort.
- Construct, reproduce, describe and extend numerical and spatial patterns.
- Model situations that reflect mathematical relationships involving addition, subtraction, multiplication and division as open number sentences and match number sentences to story problems.
- Explore inequalities and the  $\neq$  symbol.

**GRADE 4**

**Numerical and Proportional Reasoning**

Place Value

- Build place value models, draw diagrams and show equivalent representations for two-, three- and four-digit numbers in expanded and regrouped forms.
- Solve practical problems and extend patterns involving 10 and 100 more and less than a number.
- Use place value models, diagrams, number patterns and number lines to identify, order, round, and compare two-, three-, and four-digit whole numbers up to 10,000.
- Use place value concepts, number patterns, the number line and the commutative and associative properties to develop estimation and computation strategies.

Number Sense

- Apply and explain a variety of estimation strategies in problem-solving, including making change for money amounts and whether an estimate is an over- or under-estimate.
- Use models and pictures to estimate a reasonable answer when adding or subtracting decimals, fractions and mixed numbers.
- Develop fluency with multiplication and division fact families for all factors 1 through 10 and explore the property of zero in multiplication and its implication in division.
- Relate multiplication and division to models with groups and rectangular arrays and use factors to begin to identify prime and composite numbers.
- Identify the appropriate operation and write a word problem to match a given addition, subtraction, multiplication or division number sentence and write the matching number sentence to solve a word problem.
- Identify the best expression to find an estimate.

Fractions, Decimals and Ratios

- Build and label a variety of models and pictorial representations to compare and order fractional parts of a whole, mixed numbers, parts of a set, and decimals to identify equivalent fractions/decimals.
- Estimate locations and label fractions and decimals (tenths) on number lines and rulers.
- Solve problems involving the addition and subtraction of fractions with like denominators.

**STAMFORD PUBLIC SCHOOLS**  
**MATHEMATICS GRADE-LEVEL STANDARDS AND EXPECTATIONS\***  
**KINDERGARTEN – GRADE EIGHT**

---

**Geometry and Measurement**

Geometry

- Build, draw, describe and classify two- and three-dimensional figures, including number of angles and sides of polygons.
- Analyze two-dimensional shapes and determine lines of symmetry, congruence, and classification of angles.
- Create and read maps and use coordinate systems to specify locations.

Measurement

- Convert from one unit to another when measuring time and solve problems that involve elapsed time using clocks and calendars.
- Use estimation to predict reasonable answers to measurement problems.
- Estimate, draw and measure length to the nearest inch, half-inch and centimeter.
- Identify the appropriate customary and metric units and tools for measuring length, perimeter, area, weight, time, temperature, volume and capacity.
- Solve practical problems that involve estimation and measurement of length, perimeter, and area.
- Explore relationships between the lengths of sides of rectangles and their areas and perimeters and generalize the patterns as simple formulas.

**Working With Data: Probability and Statistics**

Working With Data

- Explore a variety of ways to collect, organize record, analyze and interpret data and identify patterns and trends.
- Construct and interpret information from line plots, bar graphs, picture graphs, and simple circle graphs.
- Solve logic, counting and classification problems involving the organization of data.
- Sort or classify objects, and draw logical conclusions from data including Venn diagrams and transitive reasoning questions.

Probability and Statistics

- Conduct probability experiments and express the probability based on possible outcomes.

**Algebraic Reasoning: Patterns and Functions**

- Recognize a variety of patterns and trends including repeating and growing patterns by extending and comparing arithmetic and geometric sequences.
- Identify rules for a given pattern.
- Use variables to represent quantities in expressions and number sentences.
- Solve simple one-step algebraic equations involving addition, subtraction and fact families.

**GRADE 5**

**Numerical and Proportional Reasoning**

Place Value

- Identify, round, order and compare whole numbers (to 1,000,000) and extend to decimals using models and number lines.
- Compose and decompose numbers and use the numbers to support computational strategies.
- Solve problems involving finding 10, 100 and 1000 more and less than a number.

**STAMFORD PUBLIC SCHOOLS**  
**MATHEMATICS GRADE-LEVEL STANDARDS AND EXPECTATIONS\***  
**KINDERGARTEN – GRADE EIGHT**

---

- Develop strategies using place value relationships, inverse operation, and commutative, associative and distributive properties, to simplify computations with 2-, 3-, and 4-digit numbers and money amounts.

**Number Sense**

- Estimate products and missing factors (quotients) using multiples of 10, 100 and 1000.
- Use rectangular arrays to identify factor pairs and to classify numbers as prime, composite and perfect squares.
- Explore divisibility rules, and patterns with remainders.
- Use benchmarks to approximate locations on number lines and coordinate grids.
- Introduce the concept of integers with practical applications and on number lines.
- Use estimation to predict when an answer is or is not reasonable or if it results in an over- or under-estimate.
- Write story problems from multiplication and division number sentences using 1 and 2-digit numbers.

**Fractions, Decimals and Ratios**

- Describe the magnitude of and round mixed numbers, fractions and decimals.
- Represent a rational number in its equivalent fraction, decimal, and percent form with models and number patterns.
- Use equivalence and substitution with common denominators when adding and subtracting fractions, decimals, and mixed numbers with like and unlike denominators.
- Construct and use models and pictorial representations to multiply common fractions and mixed numbers.
- Find fractional parts of a set of objects.
- Use ratios to solve practical problems such as interpreting maps and scale drawings

**Geometry and Measurement**

**Geometry**

- Use geometric relationships (such as parallel, perpendicular and congruence) to describe the attributes of sets and subsets of shapes and solids.
- Identify and draw lines of symmetry.
- Explore the relationship between area and perimeter when the dimensions of a polygon change.
- Develop formulas to find the perimeter and area of squares, rectangles (and triangles), and develop strategies to determine the volume of rectangular prisms.
- Plot positive points on the rectangular coordinate system.

**Measurement**

- Solve problems involving conversion of measure within customary and metric systems, including time and elapsed time.
- Estimate and choose appropriate units and tools to measure and solve problems involving length, perimeter, area, volume.

**Working With Data: Probability and Statistics**

**Working With Data**

- Construct and identify correct information and draw conclusions from line plots, bar graphs, circle graphs, and stem and leaf plots.
- Design and conduct surveys and samplings to collect data that represent a general population.
- Sort or classify objects and draw logical conclusions from data, including Venn diagrams and transitive reasoning questions.

**Probability and Statistics**

**STAMFORD PUBLIC SCHOOLS**  
**MATHEMATICS GRADE-LEVEL STANDARDS AND EXPECTATIONS\***  
**KINDERGARTEN – GRADE EIGHT**

---

- Identify possible outcomes and express the likelihood of events as a fraction.
- Design and conduct probability experiments to make and test predictions of probability and fairness.
- Make and test predictions of probability and fairness.

**Algebraic Reasoning: Patterns and Functions**

- Represent geometric and numeric patterns using words, tables, graphs and equations.
- Extend and analyze arithmetic and geometric sequences and data to make generalizations and predictions.
- Solve one-step equations.
- Recognize that a change in one variable may relate to a change in another variable.
- Use patterns, models, and relationships as context for writing and solving simple expressions, equations, and inequalities.
- Develop an understanding of 'order of operations'.

**GRADE 6**

**Numerical and Proportional Reasoning**

- Identify the place value of digits in whole numbers and decimals.
- Round whole numbers, fractions, and decimals in context.
- Express whole numbers using expanded notation and regrouping.
- Add, subtract, multiply, and divide whole numbers using a variety of computational strategies.
- Identify prime and composite numbers and write a composite number as the product of its prime factors.
- Order and compare whole numbers, fractions, decimals, and integers.
- Relate fractions, decimals, and percents to each other and to their pictorial representations and visa versa.
- Add, subtract, and multiply fractions and decimals using a variety of computational strategies.
- Solve problems involving ratios, proportions and percents.
- Estimate and predict reasonable answers and recognize and explain when an estimate will be more or less than an exact answer.

**Geometry and Measurement**

- Identify similar and congruent figures.
- Draw, identify, and classify 2- and 3-dimensional geometric shapes and figures.
- Draw and identify line(s) of symmetry.
- Draw and locate points on a coordinate grid.
- Measure and determine perimeter, area, and volume.
- Recognize the relationships among radius, diameter, circumference, and area of a circle.
- Identify geometric transformations, including rotations, reflections, and translations.
- Select and use appropriate units, strategies and tools to estimate, measure, and solve problems involving length, perimeter, area, and volume.
- Solve problems involving conversions of customary or metric units.

**Working With Data: Probability and Statistics**

- Organize data and construct displays of data including bar graphs, histograms, line graphs, stem-and-leaf plots, and circle graphs.

**STAMFORD PUBLIC SCHOOLS**  
**MATHEMATICS GRADE-LEVEL STANDARDS AND EXPECTATIONS\***  
**KINDERGARTEN – GRADE EIGHT**

---

- Given a display of data, identify correct information and draw reasonable conclusions from the data.
- Solve problems involving mean, median and mode.
- Design and conduct probability experiments and make predictions about outcomes that are equally likely or not equally likely.
- Express probabilities as fractions, ratios, decimals, and percents.
- Solve problems involving elementary notions of probability and fairness including justifying solutions.

**Algebraic Reasoning: Patterns and Functions**

- Describe and extend numeric and geometric patterns; determine missing terms and write a rule to describe the pattern.
- Represent a simple linear function with a table, graph, and equation.
- Determine the nature of changes in linear relationships using graphs, tables, and equations.
- Represent numerical and contextual situations with an algebraic expression or equation.
- Write a story problem to represent an algebraic expression or equation.
- Evaluate algebraic expressions and formulas.
- Solve one-step equations.

**GRADE 7**

**Numerical and Proportional Reasoning**

- Order and compare whole numbers, fractions, decimals, and integers.
- Round whole numbers, fractions, and decimals.
- Rewrite a rational number in its equivalent fraction, decimal, ratio, and percent form.
- Explore primes, composites, factors, multiples, Least Common Multiple, and Greatest Common Factor in problem situations.
- Estimate and perform computations with whole numbers, fractions, decimals, and integers.
- Estimate to predict outcomes and determine reasonableness of results, and describe whether an estimate is an over- or underestimate.
- Solve problems involving ratios and proportions.
- Estimate and determine percent, and what percent one number is of another.
- Apply the order of operations to simplify numerical expressions.

**Geometry and Measurement**

- Draw and identify line(s) of symmetry.
- Identify, describe, draw, and classify 2- and 3-dimensional geometric shapes and figures.
- Relate 2- and 3-dimensional representations and visa versa.
- Identify and explain congruent and similar figures and make and test conjectures about the relationships among angles and sides of congruent and similar polygons.
- Draw and interpret nets, cross-sections and front, side and top views of various solids.
- Develop and use strategies to estimate and determine length, perimeter, area, volume, and surface area.
- Identify and draw geometric transformations including rotations, reflections, and translations.
- Convert between units of length, area, capacity, weight, mass, and volume in the customary and metric systems.

**Working with Data: Probability and Statistics**

**STAMFORD PUBLIC SCHOOLS**  
**MATHEMATICS GRADE-LEVEL STANDARDS AND EXPECTATIONS\***  
**KINDERGARTEN – GRADE EIGHT**

---

- Formulate questions, design surveys and samplings, organize and analyze gathered data and defend the analysis.
- Collect, organize and display data using appropriate graphical representations including bar graphs, histograms, line graphs, stem-and-leaf plots, and circle graphs.
- Make inferences, evaluate reasonable hypotheses, and make predictions based on experimental data and displays of data.
- Solve problems involving mean, mode, median, range and outliers.
- Compare two sets of data based on their distributions and measures of central tendency.
- Compute and compare the experimental and mathematical probability of an event.
- Compute the probability of independent and independent events.

**Algebraic Reasoning: Patterns and Functions**

- Extend numeric and geometric patterns; determine missing terms and write a rule to describe the pattern.
- Use tables, graphs, and equations to represent mathematical relationships and solve real-world problems.
- Write a story problem to represent an algebraic equation.
- Plots points and graph linear equations and inequalities in a coordinate plane.
- Recognize that a linear relationship has a constant rate of change.
- Solve multi-step problems using whole numbers, decimals, fractions, and mixed numbers.
- Solve one- or two-step linear equations using a variety of methods

**GRADE 8**

**Numerical and Proportional Reasoning**

- Add, subtract, multiply, and divide Rational numbers.
- Locate, and label rational numbers on a number line; compare and order rational numbers.
- Rename fractions, decimals, and percents and visa versa.
- Apply primes, composites, factors, multiples, Least Common Multiple, and Greatest Common Factor in problem situations.
- Use powers of ten and negative exponents to write decimal fractions and to express and compare magnitude of very large and very small numbers and connect to scientific notation.
- Use the rules for exponents to multiply and divide with powers of ten, including negative exponents.
- Solve problems involving ratios, proportions, and percents in context.
- Apply the order of operations in problem situations.

**Geometry and Measurement**

- Identify, describe, draw, and classify 2- and 3-dimensional geometric shapes and figures.
- Relate 2- and 3-dimensional representations and visa versa.
- Apply measurement strategies and formulas to estimate and determine perimeter, area, volume, and surface area.
- Solve problems involving the Pythagorean Theorem and its converse.
- Determine whether two polygons are similar or congruent and make and test conjectures about the relationships among angles, sides, perimeters and areas of congruent and similar polygons.
- Solve problems involving conversions and/or operations within customary or metric units of measure.

**STAMFORD PUBLIC SCHOOLS**  
**MATHEMATICS GRADE-LEVEL STANDARDS AND EXPECTATIONS\***  
**KINDERGARTEN – GRADE EIGHT**

---

- Use coordinate geometry to explore and test geometric relationships of lines and polygons and their transformations.
- Identify and/or determine line(s) of symmetry in a polygon.
- Determine the result of transforming a figure. Transformations include rotations, reflections, translations, and dilations.

**Working With Data: Probability and Statistics**

- Organize, display, compare, and analyze sets of data. Displays include circle graphs, and graphs, bar graphs (single and double), histograms, pictographs, stem-and-leaf plots (single and back to back), and box-and-whisker plots.
- Make inferences, evaluate reasonable hypotheses, and make predictions based on experimental data and displays of data.
- Analyze and interpret data, and solve problems including range, mean, mode, median, quartiles, and outliers.
- Use combinations, permutations, trees, and networks in a variety of contexts, and identify when order is irrelevant in determining a solution.
- Identify correct solutions and solve problems involving elementary notions of probability and fairness expressed as fractions, decimals or percents and justify solutions.
- Compute and compare the experimental and mathematical probability of an event.
- Compute the probability of dependent and independent events.

**Algebraic Reasoning: Patterns and Functions**

- Extend patterns, determine missing terms, and write a rule to describe a pattern.
- Identify functions that are linear and non-linear and compare and contrast their properties using tables, graphs, equations and verbal descriptions.
- Describe how a change in one variable in a function affects a related variable.
- Use tables, graphs, and equations to represent mathematical relationships and solve real-world problems.
- Write and evaluate an algebraic expression that models a real-world situation.
- Write an algebraic equation or inequality to solve a real-world problem and solve it.
- Solve multi-step algebraic equations and inequalities.
- Identify and represent a function as a written rule, a graph, a table, or an equation.
- Graph equations and linear inequalities.
- Determine the constant rate of change in a linear relationship and recognize this as the slope of a line.

---

\* SPS draft grade-level standards and expectations were reviewed by the Project to Increase Mastery of Mathematics and Science (PIMMS) during February 2007. Mari Muri reviewed the grades K-5 standards and noted expressly that, at all times and in every grade, a problem solving focus should be used to develop understanding of all grade-level expectations. Solving Numerical, Geometric, and Statistical extended problems (not listed as separate grade-level expectations) need to be a natural progression of the problem solving atmosphere. Dan Dolan reviewed grades 6-8 standards and aligned SPS standards to NCTM Focal Points and the national study of State Frameworks.



## **STAMFORD PUBLIC SCHOOLS REQUEST FOR PROPOSALS FOR K-5 STANDARDS-BASED MATH CURRICULUM AND PROFESSIONAL DEVELOPMENT**

### **I. OVERVIEW OF INITIATIVE**

The Stamford Public Schools (SPS) is soliciting proposals from providers to implement standards-based mathematics curriculum materials for all students in grades Kindergarten through five (K-5), including initial and ongoing professional development for teachers and administrators to implement the standards-based curriculum materials.

The objectives of this initiative are to implement common, district-wide, rigorous, standards-based math curriculum materials for all SPS K-5 students, aligned to SPS grade-level standards and expectations. One key goal for SPS is to increase math achievement so that all students are prepared to achieve proficiency in Algebra I by the end of grade eight.

SPS seeks qualified providers who have prior successful experience implementing and providing comprehensive professional development on K-5 math curriculum materials, preferably in Connecticut districts or schools.

**Proposals meeting the below requirements are due to SPS by 4:00 pm on March 13, 2007.**

### **II. BACKGROUND**

SPS serves some 15,300 students in grades K-12 in 20 schools. The district, which encompasses 2,578,000 square feet of space, contains twelve elementary schools, grades K-5, five middle schools with grades 6-8, and three high schools. Included in this mix are four magnet elementary schools, one magnet middle school, two large comprehensive high schools, and a small technology and engineering high school, currently housed in a middle school, which is expected to grow in enrollment.

SPS currently uses a variety of math curriculum materials to advance its math program. SPS has committed to preparing each and every student for higher education and success in the 21<sup>st</sup> century. Furthermore, all SPS students will have access to a common, rigorous, standards-based math program that prepares them for success in Algebra I by the end of grade eight.

### **III. SCOPE OF SERVICES**

Components of the K-5 math curriculum implementation and professional development must include, but are not limited to:

#### **A. Planning**

- Working with Central office leaders to accomplish implementation and professional development goals
- Developing pacing guide for year one
- Providing lesson planning guides

- Addressing issues of cross-grade articulation
- Creating opportunities to learn facts and conceptual understanding of pedagogical demands on teachers' instructional time
- Involving families and the community in the rollout

**B. Curriculum Materials Implementation**

- Ensuring accessibility to a wide-range of students
- Using manipulatives
- Leveraging technology
- Presenting and organizing materials
- Developing a clear plan for what teachers must do to teach/implement lessons

**C. Professional Development**

- Establishing comprehensive training on curriculum materials, including texts, manipulatives, technology and assessment instruments
- Providing comprehensive training on instructional strategies used with curriculum materials
- Tailoring training for staff developers and/or coaches
- Detailing plans for ongoing professional development after Year 1 rollout
- Conducting parent and community information sessions

**D. Assessment**

- Using formative and summative assessments
- Aligning assessments with district and state tests
- Analyzing assessment data for action
- Aligning assessments for report cards

The provider is expected to:

- Work with the SPS staff to understand our expected processes;
- Work with the SPS staff to understand the desired outcomes;
- Meet regularly with SPS staff to review progress; and
- Carry out planning, implementation and professional development in a timely fashion.

**IV. TIME FRAME**

This project is expected to begin, following the selection of a provider, on or about April 1, 2007. Projected key dates are as follows:

March 2, 2007: RFP is available to prospective providers  
March 13, 2007: Proposals due by 4:00 pm.  
March 13-14, 2007: Internal review of proposals.  
March 14-16, 2007: Interview prospective providers  
March 17, 2007: Selection of consultant

**V. PROVIDER CAPABILITIES/SPECIFICATIONS**

At a minimum, providers should have a record of experience in:

- Working with other school districts and/or schools, preferable in Connecticut, to implement and provide professional development on K-5 math curriculum;

## **SPS RFP FOR GRADES K-5 STANDARDS-BASED MATH CURRICULUM AND PROFESSIONAL DEVELOPMENT**

---

- Student and teacher preparation to success in Algebra I by the end of grade eight; and
- Carrying out projects on schedule.

In view of the short time frame for carrying out this assignment, familiarity with SPS would be a notable asset.

### **VI. SUBMISSION REQUIREMENTS:**

#### **a. The proposal should include:**

- i. A narrative section that addresses the following topics:
  - Proposed approach, and overview of methods;
  - General work plan and timetable;
  - Qualifications of firm, including relevant prior experience;
  - Key personnel who will be involved in the project, with resumes attached;
  - Expectations of SPS; and
  - Comprehensive pricing plan.
- ii. Attachments should include:
  - Resumes of key personnel;
  - Three references (including name, affiliation, brief description of the project, and contact information); and
  - Two samples of consultant's completed work.

**b. Due Date:** Proposals must be received by 4:00 pm on March 13, 2007.

**c. Number of Copies:** Six (6) copies of the narrative proposal, resumes, and references are to be submitted. One copy of samples of the consultant's work will suffice.

#### **d. Address questions to:**

Joanna Nicholson  
Curriculum & Instruction  
203-227-8046  
[joannanicholson@mac.com](mailto:joannanicholson@mac.com)

#### **e. Submit proposals to:**

Purchasing Department  
Stamford Public Schools  
888 Washington Blvd., 3<sup>rd</sup> Floor  
Stamford, CT 06901

#### **f. Mail Proposals to:**

Stamford Public Schools  
P.O. Box 9310  
Purchasing Department, 3<sup>rd</sup> Floor  
Stamford, CT 06904

### **VII. GENERAL INFORMATION:**

**a. Rejection of Proposals:**

SPS reserves the right to refuse for any reason deemed to be in the District's best interest any and/or all proposals submitted under this RFP.

**b. Selection Committee:**

For requests for proposals for services anticipated to exceed \$100,000, a selection committee shall be formed which shall review the proposals. The Committee shall, if possible, interview the most qualified proposers. Proposals under \$100,000 may be awarded without a selection committee.

**c. Awarding the Contract:**

The contract shall be awarded to the proposer whose proposal is deemed by the department head or selection committee to best provide the services desired, taking into account the requirements, terms and conditions contained in the request for proposals and the criteria for evaluating proposals

**d. Availability of Funds:**

The contract award under this RFP is contingent upon the availability of funds to SPS for this project. In the event that funds are not available, any contract resulting from this RFP will become void and of no force and effect.

**e. Contract Agreement:**

The successful bidder may be required to enter into an Agreement with the Board of Education for the completion of this project. If so, a sample copy of the Agreement is attached and made a part of these conditions. The specifications of this proposal and the purchase order issued to the proposer shall serve as a contract where no formal written contract is required.

The Board reserves the right, subject to mutual agreement with the successful bidder, to extend the terms of this bid, at the bid price, for a mutually agreed upon period of time.

**f. Cancellation of Contract:**

SPS reserves the right to cancel this contract, at any time, with sixty (60) days prior written notice to the contractor, should any of the following conditions exist:

- Funds are not appropriated by the City of Stamford for continuance of this contract.
- SPS, through changes in its requirements, method of operation, or program operation no longer has a need for the commodity or service.

**g. Insurance Requirements**

The selected proposer, upon the signing of the formal contract, will be required to deliver an insurance certificate in amounts, companies, and terms acceptable to the Risk Manager of the City of Stamford.

**SPS RFP FOR GRADES K-5 STANDARDS-BASED MATH CURRICULUM AND PROFESSIONAL DEVELOPMENT**

The Consultant shall maintain professional liability insurance, which covers the services to be provided pursuant to the contract between the City of Stamford Board of Education and the "Consultant". The minimum limit of liability shall be \$1,000,000 per claim and \$1,000,000 in the aggregate. The aggregate shall apply separately to each project on which the Consultant is working.

The Consultant further agrees to maintain at its own expense workers' compensation and employer's liability insurance, which insures all employees of the Consultant. The workers' compensation insurance shall comply with all workers' compensation laws and regulations in the state of Connecticut. The employer's liability insurance shall contain limits of liability of not less than \$100,000 for each accident, disease each employee and disease policy limit.

The Consultant agrees to waive any right of claim against the City of Stamford, the Board of Education, and their employees, agents, and officers for any losses, damages and expenses arising out of the services in the Agreement between the City of Stamford Board of Education and the Consultant. All insurance required hereunder shall contain waivers of subrogation against the City of Stamford, the Board of Education, and their employees, agents and officers.



# K-5 MATH CURRICULUM STEERING COMMITTEE

FOR SPS TEACHERS ONLY



Supported by the Stamford Public Schools College Bound District Program  
POSTED: March 8, 2007

Applications must be received by 12:00 noon on March 22, 2007

**I. Who is encouraged to apply? Teachers who are interested in:**

- Math success for all SPS students, K-12 (\*The Steering Committee will comprise more K-5 than middle or high school members, yet all levels will be represented); and
- Evaluating curriculum materials to meet SPS student and teacher needs, including meetings with vendors and interviews with local educators using curriculum materials.

**II. What is expected of K-5 Math Steering Committee members?**

- Commitment to all meeting dates, listed below;
- Willingness to work collaboratively in a truncated timeframe;
- Visit local sites where various curriculum materials are being used;
- Synthesize, analyze and evaluate information from presentations, visits and review of materials;
- Interest in sharing information with (and collecting feedback from) school-based colleagues; and
- Participating in all meetings (see dates below) and up to 12 additional hours of site visits and/or independent work.

**III. Compensation**

- \$460 for meeting participation and up to \$395 for visitation/independent work (up to 12 hours x curriculum rate paid through vouchers): total = up to \$855.
- CEUs will be not awarded.

**IV. Spring 2007 Meeting Dates\* (required):**

- April 9, 2007, 4:00-7:30 pm
- April 11, 2007, 4:00-7:30 pm
- April 25, 2007, 4:00-7:30 pm
- May 1, 2007, 4:00-7:30 pm

\*Dinner will be provided for all meetings. Location TBD.

**V. Describe your current assignment (please check one):**

Name \_\_\_\_\_ School \_\_\_\_\_

Preferred E-mail Address \_\_\_\_\_ \*Applicants will be notified by e-mail

Preferred Phone Number \_\_\_\_\_

Current SPS school/grade level/assignment \_\_\_\_\_

Describe the interest, qualities and skills you have that would support your application as a member of the K-5 Math Steering Committee.

---



---



---



---



---



---



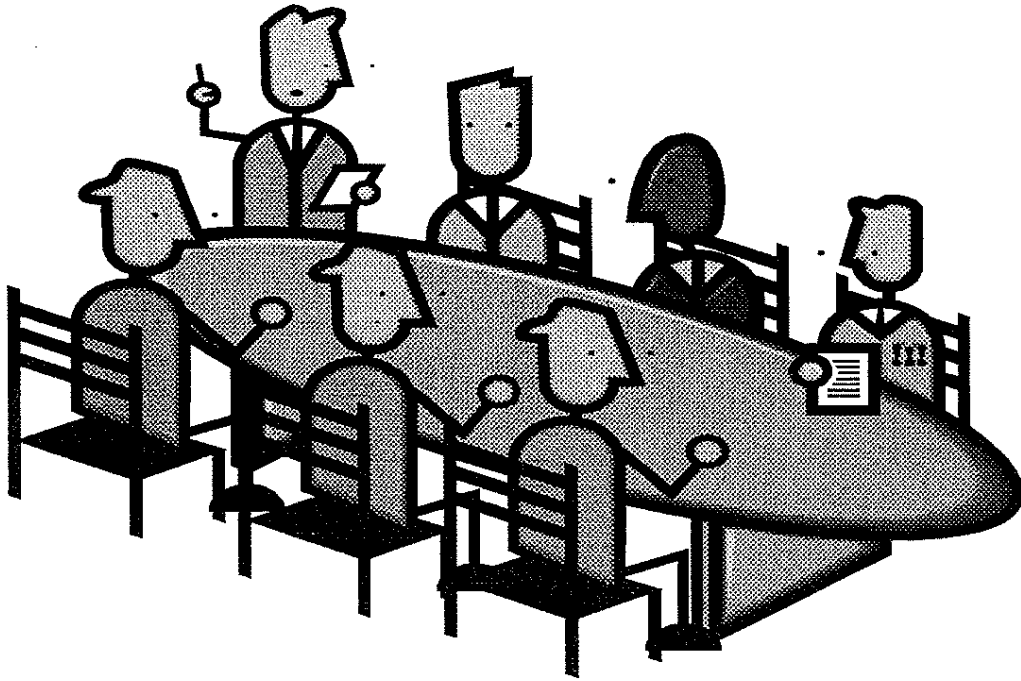
---

Applications must be received by 12:00 noon on March 22, 2007

Attention: Carlton Moody, Deputy Superintendent for Human Capital Development, 888 Washington Blvd., Stamford, CT 06904, Fax 203-977-5004

## K-5 Steering Committee Members

<b>NAME</b>		<b>School/Assignment</b>
Lupe	Dauplaise	Central- Program Director, Bilingual Programs
Denise	DiBlasi	Roxbury Elementary School, Teacher- 4 <sup>th</sup> Grade
Shanna	Esposito	KT Murphy Elementary School, Teacher- 5 <sup>th</sup> Grade
Douglas	Fetchin	Scofield Magnet Middle School, Teacher –Language Arts
Barbara	Friedman	Hart Elementary School, Asst. Principal
Christiano	Husu	Parent
Amy	Karwan	Central, Project Manager, GE College Bound Grant
Sangeetha	Kini	Parent
Laura	Lynam	Julia A. Stark Elementary School, Teacher-5 <sup>th</sup> grade
Lisa	Mackey	Rippowam Middle School, Asst. Principal
Ethan	Margolis	Northeast Elementary School, Principal
Joanna	Nicholson	Central, Interim Asst. Superintendent Curriculum & Instruction
Doreen	O'Leary	Toquam Magnet Elementary School, Teacher-4 <sup>th</sup> Grade
Susan	Paley	Central, Teacher on Special Assign. -Coordinator of GE CBDP
Mary Jo	Pittoni	Central, Director for Leadership Development
Eileen	Swerdlick	Central, Asst. Superintendent for Elementary Education
Antonia	Thompson	Parent



**Mathematics Steering  
Committee  
Stamford Public Schools**

**April 9, 2007**

**Mari Muri  
Math consultant, PIMMS  
Wesleyan University  
mmuri@wesleyan.edu**

1919

1991

9191

1993

Which number doesn't  
belong? Why not?

Source: *Good Morning, Miss Toliver* video

## Benefits of Learning with Understanding

*(definition)* Understanding: making sense of new ideas by connecting them with existing knowledge in coherent ways: not just simply memorizing or mimicking.

**Understanding is Motivating** - promotes a confident feeling

**Understanding Promotes More Understanding**- more knowledge and confidence creates more building blocks

**Understanding Helps Memory** - making connections to prior learning promotes additional learning

**Understanding Enhances Transfer** - promotes application of learning to new situations

**Understanding Influences Attitudes and Beliefs** - students see mathematics in a positive light

**Understanding Promotes the Development of Autonomous Learners** - students eager to engage in and tackle new mathematical ideas

Source: *Teaching Mathematics through Problem Solving; PK-6*, NCTM, 2003

## Fundamental Ideas for High-Quality Mathematics Education

- Mathematical literacy is essential for every child's future.
- A solid mathematics education is essential for an informed public, our national security, a strong economy, and national well-being.
- All students can be successful in mathematics and should receive a high-quality mathematics education, regardless of gender, ethnicity, or race.
- Teachers should encourage and inspire every student to continue the study of mathematics.
- Developing mathematical proficiency requires a balance and connection between conceptual understanding and procedural and computational proficiency.
- Problem solving and using mathematics to understand our world is an integral part of all mathematics learning.
- Teachers must have a solid knowledge of both mathematics content and teaching strategies as well as enjoy and value mathematics.
- Effective programs of teacher preparation and professional development help teachers understand the mathematics they teach, how their students learn, and how to help each student learn.
- Improving mathematics education for all requires a commitment from a variety of stakeholders, including teachers, mathematics teacher-leaders, school and district administrators, institutions of higher learning, mathematicians, professional organizations, families, politicians, business and community leaders, and students.

Source: *Administrator's Guide: How to Support and Improve mathematics Education in Your School*: NCTM  
and ASCD

# Standards-based Elementary Math Curriculum Teaching Programs

- All 4 programs are presented in Units rather than Chapters
- All 4 programs integrate the use of manipulatives and calculators
- All 4 programs have strong emphasis on problem solving

## Everyday Math

Spiral Approach to Learning  
Cross curricular projects  
Strong math communication  
Games are primary source of reinforcement  
On-going review of prior learning  
"Routines" develop across grades  
Varied approach to assessment  
Consumable Student Books now available  
<http://everydaymath.uchicago.edu/about.shtml#publisher>

## Investigations into Number, Data and Space

Topical – in-depth – investigations of math topics  
Primarily group problem solving  
Integrates use of software  
Promotes "invented" strategies  
Primarily open-ended assessments  
Emphasizes constructivist approach  
Strong teacher professional development components  
Recent revision completed (more teacher friendly)  
<http://investigations.terc.edu/>

## Math Trailblazers

Integration with science and language arts  
Science-type Investigations: TIMS Lab method  
DPPs as on-going review *Daily Practice Problems*  
Varied approaches to assessment  
Very strong TUTOR section for math content  
for teachers  
Early grade, consumable workbooks  
Later grades, hard cover book student book  
<http://www.math.uic.edu/IMSE/MTB/mtb.html>

## Growing With Math

Builds incredibly strong Number Sense via Math Chats or  
Daily Number Sense Starters *Main Activities*  
On-going review of prior learning through MC/S *Connections & Solutions*  
Varied approaches to assessment, including Unit Performance  
Tasks with rubric and scored student work  
Strong emphasis on language acquisition  
Suggestions for Differentiating Instruction  
Consumable student workbooks  
<http://www.wrightgroup.com/index.php/programlanding?isbn=L000000002>

Compiled by Mari Muri  
Consultant, PIMMS, Wesleyan University  
Revised April, 2007

*Expressions – Invent Program*

## Frequently Asked Questions:

- ❖ Are traditional basics still important?
- ❖ What mathematics beyond the basics should all students learn?
- ❖ How should students be grouped?
- ❖ What is the role of practice and drill?
- ❖ What are appropriate uses of manipulatives and the math classroom?
- ❖ Will calculators and other technology hurt students' computational skills?
- ❖ When should students master their basic computational facts?
- ❖ How should students learn their basic single-digit facts?
- ❖ Should elementary schools use mathematics specialists?
- ❖ What does algebra really entail in the elementary school?
- ❖ What about algebra at eighth grade?
- ❖ Do all students need 4 years of high school mathematics?
- ❖ How do I address those who hold different views on teaching math?

Source: *Administrator's Guide: How to Support and Improve mathematics Education in Your School*: NCTM  
and ASCD

# **Important Questions Regarding the Teaching of Algorithms**

- 1. What is Number Sense?**
- 2. What is Computational Fluency?**
- 3. What is the role of computational algorithms?  
Are they important? If so, which ones?**
- 4. Should all middle grade students be able to compute mentally?  
What should we expect them to be able to do?**
- 5. When should students be allowed to use calculators to do arithmetic computation?**
- 6. What mathematics is important for students to know for their adult lives?**

# **Algebraic Thinking**

## **WHAT IS IT?**

**Understanding Patterns, Relations,  
and Functions**

**Representing mathematical  
situations using symbols**

**Using models to represent  
quantitative relationships**

**Analyzing change**

## Teaching Mathematics

### Basal Approach: 30-45 minutes

- Go over homework
- Introduce lesson and new problem on board
- Teacher may model with manipulatives
- Infrequent student use of manipulatives
- Students sit in neat rows, in individual seats
- Students practice problems in workbook or on teacher-made work sheet
- Teacher assigns same type of work as homework
- Promotes rote memorization with little conceptual understanding

### Standards-based Approach: 1 hr minimum

- Build number sense and mental math
- Students check each other's homework
- Teacher answers questions only on particular problems
- Teacher introduces new lesson with **questions and examples**
- Teachers use manipulatives to demonstrate
- Students have free use of manipulatives to develop understanding
- Students work in pairs or small groups to discuss work or work at **Math Center**
- Students complete written work, mostly individually
- Teacher 'rooms' the room to take notes on students' understanding
- Teacher uses notes to plan instruction
- Develops strong conceptual understanding and lasting learning

## *Program Delivery Standards:*

- Written curriculum, including articulation and alignment
- Instructional materials: text, ancillary, manipulatives, etc
- Instructional connections (within and outside of math)
- Instructional technology: calculators, smart boards, etc
- Instructional time
- Assessment of students:  
Formative, summative; classroom, local, imposed from outside
- Uses of assessment data
- Professional development; professional interaction
- Professional supervision and evaluation
- Monitoring program(s)
- Grouping and tracking practices
- Remedial assistance and student support
- Resource personnel and leadership
- Administrative support and leadership

## Suggested Readings in EDTHOUGHTS

McRel  
What Works  
Works in the  
Classroom

Article	Page
Ability Grouping	4
Differentiated Learning	8
Instructional Methods to Support Reasoning and Problem Solving	12
Role of Teacher Questioning	16
Motivating Students to Enjoy Math	18
Learner-Centered Instructional Strategies	20
Impact of Instruction and Assessment on Learning	22
Impact of Teacher Attitude on Achievement	28
Importance of Standards-Based Curricula	44
Impact of Technology on Content and Instruction	61 - 71
The Role of Algorithms	82
The Role of Hands-On Learning	90

# **SOME KEY QUESTIONS FOR THE FUTURE OF MATHEMATICS EDUCATION**

**Are we teaching the mathematics our students will need in the future?**

**Do school programs reflect the realities of a technological world?**

**Are we teaching mathematics in a way that will develop students who possess the mathematical power that permits them to use mathematics productively?**

**What does it mean to be mathematically literate in a world that relies on calculators and computers to carry out mathematical procedures**

**and**

**in a world where mathematics is rapidly growing and extensively being applied**

# How People Learn

Research findings from Dr. William Glasser, psychologist

10% of what we read

20% of what we hear

30% of what we see

50% of what we see and hear

70% of what we discuss with  
others

80% of what we experience  
personally

95% of what we teach others

## Word Problem "Roundtable"

Read your problem aloud and discuss a solution with your group. Do not write anything during the discussion. This should be an oral discussion only.

When your group is satisfied with your solution and that everyone in the group can solve the problem, write a group report on how to solve the problem, sentence by sentence.

Now discussion ends. Each person in the group writes one sentence and then passes the solution report on to another person to write the next sentence, until the solution is fully described.

Try to use words, rather than symbols, to complete your solution report.

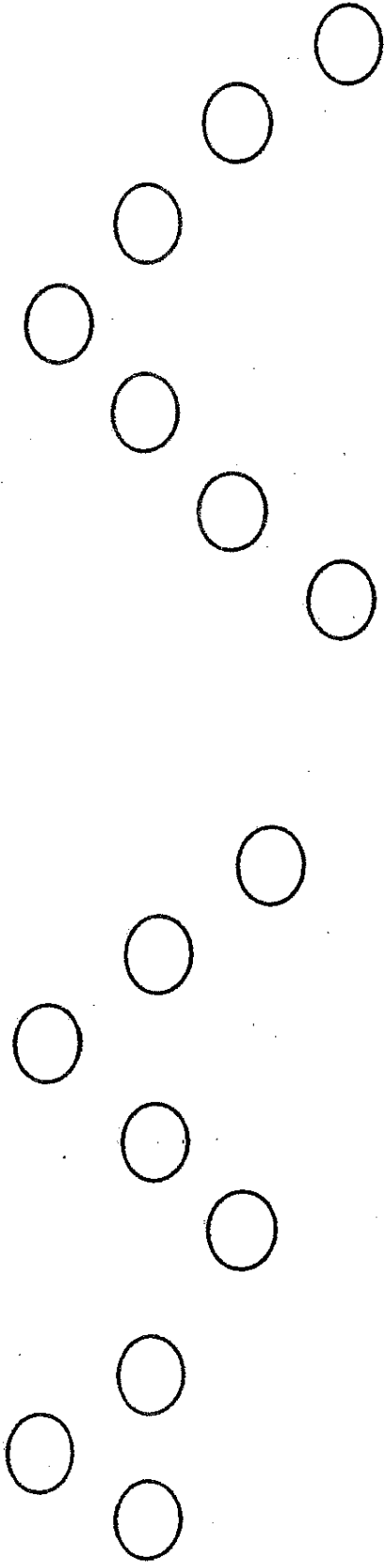


Figure 1

Figure 2

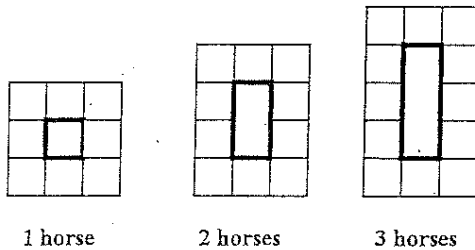
Figure 3

How many balls will there be in the 100<sup>th</sup> Figure?

## RAINBOW CORRALS

Suppose 1 Rainbow Cube represents 1 horse. It takes 8 Rainbow Cubes to build a corral for 1 horse. It takes 10 cubes to build a corral for 2 horses. It takes 12 cubes to build a corral for 3 horses. How many cubes would it take to build a corral for 100 horses? Explain how you know how many cubes it would take to build a 100-horse corral.

Introduce the problem by building a corral with 8 Rainbow Cubes on the overhead projector. **This is a corral for 1 horse built with 8 cubes.** Build the next largest corral with 10 cubes. **It takes 10 cubes to build a corral for 2 horses.** Build the next largest corral with 12 cubes. **It takes 12 cubes to build a corral for 3 horses.** **How many cubes do you think it take to build a corral for 4 horses?** (14) Allow students to respond. **How do you know?**



[Source: 20 Thinking Questions for Rainbow Cubes, Creative Publications]

## Your Birthday

1. Write the number of the month in which you were born.
2. Multiply by 4.
3. Add 13.
4. Multiply by 25.
5. Subtract 200.
6. Add the day of the month you were born.
7. Multiply by 2.
8. Subtract 40.
9. Multiply by 50.
10. Add the last two digits of the year you were born.
11. Subtract 10,500.

The result is a number telling (from left to right) the month, the day of the month, and the year you were born.

Why does it work?

ter, and still others treat the letter as shorthand for an object (*b* means *boy* rather than *number of boys*). Students need to be able to use variables in many ways. Two particularly important ways in grades 5–8 are using a variable as a placeholder for a specific unknown, as in  $n + 5 = 12$ , and as a representative of a range of values, as in  $3t + 6$ . Students who work with computers are likely to encounter the replacement use of variables. Students need to tell from the context how a variable is being used.

Giving students opportunities to explore interesting problems, applications, and situations does not guarantee that they will make the appropriate connections; it is inevitable that some students might lose sight of the important mathematical ideas that underlie any activity. They need to be encouraged and helped to reflect on their explorations and summarize concepts, relationships, processes, and facts that have emerged from their discussions.

The following example illustrates how students can develop a sophisticated understanding of how algebra can be used to model situations and how the algebraic model is related to other models or representations:

**Working with square tiles, students can explore the question, “Can you add tiles to this figure [see fig. 9.1] to make a new figure with a perimeter of 18 units?” (Tiles must touch each other along an entire edge.)**

Students can discover many interesting facts and relationships in exploring this problem. They can discover that adding a tile to fill in a corner where it will touch other tiles along two edges does not change the perimeter at all; that adding a tile that touches another tile along one edge changes the perimeter by exactly two units; and that adding a tile so that it touches three edges actually reduces the perimeter. The students can write algebraic expressions to summarize their discoveries, for example,  $p + 2$  or  $p - 2$  for adding tiles that touch one or three edges, respectively.

Once the class has found different ways to add tiles to make a new figure with a perimeter of 18, students can explore other problems, such as determining the fewest number of tiles that can be added. Students discover that at least three tiles must be added before the perimeter will total 18 units. A question about the greatest number of tiles that can be added to reach a perimeter of 18 units leads to an interesting discovery: A rectangle that is 4 tiles by 5 tiles uses the most tiles. This raises the question, What other rectangles have perimeters of 18 units? Collecting and organizing the class data yields a table of values for further investigation.

Fifth-grade students might cut physical representations of the rectangles from grid paper. These can be stacked on a second sheet of grid paper to produce a physical graph of the relationship between length and width (see fig. 9.2).

In later grades, students can locate points representing the length versus the width of each rectangle (see fig. 9.3). Teachers can ask such questions as, Does it make sense to connect the points in the graph? How would you interpret the points where the line intersects the horizontal axis? If you can use fractional measures for the sides of the rectangle with a perimeter of 18 units, what width would you expect to find for a length between 4 and 5 units? What would you say about its area? Students can make a graph to picture the relationship between the length and the area (see fig. 9.4).

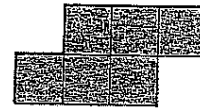


Fig. 9.1. Tile shapes

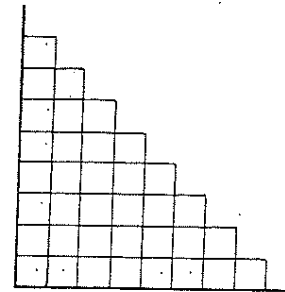


Fig. 9.2. Rectangles

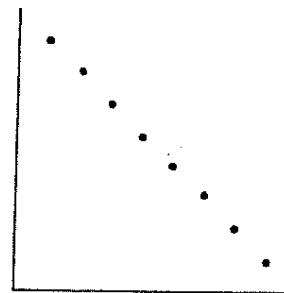


Fig. 9.3. Width versus length.

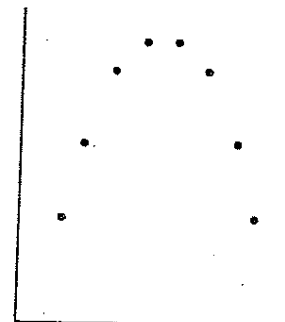


Fig. 9.4. Area versus length

Schedule of Vendor Presentations  
Standards-Based Math Programs  
RFP Respondents

	Program	Publisher	Representative
<b>April 26, 2007</b>			
4:00-5:15 P.M.	Investigations	Pearson/Scott Foresman	Thomas Esposito <a href="mailto:Thomas.esposito@scottforesman.com">Thomas.esposito@scottforesman.com</a> 914-751-8739
6:00-7:15 P.M.	Growing with Mathematics	McGraw Hill/Wright Group	Katie Gallagher <a href="mailto:Katieg478@aol.com">Katieg478@aol.com</a> 203-221-7140
<b>May 1, 2007</b>			
4:00-5:15 P.M.	Trailblazers	Kendall Hunt (TIMS Project)	Florence O'Neil Russo <a href="mailto:frusso@kendallhunt.com">frusso@kendallhunt.com</a> 800-338-8297
6:00-7:15 P.M.	Everyday Math	McGraw Hill/Wright Group	Ray Lenoue <a href="mailto:ernrdl@aol.com">ernrdl@aol.com</a> 203-866-7086
<b>May 8, 2007</b>			
4:00-5:15 P.M.	Math Expressions	Houghton Mifflin	Cathy Landers <a href="mailto:Cathy_landers@hmco.com">Cathy_landers@hmco.com</a> 866-628-3383

# K-5 MATH STEERING COMMITTEE MATERIALS SELECTION CRITERIA

Committee Member: \_\_\_\_\_

Program Name: \_\_\_\_\_

DIRECTIONS: Circle one number on each scale below. The higher the number, the better that text appears to meet the philosophy, Standards and Grade Level Expectations of the Stamford Public Schools.

Rating Scale: 5 = high  
1 = low

## Category 1: Mathematical Content

The mathematical content of the program reflects the curriculum Standards.

- **Mathematics as problem solving is built into the program at all levels.** The mathematics is developed from problem situations. Situations are sufficiently simple to be manageable but sufficiently complex to provide for diversity in approach. They are amenable to individual, small-group, or large group instruction; involve a variety of mathematical domains; and are open and flexible as to the methods to be used.

1 2 3 4 5
- **Mathematics as communication is built into the program at all levels.** Students have many opportunities to use language to communicate their mathematical ideas. The program asks students to explain, conjecture, and defend their ideas orally and in writing. As students mature and develop, the program expects students' mathematical communication to become more formal and symbolic. Students are asked to form multiple representations of ideas, express relationships within and among representation systems, and formulate generalizations.

1 2 3 4 5
- **Mathematics as reasoning is built into the program at all levels.** Throughout the program, students are asked to explain and justify their thinking and to question the statements of other students and the teacher. As students mature, the program asks students to do both inductive and deductive reasoning.

1 2 3 4 5
- **Mathematical connections are clear in the program;** the program approaches mathematics as a whole. Concepts, procedures, and intellectual processes are interrelated through specific instructional activities designed to connect ideas and procedures among different mathematical topics, with other content areas, and to life situations.

1 2 3 4 5
- **The program is comprehensive and includes the mathematics content emphasized in the SPS Standards at each grade level.** Each grade level expectation is covered at the appropriate grade level and in sufficient depth to ensure mastery at that grade level.

1 2 3 4 5

## Category 2: Organization and Structure

The program is organized into cohesive units, multi-day lessons, and worthwhile tasks.

- **The program is organized into units, modules, or other structure so that students have sufficient time to explore and investigate in-depth major mathematical ideas.** The units or modules include lessons, activities, and projects that are multi-days, emphasize the connections between mathematical concepts, and promote the attainment of several, rather than just one, instructional objectives.

1 2 3 4 5

- **The program asks students to work on worthwhile mathematical tasks.** The tasks do not separate mathematical thinking from mathematical concepts or skills; they capture students' curiosity and invite them to speculate and to pursue their hunches. Many tasks have more than one reasonable solution. The tasks require that students reason about different strategies and outcomes, weigh the pros and cons of alternatives, and pursue particular paths.

1 2 3 4 5

- **When appropriate, the instructional materials incorporate calculators and computers and other technology into the program as tools for students to use to do mathematics.** The program is designed with the expectation that calculators are available to all students at all times and that all students have access to a computer for individual and group work.

1 2 3 4 5

- **The program is appropriate for *all* students.** All students are expected to encounter typical problem situations related to important mathematical topics. All students are expected to experience mathematics in the context of the broad, rich curriculum described in the K-8 Grade Level Expectations. Supports are provided to allow teachers to adjust the lessons for students at a variety of developmental levels, and to allow additional practice for students who learn at slower or accelerated rates.

1 2 3 4 5

### Category 3: Student Experiences

The program emphasizes students doing rather than memorizing mathematics. Students are actively involved with mathematics.

- **The program is designed so that students are active learners.** Students are encouraged to explore and investigate mathematical ideas. They are expected to read, write, and discuss mathematics. The program asks students to conjecture, test, and build arguments about a conjecture's validity. Students are asked to reason about different strategies and outcomes, weigh the pros and cons of alternatives, and pursue varied paths when working on tasks. Students are expected to work on group and individual projects and assignments.  
1 2 3 4 5
- **Students are expected to construct their own understanding of mathematics.** The program recognizes that students approach a new task with prior knowledge and encourages students to use natural language and informal procedures.  
1 2 3 4 5
- **The program asks students to engage in mathematical discourse.** The materials ask students to talk with one another, as well as respond to the teacher. Students are expected to make public conjectures and reason with others about mathematics. Students are asked to clarify and justify their ideas orally and in writing.  
1 2 3 4 5
- **Students use manipulatives and technology to explore mathematical ideas, model mathematical situations, analyze data, calculate numerical results, and solve problems.** Generally, students decide what tools are needed and when to use them.  
1 2 3 4 5
- **Students are expected to determine when they need to calculate in a problem and whether they require an exact or approximate answer.** Students are expected to choose an appropriate procedure when calculating, whether it is using paper-and-pencil, mental calculation, or a calculator.  
1 2 3 4 5
- **Students are expected to reflect on, make judgments about, and report on their own behavior, performance, and feelings.** Students are asked to do self-assessment on selected aspects of their experiences as one method for evaluating students' performance and disposition.  
1 2 3 4 5
- **Student materials are "user friendly."** The program is at the appropriate level for students to read. Textual materials are generally well organized and attractive for students.  
1 2 3 4 5

## Category 4: Teacher's Role

**The instructional materials provide suggestions to teachers to assist them in shifting toward the vision of teaching presented by the Standards.**

- **The instructional materials provide suggestions to teachers** so that, in tasks and lessons, teachers can help students to:
  - Work together to make sense of mathematics
  - Rely more on themselves to determine whether something is mathematically correct
  - Reason mathematically
  - Learn to conjecture, invent, and solve problems
  - Connect mathematics, its ideas, and its applications to other topics within mathematics and to other disciplines.

1 2 3 4 5
  
- **The instructional materials provide suggestions for teachers in initiating and orchestrating mathematical discourse.** The materials suggest questions that elicit, engage, and challenge students' thinking. Teachers are encouraged to regularly follow students' statements with, "Why?" and "What if?" Also, teachers should ask students to explain their thinking and reasoning.

1 2 3 4 5
  
- **The instructional materials provide assistance to teachers to facilitate learning by all students.** Suggestions are provided on how to use a variety of methods so that all students can contribute to the thinking of the class. Students are expected to express themselves in writing and pictorially, concretely and representationally, as well as orally. The program encourages teachers to accept and respect the thinking of all students by providing examples of how to probe students' thinking and encourage students to follow and understand each others' approaches and ideas.

1 2 3 4 5
  
- **The instructional materials provide suggestions to teachers for establishing a classroom learning environment focused on sense making.** Teachers are provided suggestions on how to:
  - Structure the time so students can grapple with significant mathematical ideas and problems
  - Use physical space and material in ways that facilitates students' learning
  - Assist students to work together collaboratively, as well as independently

1 2 3 4 5
  
- **The instructional material provide suggestions for teachers to differentiate lessons based upon levels of student mathematical development, SPED students and LEP students.**

1 2 3 4 5

- **The instructional materials provide suggestions to teachers to help them reflect on what happens in the classroom so that they can adjust or adapt their teaching plans.** Teachers are provided suggestions on how to observe, listen to, and gather other information so they can assess and monitor student learning. Teachers also are provided suggestions on how to examine the effect of the task, discourse, and learning environment in promoting students' understanding of mathematics.

1 2 3 4 5

- **The instructional materials provide suggestions for how parents can be involved and kept informed about the program.**

1 2 3 4 5

- **Teacher's guides are "user friendly."** The program is easy for the teacher to follow and offers appropriate guidance in the use and integration of various student materials and technology.

1 2 3 4 5

### Category 5: Assessment

**The student assessment in the instructional materials provides teachers with information about what their students know and how they think about mathematics.**

- **Student assessment is integrated into the instructional program.** Assessment activities are similar to learning activities. Assessment activities examine the extent to which students have integrated and made sense of information, whether they can apply it to situations that require reasoning and creative thinking, and whether they can use mathematics to communicate their ideas.

1 2 3 4 5

- **Multiple means of assessment are used, informal as well as formal.** Suggestions are provided for assessing students, individually or in small groups, through observations, oral and written work, student demonstrations of presentations, and students' self-assessment. The use of calculators, computer, and manipulatives are built into assessment activities. Assessment is built into the instructional materials as a continuous, dynamic, and often informal process.

1 2 3 4 5

- **All aspects of mathematical knowledge and how they are interrelated are assessed in the instructional materials.** However, assessment is not of separate or isolated competencies, although one aspect of mathematical knowledge might be emphasized more than another in a particular assessment. Conceptual understandings and procedural knowledge are frequently assessed through tasks that ask students to apply information about a given concept in novel situations.

1 2 3 4 5

**TOTAL POINTS EARNED FOR THIS TEXT \_\_\_\_\_/135**

**OVERALL RATING**

\*\* Considering the philosophy, goals, and objectives of SPS's new Mathematics Grade Level Expectations, what overall rating would you give this text?

1 2 3 4 5  
Not appropriate for SPS

6 7 8 9 10  
Most appropriate for SPS

Pros to remember for later discussion:

Cons to remember for later discussion:

### Completed Site Visits and Attendees

Math Series	District /School	Date Attended	Visitors
Everyday Math	Weston /Heribuff Elementary	5/22/07	Doreen O'Leary
	Greenwich/Dundee School	5/15/07	Barbara Friedman Susan Paley Laura Lynam
Investigations	Harrison N.Y./Parsons School	5/23/07	Susan Paley Ethan Margolis
	New Canaan/West School	5/16/07	Susan Paley Ethan Margolis Doreen O'Leary Antonia Thompson
	Bridgeport/6-6 Magnet		Doug Fetchin Lupe Dauplaise Shanna Esposito
Growing with Math	Norwalk/Rowayton School	5/23/07	Amy Karwan Eileen Swerdlick Mary Jo Pittoni
	Danbury/Mill Ridge Int.	5/24/07	Susan Paley Denise DiBiasi
Expressions	Hamilton, NJ/Langtree & Kuser Schools	5/22/07	Susan Paley
Trailblazers	West Hartford	5/25/07	Susan Paley

### Other District Contacts

Math Series	District /School	Contact	SPS Committee Member
Everyday Math	Hartford	Megan Bennett	Susan Paley
	Plainfield	Rena Cadro	Susan Paley
Growing With Math	New York City	John Kehoe	Eileen Swerdlick
	Norwalk	Dr. Phyllis Bartoli	Susan Paley
Trailblazers	Danbury	Dr. Karen List	Susan Paley
	West Hartford		Joanna Nicholson Amy Karwan
	Region 15	Dr. Lois Lanning	Joanna Nicholson
Expressions	Newington	Pamela Muraca	Susan Paley
	Hamden	Betsy Carter	Joanna Nicholson
Investigations	Gill/Montague, MA	Dr. Sarita Belmo	Susan Paley
	Westbrook	Kit Bishop	Joanna Nicholson
Everyday & Investigations - blending program	Trumbull	Mary Santilli	Susan Paley
	Westport	Karen Griffin	Joanna Nicholson

**K – 5 MATH STEERING COMMITTEE  
SITE SELECTION QUESTIONAIRE**

Math Program: \_\_\_\_\_ School/District: \_\_\_\_\_

SPS Committee Member: \_\_\_\_\_ Date: \_\_\_\_\_

Teacher Visited: \_\_\_\_\_ Grade Level: \_\_\_\_\_

1. How much time do you spend teaching math each day?
2. How long have you been using this program?
  - Did you use all parts of the program your first year?
3. How long did you use it before you felt “comfortable” with it?
  - How much professional development is necessary?
4. Do you teach “units” in the sequence in which they are presented or do you have a district Scope and Sequence or Pacing Guide that you follow?
  - Can “units” be omitted?
5. How much teacher preparation is needed for each lesson?
6. Are lessons delivered best in whole class, small group or individual settings?
  - Do you have students work in cooperative groups frequently with materials from this program?

7. Are there sufficient materials for low, average, and high ability students?
  - Are all materials/manipulatives included or do you need to provide them?
  - Can you move students to above or below grade level materials if needed?
  - Are materials appropriate for Special Education or other identified students?
8. Is mastery expected for all concepts at your grade level?
9. Are there major concepts missing? If so, what are they?

10. What type of assessments do you use?
11. What materials are essential for teaching this program?
  - Are there consumables that need to be purchased each year?

12. Do you supplement with other materials? If so, what do you use and why is it necessary?
  - Grades K & 1 – Is there an appropriated balance between manipulatives and paper/pencil tasks?
  - Do you have a substantial Limited English Proficient (LEP) population that uses this program? Have you needed to provide extra support for these students?
13. Is there enough in-depth study for each concept?
  - How are concepts maintained over time?
  - Is there carryover of concepts between “units”?

14. Is there enough practice and homework support?

15. What amount of homework time is expected?

16. Is the vocabulary in the text aligned with CMT vocabulary?

17. Is the vocabulary difficult for the students to master?

18. Is math instructional or coaching support provided?

19. Have scores on the CMT improved?

Is this program aligned with CMT objectives and national standards?

20. What has been parents' reactions to this math program?

*You Are Invited*

You are cordially invited

on

Wednesday, May 16<sup>th</sup>

from

3:45 – 5:45 p.m.

to a

**Mathapalooza Materials Preview**

The Elementary Math Steering Committee has been at work since April reviewing standards-based math programs for district adoption.

The programs under consideration are:

Investigations

Growing With Mathematics

Trailblazers

Everyday Math

Math Expressions

Each company submitted an RFP in order to be considered.

We hope that you will come to one of the preview sites for your grade level to browse and look at the materials. We welcome your participation, insights and feedback. Site and schedule is shown on the back.

# **Mathapalooza Materials Preview**

**May 16<sup>th</sup>**

**3:45 – 5:45 p.m.**

---

## **Site and Schedule:**

**Northeast Cafeteria, Grades K-1**

**Stark Cafeteria, Grades 2-3**

**Springdale Media Center, Grades 4-5**

**SPS K-5 MATH PROFESSIONAL DEVELOPMENT EVALUATION  
MAY 16, 2007 – SPS Mathapalooza Materials Preview**

Please complete this anonymous feedback before you leave.

**Based on your observations today, or on your experience with and knowledge of math programs, what question(s) would you like the K-5 Math Steering Committee members to investigate?**

**GENERAL QUESTIONS**

Kendall Hunt TIMS' Investigations

McGraw Hill/Wright Group's Growing with Mathematics

ERC's Trailblazers

McGraw Hill's Everyday Math

Houghton Mifflin's Math Expressions

Summary of Teacher Comments  
Math Curricula Materials Session  
May 16, 2007

General Comments:

Several major issues were suggested by many of the respondents, and should be considered in communication with teachers, if not in the decision making about the program that will best fit our needs:

1. Teachers did not understand their role, and many doubted that teachers would participate in the choice of materials. We need to clearly mention the composition of the Steering Committee, site visits to other schools, conversations with their teachers, as well as this viewing opportunity for all Stamford teachers, in our decision making process. Some mentioned that they didn't understand whether we were planning to extend this to all grades—or were we planning to adopt different materials for different grades and schools.
2. There were major concerns about whether all schools will get everything, and if we use consumables like workbooks, whether we can guarantee that the district will purchase these in the future, when money is tight. Teachers are concerned that they will have to copy materials in the future.
3. A consistent message was to check what manipulatives teachers currently have in their classrooms, rather than reordering full kits for everyone. I don't know operationally whether this is feasible, but interesting.
4. The group consistently reflected that they did not want to have to make copies, games, etc. They wanted them to be available already.
5. They were very concerned about programs real or perceived friendliness or ease of differentiation—meeting the needs of ELL, special ed, and the gifted and talented. They were concerned about the availability of Spanish materials, and even other languages like Creole.
6. While technology was not mentioned too frequently, some asked whether the programs had Smartboard capability.
7. Correlation to Standards and CMTs was one of the most frequent concerns. Evidently many of the displays did not show the correlation information—no one mentioned Stamford's own standards, but referred to State requirements.
8. The major concern was over time and availability of PD. Teachers want to make sure that they have opportunities to learn about the program and prepare for next year. Not a surprise—but we need to know that communication about this will be critical to the success of our launch.

Following are the questions/issues/opinions by grade level for each of the Programs. I have tried to group them into meaningful categories of responses, along with program specific comments. Actual stated choices of preferred programs are considered “liked”, while explicit comments like NO, no way, etc. are considered “not liked” If no comment was made, I didn't add them to the tally, and some teachers selected more than one program.

## **Kindergarten/First Grade Group 72 Responses**

Investigations: 19% of the group liked the program, while 7% explicitly said they did not want it. Comments included concern about not enough material and worksheets to support learning.

Growing with Math: This was the clear winner with this group, with 51 indicating that they liked the program and only 6% indicating they didn't. Those that didn't like it commented that it was too easy or vague, and too "Mimosa like".

Trailblazers: Least liked program for this age level with 11% indicating like and 3% not liking the program. Many just left it totally blank, with comments on the cluttered nature of the pages.

Everyday Math: 24% liked the program, and 8% didn't like. Comments were made concerning the spiraling nature of the program, which teachers felt was confusing, and too many dittos and minor topics. Concern was about whether the program moved too fast or was too hard.

Expressions: 30% liked the program, and 10% didn't like. There was a great deal of confusion about the fact that this was not the Houghton Mifflin program that they are currently using. Several comments referred to the need to "move on" from this, while others said they loved their existing program and didn't want to change. I'm not sure that they recognized the difference between this and the existing program, and the sales rep. didn't clarify. Several mentioned that they liked the explicit strategies for differentiation, ELL support and challenges.

**Second/third Grade Group 28 Responses NOTE THE SMALL SAMPLE SIZE**

Differentiation is a big issue at this grade level. Many commented on differentiation support for all of the programs.

Investigations: 25% liked the program, and 7% didn't. Responses varied from too much material, to not enough. Some liked the small workbook style, but others were concerned they would end up copying the material.

Growing with Math: 28% liked the program, 43% didn't. The no's were divided evenly between those that thought it was too easy, those that thought it was too hard, and those that thought it was too Mimosa. Several commented that they didn't think it had enough practice materials for basic computation skills.

Trailblazers: 14% liked the program, and 32% didn't. Comments included "too hard" and not enough materials. Several liked the integration and connections with other subject areas.

Everyday Math: 39% liked, and 14% didn't. Comments centered on too many dittos that needed to be copied by teachers, and the spiraling of the program. Respondents did like the differentiation handbook.

Expressions: This was the winner at this level, although there were only 28 responses. 61% liked the program, although comments indicated confusion with the existing program.

#### **Fourth/Fifth Grade 55 Responses**

A great number of these teachers were concerned about whether they would continue to get consumables in the future, and whether they would get all of the components of the program. Standards and Differentiation opportunities were the most important with this group. An additional area of concern at this grade level was the support for assessment, including formative assessment and technology to support test preparation.

Investigations : 22% liked, and 22% didn't like. Several commented that it was too hard.

Growing with Math: 31% liked, and 15% didn't. Comments were that it was too easy, didn't provide enough opportunities to practice skills, and several referred to the Mimosa connection as proving that it was not a successful program.

Trailblazers: 11% liked, and 35% didn't. Many thought it was too hard and wordy, and didn't include enough homework or other materials.

Everyday Math : This was the winner at this grade level, with 51% liking, and 6% not liking. Several negatively commented on spiraling of program. Some teachers commented that teachers would need a lot of support to implement it.

Expressions: 38% liked, and 20% didn't. Concerns about correlation to Standards and CMTs and the different language used were prevalent among those who are currently using it. Some complained that homework did not match what was presented in class each day. Several mentioned that they liked the clear presentation of ideas and differentiation.

## **Municipalities Currently Using Everyday Mathematics**

### Connecticut

Ansonia  
Avon  
Bethany  
Bethel  
Bolton  
Brookfield  
Canterbury  
Canton  
Colchester  
Coventry  
Farmington  
Glastonbury  
Granby  
Greenwich  
Guilford  
Hartford  
Lisbon  
Litchfield  
New Fairfield  
New Milford  
Newtown  
Norwich  
Old Saybrook  
Plainfield  
Shelton  
South Windsor  
Suffield  
Tolland  
Weston  
Wethersfield  
Wilton  
Windham

### Other Metro Urban Areas

Newark, NJ  
Jersey City, NJ  
Elizabeth, NJ  
Plainfield, NJ  
New York, NY  
Philadelphia, PA  
Worcester, MA  
Washington, DC  
Dallas, TX  
Orlando, FL