

# Math - Grade 4: Unit 1 - Building a Community of Mathematicians

## UNIT OVERVIEW

### GENERAL INFORMATION

<b>Terms:</b>		<b>Duration:</b>	16.0 Day(s)	<b>Start Date:</b>	08-26-2015	<b>Finish Date:</b>	09-17-2015
<b>Subjects:</b>	Mathematics	<b>Interdisciplinary Approaches:</b>		<b>Course s:</b>	ELEM-MA-Mathematics - Grade 4		
<b>Year Level(s):</b>	4	<b>Unit No.</b>	MPSDC-024554				
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### UNIT FOCUS

This launch unit is designed to introduce students to the routines of math workshop and to the rigor of the Connecticut Core Standards. The unit allows for reteaching to mastery and time to establish routines necessary for building a classroom community. Students will learn to follow agreed upon rules for speaking and listening as they begin to build the stamina needed to endure the practice time of math workshop. This unit is not designed to go in-depth with content standards. The purpose is to familiarize students with the routines and procedures that will be necessary in order for students to successfully meet the Connecticut Core Standards and actively participate in math workshop. Within this unit, you will need to assess students using the District Benchmark Assessment. Subsequent units will include more thorough instruction on the standards.

### PRIOR LEARNINGS / CONNECTIONS

The creation of a numeracy environment is the foundation of math workshop. It is important to invest time and attention in creating supportive classroom communities. Students should connect prior experiences with math workshop, including but not limited to:

**Classroom Community:** Teachers and students work collaboratively in an atmosphere of mutual respect; students are motivated to do their best work and feel safe to take risks. The class functions as a learning community where each student's learning is important, i.e., students take responsibility for learning and support others.

**Physical environment:** Purposeful arrangement of the environment facilitates development of a numeracy environment. Students have independent access to resources and the arrangement of the room facilitates collaboration.

**Predictable structure:** The math block should be at least 60 minutes. Maintenance of a predictable structure is essential if students are to become self-managing.

### ADDITIONAL INFORMATION

#### RESOURCES

No.	Description	Files / Links
RES1	Guided Math in Action by Nicki Newton - Teacher Resource (First 20 Days)	<a href="https://drive.google.com/a/mpspride.org/file/d/0B1u-SudncFHQRDBIZW1xemRXVHM/view?usp=sharing">https://drive.google.com/a/mpspride.org/file/d/0B1u-SudncFHQRDBIZW1xemRXVHM/view?usp=sharing</a> (link)
RES2	Math Workshop in Action -	
RES3	Kid - friendly 8 Mathematical Practices - Found in enVision 2.0 teacher resources	
RES4	Number talk: Helping Children Build Mental Math and Computation Strategies, Sherry Parrish - Teacher Resource	
RES5	enVision 2.0 Math Practices Videos -	
RES6	Teaching Student Centered Math K-3 (Van de Walle) - Blackline Masters	<a href="http://www.ablongman.com/vandewalleseries/Vol_1_BLM_PDFs/V1%20All%20BLMs.pdf">http://www.ablongman.com/vandewalleseries/Vol_1_BLM_PDFs/V1%20All%20BLMs.pdf</a> (link)
RES7	Renerek Activities - K-5 Math Resource Page	<a href="http://www.k-5mathteachingresources.com/Rekenre">http://www.k-5mathteachingresources.com/Rekenre</a>

		k.html (link)
RES8	Mental Math Activities - K-5 Math Resource Page	<a href="http://www.k-5mathteachingresources.com/mental-math.html">http://www.k-5mathteachingresources.com/mental-math.html</a> (link)
RES9	Common Core FlipBook -	<a href="http://www.tusd1.org/resources/curriculum/math/4flipbookedited.pdf">http://www.tusd1.org/resources/curriculum/math/4flipbookedited.pdf</a> (link)
RES10	K-8 Publishers' Criteria for CCSS for Math -	<a href="http://www.corestandards.org/assets/Math_Publishers_Criteria_K-8_Summer%202012_FINAL.pdf">http://www.corestandards.org/assets/Math_Publishers_Criteria_K-8_Summer%202012_FINAL.pdf</a> (link)
RES11	CCSS Standards for Mathematical Practice -	<a href="http://www.corestandards.org/Math/Practice/">http://www.corestandards.org/Math/Practice/</a> (link)
RES12	CCSS Progressions -	<a href="http://ime.math.arizona.edu/progressions/">http://ime.math.arizona.edu/progressions/</a> (link)
RES13	Math Look Fors -	<a href="https://drive.google.com/a/mpspride.org/file/d/0B6yqp2quUBXKYIc1NEZOS1dvZ3c/view?usp=sharing">https://drive.google.com/a/mpspride.org/file/d/0B6yqp2quUBXKYIc1NEZOS1dvZ3c/view?usp=sharing</a> (link)
RES14	CCSS Math Focus K-8 -	<a href="https://drive.google.com/a/mpspride.org/file/d/0B6yqp2quUBXKRIM1a2MteHFxaTQ/view?usp=sharing">https://drive.google.com/a/mpspride.org/file/d/0B6yqp2quUBXKRIM1a2MteHFxaTQ/view?usp=sharing</a> (link)
RES15	UConn - Bridging Practices Among CT Math Educators -	<a href="http://bridges.education.uconn.edu/repository">http://bridges.education.uconn.edu/repository</a> (link)
RES16	Year Long Curriculum Map -	<a href="https://docs.google.com/document/d/1f5MQxNI_PhHqkHleftj_Yy2MqbpKw4LjXIr5-WjvFo/edit?usp=sharing">https://docs.google.com/document/d/1f5MQxNI_PhHqkHleftj_Yy2MqbpKw4LjXIr5-WjvFo/edit?usp=sharing</a> (link)
RES17	K-5 Math Teaching Resources - Teacher Resource	<a href="http://www.k-5mathteachingresources.com/">http://www.k-5mathteachingresources.com/</a> (link)
<b>COMMENTS / NOTES</b>		

## STAGE 1: DESIRED RESULTS - KEY UNDERSTANDINGS

ESTABLISHED GOALS	TRANSFER	
<p><b>Curriculum</b>  <b>Common Core Standards</b>  <i>Mathematics : 3</i>                      920293 Number &amp; Operations in Base Ten                      920294 <i>Use place value understanding and properties of operations to perform multi-digit arithmetic.</i></p> <ul style="list-style-type: none"> <li>• CCSS.MATH.CONTENT.3.NBT.A.3 Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.</li> <li>• CCSS.MATH.CONTENT.3.NBT.A.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> <li>• CCSS.MATH.CONTENT.3.NBT.A.1 Use place value understanding to round whole numbers to the nearest 10 or 100.</li> </ul> <p>920279 Operations &amp; Algebraic Thinking                      920288 <i>Multiply and divide within 100.</i></p> <ul style="list-style-type: none"> <li>• CCSS.MATH.CONTENT.3.OA.C.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.</li> </ul> <p>920290 <i>Solve problems involving the four operations, and identify and explain patterns in arithmetic.</i></p> <ul style="list-style-type: none"> <li>• CCSS.MATH.CONTENT.3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</li> </ul>	<p><i>Students will be able to independently use their learning to ...</i></p> <p>T1                      Students will be able to independently use their learning to interpret and persevere in solving mathematical problems using strategic thinking and expressing answers with a degree of precision appropriate for the problem context.</p> <p>T2                      Students will be able to independently use their learning to express appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others, and attending to precision when making mathematical statements.</p>	
	MEANING	
	UNDERSTANDINGS	ESSENTIAL QUESTIONS
	<p><i>Students will understand that ...</i></p> <p>U1                      Mathematicians have strategies, routines and responsibilities in math workshop that contribute to a successful math community.</p> <p>U2                      A strong math community is built through sharing and respecting other's ideas and abilities.</p> <p>U3                      Mathematicians use the 8 Mathematical Practices.</p> <p>U4                      Good mathematicians use math words to talk/write about their thinking.</p>	<p><i>Students will keep considering ...</i></p> <p>Q1                      How do mathematicians work together during Math Workshop?</p> <p>Q2                      How do good mathematicians communicate their ideas?</p>
ACQUISITION OF KNOWLEDGE AND SKILL		
KNOWLEDGE	SKILLS	
<p><i>Students will know ...</i></p> <p>K1                      What a math community is.</p> <p>K2                      The expectations for Math workshop, including rules, rewards and consequences.</p> <p>K3</p>	<p><i>Students will be skilled at ...</i></p> <p>S1                      Following rules and routines during Math Workshop.</p> <p>S2                      Using a variety of math tools and strategies.</p> <p>S3                      Communicating their mathematical thinking.</p>	

<p><i>Mathematics : 4</i> 2000112 Mathematical Practices</p> <ul style="list-style-type: none"> <li>• CCSS.MATH.MP.3 Construct viable arguments and critique the reasoning of others.</li> <li>• CCSS.MATH.MP.4 Model with mathematics.</li> <li>• CCSS.MATH.MP.5 Use appropriate tools strategically.</li> <li>• CCSS.MATH.MP.8 Look for and express regularity in repeated reasoning.</li> <li>• CCSS.MATH.MP.1 Make sense of problems and persevere in solving them.</li> <li>• CCSS.MATH.MP.2 Reason abstractly and quantitatively.</li> <li>• CCSS.MATH.MP.6 Attend to precision.</li> <li>• CCSS.MATH.MP.7 Look for and make use of structure.</li> </ul> <p><b>Other Goals</b> <b>Learning Personalized</b></p> <ul style="list-style-type: none"> <li>• Element 3: Mindsets</li> </ul>	<p>What good mathematicians do, i.e., use tools, strategies, communicate thinking, etc.</p> <p>K4 Place value through 1,000.</p> <p>K5 Basic properties of operations.</p> <p>K6 Various strategies to add and subtract multi-digit numbers fluently.</p> <p>K7 Strategies to multiply and divide basic math facts within 100.</p> <p>K8 Inverse relationships of operations.</p> <p>K9 Multi-digit addition and subtraction.</p> <p>K10 VOCABULARY: place value, digits, ones, tens, hundreds, thousands, base-ten, numeral, array, add, sum, subtract, difference, rounding, estimate, fluency, multiplication, division, factor, product, quotient, divisor, dividend, inverse relationship</p>	<p>S4 Actively listen to teacher and classmates.</p> <p>S5 Demonstrating behaviors/habits of mind consistent with the 8 Mathematical Practices.</p> <p>S6 Problem solving using multiple strategies.</p> <p>S7 Writing whole numbers in standard, expanded, and word form up to 1000.</p> <p>S8 Stating the value of any digit within 1,000.</p> <p>S9 Rounding whole numbers to the nearest 10 and 100.</p> <p>S10 Solving addition, subtraction, multiplication, and division facts fluently.</p> <p>S11 Adding and subtracting multi-digit numbers within 1000.</p> <p>S12 Multiplying 1-digit whole numbers by multiples of 10.</p>
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## STAGE 2: ASSESSMENT EVIDENCE

### PERFORMANCE TASK(S)

Coding	Code	Evaluative Criteria	Description
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### OTHER EVIDENCE

Coding	Code	Evaluative Criteria	Description
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	OE1		<p><b>Name:</b> enVision Math 2.0 Placement Test (Optional)</p> <p><b>Due Date:</b> 10-05-2015</p> <p><b>Assessment Evidence:</b> See enVision Math 2.0</p>
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## STAGE 3: LEARNING PLAN

### PRE-ASSESSMENTS

#### District Benchmark Assessment (September 6 - October 8)

Coding	Code	Description of Learning Activity	Extension / Modification
	LE1	<p><b>Activity:</b> Use Nicki Newton's "The First 20 Days of Math Workshop" The following standards should be reviewed/embedded within the first 3 weeks of instruction to aid in setting the table for math workshop and reviewing major clusters from the previous grade level.</p> <ul style="list-style-type: none"> <li>• 3.NBT.A.1</li> <li>• 3.NBT.A.2</li> <li>• 3.NBT.A.3</li> <li>• 3.OA.7</li> <li>• 3.OA.D.8</li> </ul> <p>Incorporate basic math fact review throughout "launch" Give all operations basic fact assessment: Addition/Subtraction facts within 20, Multiplication/Division facts within 100 Fastt Math Practice Provide strategies</p>	
	LE2	<p><b>Duration:</b> 1.0 Week(s) <b>Activity:</b> <u>Week 1:</u> What is Math Workshop?</p> <ul style="list-style-type: none"> <li>• Discuss overall routines and procedures (make anchor chart)</li> <li>• How mathematicians engage by talking and listening to one another (introduce Problem of the Day using enVision Problem Solving Guide)</li> <li>• The Importance of using math vocabulary (refer to word wall that will be utilized throughout the year; play some vocabulary games)</li> <li>• Discuss how they can show their work through objects, drawings, pictures and acting it out (continue to show through Problem of the Day)</li> <li>• Introduce a math journal and the importance of writing in math</li> </ul>	

LE3	<p><b>Duration:</b> 1.0 Week(s)</p> <p><b>Activity:</b> <u>Week 2:</u> Routines during Math Workshop</p> <ul style="list-style-type: none"> <li>• Introduce Number Talks (using "Number Talks" by Sherry Parrish); incorporate Grade 3 review content <ul style="list-style-type: none"> <li>• Go over the "structure/rules" of a number talk</li> <li>• Emphasize things that were discussed in week 1, such as how to listen, discuss their thinking, show their work...</li> </ul> </li> <li>• What happens during the mini-lesson <ul style="list-style-type: none"> <li>• Learn a concept, read a short book, watch a mini-video...</li> <li>• Student's role is to listen, talk with each, and participate</li> </ul> </li> <li>• Introduce math centers (VERY IMPORTANT TO SPEND AMPLE TIME ON ALL OF THESE COMPONENTS AS THIS WILL SET THE "TONE" FOR THE ENTIRE YEAR); set up centers that review Grade 3 standards mentioned above <ul style="list-style-type: none"> <li>• How to take out math centers</li> <li>• The importance of respecting supplies/materials</li> <li>• How to work well together and resolve any problems that come up</li> <li>• How to decide who goes first if playing a game</li> <li>• Practice playing different games/activities</li> <li>• Designate rules for centers</li> <li>• Sometimes they will work independently, with partners, and/or in groups</li> </ul> </li> </ul>	
LE4	<p><b>Duration:</b> 1.0 Week(s)</p> <p><b>Activity:</b> <u>Week 3</u></p> <ul style="list-style-type: none"> <li>• Start to pull guided groups (first review routines/procedures about using manipulatives, playing games, and working together) <ul style="list-style-type: none"> <li>• Students will work in math centers</li> </ul> </li> <li>• "Debrief" and discuss how Math Workshop is going <ul style="list-style-type: none"> <li>• Students can reflect in their math journals</li> <li>• Share out whole class</li> <li>• Keep reinforcing routines (stopping to review whenever necessary)</li> </ul> </li> </ul>	