

**Easthampton Public Schools
Math Pacing Guide 2014-2015
Grade 3**

Enduring Understandings	Essential Questions	Content Standards	Time Frame	Math Practices, Notes and Resources
Unit 1 Multi-digit Addition and Subtraction (Resource: MX Unit 4)				
<ul style="list-style-type: none"> • There are many ways to represent numbers • Addition and subtraction are inverse operations. • place value can help us add and subtract larger numbers more efficiently. • Sometimes an estimate is an appropriate answer. 	<ol style="list-style-type: none"> 1. How can we model and represent multi-digit numbers? 2. How are addition and subtraction related? 3. How can place value help us add and subtract efficiently? 4. How can I estimate answers? 5. When are estimates appropriate? 	<p>OA.8 Solve 2 step problems</p> <p>OA.9 Identify arithmetic patterns</p> <p>NBT.1. Round numbers</p> <p>NBT2 Fluently add and subtract within 1000.</p>	<p>18 lessons</p> <p>25 days</p> <p>Sept- early Oct</p> <p>Suggested 2 day lessons: 8, 11</p>	<p>MP</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 6. Attend to precision. 7. Look for and make use of structure. <p>Notes:</p> <ul style="list-style-type: none"> -Students are encouraged to represent word problems with models and equations. -Engage NY uses vertical models for building an understanding of rounding. -Quick Mental Math talks will be used during this unit to allow students to see multiple strategies for solving equations (ex: 15 +16, or 27+7) <p>Fact Focus: Partners of 11-18; use of strategies including doubles, near doubles and making tens strategies for addition and subtraction.</p> <p>Fact Fluency: addition and subtraction facts to 20.</p>

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Unit 2 Multiplication and Division Part 1 (0-5, 9, 10)
(Resource: MX Unit 1)

<ul style="list-style-type: none"> • Multiplication and Division involve combining and separating equal groups. • Multiplication and division are inverse operations. • Patterns are found in the multiplication tables. • Multiplication is related to area. 	<ol style="list-style-type: none"> 1. How are multiplication and division different from addition and subtraction? 2. How are multiplication and division related? 3. What patterns can be found in multiplication tables? 4. How is multiplication related to area? 	<p>OA.1 Interpret Products OA.2 Interpret Quotients OA.3 Use multi/div to solve word problems OA.4 Determine unknown in multi/div equation OA.5 Properties of multi. OA.6 Understand division as an unknown-factor problem. OA.7 Fact fluency multi/div to 100 OA.9 Interpret quotients MD.5A, B. Area concepts MD.7 a,b,c,d Relate area to multiplication and addition</p>	<p>19 lessons 30days early Oct. – mid Nov. Suggested 2 day Lessons: 6, 9, 14, 18</p>	<p>MP 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 7. Look for and make use of structure. 8. Look for an express regularity in repeated reasoning.</p> <p>Notes and Resources: -Encourage multiple representations of multiplication situations -Students should see and understand that there are reliable patterns and relationships among multiplication facts. -Online; Multiplication.com has games and students control which tables are included.</p> <p>Fact Focus: 2s, 5s, 10s 9s, 0s, 1s, (3s, 4s) Fact Fluency: 10s, 2s, 1s, 0s</p>
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Unit 3 Measurement, Time, and Graphs (Resource: MX Unit 3)				
<ul style="list-style-type: none"> • There are many ways to measure an object. • The size of the unit will affect the measurement of an object. • Elapsed time is length of time that passes between a beginning and ending time.. • Graphs help us organize and compare data. 	<ol style="list-style-type: none"> 1. How can objects be measured? 2. How does the size of the unit affect the measurement? 3. How do I determine the amount of time that passes between events? 4. Why are graphs helpful? 	<p>OA.3 Use multi/div to solve word problems</p> <p>NBT.2 Fluently add and subtract within 1000</p> <p>MD.1 Tell and write time to the nearest minute</p> <p>MD.2 Measure and estimate liquid volumes and masses</p> <p>MD.3 Draw a scaled picture graph and a scaled bar graph</p> <p>MD.4 Measure to half and fourth of inch to generate data and create line plots.</p>	<p>15 lessons</p> <p>23 days</p> <p>Mid Nov. - December</p> <p>Suggested 2 day Lessons: 1, 11, 13</p>	<p>MP</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. <p>Notes:</p> <ul style="list-style-type: none"> -Measurement of length includes fractional units ($\frac{1}{2}$, $\frac{1}{4}$). Some pre-teaching may be necessary. -students will need review of telling time. RTI lessons 71-74 can supplement time. Online Mathfactcafe.com has telling time practice. Understanding of timeline model is crucial for solving elapsed time problems. -Students need experience constructing graphs. Use differentiation cards (on level) for activities to do this. <p>Fact Focus: 5s, 3s, 9s (relate to 10s) Fact Fluency: 5s, 4s (relate to 2s, Double, double)</p>

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Unit 4 Multiplication and Division Part 2
(MX Unit 2)

<ul style="list-style-type: none"> • The distributive property allows us to break multi. problems into parts. • Division is multiplication with an unknown factor. • Unknown values can be represented with variables • Multiplication and division can be used to solve word problems involving equal groups, arrays and area. 	<ol style="list-style-type: none"> 1. How can known multiplication facts help us solve unknown facts? 2. How can multiplication help us to solve division problems? 3. Why do we use variables? 4. How are multiplication word problems and division problems different? 	<p>OA.1 Interpret Products OA.2 Interpret Quotients OA.3 Use multi/div to solve word problems OA.4 Determine unknown in multi/div equation OA.5 Properties of multi. OA.6 Understand division as an unknown-factor problem. OA.7 Fact fluency multi/div to 100 OA.9 Interpret quotients</p> <p>NBT.3 Multiply 1 digit numbers by multiples of 10</p> <p>MD.5a, b Area concepts MD.7a, b Relate area to +, x</p>	<p>15 lessons</p> <p>22 days</p> <p>January to early Feb.</p> <p>Suggested 2 day Lessons: 8, 11, 14</p>	<p>MP</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 7. Look for and make use of structure. 8. Look for an express regularity in repeated reasoning. <p>Notes:</p> <ul style="list-style-type: none"> -Comprehension of word problems and algebraic thinking crucial to representing word problems with models and equations. -emphasis on identifying the problem type and choosing the right operation (e.g. equal groups, array, verses part/total; division as unknown factor problem.) -Xtramath.com can be set up in the classroom as ongoing individualized fact practice. <p>Fact Focus: 6s (relate to 3s), 7s, 8s Fact Fluency: 3s, 6s</p>
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<i>MIDYEAR TEST AND FOLLOW UP Mid January</i>				
Enduring Understandings	Essential Questions	Content Standards	Time Frame	Math Practices, Notes and Resources
Unit 5 Polygons, Perimeter, and Area Resources: MX Unit 6				
<ul style="list-style-type: none"> • Understand that shapes in different categories may share attributes and that the shared attributes can define a larger category. • Area and perimeter are different measures rectangles. The dimensions of a rectangle can determine both area and perimeter. 	<ol style="list-style-type: none"> 1. How are shapes in the same category (like triangles and quadrilaterals) alike and how are they different? 2. How are area and perimeter related? How are they different? 3. How can we use operations to help us solve problems involving perimeter and area? 	<p>MD.5a, b Area Concepts MD.6 Measure area by counting squares MD.7, 7a, b, c, d Relate area to multiplication and addition. MD.8 Solve problem involving perimeter.</p> <p>G.1 Understand quadrilateral shapes share attributes. G.2 Partition shapes into unit fractions</p>	<p>11 lessons</p> <p>17 days</p> <p>Suggested 2 day lessons: 5, 10</p> <p>Mid Feb. to late March</p>	<p>MP</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. <p>Notes:</p> <ul style="list-style-type: none"> -Will need extra time for problem solving with area and perimeter. -Can use shape builder online to practice with area and perimeter. -RTI lessons 87-91 Area and lessons 92-96 Perimeter <p>Fact Focus: Relate 2s, 4s, and 8s, Fact Fluency: 8s</p>

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Unit 6 Fractions

Resources: MX Unit 7 and Model Curriculum)

<ul style="list-style-type: none"> • The more parts a whole is partitioned into, the smaller the parts. • The size of a fraction is relative to the size of the whole. • Fractions can be represented with various models • Whole numbers and number greater than one can be represented by fractions • Different but equivalent fractions can be used to represent the same amount. 	<ol style="list-style-type: none"> 1. What is a fraction? 2. How do we compare fractions by size? 3. Is $\frac{1}{2}$ large or small? 4. How can we represent fractions? 5. Can all numbers be represented by fractions? 6. What are equivalent fractions? How can we find equivalent fractions? 	<p>NF.1 Understand unit fractions and that all fractions are made of unit fractions</p> <p>NF.2a, b Identify and place fractions on a numberline.</p> <p>NF.3a, b, c, d Explain equivalent fractions, express whole numbers as fractions, compare fractions with same numerator or denominator.</p> <p>G.2 Partition shapes into parts with equal areas. Express each part as unit fraction</p>	<p style="text-align: center;">9 lessons (plus supple- mental lessons and activities)</p> <p style="text-align: center;">20 days</p> <p style="text-align: center;">Suggested 2 day lessons: 1, 5, 7</p> <p style="text-align: center;">Late March- early May</p>	<p>MP</p> <ol style="list-style-type: none"> 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 7. Look for and make use of structure. 8. Look for an express regularity in repeated reasoning. <p>Notes: Representing fractions greater than one on the numberline may be difficult and require extra practice.</p> <p>Resources: RTI level 1 lessons 55-70, can be used to supplement MX lessons. DESE Model Curriculum Unit, Exploring Fractions is another resource for hands-on activities.</p>
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Unit 7 Write Equations to Solve Word Problems (multi-step) Resource: MX Unit 5, Exemplars, Core Performance Assessments				
<p>Fact Focus: Partners of 11-18; use of strategies including doubles, near doubles and making tens strategies for addition and subtraction.</p> <ul style="list-style-type: none"> • Fact Fluency: addition and subtraction facts to 20. To solve problems you need to make sense of them. • Some problem solutions require many steps. • There can be different strategies to solve a problem. Some are more effective and efficient than others are. • Problem solving requires perseverance. • Problems solutions should be evaluated to determine if they are reasonable. 	<ol style="list-style-type: none"> 1. How do I know where to begin when solving a problem? 2. How can I keep track of my steps in solving a problem? 3. How do I decide what strategy will work best? 4. What do I do when I get stuck? 5. How do I know when a result is reasonable? 	<p>OA.3 Use multi/Div. to solve problems OA.4 Determine the unknown whole number in a multiplication or division equation</p> <p>OA.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter variable.</p> <p>NBT.1 Use place value understanding to round whole numbers NBT.2 Fluently add and subtract within 1000</p>	<p>11 lessons and additional performance tasks (see notes)</p> <p>16 days</p> <p>Suggested 2 day lessons: 5, 8</p> <p>early May – mid June</p>	<p>MP</p> <ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 7. Look for and make use of structure. <p>Notes and Resources: <u>Exemplars*</u> problems and <u>Core Assessment Modules</u> can be used for rich problem solving (small group or individual performance tasks) with the Solve and Discuss protocol.</p> <p>Fact Focus: Students will take ownership and work on tables and facts they need to practice. Fact Fluency: 7s and square products</p>

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Prepare for PARCC TESTING, REVIEW AND END OF YEAR TESTING

Mini Unit - Fact Fluency

<ul style="list-style-type: none"> • Multiplication and division are inverse operations. • Patterns are found in the multiplication tables. 	<ol style="list-style-type: none"> 1. How are multiplication and division related? 2. What patterns can be found in multiplication tables? 	OA.7 Fact fluency multi/div to 100	June	Games: Multiplication Draw card, Baseball Multiplication, Rio, Bingo See online resources. Online: That's a fact with recording sheet for individual progress
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Notes: The third grade team feels this scope and sequence worked well to prepare students for MCAS this year. They are pleased to have been able to complete the program. Challenging areas include:

- Elapsed Time
- Area and Perimeter
- Fraction greater than one on the number line and constructing fraction models.

All of the standards related to these areas were at the fourth grade level in the previous frameworks, demonstrating the increased rigor of the new Frameworks. We will work to improve instruction in these areas during team time next year.