

Grade 4 Curriculum Map

- Start working on Multiplication Fact Fluency (NBT.MA.5a) the first week of school.

Unit/Timeframe: Approximately 3 weeks in total	Understanding and Operating on Whole Numbers (Topics 3 & 4)*	Grade Level: 4
Topic 3: Place Value		
Additional Notes		
<p>*Please consider this as a part of a two-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).</p> <ul style="list-style-type: none"> Begin the year with emphasis on basic multiplication fact fluency and continue throughout the year, incorporating basic division facts as the year progresses (e.g. Math Sprints). Fourth grade facts include all products of factors through 12 X 12. Problem Solving 3.6 can be replaced with other activities that promote decomposing numbers by place value 		
Content Standards		2011 MA Curriculum Framework for Literacy
<p>4.NBT.2: Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$</p> <p>4.NBT.1: Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.</p> <p>4.NBT.3: Use place value understanding to round multi-digit whole numbers to any place.</p>		N/A
Essential Questions	Knowledge/Concepts	Skills
<p>How are greater numbers read and written?</p> <p>How can whole numbers be compared and ordered?</p>	<p>Anticipated Misconceptions:</p> <p>Students may see “value” the same as “place value”</p> <p>Students may be unsure about which place value determines the value of a number</p>	<p>Students will be able to:</p> <p>Decompose numbers using place value, going from ones to thousands. Example: 520 = 5 hundreds and 2 tens or 4 hundreds and 12 tens or 3 hundreds and 22 tens.</p>

	<p>when compared to another number</p> <p>Students need to pay attention to <i>how</i> they are being asked to order numbers, e.g.: ascending, descending, least to greatest, etc....)</p> <p>Students will need to practice <i>greater than, less than, equal to, and not equal to</i> – some may not have the symbols correctly memorized</p>	<p>Read and write multi-digit numbers.</p> <p>Use expanded notation, standard form, and word form of multi-digits numbers.</p> <p>Compare and order multi-digit numbers.</p> <p>Recognize that a digit in one place represents 10 times what it represents to its right.</p> <p>Round whole numbers to any place value.</p>	
Common Resources		Common Assessments	
<p><i>Math Background</i> 63A -63B</p> <p>Base 10 blocks Place value charts Number lines Teacher Pay Teachers- Base Ten Brainiacs Activities for NBT.1 and NBT.2: http://www.k-5mathteachingresources.com/4th-grade-number-activities.html</p> <p>Math Reads: <i>The Cat in Numberland</i> <i>Full Count</i> <i>G is for Googol</i> <i>A Million Dots</i> <i>A Million Fish...More or Less</i> <i>Usborne Illustrated Elementary Math Dictionary</i></p>		<p>enVisionMath Program: Optional - <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i></p> <p>Informal Assessments: White boards Anecdotal assessments Journals/Notebooks Frequent observations</p>	
Lesson	Standard	Notes	Intervention
3-1	NBT2		F3
3-2	NBT1		

3-3	NBT2		F5		
3-4	NBT2		F9 and F11		
3-5	NBT3	2 days	F8		
3-6	NBT2	See <i>additional note</i>	J6		
Vocabulary					
Digits, place value, standard form, expanded form, word form, compare , round					

Unit/Timeframe: Understanding and Operating on Whole Numbers (Topics 3 & 4)* Approximately 3 weeks in total		Grade Level: 4
Topic 4: Addition and Subtraction of Whole Numbers		
Additional Notes		
<p>*Please consider this as a part of a two-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).</p> <ul style="list-style-type: none"> Encourage students to continue to use estimation daily. This enhances their ability to judge the reasonableness of their answers 		
Content Standards		2011 MA Curriculum Framework for Literacy
4.NBT.3: Use place value understanding to round multi-digit whole numbers to any place. 4.NBT.4: Fluently add and subtract multi-digit whole numbers using the standard algorithm. 4.OA.3: Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations.		N/A

Essential Questions	Knowledge/Concepts	Skills
<p>How can sums and differences of whole numbers be estimated?</p> <p>What are standard procedures for adding and subtracting whole numbers?</p>	<p>Know that the order and/or grouping of addends doesn't change the sum</p> <p>Anticipated Misconceptions: Students may still be putting the larger number on the bottom when subtracting</p> <p>Students may not fully understand the conceptual basis for regrouping ("change the 9 to an 8—instead of seeing 900 changing to 800 and 10 tens)</p> <p>Students should be using mental math all year, but should also be able to vocalize and write their thinking</p> <p>Explicit instruction on Using bar diagrams and equations is still necessary at this grade level</p>	<p>Students will be able to:</p> <p>Use a variety of methods to mentally add and subtract, (rounding, estimating, compensation, place value, decomposing, counting on).</p> <p>Fluently add and subtract multi-digit whole numbers using the standard algorithm.</p> <p>Use inverse operations to check the validity of an answer.</p> <p>Use estimation to check for reasonableness.</p>
Common Resources		Common Assessments
<p><i>Math Background</i> 87A and B Use bar diagrams frequently YouTube--- <i>Squaring Off: Subtraction Across Zeros</i> https://www.youtube.com/watch?v=r4arfV3bn7g</p> <p><i>Hold at 1000</i>—Google it for directions See MA Curriculum Framework (Blue Book pg. 183) OA3, NBT3 and NBT4 http://www.k-5mathteachingresources.com/</p> <p>Math Reads: <i>Greater Estimates</i> <i>Mystery Math</i></p>		<p>enVisionMath Program: Optional - <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i></p> <p>Informal Assessments: White boards Anecdotal assessments Journals/Notebooks Frequent observations</p>

<i>Usborne Illustrated Elementary Math Dictionary</i>			
Lessons	Standard	Notes	Intervention
4-1	NBT3		G5,G6,G11
4-2	NBT3	2 days	G7,G8,G15
4-3	NBT4		G12,G16,G19
4-4	NBT4		G13,G17,G20
4-5	NBT4	Squaring off video (box trick)	G18
4-6	NBT4 and OA3	Additional practice with bar diagrams	J8

Vocabulary

Breaking apart, compensation, counting on, commutative properties of addition, associative properties of addition, identity property of addition, inverse operations

Unit/Timeframe: Approximately 3 weeks in total	Multiplication and Division Foundations (Topics 1 & 2)*	Grade Level: 4
Topic 1: Multiplication and Division Meaning and Facts		
Additional Notes		
<p>*Please consider this as a part of a two-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).</p> <ul style="list-style-type: none"> • Lesson 1-4 will be an important prerequisite for later Topics (5 through 8). • Add 11-1 through 11-3 for exposure to multiplication concepts. 		

Content Standards		2011 MA Curriculum Framework for Literacy
<p>4.OA.1: Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.</p> <p>4.OA.2: Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.</p> <p>4.OA.3: Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity.</p> <p>4.OA.4: Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is prime or composite.</p> <p>4.OA.5: Generate a number or shape pattern that follows a given rule.</p>		N/A
Essential Questions	Knowledge/Concepts	Skills
<p>How can patterns and properties be used to find some multiplication facts?</p> <p>How can unknown multiplication facts be found by breaking them into known facts?</p> <p>How can unknown division facts be found by thinking about related multiplication facts?</p>	<p>Mastery of multiplication and related division facts</p> <p>Understand when and how a zero can be used in division</p> <p>Understand how to generate the original/traditional multiplication expression when given parts $(4 \times 2) + (4 \times 2) = 8 \times 2$</p> <p>Know the distinct definitions for <i>expression</i>, <i>equation</i>, and <i>number sentence</i></p>	<p>Students will be able to:</p> <p>Recognize multiplication as repeated addition of equal groups.</p> <p>Find products with the factors 2, 3, 4, 5, 6, 7, 8 or 9.</p> <p>Apply multiplication properties.</p> <p>Use a pattern to solve a problem.</p> <p>Use and draw models to solve division problems.</p>

	<p>How to draw correct arrays for dimensions given</p>	<p>Use arrays to complete multiplication and division fact families.</p> <p>Use multiplication facts with 0 and 1 to learn about special division rules with 0 and 1.</p> <p>Identify multiplication facts related to division facts in order to solve division problems.</p> <p>Draw a picture and write an equation to solve a problem.</p>																														
Common Resources		Common Assessments																														
<p>http://www.k-5mathteachingresources.com/4th-grade-number-activities.html</p> <p>Centimeter grid paper</p> <p>Math Reads: <i>The Lion's Share</i> <i>Mystery Math</i> <i>Usborne Illustrated Elementary Math Dictionary</i></p>		<p>enVisionMath Program: <i>Optional -</i> <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i></p> <p>Informal Assessments: White boards Anecdotal assessments Journals/Notebooks Frequent observations</p>																														
<table border="1"> <thead> <tr> <th>Lessons</th> <th>Standard</th> <th>Notes</th> <th>Intervention</th> </tr> </thead> <tbody> <tr> <td>1-1</td> <td>OA1</td> <td></td> <td>G21,G22,G23</td> </tr> <tr> <td>1-2 and 1-5</td> <td>OA3 and OA5</td> <td>Combine with 1-5</td> <td>F37, G25, G26, J16</td> </tr> <tr> <td>1-3</td> <td>OA1</td> <td></td> <td>F37, G25, G26</td> </tr> <tr> <td>1-4</td> <td>OA4</td> <td>2 days- Use <i>Set the Purpose</i> activity of 1-4</td> <td>G28, G29, G30, G31</td> </tr> <tr> <td>1-6</td> <td>OA2</td> <td></td> <td>G35, G37</td> </tr> </tbody> </table>	Lessons	Standard	Notes	Intervention	1-1	OA1		G21,G22,G23	1-2 and 1-5	OA3 and OA5	Combine with 1-5	F37, G25, G26, J16	1-3	OA1		F37, G25, G26	1-4	OA4	2 days- Use <i>Set the Purpose</i> activity of 1-4	G28, G29, G30, G31	1-6	OA2		G35, G37								
Lessons	Standard	Notes	Intervention																													
1-1	OA1		G21,G22,G23																													
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1-4	OA4	2 days- Use <i>Set the Purpose</i> activity of 1-4	G28, G29, G30, G31																													
1-6	OA2		G35, G37																													

1-7 and 1-8	OA1 and OA2		G35, G37-G41		
11-1 and 11-3	OA4		G59		
11-2	OA4		G59		
Vocabulary					
Array, product, factors, multiples, commutative property of multiplication, zero property of multiplication, identity property of multiplication, distributive property of multiplication, inverse operations, fact family					

Unit/Timeframe: Multiplication and Division Foundations (Topics 1 & 2)* Approximately 3 weeks in total		Grade Level: 4
Topic 2 : Generate and Analyze Patterns		
Additional Notes		
<p>*Please consider this as a part of a two-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).</p> <ul style="list-style-type: none"> • Use T-charts for multi-step problems in 2-6. 		
Content Standards		2011 MA Curriculum Framework for Literacy
4.OA.3: Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity.		N/A

4.OA.5: Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.		
Essential Questions	Knowledge/Concepts	Skills
<p>How can patterns be used to describe how two quantities are related?</p> <p>How can a relationship between two quantities be shown using a table?</p>	<p>Anticipated Misconceptions:</p> <p>Students concentrate on the in-box rather than the relationship (pattern) between in- and outboxes</p> <p>Students should test numbers from the <i>entire pattern</i> rather than just the first pair</p> <p>A table does not have to be in sequential order</p> <p>Students will need extra practice for when given the rule and asked to work backwards</p>	<p>Students will be able to:</p> <p>Identify and extend repeating geometric or repeating number patterns.</p> <p>Identify whole number patterns involving addition and subtracting.</p> <p>Extend tables of ordered pairs for situations involving multiplication, addition or subtraction.</p> <p>Find the rule in a table given a table of number pairs.</p> <p>Extend patterns of cubes or tiles.</p> <p>Use reasoning to solve problems.</p> <p>Create a table given a geometric pattern.</p>
Common Resources		Common Assessments
<p>http://www.k-5mathteachingresources.com/</p> <p>Math Reads: <i>G is for Googol</i> <i>Growing Patterns</i> <i>The I Hate Mathematics! Book</i> <i>Spaghetti and Meatballs for All!</i> <i>Usborne Illustrated Elementary Math Dictionary</i></p>		<p>enVisionMath Program: <i>Optional -</i> <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i></p> <p>Informal Assessments:</p>

<table border="1"> <thead> <tr> <th>Lesson</th> <th>Standard</th> <th>Notes</th> <th>Intervention</th> </tr> </thead> <tbody> <tr> <td>2-1 and 2-2</td> <td>OA5</td> <td></td> <td>F22 and F23</td> </tr> <tr> <td>2-3 and 2-4</td> <td>OA5</td> <td>2 days if needed</td> <td>F24</td> </tr> <tr> <td>2-5</td> <td>OA5</td> <td>2 days if needed</td> <td>F25</td> </tr> <tr> <td>2-6</td> <td>OA3</td> <td>Multi-step word problems</td> <td>J21</td> </tr> </tbody> </table>				Lesson	Standard	Notes	Intervention	2-1 and 2-2	OA5		F22 and F23	2-3 and 2-4	OA5	2 days if needed	F24	2-5	OA5	2 days if needed	F25	2-6	OA3	Multi-step word problems	J21	White boards Anecdotal assessments Journals/Notebooks Frequent observations
Lesson	Standard	Notes	Intervention																					
2-1 and 2-2	OA5		F22 and F23																					
2-3 and 2-4	OA5	2 days if needed	F24																					
2-5	OA5	2 days if needed	F25																					
2-6	OA3	Multi-step word problems	J21																					
Vocabulary																								
Repeating pattern, rule, input/output table																								

Unit/Timeframe: Multiplication with Single Digits (Topics 5 & 6)* Approximately 3 weeks in total	Grade Level: 4
Topic 5: Number Sense-Multiplying by 1-digit Numbers	
Additional Notes	
<p>*Please consider this as a part of a two-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).</p> <ul style="list-style-type: none"> • Use bar diagrams for 5-6. • Use Teaching Tool 1 Problem Solving Recording Sheet. 	

Content Standards				2011 MA Curriculum Framework for Literacy	
5.NBT.5: Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.				N/A	
Essential Questions		Knowledge/Concepts		Skills	
How can some products be found mentally? How can products be estimated?		Anticipated Misconceptions: Avoid using the phrase “adding on” zeros. Use alternative words/phrases (e.g. “tacking on” zeros, “extending by” zeros). When multiplying two factors that result in a product ending with zero, make sure to remember the zero is part of the basic math product		Students will be able to: Use arrays to multiply by 10 and 100. Multiply by multiples of 10 and 100. Break apart factors to multiply. Use compensation to multiply mentally. Use rounding to estimate products. Decide if the answer to a question is reasonable.	
Common Resources				Common Assessments	
http://www.k-5mathteachingresources.com/ Grid paper Math Reads: <i>Mystery Math</i> <i>Usborne Illustrated Elementary Math Dictionary</i>				enVisionMath Program: Optional - <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i> Informal Assessments: White boards Anecdotal assessments Journals/Notebooks Frequent observations	
Lessons	Standard	Notes	Intervention		
5-1 and 5-2	NBT5		G32 and G43		
5-3	NBT5		G47		

5-4 (Omit)					
5-5	NBT5		G45		
5-6	OA3 and NBT5				
Vocabulary					
Annex, tack on, partial product, compensation					

Unit/Timeframe: Multiplication with Single Digits (Topics 5 & 6) Approximately 3 weeks in total		Grade Level: 4
Topic 6: Developing Fluency: Multiplying by a 1-digit Number		
Additional Notes		
<p>*Please consider this as a part of a two-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).</p> <ul style="list-style-type: none"> • Fourth grade is <u>not responsible</u> for mastery of the traditional/standard algorithm for multiplication. The emphasis at this grade level should be on models for multiplication. 		
Content Standards	2011 MA Curriculum Framework for Literacy	
4.NBT.5: Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	N/A	

4.OA.3: Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity.				
Essential Questions		Knowledge/Concepts		Skills
How can arrays be used to find products?		Understand how to apply previous place value strategies for multiplying. Do not stress the use of the standard algorithm		<p>Students will be able to:</p> <p>Multiply using arrays and an expanded algorithm. Multiply up to 4-digit by a 1-digit number.</p> <p>Evaluate problems for missing or extra information.</p>
Common Resources				Common Assessments
http://www.k-5mathteachingresources.com/ Math Reads: <i>Mystery Math</i> <i>Usborne Illustrated Elementary Math Dictionary</i>				<p>enVisionMath Program: <i>Optional -</i> <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i></p> <p>Informal Assessments: White boards Anecdotal assessments Journals/Notebooks Frequent observations</p>
Lessons	Standard	Notes	Intervention	
6-1 and 6-2	NBT5	6-2 is optional	G48, G49	
6-3, 6-4, and 6-5 combined (2 days)	NBT5 and OA3	Use partial products strategy	G49, G50, G52	
6-6	NBT5		J1	
Vocabulary				
No new vocabulary				

Unit/Timeframe: Multi-digit Multiplication (Topics 7 & 8)* Approximately 3 weeks in total		Grade Level: 4
Topic 7: Number Sense: Multiplying by 2-Digit Numbers		
Additional Notes		
*Please consider this as a part of a two-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).		
Content Standards		2011 MA Curriculum Framework for Literacy
4.NBT.5: Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.		N/A
Essential Questions	Knowledge/Concepts	Skills
How can greater products be found mentally? How can greater products be estimated?	Understand that reasonableness will dictate the accuracy of multiplication computation	Students will be able to: Multiply 2-digit numbers by multiples of 10 using arrays. Use mental math to multiply 2-digit numbers. Use rounding to estimate. Use compatible numbers to estimate. Solve multi-step problems.

Common Resources				Common Assessments															
http://www.k-5mathteachingresources.com/				enVisionMath Program: <i>Optional -</i> <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i>															
Math Reads: <i>One Riddle, One Answer</i> <i>Usborne Illustrated Elementary Math Dictionary</i>																			
<table border="1"> <thead> <tr> <th>Lessons</th> <th>Standard</th> <th>Notes</th> <th>Intervention</th> </tr> </thead> <tbody> <tr> <td>7-1 and 7-2</td> <td>NBT5</td> <td></td> <td>G66</td> </tr> <tr> <td>7-3 and 7-4</td> <td>NBT5</td> <td>7-4 is optional</td> <td>G67</td> </tr> <tr> <td>7-5</td> <td>NBT5</td> <td></td> <td>J3</td> </tr> </tbody> </table>						Lessons	Standard	Notes	Intervention	7-1 and 7-2	NBT5		G66	7-3 and 7-4	NBT5	7-4 is optional	G67	7-5	NBT5
Lessons	Standard	Notes	Intervention																
7-1 and 7-2	NBT5		G66																
7-3 and 7-4	NBT5	7-4 is optional	G67																
7-5	NBT5		J3																
Vocabulary																			
Compatible numbers																			

Unit/Timeframe: Multi-digit Multiplication (Topics 7 & 8)* Approximately 3 weeks in total		Grade Level: 4
Topic 8: Developing Fluency: Multiplying by 2-Digit Numbers		
Additional Notes		
<p>*Please consider this as a part of a two-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).</p> <ul style="list-style-type: none"> The focus should be on using the partial products strategy for multiplication. 		
Content Standards		2011 MA Curriculum Framework for Literacy
4.NBT.5: Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.		N/A
Essential Questions	Knowledge/Concepts	Skills
How can arrays be used to find greater products?	Understand the relationship between partial product method and the area model Anticipated Misconceptions: Students are sometimes confused about the value of the place they are multiplying (keeping track) Make sure students write the expressions inside the area model	Students will be able to: Multiply 2-digit factors with arrays. Multiply using arrays and an expanded algorithm with partial products. Multiply 2-digit factors by multiples of 10. Multiply 2-digit numbers. Solve problems that involve 2 questions.

Common Resources				Common Assessments	
http://www.k-5mathteachingresources.com/ Teaching Tool 5 Quarter inch grid paper Math Reads: <i>One Riddle, One Answer</i> <i>Usborne Illustrated Elementary Math Dictionary</i>				enVisionMath Program: Optional - <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i> Informal Assessments: White boards Anecdotal assessments Journals/Notebooks Frequent observations	
Lessons	Standard	Notes	Intervention		
8-1	NBT5		G68		
8-2	NBT5		G68		
8-3 and 8-4	NBT5	8-3 is optional , but should be taught with 8-4 using partial products.	G69		
8-5	NBT5		J2		
Vocabulary					
No new vocabulary					

Unit/Timeframe: Division with Single Digits (Topics 9 & 10)* Approximately 5 weeks in total		Grade Level: 4
Topic 9: Number Sense: Dividing by 1-Digit Divisors		
Additional Notes		
<p>*Please consider this as a part of a two-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).</p>		
Content Standards		2011 MA Curriculum Framework for Literacy
4.NBT.6: Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.		N/A
Essential Questions	Knowledge/Concepts	Skills
What are different meanings of division? How can mental math and estimation be used to divide?	<p>Anticipated Misconceptions:</p> <p>Key words/language might confuse students</p> <p>Know how to correctly write division equation, especially when writing the equation “backwards”</p> <p>If multiplication facts up to 12 x 12 are not strong, this will complicate the Topic</p>	<p>Students will be able to:</p> <p>Discern between a multiplication and division word problem; close reading</p> <p>Show thinking using pictures, words and numbers.</p> <p>Interpret remainders.</p> <p>Solve division problems using a place value model (area model or partial quotient).</p> <p>Divide up to a four- digit dividend by one-digit divisor.</p>

Common Resources				Common Assessments	
http://www.k-5mathteachingresources.com/				<p>enVisionMath Program: <i>Optional -</i> <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i></p> <p>Informal Assessments: White boards Anecdotal assessments Journals/Notebooks Frequent observations</p>	
<p>Math Reads: <i>Mystery Math</i> <i>Usborne Illustrated Elementary Math Dictionary</i></p>					
Lessons	Standard	Notes	Intervention		
9-1	4NBT6		G44		
9-2	4NBT6	You may consider combining with 9-3. This is very difficult. If you are out of time, consider skipping.	G46		
9-3	4NBT6		G46		
9-4	4NBT6	Use partial quotients and other strategies since <i>enVisionMath</i> only uses traditional algorithm. Continue to analyze quotients when there are remainders.	G42		
9-5	4NBT6		G36		
9-6	4NBT6				
Vocabulary					
Remainder, divisor, dividend, quotient					

Unit/Timeframe: Division with Single Digits (Topics 9 & 10)* Approximately 5 weeks in total		Grade Level: 4
Topic 10: Developing Fluency: Dividing by 1-Digit Divisors		
Additional Notes		
<p>*Please consider this as a part of a two-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).</p> <ul style="list-style-type: none"> Teachers should supplement problems about analyzing the quotient since envisions does not spend much time on this. 		
Content Standards		2011 MA Curriculum Framework for Literacy
<p>4.NBT.5: Fluently multiply multi-digit whole numbers using the standard algorithm.</p> <p>4.NBT.6: Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.</p> <p>4.OA.3: Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. 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.</p>		N/A
Essential Questions	Knowledge/Concepts	Skills
How can repeated subtraction be used to model subtraction?	<p>Anticipated Misconceptions:</p> <p>Key words/language might confuse students</p> <p>Know how to correctly write division equation especially when writing the equation “backwards”</p>	<p>Students will be able to:</p> <p>Discern between a multiplication and division word problem; close reading</p> <p>Show thinking using pictures, words and numbers.</p> <p>Interpret remainders.</p>

	<p>If multiplication facts up to 12 x 12 are not strong, this will complicate the Topic</p>	<p>Solve division problems using a place value model (area model or partial quotient).</p> <p>Divide up to a four- digit dividend by one-digit divisor.</p>	
Common Resources		Common Assessments	
<p><i>Common Core Progress Book</i> (partial quotient problems)</p> <p>http://www.k-5mathteachingresources.com/</p> <p>Math Reads: <i>The Big One-oh</i> <i>The Great Divide</i> <i>Mystery Math</i> <i>One Riddle, One Answer</i> <i>Usborne Illustrated Elementary Math Dictionary</i></p>		<p>enVisionMath Program: Optional - <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i></p> <p>Informal Assessments: White boards Anecdotal assessments Journals/Notebooks Frequent observations</p>	
Lessons	Standards	Notes	Interventions
10-1	4NBT6	Combine with 10-2	G35
10-2			G35
10-3	4NBT6	enVisionMath uses standard algorithm. Use problems but teach with the partial quotient models.	G53
10-4	4NBT6		G54
10-5	4NBT6		G55 and 56
10-6 (Omit)		You will need several days for students to master division using place value models.	G46

10-7	4NBT6		G55, 56, 58		
10-8	4NBT 5 and 4OA3		J3 and 4		
Vocabulary					
No new vocabulary					

Unit/Timeframe: Approximately 8 weeks in total	Fractions (Topic 11, 12, & 13)*	Grade Level: 4
Topic 11: Fraction equivalence and ordering		
Additional Notes		
<p>*Please consider this as a part of a three-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).</p> <ul style="list-style-type: none"> • Lessons 11-1, 11-2, and 11-3 were taught with Topic 1 • Students need to have multiple opportunities to view and experience multiple visual representations (manipulatives, pictorial models, etc.) to develop concept of size of fractions. • Please concentrate on denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100. 		
Content Standards		2011 MA Curriculum Framework for Literacy
4.NF.1: Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.		N/A

<p>4.NF.2: Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.</p>		
Essential Questions	Knowledge/Concepts	Skills
<p>How can the same fractional amount be named using symbols in different ways?</p> <p>How can fractions be compared and ordered?</p>	<p>You can only compare fractions when they relate to the same whole</p> <p>How to represent examples like $\frac{4}{2}$</p> <p>Anticipated Misconceptions: Difficulty understanding the whole. ($\frac{1}{4}$ of a cookie vs. $\frac{1}{4}$ of the package of cookies)</p> <p>On a fractional number line you do not count the lines; you count the spaces in between</p>	<p>Students will be able to:</p> <p>Find equivalent fractions</p> <p>Compare and order 2 or more fractions of unlike denominators.</p> <p>Use benchmark fractions to compare.</p> <p>Create and use fraction models (including a number line) to find equivalent fractions and to compare fractions.</p>
Common Resources		Common Assessments
<p>http://www.k-5mathteachingresources.com/</p> <p>Math Reads: <i>Piece=Part=Portion</i> <i>Usborne Illustrated Elementary Math Dictionary</i></p>		<p>enVisionMath Program: <i>Optional -</i> <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i></p> <p>Informal Assessments:</p>

Lessons	Standard	Notes	Intervention	White boards Anecdotal assessments Journals/Notebooks Frequent observations
11-1, 11-2, & 11-3		Already taught with multiplication (topic 1)	G59	
11-4	4NF1	2 days for the lesson and launch with the PBIL	H7 and H14	
11-5	4NF1		H5	
11-6	4NF2	Continue to revisit this skill throughout.	H6,9, 19	
11-7	4NF2	2 days needed	H19	
11-8	4NF2	Launch with the PBIL; you can combine this with a review day.	J37	
Vocabulary				
Fraction, denominator, numerator, benchmark fraction, equivalent fraction, parts, whole				

Unit/Timeframe: Fractions (Topic 11, 12, & 13)* Approximately 8 weeks in total		Grade Level: 4
Topic 12: Adding and Subtracting Fractions and Mixed Numbers with Like Denominators		
Additional Notes		
<p>*Please consider this as a part of a three-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).</p> <ul style="list-style-type: none"> Incorporate money from the beginning of the topic. Consider doing 13-9 before 13-1. 		
Content Standards		2011 MA Curriculum Framework for Literacy
<p>4.NF.3: Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.</p> <p>4.NF.3a: Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.</p> <p>4.NF.3b: Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.</p> <p>4.NF.3c: Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.</p> <p>4.NF.3d: Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.</p>		N/A
Essential Questions	Knowledge/Concepts	Skills
<p>What does it mean to add and subtract fractions and mixed numbers with like denominators?</p> <p>What is a standard procedure for adding and subtracting fractions and mixed</p>	<p>Know what a unit fraction is</p> <p>Recognize the numerous forms of equivalence amongst fractions</p>	<p>Students will be able to:</p> <p>Convert mixed numbers and improper fractions.</p> <p>Decompose fractions and justify them.</p>

<p>numbers with like denominators?</p> <p>How can fractions and mixed numbers be added and subtracted on a number line?</p>		<p>Add/subtract with like denominators</p> <p>Use models and equations to represent problems (including a number line).</p> <p>Create equivalent fractions.</p>																																				
Common Resources		Common Assessments																																				
<p>http://www.k-5mathteachingresources.com/</p> <p>Math Reads: <i>Working with Fractions</i> <i>Usborne Illustrated Elementary Math Dictionary</i></p> <table border="1" data-bbox="191 808 1220 1354"> <thead> <tr> <th>Lesson</th> <th>Standard</th> <th>Notes</th> <th>Intervention</th> </tr> </thead> <tbody> <tr> <td>12-1</td> <td>4NF3</td> <td>Combine with 12-2</td> <td>H36</td> </tr> <tr> <td>12-2</td> <td>4NF3a</td> <td></td> <td>H38</td> </tr> <tr> <td>12-3</td> <td>4NF3a</td> <td>Combine with 12-4</td> <td>H37</td> </tr> <tr> <td>12-4</td> <td>4NF3a</td> <td></td> <td>H38</td> </tr> <tr> <td>12-5</td> <td>4NF3d</td> <td>Launch with PBIL</td> <td>H39</td> </tr> <tr> <td>12-6</td> <td>4NF3c</td> <td>This takes 2 days.</td> <td>H18</td> </tr> <tr> <td>12-7</td> <td>4NF3c</td> <td>Focus on the addition in 12-7 and blend with 12-8.</td> <td>H43 and H44</td> </tr> <tr> <td>12-8</td> <td>4NF3c</td> <td></td> <td>H43</td> </tr> </tbody> </table>		Lesson	Standard	Notes	Intervention	12-1	4NF3	Combine with 12-2	H36	12-2	4NF3a		H38	12-3	4NF3a	Combine with 12-4	H37	12-4	4NF3a		H38	12-5	4NF3d	Launch with PBIL	H39	12-6	4NF3c	This takes 2 days.	H18	12-7	4NF3c	Focus on the addition in 12-7 and blend with 12-8.	H43 and H44	12-8	4NF3c		H43	<p>enVisionMath Program: <i>Optional -</i> <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i></p> <p>Informal Assessments: White boards Anecdotal assessments Journals/Notebooks Frequent observations</p>
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12-1	4NF3	Combine with 12-2	H36																																			
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12-5	4NF3d	Launch with PBIL	H39																																			
12-6	4NF3c	This takes 2 days.	H18																																			
12-7	4NF3c	Focus on the addition in 12-7 and blend with 12-8.	H43 and H44																																			
12-8	4NF3c		H43																																			

12-9		Focus on subtraction in 12-7 and blend with 12-9.	H44		
12-10	4NF3b		H36,37,38		
12-11	4NF3d		J11		
Vocabulary					
Mixed number, improper fraction,					

Unit/Timeframe: Approximately 8 weeks in total	Fractions (Topic 11, 12 & 13)*	Grade Level: 4
Topic 13: Extending Fraction Concepts		
Additional Notes		
<p>*Please consider this as a part of a three-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).</p> <ul style="list-style-type: none"> Lesson 13-6 incorporates fractions with denominators other than 10 and 100 for generating equivalent fractions. This goes beyond the requirement of the standard, which is meant to solidify the relationship between 10^{ths} and 100^{ths}. It would be prudent to exclude those types of fractions in order to accomplish the purpose of the standard. 		
Content Standards		2011 MA Curriculum Framework for Literacy
<p>4.NF.4a: Understand a fraction a/b as a multiple of $1/b$.</p> <p>4.NF.4b: Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number.</p> <p>4.NF.4c: Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.</p>		N/A

<p>4.NF.5: Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.</p> <p>4.NF.6: Use decimal notation for fractions with denominators 10 or 100.</p> <p>4.NF.7: Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.</p> <p>4.MD.2: Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p>		
Essential Questions	Knowledge/Concepts	Skills
<p>How is decimal numeration related to whole number numeration?</p> <p>How can decimals be compared and ordered?</p> <p>How are decimals and fractions related?</p>	<p>Reading a decimal; place values</p> <p>How to compare decimals that go to different places</p> <p>Tenths are not smaller than hundredths</p>	<p>Students will be able to:</p> <p>Multiply fractions by whole numbers using visual models.</p> <p>Relate decimals to fractions with denominators of 10 and 100.</p> <p>Read, write, compare and order decimals to the nearest hundredth.</p> <p>Use money to understand decimals.</p>
Common Resources		Common Assessments
<p>Place value chart that includes decimals</p> <p>http://www.k-5mathteachingresources.com/</p>		<p>enVisionMath Program:</p> <p><i>Optional -</i></p> <p><i>Quick Check</i></p> <p><i>Practice Master</i></p> <p><i>Problem Solving</i></p> <p><i>Topic Test</i></p>

Math Reads:*Usborne Illustrated Elementary Math Dictionary*

Lesson	Standard	Notes	Intervention
13-1	4NF4a	Combine with 13-2 over a 2 day span.	
13-2	4NF4b		H45
13-3	4NF4c		H45
13-4	4NF5	Introduce the expanded place value chart. Teaching Tool 17 is a great resource.	H10 and 30
13-5	4NF5	<i>Common Core Progress 24 and Teaching Tool 17</i> can be supplemented	H5, 8, 20, 21, 23, 34, 35
13-6 (2 days)	4NF6	<i>Common Core Progress 25 and Teaching Tool 17</i> can be supplemented	
13-7	4NF7		H22
13-8	4NF7	This needs to be taught over 2 days.	H28
13-9	4MD2		H13
13-10	4NF6		J25

Informal Assessments:

White boards
 Anecdotal assessments
 Journals/Notebooks
 Frequent observations

Vocabulary
Unit fraction, decimal point, decimal, hundredth, tenth

Unit/Timeframe: Approximately 3 weeks	Topic 16: Lines, Angles and Shapes	Grade Level: 4
Additional Notes		
<ul style="list-style-type: none"> Some lessons from Topic 16 can be blended together. 		
Content Standards	2011 MA Curriculum Framework for Literacy	
<p>4.G.1: Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.</p> <p>4.G.2: Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.</p> <p>4.G.3: Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.</p> <p>4.MD.5a: An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a "one-degree angle," and can be used to measure angles.</p> <p>4.MD.5b: An angle that turns through n one-degree angles is said to have an angle measure of n degrees.</p> <p>4.MD.6: Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.</p> <p>4.MD.7: Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the</p>	N/A	

parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.		
Essential Questions	Knowledge/Concepts	Skills
<p>How can lines, angles and shapes be described, analyzed and classified?</p> <p>How are angles measured, added and subtracted?</p>	<p>Know that a circle is 360 degrees</p> <p>Know types of angles and lines</p> <p>Know that a line is also an angle (180 degrees).</p>	<p>Students will be able to:</p> <p>Measure angles using a protractor.</p> <p>Use a protractor correctly (which scale to use).</p> <p>Find the missing angle measure.</p> <p>Identify types of angles and lines.</p> <p>Determine if a shape has lines of symmetry.</p> <p>Draw lines of symmetry.</p> <p>Classify two-dimensional shapes using angles and sides.</p>
Common Resources		Common Assessments

<http://www.k-5mathteachingresources.com/>

Math Reads:

Seeing Symmetry

The Warlord's Puzzle

What's Your Angle, Pythagoras?

Usborne Illustrated Elementary Math Dictionary

Lesson	Standard	Notes	Intervention
16-1	4G1		I12
16-2	4G1		I3 and 4
16-3	4MD5a		
16-4	4MD5b		
16-5	4MD6	This should take 2 days. This skill should be practiced throughout the topic.	I17
16-6	4MD7	This should take 2 days. Assess here before moving on.	
16-7	4G2	Half day lesson. Combine classifying triangles by angles from 16-8.	I5
16-8	4G2	This takes 2 more days.	I6 and 7
16-9	4G2	Revisit throughout the rest of the year.	I6 and 7
16-10	4G3	Practice non-traditional shapes such as letters.	I9
16-11 (Optional)	4G2		J32

enVisionMath Program:

Optional -

Quick Check

Practice Master

Problem Solving

Topic Test

Informal Assessments:

White boards

Anecdotal assessments

Journals/Notebooks

Frequent observations

Vocabulary

Point, line, plane, parallel lines, intersecting lines, perpendicular lines, line segment, ray, angle, right angle, acute angle, obtuse angle, straight angle, degree, unit angle, angle measure, protractor, polygons, side, vertex/vertices, triangle, quadrilateral, pentagon, hexagon, octagon, equilateral triangle, isosceles triangle, scalene triangle, right triangle, acute triangle, obtuse triangle, rhombus, trapezoid, parallelogram, rectangle, square, symmetric, line of symmetry

Unit/Timeframe: Approximately 3 weeks in total	Measurement (Topics 15 and 14)*	Grade Level: 4
Topic 15: Solving Measurement Problems		
Additional Notes		
*Please consider this as a part of a two-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).		
Content Standards	2011 MA Curriculum Framework for Literacy	
<p>4.MD.2: Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p> <p>4.MD.3: Apply the area and perimeter formulas for rectangles in real world and mathematical problems.</p> <p>4.MD.4: Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots.</p>	N/A	

Essential Questions		Knowledge/Concepts		Skills
<p>What do area and perimeter mean and how can each be found?</p> <p>How can line plots and other tools help to solve measurement problems?</p>		<p>Anticipated Misconceptions:</p> <p>Area vs. Perimeter definitions</p> <p>When interpreting line plots some students only look at the sections with actual data</p> <p>How to space the intervals to create a line plot</p>		<p>Students will be able to:</p> <p>Use the formulas to find perimeter and area of rectangles.</p> <p>Given the area or perimeter, use the formulas to find missing measurements.</p> <p>Create and interpret a line plot using fractions.</p>
Common Resources				Common Assessments
<p>http://www.k-5mathteachingresources.com/</p> <p>Math Reads: <i>Guinness World Records: Wild Lives</i> <i>One Hen</i> <i>Racing Around</i> <i>Tiger Math</i> <i>Usborne Illustrated Elementary Math Dictionary</i></p>				<p>enVisionMath Program: <i>Optional -</i> <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i></p> <p>Informal Assessments: White boards Anecdotal assessments Journals/Notebooks Frequent observations</p>
Lesson	Standard	Notes	Intervention	
15-1	4MD3	This will be taught in 2 days (1 day for area and 1 for perimeter) You may supplement with <i>Common Core Progress 29</i> .	I48	
15-2 (Optional)	4MD2			
15-3	4MD2		H11 and H12	

15-4	4MD4	You may supplement with <i>Common Core Progress 30</i> .	I62		
15-5 (Optional)	4MD2		J18		
Vocabulary					
Length, width, area, perimeter, line plot					

Unit/Timeframe: Approximately 3 weeks in total		Measurement (Topics 15 and 14)*		Grade Level: 4	
Topic 14: Measurement Units and Conversions					
Additional Notes					
*Please consider this as a part of a two-Topic unit. You may wish to be flexible with the sequence of the lessons and/or Topics throughout the unit (e.g. teaching lessons from within this unit – but from different Topics - together or in a different order).					
Content Standards			2011 MA Curriculum Framework for Literacy		
4.MD.1: Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb., oz.; l, ml; hr., min., sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.			N/A		

<p>4.MD.2: Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p>				
Essential Questions		Knowledge/Concepts		Skills
<p>What are customary and metric units for measuring length, capacity, and weight/mass, and how are they related?</p>		<p>Understand that there are two scales of measurement: <i>customary</i> and <i>metric</i></p>		<p>Students will be able to:</p> <p>Estimate and measure intervals of time, length, weight and capacity in both customary and metric units.</p> <p>Convert larger units to smaller units.</p> <p>Interpret data on a line plot that includes fractions.</p>
Common Resources				Common Assessments
<p>http://www.k-5mathteachingresources.com/</p> <p>Math Reads: <i>How Big Is It?</i> <i>Usborne Illustrated Elementary Math Dictionary</i></p>				<p>enVisionMath Program: <i>Optional -</i> <i>Quick Check</i> <i>Practice Master</i> <i>Problem Solving</i> <i>Topic Test</i></p> <p>Informal Assessments: White boards Anecdotal assessments Journals/Notebooks Frequent observations</p>
Lesson	Standard	Notes	Intervention	
14-1	4MD1		I22	
14-2	4MD1		I24	
14-3	4MD1		I26	
14-4	4MD1	You may supplement with <i>Common Core Progress 26</i>	I33-35	

14-5 (Optional)	4MD1		J36		
14-6	4MD1		I23		
14-7	4MD1		I26		
14-8	4MD1		I27		
14-9	4MD1	You may supplement with <i>Common Core Progress 27</i>	I36		
14-10	4MD1		I30 and I39		
14-11	4MD2		J27		
Vocabulary					
Inch, foot, yard, mile, length, capacity, weight, ounce, pound, ton, millimeter, centimeter, decimeter, meter, kilometer, milliliter, liter, mass, gram, kilogram, cup, pint, quart, gallon,					