

Hillsborough Township Public Schools  
 Mathematics Department  
 Grade Three Curriculum Map

Essential Questions	Enduring Understandings	Domain	Cluster	Standard	Learning Targets	Assessment Formative and Summative	Inter-disciplinary Connections	21 <sup>st</sup> Century Connections
<b>Unit 1 – Introducing tools, time, and multiplication</b>						Beginning of the Year Assessment, Written Assessment, Open Response Question		
How can we compare and contrast numbers?	Numeric fluency includes both the understanding of and the ability to appropriately use numbers.	Number and Operations in Base Ten  SMP 6 – Attend to precision.	Use place value understanding and properties of operations to perform multi-digit arithmetic.	3.NBT.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.	Use number grid patterns for adding and subtracting.	What number is 20 more/less than 76?		
How can we decide when to use an exact answer and when to use an estimate?	Context is critical when using estimation.	Number & Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic.	3.NBT.1 - Use place value understanding to round whole numbers to the nearest 10 or 100.	Use open number lines to round numbers.	Round 29 to the nearest 10; round 243 to the nearest 100.		
How can measurements be used to solve problems?	Measurements can be used to describe, compare, and make sense of phenomena.	Measurement & Data  SMP 1 – Make sense of problems and persevere in solving them.  SMP 6 – Attend to precision.	Solve problems involving measurement and estimation.	3.MD.1 - Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.	Tell time to the nearest minute and calculate elapsed time.	Using an analog clock, show students 2:45 and 8:20 and have students write time on paper; Jonah started math at 9:10 and finished at 9:50. How long did he work on math?		9.1.4.A.3 - Determine when the use of technology is appropriate to solve problems.

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How can experimental and theoretical probabilities be used to make predictions or draw conclusions?	The message conveyed by the data depends on how the data is collected, represented, and summarized.	Measurement & Data  SMP 2 – Reason abstractly and quantitatively.  SMP 4 – Model with mathematics.  SMP 6 – Attend to precision.	Represent and Interpret Data.	3.MD.3 - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in the scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i>	Represent and interpret data on scaled bar graphs.	Record the number of letters in each child's last name and create a tally chart to organize the data. Use data to create a bar graph.		9.1.4.A.5 - Apply critical thinking and problem-solving skills in classroom and family settings
How do operations affect numbers?	The magnitude of numbers affects the outcome of operations on them.	Operations & Algebraic Thinking  SMP 2 – Reason abstractly and quantitatively.  SMP 4 – Model with mathematics.  SMP 6 – Attend to precision.	Understand properties of multiplication and the relationship between multiplication and division.	3.OA.1 – Interpret products of whole numbers, e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each. <i>For example, describe and/or represent a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</i>	Use drawings and number models to represent and solve multiplication number stories.	Susie bought three packs of crayons. There are 8 crayons in each box. How many crayons in all?		9.2.4.B.2 - Identify age-appropriate financial goals.
What makes a computational strategy both effective and efficient?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.		Multiply and divide within 100.	3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all products of two one-digit numbers.	Use drawings and number models to represent and solve multiplication number stories.	Show how you would represent 7 groups of 10 in an array or other drawing and write the corresponding number model.	SL.3.1.D - Explain their own ideas and understanding in light of the discussion.	
How do mathematical	One representation	Operations & Algebraic	Represent and solve	3.OA.2 - Interpret whole-number quotients of whole	Solve division	Johnny shares 15 cookies with four		

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ideas interconnect and build on one another to produce a coherent whole?	may sometimes be more helpful than another; used together, multiple representations give a fuller understanding of a problem.	Thinking  SMP 4 – Model with mathematics.	problems involving multiplication and division.	numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.	number stories.	of his friends. How many cookies does each child get?		
What makes a computational strategy both effective and efficient?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations & Algebraic Thinking  SMP 2 – Reason abstractly and quantitatively.  SMP 3 – Construct viable arguments and critique the reasoning of others.	Understand properties of multiplication and the relationship between multiplication and division.	3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all products of two one-digit numbers.  3.OA.1 – Interpret products of whole numbers, e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each. <i>For example, describe and/or represent a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</i>	Develop strategies for 2s 5s and 10s facts.	Count, sketch and write a number model for a given number of dimes or nickels.	W.3.2.A - Introduce a topic and group related information together; include text features (e.g., illustrations, diagrams, captions) when useful to support comprehension.	9.1.4.A.5 - Apply critical thinking and problem-solving skills in classroom and family settings.
How can measurements be used to solve problems?	What we measure affects how we measure it.	Measurement & Data  SMP 2 – Reason abstractly and quantitatively.  SMP 5 – Use appropriate tools	Solve problems involving measurement and estimation.	3.MD.2 - Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving	Estimate and compare masses.	Using a pan balance, demonstrate how to measure mass of a given object.		

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		strategically.		masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.				
How do geometric relationships help to solve problems and/or make sense of phenomena?	Geometric relationships provide a means to make sense of a variety of phenomena.	Geometry SMP 2 – Use appropriate tools strategically. SMP 4 – Model with mathematics.	Reason with shapes and their attributes.	3.G.2 - Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. <i>For example, partition a shape into 4 parts with equal area, and describe the area of each part as <math>\frac{1}{4}</math> of the area of the shape.</i>	Divide wholes and sets into equal shares.	Share two pancakes equally among four people. Draw a picture to represent how much each gets.		9.1.4.A.1 - Recognize a problem and brainstorm ways to solve the problem individually or collaboratively
How do mathematical ideas interconnect and build on one another to produce a coherent whole?	A quantity can be represented numerically in a variety of ways.	Number and Operations – Fractions. SMP 4 – Model with mathematics.	Develop understanding of fractions as numbers.	3.NF.1 - Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by $a$ parts of size $\frac{1}{b}$ .	Naming equal shares with unit fractions.	Share 3 brownies among 4 friends. What part of the 3 brownies can each friend get? Draw a picture to show how you shared the brownies? Discuss your picture with a partner.	SL.3.6 - Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.	
<b>Unit 2 – Strategies for Multiplication and Division Pacing – 21 days</b>						Written Assessment, Open Response Question		
What makes a computational strategy both effective and efficient?	Computational fluency includes understanding the meaning and the appropriate use of numerical	Number & Operation in Base Ten SMP 7 – Look for and make use of structure.	Use place value understanding and properties of operations to perform multi-digit	3.NBT.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.	Use basic addition and subtraction facts to solve problems with larger numbers.	$6 + 8 = 14$ $26 + 8 = ?$ $46 + 8 = ?$ $66 + 8 = ?$  $16 - 9 = 7$ $26 - 9 = ?$ $56 - 9 = ?$		

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	operations.		arithmetic.					
How do mathematical ideas interconnect and build on one another to produce a coherent whole?	One representation may sometimes be more helpful than another; used together, multiple representations give a fuller understanding of a problem	Operations & Algebraic Thinking  SMP 1 – Make sense of problems and persevere in solving them.	Solve problems involving the four operations, and identify and explain patterns in arithmetic.	3.OA.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 computations and estimation strategies including rounding.	Use diagrams or pictures to solve number stories.	John had \$0.90. He bought milk and had \$0.23 left. How much did the milk cost?		9.2.4.B.2 - Identify age-appropriate financial goals.
How do mathematical ideas interconnect and build on one another to produce a coherent whole?	One representation may sometimes be more helpful than another; used together, multiple representations give a fuller understanding of a problem.	Operations & Algebraic Thinking  SMP 2 – Reason abstractly and quantitatively.  SMP 3 – Construct viable arguments and critique the reasoning of others.	Multiply and divide within 100.	3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all products of two one-digit numbers.	Make sense of and solve 2 step number stories using more than one operation.	A package of crayons contains 12 crayons. You buy 2 packs of crayons. You lose 6 crayons. How many crayons are left?		
			Solve problems involving the four operations, and identify and explain patterns in arithmetic.	3.OA.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 computations and estimation strategies including rounding.	Solve array problems.	Write a number model with “a” for the unknown value and draw an array to help solve.  5 shelves of books, 7 books per shelf: how many books?	9.1.4.A.5 - Apply critical thinking and problem-solving skills in classroom and family settings.	

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How do operations affect numbers?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations & Algebraic Thinking  SMP 8 – Look for and express regularity in repeated reasoning.	Represent and solve problems involving multiplication and division.	3.OA.3 - Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	Solve problems involving multiples of equal groups and make sense of multiplying by 0 and 1.	There are 47 marbles in a bag. You have 0 bags of marbles. How many marbles do you have? Write a number model.		
How do mathematical ideas interconnect and build on one another to produce a coherent whole?	One representation may sometimes be more helpful than another; used together, multiple representations give a fuller understanding of a problem.	Operations & Algebraic Thinking  SMP 2 – Reason abstractly and quantitatively.  SMP 8 – Look for and express regularity in repeated reasoning.	Represent and solve problems involving multiplication and division.	3.OA.2 - Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. represent the problem.	Create mathematical representations for solving division problems.	Karen and Robin share 16 markers equally. How many markers does each child get? Use drawings, numbers, and words to show your thinking.	RL.3.1 - Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	

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What makes a computational strategy both effective and efficient?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations & Algebraic Thinking  SMP 2 – Reason abstractly and quantitatively.  SMP 3 – Construct viable arguments and critique the reasoning of others.	Represent and solve problems involving multiplication and division.	3.OA.3 - Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	Solve division number stories and learn about remainders.	Kim has 23 pencils to share equally among 3 pencil boxes. How many pencils does she put in each box? How many pencils are left over?	SL.3.1.A – Explicitly draw on previously read text or material and other information known about the topic to explore ideas under discussion.	
<b>Unit 3 -Operations</b> <b>Pacing-21 days</b>						Written Assessment, Open Response Question		
How do operations affect numbers?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations & Algebraic Thinking  SMP 7 – Look for and make use of structure.	Represent and solve problems involving multiplication and division.  Multiply and divide within 100.	3.OA.4 - Determine the unknown number in a multiplication or division equation relating three whole numbers.  3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all	Find missing numbers and rules in “What’s My Rule?” tables.	Complete a multiplication and division number pattern chart with “Input and Output” information using the following numbers: Rule – divide by 5 Input numbers: 15, 35 Output numbers: 6, 5.		

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				products of two one-digit numbers.				
How can we decide when to use an exact answer and when to use an estimate?	Context is critical when using estimation.	Number & Operations in Base Ten  SMP 6 – Attend to precision.	Use place value understanding and properties of operations to perform multi-digit arithmetic.	3.NBT.1 - Use place value understanding to round whole numbers to the nearest 10 or 100.  3.NBT.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.	Make estimates to solve problems.	Make an estimate for $385 + 423 = ?$		
		Operations & Algebraic Thinking  SMP 3 – Construct viable arguments and critique the reasoning of others.	Solve problems involving the four operations, and identify and explain patterns in arithmetic.	3.OA.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 computations and estimation strategies including rounding.	Estimate sums and find exact answers	Joe and Sue need 120 magnets to finish their project. Joe has 47 magnets and Sue has 68 magnets. Do they have enough magnets between them to finish? Estimate and find an exact answer.		
What makes a computation strategy both effective and efficient?	In many cases, there are multiple algorithms for finding a mathematical solution, and those algorithms are frequently associated with	Number & Operations in Base Ten  SMP 2 – Reason abstractly and quantitatively.  SMP 3 – Construct viable arguments and critique.	Use place value understanding and properties of operations to perform multi-digit arithmetic.	3.NBT.1 - Use place value understanding to round whole numbers to the nearest 10 or 100.  3.NBT.2 - Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship	Use partial sums addition and column addition to add 2 and 3 digit numbers.	Use partial sums column addition to solve the following problem:  $365 + 254 = ?$		

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	different cultures.			between addition and subtraction				
What makes a computation strategy both effective and efficient?	In many cases, there are multiple algorithms for finding a mathematical solution, and those algorithms are frequently associated with different cultures.	Number & Operations in Base Ten  SMP 2 – Reason abstractly and quantitatively.  SMP 3 – Construct viable arguments and critique.	Use place value understanding and properties of operations to perform multi-digit arithmetic.	3.NBT.1 - Use place value understanding to round whole numbers to the nearest 10 or 100.  3.NBT.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	Solve subtraction problems using count up strategy and expand and trade algorithm.	Solve the following problem using the expand and trade algorithm or counting up strategy:  425- 334 = ?  Explain how you solved the problem.	SL.3.1.D - Explain their own ideas and understanding in light of the discussion.	9.1.4.D.1 - Use effective oral and written communication in face-to-face and online interactions and when presenting to an audience.
How do mathematical ideas interconnect and build on one another to produce a coherent whole?	The message conveyed by the data depends on how the data is collected, represented, and summarized.	Measurement and Data  SMP 4 – Model with mathematics.  SMP 6 – Attend to precision.	Represent and interpret data.	3.MD.3 - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in the scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i>	Create a scaled picture graph	Create a picture graph showing the number of minutes spent reading for a week. Discuss the results with a partner.	SL.3.1 - Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on <i>grade 3 topics and texts</i> , building on others' ideas and expressing their own clearly.	9.1.4.F.2 - Establish and follow performance goals to guide progress in assigned areas of responsibility and accountability during classroom projects and extra-curricular activities.
How do operations affect numbers?	Computational fluency includes understanding	Operations and Algebraic Thinking	Represent and solve problems involving	3.OA.1 – Interpret products of whole numbers, e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7	Discover and develop multiplication strategies	Solve the following multiplications problems using any fact strategy from		

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	the meaning and the appropriate use of numerical operations.		multiplication and division  Multiply and divide within 100	objects each. <i>For example, describe and/or represent a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</i>  3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all products of two one-digit numbers.	(such as squares, turn around facts, adding-a-group, subtract-a-group) to compile fact strategy journal	your Fact Strategy Journal.  $4 \times 5 = ?$  $3 \times 6 = ?$  $5 \times 5 = ?$		
How do operations affect numbers?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations and Algebraic Thinking  SMP 2 – Reason abstractly and quantitatively.  SMP 3 – Construct viable arguments and critique.	Represent and solve problems involving multiplication and division	3.OA.1 – Interpret products of whole numbers, e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each. <i>For example, describe and/or represent a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</i>  3.OA.3 - Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	Find turn-around facts	Find the turn-around facts:  $4 \times 3 =$  $6 \times 7 =$		

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			Understand properties of multiplication and the relationship between multiplication and division	3.OA.5 - Apply the properties of operations as strategies to multiply and divide.				
How do operations affect numbers?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations and Algebraic Thinking  SMP 2 – Reason abstractly and quantitatively.  SMP 3 – Construct viable arguments and critique.	Multiply and divide within 100          Solve problems involving the four operations, and identify and explain patterns in arithmetic.	3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all products of two one-digit numbers.   3.OA.9 - Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations	Develop strategies such as add a group or subtract a group to find unknown products	Find the product and describe the strategy used:  $7 \times 8 =$  $6 \times 4 =$		
How do operations affect numbers?	The magnitude of numbers affects the outcome of operations on them.	Number & Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit	3.NBT.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.	Find equivalent names for numbers.	Write at least ten different names for 20.		

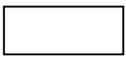
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		Operations and Algebraic Thinking	arithmetic. Multiply and divide within 100.	3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all products of two one-digit numbers.				
<b>Unit 4 – Measurement and Geometry</b>						Written Assessment, Open Response Question		
<b>Pacing – 20 days</b>								
How can measurements be used to solve problems?	Everyday objects have a variety of attributes, each of which can be measured in many ways.	Measurement & Data  SMP 4 – Model with mathematics.  SMP 5 – Use appropriate tools strategically.  SMP 6 – Attend to precision	Represent and interpret data	3.MD.4 - Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units - whole numbers, halves, or quarters.	Measure to the nearest $\frac{1}{2}$ inch and centimeter and create a line plot.	Measure width of students hands to nearest $\frac{1}{2}$ inch and $\frac{1}{2}$ centimeter. Then create a class line plot.		9.1.4.C.1- Practice collaborative skills in groups, and explain how these skills assist in completing tasks in different settings (at home, in school, and during play).

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How can measurements be used to solve problems?	Everyday objects have a variety of attributes, each of which can be measured in many ways.	Measurement & Data  SMP 5 – Use appropriate tools strategically.  SMP 6 – Attend to precision.	Represent and interpret data	3.MD.4 - Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units - whole numbers, halves, or quarters.	Measure in $\frac{1}{2}$ inch increments along a ruler (representing fractions on a number line).	Draw a number line from zero to 3. Mark 1 inch, $1\frac{1}{2}$ inches and so on.		
					Measure distances around objects to the nearest $\frac{1}{2}$ inch.	Measure 3 different objects such as a water bottle, ball, or globe using a tape measure to the nearest $\frac{1}{2}$ inch.		
How can measurements be used to solve problems?	Everyday objects have a variety of attributes, each of which can be measured in many ways.	Measurement & Data  SMP 5 – Use appropriate tools strategically.	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	3.MD.2 - Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.	Compare masses of objects to standard masses.	Use the pan balance to find objects that weigh 1 gram, 100 grams, and 1,000 grams.		
How can spatial relationships be described by careful use of geometric language?	Geometric properties can be used to construct geometric figures.	Geometry  SMP 2 – Reason abstractly and quantitatively.	Reason with shapes and their attributes.	3.G.1 - Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g. quadrilateral). Recognize rhombuses, rectangles, and squares as examples of	Identify, compare and classify characteristics of polygons.	Use geoboards to create a quadrilateral with at least one right angle with a pair of parallel sides.		9.1.4.A.2 - Evaluate available resources that can assist in solving problems.

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				quadrilaterals, and draw examples of quadrilateral that do not belong to any of the subcategories.				
How can measurements be used to solve problems?	Geometric relationships provide a means to make sense of a variety of phenomena.	Measurement & Data  SMP 5 – Use appropriate tools strategically.  SMP 6 – Attend to precision.  SMP 7 – Look for and make use of structure.	Geometric measurement; recognize perimeter.	3.MD.8 - Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	Measure polygon perimeter to the nearest $\frac{1}{2}$ inch and solve perimeter number stories.	Draw a polygon. Name the polygon. Find the perimeter of the polygon to the nearest $\frac{1}{2}$ inch.  Mr. Smith wants to build a fence for his bunny. The longer sides are 15 feet long and the shorter sides are 4 $\frac{1}{2}$ feet long. How much fencing should Mr. Smith buy? Draw a picture to show how you solved the problem.	RI.3.1 - Ask and answer questions, and make relevant connections to demonstrate understanding of a text, referring explicitly to basis for the answers.	
How can measurements be used to solve problems?	Geometric relationships provide a means to make sense of a variety of phenomena.	Measurement & Data  SMP 4 – Model with mathematics.  SMP 5 – Use appropriate tools strategically.  SMP 6 – Attend to precision.	Solve problems involving the four operations and identify patterns in arithmetic.	3.OA.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 computations and estimation strategies including rounding.	Distinguish between perimeter and area. Find the area of a given figure using a variety of methods and write a related number sentence.	This is a 10 in x 7 in rectangle.   Find the area and perimeter. Write related number sentences.		
How can measurements	Geometric relationships	Measurement & Data	Geometric measurement:	3.MD.5a - A square with side length 1 unit, called "a	Identify areas of rectilinear	Find the area of given rectilinear		

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be used to solve problems?	provide a means to make sense of a variety of phenomena.	<p>SMP 4 – Model with mathematics.</p> <p>SMP 5 – Use appropriate tools strategically.</p> <p>SMP 6 – Attend to precision.</p>	understand the concepts of area and relate area to multiplication and to addition.	<p>unit square," is said to have "one square unit" of area, and can be used to measure area.</p> <p>3.MD.5b - A plane figure which can be covered without gaps or overlaps by <math>n</math> unit squares is said to have an area of <math>n</math> square units.</p> <p>3.MD.6 - Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).</p> <p>3.MD.7.a - Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.</p> <p>3.MD.7c - Relate area to operations of multiplication and addition by using tiling to show a concrete case that the area of a rectangle with whole-number side lengths <math>a</math> and <math>b+c</math> is the sum of <math>axb</math> and <math>axc</math>. Use area models to represent the distributive property in mathematical reasoning.</p>	figures.	figures on grid paper. Show the number model for each rectangle.		

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				3.MD.7d - Relate area to operations of multiplication and addition by recognizing area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.				
<b>Mid Year Assessment Pacing – 1 Day</b>								
<b>Unit 5 – Fractions and Multiplication Strategies Pacing – 21 days</b>						Written Assessment, Open Response Question		
How do geometric relationships help to solve problems and/or make sense of phenomena?	Geometric relationships provide a means to make sense of a variety of phenomena.	Geometry  Number & Operations -Fractions  SMP 2 – Reason abstractly and quantitatively.  SMP 3 – Construct viable arguments and critique the reasoning of others.	Reason with shapes and their attributes          Develop understanding of fractions as numbers..	3.G.2 - Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. <i>For example, partition a shape into 4 parts with equal area, and describe the area of each part as <math>\frac{1}{4}</math> of the area of the shape.</i>  3.NF.1 - Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$ .	Explore equal parts or fractions of different wholes.	Draw a square. Divide it into four equal parts. Shade one part. Write the fraction of the square that is shaded. Write the fraction of the square that is not shaded.		

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How can measurements be used to solve problems?	Measurements can be used to describe, compare, and make sense of phenomena.	Measurement & Data  SMP 1 – Make sense of problems and persevere in solving them.  SMP 2 – Reason abstractly and quantitatively.	Geometric Measurement: understand concepts of area and relate area to multiplication and to addition  Geometric Measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.	3.MD.6 - Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).  3.MD.8 - Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	Explore different shapes with the same area and find the perimeter.	Use 6 one-inch square pattern blocks and have students build every possible pentomino. Find the perimeter of each pentomino.		
How do mathematical ideas interconnect and build on one another to produce a coherent whole?	One representation may sometimes be more helpful than another; used together, multiple representations give a fuller understanding of a problem.	Number & Operations - Fractions  SMP 2 – Reason abstractly and quantitatively.  SMP 4 – Model with mathematics.  SMP 6 – Attend to precision.	Develop understanding of fractions as numbers.	3.NF.1 - Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; understand a fraction $a/b$ as the quantity formed by $a$ parts of size $1/b$ .  3.NF.3a - understanding two fractions as equivalent (equal) if they are the same size, or the same point on a number line.  3.NF.3b - recognizing and generating simple	Represent fractions in various ways, identify the numerator and denominator and equivalent fractions.	Display different fraction circles and write the unit fraction and word for each card. Identify equivalent fractions using fraction circles.		

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				<p>equivalent fractions, e.g., <math>1/2=2/4</math>, <math>4/6=2/3</math>. Explain why the fractions are equivalent, e.g., by using a visual fraction model.</p> <p>3.NF.3c - expressing whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.</p> <p>3.NF.3d - Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, <math>&lt;</math>, and justify the conclusions, e.g., by using a visual fraction model.</p>				
How do operations affect numbers?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	<p>Operations &amp; Algebraic Thinking</p> <p>SMP 1 – Make sense of problems and persevere in solving them.</p> <p>SMP 6 – Attend to precision.</p>	Represent and solve problems involving multiplication and division.	<p>3.OA.1 – Interpret products of whole numbers, e.g., interpret <math>5 \times 7</math> as the total number of objects in 5 groups of 7 objects each. <i>For example, describe and/or represent a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</i></p> <p>3.OA.4 - Determine the unknown number in a</p>	Apply strategies to solve unknown multiplication facts (helper facts).	<p>Solve the following problems and identify how the helper fact can be used to solve.</p> <p><math>6 \times 8 = ?</math></p>		9.1.4.A.5 - Apply critical thinking and problem-solving skills in classroom and family settings.

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		SMP 7 – Look for and make use of structure.	Understand properties of multiplication and the relationship between multiplication and division.	multiplication or division equation relating three whole numbers.  3.OA.5 - Apply the properties of operations as strategies to multiply and divide.				
How do geometric relationships help to solve problems and/or make sense of phenomena?	Geometric relationships provide a means to make sense of a variety of phenomena.	Operations & Algebraic Thinking	Understand properties of multiplication and the relationship between multiplication and division.	3.OA.5 - Apply the properties of operations as strategies to multiply and divide.	Explore the use of doubling to solve number stories involving area.	Use a 6 by 4 rectangle and have students divide it in half to solve area. Example: $6 \times 2 + 6 \times 2$		
How do operations affect numbers?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Measurement & Data  SMP 3 – Construct viable arguments and critique the	Solve problems involving the four operations, and identify and explain patterns in arithmetic.  Geometric measurement: understand concepts of area and relate area to	3.OA.9 - Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations.  3.MD.7d - Relate area to operations of multiplication and addition by recognizing area as additive. Find areas of rectilinear figures by	Use the doubling strategy to solve multiplication facts.	Solve the following problems using the doubling strategy.  $4 \times 8 = ?$ $6 \times 7 = ?$ $9 \times 6 = ?$		

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		reasoning of others.  SMP 7 – Look for and make use of structure.	multiplication and addition.	decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.				
How do operations affect numbers?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations & Algebraic Thinking  SMP 7 – Look for and make use of structure.  SMP 8 – Look for and express regularity in repeated reasoning.	Solve problems involving the 4 operations, and identify and explain patterns in arithmetic.	3.OA.9 - Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations.	Identify and explain arithmetic patterns using properties of operations.	Use a number grid to find patterns such as multiples of 5, 10 and 9.		
How do operations affect numbers?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations & Algebraic Thinking.  SMP 7 – Look for and make use of structure.	Represent and solve problems involving multiplication and division.  Understand properties of multiplication and the relationship between multiplication and division.	3.OA.4 - Determine the unknown number in a multiplication or division equation relating three whole numbers.  3.OA.6 - Understand division as an unknown-factor problem.	Understand the relationship between multiplication and division by finding missing factors .	Given a fact triangle find the missing number.		
How do operations affect numbers?	Computational fluency includes	Operations & Algebraic Thinking	Understand properties of multiplication	3.OA.5 - Apply the properties of operations as strategies to multiply and	Use square and near square facts	Solve the following problems using square facts and		

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	understanding the meaning and the appropriate use of numerical operations.	SMP 7 – Look for and make use of structure.	and the relationship between multiplication and division.  Solve problems involving the 4 operations, and identify and explain patterns in arithmetic.	divide.  3.OA.9 - Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations.	as a multiplication strategy to find products.	near square facts.  $6 \times 7 = ?$  $5 \times 6 = ?$		
How do operations affect numbers?	In many cases, there are multiple algorithms for finding a mathematical solution, and those algorithms are frequently associated with different cultures.	Operations & Algebraic Thinking  SMP 1 – Make sense of problems and persevere in solving them.  SMP 3 – Construct viable arguments and critique the reasoning of others.  SMP 4 – Model with mathematics.	Represent and solve problems involving multiplication and division.  Solve problems involving 4 operations, and identify and explain patterns and arithmetic.	3.OA.2 - Interpret whole-number quotients of whole numbers, e.g., interpret 56,8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.  3.OA.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 computations and estimation strategies including rounding.	Make sense of and solve a number story.	Solve: There are 12 children on a team. The coach gives each player 2 bottles of water from a package of 30. How many bottles of water are left over? Use words or pictures to solve and explain your answer.		9.1.4.D.1 - Use effective oral and written communication in face-to-face and online interactions and when presenting to an audience.
How do	Numeric	Operations &	Represent	3.OA.1 – Interpret products of whole numbers, e.g., interpret	Use Break-	Solve the following		

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mathematical ideas interconnect and build on one another to produce a coherent whole?	fluency includes both the understanding of and the ability to appropriately use numbers.	Algebraic Thinking  SMP 1 – Make sense of problems and persevere in solving them.  SMP 2 – Reason abstractly and quantitatively.  SMP 7 – Look for and make use of structure.	and solve problems involving multiplication and division.  Understand properties of multiplication and the relationship between multiplication and division.	5 x 7 as the total number of objects in 5 groups of 7 objects each. <i>For example, describe and/or represent a context in which a total number of objects can be expressed as 5 x 7.</i>  3.OA.5 - Apply the properties of operations as strategies to multiply and divide.	Apart strategy to solve multiplication facts.	problems using the Break –Apart Strategy. Use pictures or diagrams to show your work.  4 x 7 = ?  8 x 9 = ?  7 x 6 = ?		
<b>Unit 6 – Various Operations Pacing – 21 days</b>						Written Assessment Open Response Question		
How do operations affect numbers?	In many cases, there are multiple algorithms for finding a mathematical solution, and those algorithms are frequently associated with different cultures.	Number and Operations in Base Ten  SMP 1 – Make sense of problems and persevere in solving them.  SMP 6 – Attend to precision.	Use place value understanding and properties of operations to perform multi-digit arithmetic.	3.NBT.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.	Use the Trade- First method to solve subtraction problems.	Solve the following problem using the trade first method.  425 – 276 = ?		
How do operations affect numbers?	Computational fluency includes understanding the meaning	Operations & Algebraic Thinking  SMP 6 – Attend to	Multiply and divide within 100.	3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division	Demonstrate automaticity with multiplication facts.	Complete multiplication math fact inventory with factors 1-10.		

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	and the appropriate use of numerical operations.	precision.		(e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all products of two one-digit numbers.				
How do operations affect numbers?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations & Algebraic Thinking  SMP 6 – Attend to precision.  SMP 8 – Look for and express regularity in repeated reasoning.	Understand properties of multiplication and the relationship between multiplication and division.  Multiply and divide within 100.	3.OA.5 - Apply the properties of operations as strategies to multiply and divide.  3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all products of two one-digit numbers.	Use multiplication strategies.	Solve the following problems using any fact strategy from your Fact Strategy Journal.  $8 \times 4 = ?$  $7 \times 8 = ?$  $9 \times 6 = ?$		
How do operations affect numbers?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations & Algebraic Thinking  SMP 5 – Use appropriate tools strategically.  SMP 6 – Attend to precision.  SMP 7 – Look for and make use of	Represent and solve problems involving multiplication and division.  Multiply and divide within 100.	3.OA.1 – Interpret products of whole numbers, e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each. <i>For example, describe and/or represent a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</i>  3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between	Demonstrate automaticity with multiplication facts.	Complete multiplication math fact inventory with factors 1-10.		

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		structure.		multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all products of two one-digit numbers.				
How can spatial relationships be described by careful use of geometric language?	Geometric properties can be used to construct geometric figures.	Geometry  SMP 2 – Reason abstractly and quantitatively.	Reason with shapes and their attributes.	3.G.1 - Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g. quadrilateral). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilateral that do not belong to any of the subcategories.	Construct quadrilaterals and compare characteristics.	Build a square and a rhombus with straws. What properties do a rhombus and a square share?	W.3.1.C - Use linking words and phrases (e.g., <i>because</i> , <i>therefore</i> , <i>since</i> , <i>for example</i> ) to connect opinion and reasons.	
How can measurements be used to solve problems?	Everyday objects have a variety of attributes, each of which can be measured in many ways.	Measurement & Data  SMP 2 – Reason abstractly and quantitatively.  SMP 8 – Look for and express regularity in repeated reasoning.	Represent and interpret data.	3.MD.4 - Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units - whole numbers, halves, or quarters.	Measure and plot distances.	Throw a penny towards a set target (example 5 feet). Measure the distance of each throw and record. Then create a line plot. Share your results with others.	SL.3.4- Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.	9.1.4.C.1 - Practice collaborative skills in groups, and explain how these skills assist in completing tasks in different settings (at home, in school, and during play).
How can measurements	Everyday objects have a	Measurement & Data	Geometric measurement;	3.MD.8 - Solve real world and mathematical problems	Compare perimeter	Measure and calculate the		

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be used to solve problems?	variety of attributes, each of which can be measured in many ways.	SMP 2 – Reason abstractly and quantitatively.  SMP 8 – Look for and express regularity in repeated reasoning.	recognize perimeter.	involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.	measurements of polygons.	perimeter of several pattern blocks. Compare the perimeters.		
How do operations affect numbers?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations & Algebraic Thinking  SMP 1 – Make sense of problems and persevere in solving them.	Represent and solve problems involving multiplication and division.  Understand properties of multiplication and the relationship between multiplication and division.	3.OA.3 - Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.  3.OA.4 - Determine the unknown number in a multiplication or division equation relating three whole numbers.  3.OA.6 – Understand division as an unknown-factor problem.	Make sense of and solve number stories	Solve the following number story: 4 packages of pencils 6 pencils in each packages What is the total number of pencils? Write the number model to support answer.		
How do operations	Computational fluency	Operations & Algebraic	Represent and solve	3.OA.4 - Determine the unknown number in a	Use strategies to multiple	Solve $6 \times 15$ using any strategy. Show		

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affect numbers?	includes understanding the meaning and the appropriate use of numerical operations.	Thinking SMP 2 – Reason abstractly and quantitatively. SMP 3 – Construct viable arguments and critique. SMP 7 – Look for and make use of structure.	problems involving multiplication and division.  Understand properties of multiplication and the relationship between multiplication and division.	multiplication or division equation relating three whole numbers.  3.OA.5 - Apply the properties of operations as strategies to multiply and divide.	with larger factors	how you solved the problem		
What makes an algebraic algorithm both effective and efficient?	Algebraic and numeric procedures are interconnected and build on one another to produce a coherent whole.	Operations & Algebraic Thinking SMP 1 – Make sense of problems and persevere in solving them. SMP 4 – Model with mathematics. SMP 7 – Look for and make use of structure.	Solve problems involving 4 operations, and identify and explain patterns in arithmetic.	3.OA.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 computations and estimation strategies including rounding.	Use parentheses in number sentences and write a two-step number story.	Solve the following and then write a number story to go with the model.  $12 - (2 \times 3) = ?$		9.1.4.A.5 - Apply critical thinking and problem-solving skills in classroom and family settings.
					Use the order of operations to solve multistep problems and represent them with equations.	Solve:  $3 + 5 \times 4 = ?$		
<b>Unit 7 – Fractions</b> <b>Pacing – 21 days</b>						Written Assessment Open Response Question		

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How can measurements be used to solve problems?	What we measure affects how we measure it.	Measurement & Data  SMP 5 – Use appropriate tools strategically.  SMP 6 – Attend to precision.	Solve problems involving measurement and estimation.	3.MD.2 - Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.	Estimate and measure liquid volumes.	Show 3 different containers and predict which will hold the most liquid. Check predictions with a 1 liter beaker.  Write 2 observations about the different liquid volumes.		
How can we decide when to use an exact answer and when to use an estimate?	Context is crucial when using estimation.	Measurement and Data	Geometric measurement: understand concepts of area and relate areas to multiplication and to addition.	3.MD.7c - Relate area to operations of multiplication and addition by using tiling to show a concrete case that the area of a rectangle with whole-number side lengths $a$ and $b+c$ is the sum of $axb$ and $axc$ . Use area models to represent the distributive property in mathematical reasoning.	Use estimation of area to solve problems.	Estimate how many cards would fit in a 1 square foot? How many cards would fit in 10 square feet?		
How do mathematical ideas interconnect and build on one another to produce a coherent whole?	One representation may sometimes be more helpful than another; used together, multiple representations give a fuller understanding of a problem.	Number & Operations -Fractions  SMP 4 – Model with mathematics.	Develop understanding of fractions as numbers.	3.NF.3a - Understanding two fractions as equivalent (equal) if they are the same size, or the same point on a number line.	Sort representations of equal and non-equal shares.	Use fraction cards and have students match equal fraction cards.		

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How can measurements be used to solve problems?	What we measure affects how we measure.	Measurement and Data	Solve problems involving measurement and estimation.	<p>3.MD.1 - Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.</p> <p>3.MD.2 - Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.</p>	Solve number stories involving time, mass, volume and length.	<p>Solve the following problem:</p> <p>Ava left to go swimming at 4:05 and returned at 5:25. How long was she gone?</p>		
How do mathematical ideas interconnect and build on one another to produce a coherent whole?	One representation may sometimes be more helpful than another; used together, multiple representations give a fuller understanding of a problem.	<p>Number &amp; Operations -Fractions</p> <p>SMP 4 – Model with mathematics.</p>	Develop understanding of fractions as numbers.	<p>3.NF.1 - Understand a fraction <math>1/b</math> as the quantity formed by 1 part when a whole is partitioned into <math>b</math> equal parts; understand a fraction <math>a/b</math> as the quantity formed by <math>a</math> parts of size <math>1/b</math>.</p> <p>3.NF.2a - Representing a fraction <math>1/b</math> on a number line diagram by defining</p>	Name, compare and order fractions using fraction strips, number lines and fraction circles.	<p>Use fractions strips to compare using <math>&lt;</math>, <math>&gt;</math>, <math>=</math></p> <p><math>2/3</math> ___ <math>1/3</math></p> <p><math>3/5</math> ___ <math>5/5</math></p> <p><math>1/2</math> ___ <math>2/4</math></p>		

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				<p>the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size <math>1/b</math> and that the endpoint of the part based at 0 locates the number <math>1/b</math> on the number line.</p> <p>3.NF.3a - Understanding two fractions as equivalent (equal) if they are the same size, or the same point on a number line.</p>	<p>Partition distances to locate fractions on number lines.</p>	<p>Fill in the missing fractions on the number line.</p> 		
				<p>3.NF.3b - Recognize and generate simple equivalent fractions, e.g., <math>1/2 = 2/4</math>, <math>4/6 = 2/3</math>. Explain why the fractions are equivalent, e.g., by using a visual fraction model.</p> <p>3.NF.3c - Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.</p> <p>3.NF.3d - Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of</p>	<p>Solve fraction number stories.</p>	<p>Solve. 3 friends share 9 apples. How many apples does each friend have?</p>		

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				comparisons with the symbols $>$ , $=$ , $<$ , and justify the conclusions, e.g., by using a visual fraction model.				
How do mathematical ideas interconnect and build on one another to produce a coherent whole?	Mathematical models can be used to describe and quantify physical relationships.	Number & Operations -Fractions  SMP 4 – Model with mathematics.	Develop understanding of fractions as numbers.	3.NF.1 - Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; understand a fraction $a/b$ as the quantity formed by a parts of size $1/b$ .	Name fractions of sets of objects.	14 dogs are in the park. 2 of them are chasing a ball. What fraction of the dogs is chasing a ball?		
		Operations & Algebraic Thinking  SMP 4 – Model with mathematics.	Represent and solve problems involving multiplication and division.	3.OA.2 - Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.	Solve word problems involving division and fractions.	6 people share a collection of 18 marbles equally. How many marbles does each person get? What fraction of the marbles in the collection does each person get?		
<b>Unit 8 – Multiplication and Division</b> <b>Pacing – 16 days</b>						Written Assessment Open Response Question		
How do mathematical ideas interconnect and build on one another to produce a coherent whole?	A quantity can be represented numerically in various ways.	Number & Operations -Fractions  SMP 5 – Use appropriate tools strategically.  SMP 6 – Attend to precision.	Develop understanding of fractions as numbers.	3.NF.1 - Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; understand a fraction $a/b$ as the quantity formed by a parts of size $1/b$ .  3.NF.3 – Explain	Explore rulers marked with inches, $\frac{1}{2}$ inches, $\frac{1}{4}$ inches and $\frac{1}{8}$ inches.	Compare 2 different rulers with a friend and write down 2 observations about how they are different and how they are the same.		9.1.4.D.1 - Use effective oral and written communication in face-to-face and online interactions and when presenting to an audience.

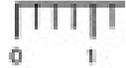
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				<p>equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <p>3.NF.3c - Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.</p>				
How can measurements be used to solve problems?	What we measure affects how we measure it.	<p>Measurement &amp; Data.</p> <p>SMP 5 – Use appropriate tools strategically.</p> <p>SMP 6 – Attend to precision.</p>	Represent and interpret data	<p>3.MD.4 - Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units - whole numbers, halves, or quarters.</p>	Use rulers to measure to the nearest 1/4 inch.	Measure your math journal (length and width) to the nearest 1/4 inch.		
What makes a computational strategy both effective and efficient?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	<p>Operations &amp; Algebraic Thinking</p> <p>Numbers &amp; Operations in Base Ten</p> <p>SMP 2 – Reason abstractly and quantitatively.</p> <p>SMP 6 – Attend to precision.</p> <p>SMP 7 – Look for and make use of</p>	<p>Understand properties of multiplication and the relationship between multiplication and division.</p> <p>Multiply and divide within 100.</p>	<p>3.OA.6 - Understand division as an unknown-factor problem.</p> <p>3.NBT.3 - Multiply one-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value and properties of operations.</p>	Develop strategies for solving extended multiplication and division facts.	<p>Solve using an extended fact strategy.</p> <p>2 x 4 =? 2 x 40 =? 2 x 400 =?</p> <p>10/2 = ? 100/2 = ? 1,000/2 = ?</p>		

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		structure.						
How can patterns, relations, and functions be used as tools to best describe and help explain real-life situations?	Algebraic representations can be used to generalize patterns and relationships.	Operations & Algebraic Thinking  SMP 7 – Look for and make use of structure.  SMP 8 – Look for and express regularity in repeated reasoning.	Multiply and divide within 100.	3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all products of two one-digit numbers.	Find factors of counting numbers.	Find the factors for the following numbers: 12 18 24		
What makes a computational strategy both effective and efficient?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Numbers & Operations in Base Ten  SMP 7 – Look for and make use of structure.  SMP 8 – Look for and express regularity in repeated reasoning.	Use place value understanding and properties of operations to perform multi-digit arithmetic.	3.NBT.3 - Multiply one-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value and properties of operations.	Find factors of counting numbers.	Find the factors for the following numbers:  120 240 450		
How can we use mathematical models to describe physical relationships?	Mathematical models can be used to describe and quantify physical relationships.	Operations & Algebraic Thinking  SMP 3 – Construct viable arguments.  SMP 4 – Model	Represent and solve problems using multiplication and division.	3.OA.2 - Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when	Use strategies to solve real world problems and justify claims.	There are 36 members in the school chorus. How can the choir director arrange the chairs in the rows equally? Find 2 different ways that	SL.3.1.D - Explain their own ideas and understanding in light of the discussion.	9.1.4.B.1 - Participate in brainstorming sessions to seek information, ideas, and strategies that

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		with mathematics.		56 objects are partitioned into equal shares of 8 objects each.  3.OA.3 - Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.		the children can be seated. Draw an array of each arrangement.		foster creative thinking.
					Model equal sharing situations with \$10 and \$1 bills.	If \$62.00 is shared equally by 3 people. How much money does each person get?		9.2.4.B.2 - Identify age-appropriate financial goals.
How do mathematical ideas interconnect and build on one another to produce a coherent whole?	One representation may sometimes be more helpful than another; used together, multiple representations give a fuller understanding of a problem.	Number & Operations -Fractions  SMP 1 – Make sense of problems and persevere in solving them.  SMP 2 – Reason abstractly and quantitatively.  SMP 8 – Look for and express regularity in repeated reasoning.	Develop understanding of fractions as numbers.	3.NF.2 - Understand a fraction as a number on the number line; represent fractions on a number line diagram.  3.NF.2a - Representing a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into $b$ equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.  3.NF.2b - Represent a fraction $a/b$ on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the	Plot fractions on a number line.	Fill in the missing fractions on the number line.  		

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				resulting interval has size $a/b$ and that its endpoint locates the number $a/b$ on the number line.				
How can spatial relationships be described by careful use of geometric language?	Geometric relationships provide a means to make sense of a variety of phenomena.	Number & Operations -Fractions	Develop understanding of fractions as numbers.	<p>3.NF.3 - Explain equivalences of fractions in special cases, and compare fractions by reasoning about their size.</p> <p>3.NF.3a – Understanding two fractions as equivalent (equal) if they are the same size, or the same point on a number line.</p> <p>3.NF.3b - recognize and generate simple equivalent fractions, e.g., <math>\frac{1}{2} = \frac{2}{4}</math>, <math>\frac{4}{6} = \frac{2}{3}</math>. Explain why the fractions are equivalent, e.g., by using a visual fraction model.</p> <p>3.NF.3d - Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, <math>&lt;</math>, and justify the conclusions,</p>	Find equivalent fractions using fraction circles.	Use fractions circles to find the missing part and write a fraction for that part.		

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		Geometry	Reason with shapes and their attributes.	e.g., by using a visual fraction model.  3.G.2 - Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. <i>For example, partition a shape into 4 parts with equal area, and describe the area of each part as <math>\frac{1}{4}</math> of the area of the shape.</i>				
How can measurements be used to solve problems?	What we measure affects how we measure it.	Measurement & Data  SMP 8 – Look for and express regularity in repeated reasoning.	Geometric measurement; understand concepts of area and relate area to multiplication and to addition.	3.MD.7 Relate area to the operations of multiplication and division.  3.MD.7b Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world mathematical problems, and represent whole number products as rectangular areas in mathematical reasoning.	Create rectangles using given area measures.	Use geoboards to create as many rectangles as possible with the area of 24. Write down the length and width of each rectangle.		9.1.4.A.2 - Evaluate available resources that can assist in solving problems.
How do geometric relationships help to solve problems and/or make sense of phenomena?	Geometric relationships provide a means to make sense of a variety of phenomena.	Geometry  SMP 2 – Reason abstractly and quantitatively.  SMP 6 – Attend to precision.	Reason with shapes and their attributes.	3.G.1 - Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of	Explore the shared attributes of prisms.	Show students a rectangular prism and have them identify the base, vertex, edges and faces.	RI.3.4 - Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a	

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		SMP 7 – Look for and make use of structure.		quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.			<i>grade 3 topic or subject area.</i>	
<b>Unit 9- Reviewing Operations Pacing – 16 days</b>						Written Assessment Open Response Question		
What makes a computational strategy both effective and efficient?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations & Algebraic Thinking  SMP 6 – Attend to precision.  SMP 7 – Look for and make use of structure.	Represent and solve problems involving multiplication and division.  Multiply and Divide within 100.	3.OA.1 – Interpret products of whole numbers, e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each. <i>For example, describe and/or represent a context in which a total number of objects can be expressed as <math>5 \times 7</math>.</i>  3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all products of two one-digit numbers.	Develop multiplication fluency.	Complete multiplication math fact inventory with factors 1-10.		
What makes a computational strategy both effective and efficient?	Computational fluency includes understanding the meaning and the	Operations & Algebraic Thinking  SMP 1 – Make sense of problems	Represent and solve problems involving multiplication and division.	3.OA.3 - Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement	Solve number stories by multiplying and viding with multiples of	Jen has 6 cases of water. Each case holds 20 bottles. How many bottles of water does she have? Write a	SL.3.1.D - Explain their own ideas and understanding in light of the	

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	appropriate use of numerical operations.	and persevere in solving them.  SMP 4 – Model with mathematics.	Understand properties of multiplication and the relationship between multiplication and division.	quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.  3.OA.4 - Determine the unknown number in a multiplication or division equation relating three whole numbers.  3.OA.6 - Understand division as an unknown-factor problem.	10.	number model or draw a picture or diagram to solve.	discussion.	
How can measurements be used to solve problems?	Measurements can be used to describe, compare, and make sense of phenomena.	Measurement & Data  SMP 1 – Make sense of problems and persevere in solving them.  SMP 4 – Model with mathematics.	Solve problems involving measurement and estimation.	3.MD.2 - Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.	Solve number stories involving mass and volume by multiplying and dividing with multiples of 10.	What is the total mass of 60 bald eagles that each have a mass of 4 kilograms? Write a number model or draw a picture or diagram. Explain your strategy.		9.1.4.A.5 - Apply critical thinking and problem-solving skills in classroom and family settings.

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What makes a computational strategy both effective and efficient?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations & Algebraic Thinking  SMP 1 – Make sense of problems and persevere in solving them.  SMP 6 – Attend to precision.  SMP 7 – Look for and make use of structure.	Represent and solve problems involving multiplication and division.  Multiply and divide within 100.  Use place value understanding and properties of operations to perform multi-digit arithmetic.	3.OA.3 - Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.  3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end for Grade 3, know from memory all products of two one-digit numbers.  3.NBT.3 - Multiply one-digit whole numbers by multiples of 10 in the range 10-90 using strategies based on place value and properties of operations.	Use mental computation to multiply problems involving larger factors.	Solve the following problems using mental math: Use the Break-apart strategy.  $6 \times 13 = ?$ $6 \times 10 = ?$ $6 \times 3 = ?$		
How can measurements be used to solve problems?	Measurements can be used to describe, compare, and	Measurement & Data  SMP 1 – Make	Solve problems involving measurement	3.MD.1 - Tell and write time to the nearest minute and measure time intervals in minutes. Solve word	Solve elapsed time problems.	Johnny goes to see a movie that is 2 hours and 15 minutes long. The		9.1.4.A.3 - Determine when the use of technology

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	make sense of phenomena.	sense of problems and persevere in solving them.	and estimation.	problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.		movie starts at 4:00. What time will the movie be over?		is appropriate to solve problems.
			Solve problems involving measurement and estimation.	3.MD.2 - Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.	Find the masses of objects.	Use the pan balance to find objects that weigh 1 gram, 100 grams, and 1,000 grams.		
How do geometric relationships help solve problems and/or make sense of phenomena?	Geometric properties can be used to construct geometric figures.	Geometry  SMP 1 – Make sense of problems and persevere in solving them.	Reason with shapes and their attributes.	3.G.1 - Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.  3.G.2 - Partition shapes into parts with equal areas. Express the area of each	Reassemble a square.	Divide a square and cut it into equal sized triangles. Reassemble to make the square.		9.1.4.B.1 - Participate in brainstorming sessions to seek information, ideas, and strategies that foster creative thinking.

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				part as a unit fraction of the whole. <i>For example, partition a shape into 4 parts with equal area, and describe the area of each part as <math>\frac{1}{4}</math> of the area of the shape.</i>				
What makes a computational strategy both effective and efficient?	Computational fluency includes understanding the meaning and the appropriate use of numerical operations.	Operations & Algebraic Thinking  SMP 2 – Reason abstractly and quantitatively.  SMP 6 – Attend to precision.  SMP 7 – Look for and make use of structure.	Understand properties of multiplication and the relationship between multiplication and division.	3.OA.5 - Apply the properties of operations as strategies to multiply and divide.	Partition rectangles to solve multi-digit multiplication problems.	Solve the following multiplication problem by using the partitioning rectangle strategy.  $3 \times 27 = ?$  $3 \times 20 = ?$  $3 \times 7 = ?$		
How can measurements be used to solve problems?	Everyday objects have a variety of attributes, each of which can be measured in many ways.	Measurement & Data  SMP 2 – Reason abstractly and quantitatively.  SMP 6 – Attend to precision.  SMP 7 – Look for and make use of structure.	Geometric measurement: understand concepts of area and relate area to multiplication and to addition.	3.MD.7.b - Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.  3.MD.7c - Relate area to operations of multiplication and addition by using tiling to show a concrete case that the area of a rectangle with whole-	Solve multiplication problems using an area model.	Solve the following multiplication problem by using the partitioning rectangle strategy.  $4 \times 35 = ?$  $4 \times 30 = ?$  $4 \times 5 = ?$		



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			perform multi-digit arithmetic.	between addition and subtraction				
How can experimental and theoretical probabilities be used to make predictions or draw conclusions?	The results of a statistical investigation can be used to support or refute an argument.	Measurement & Data  SMP 4 – Model with mathematics.  SMP 6 – Attend to precision.	Solve problems involving measurement and estimation.          Represent and interpret data.	3.MD.1 - Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.          3.MD.3 - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in the scaled bar graphs. <i>For example, draw a bar graph in which each square in the bar graph might represent 5 pets.</i>	Analyze the length-of-day graph.	Compare the length of a day in December to a day in June. Write down 2 observations.	W.3.2.B - Develop the topic with facts, definitions, and details.	9.1.4.E.3 - Distinguish how digital media are used by individuals, groups, and organizations for varying purposes.
End of Year Assessment Pacing: 1 Day								