

**3rd Grade Math Curriculum Guide
Lunenburg County Public Schools
June 2014**

Marking Period: First Nine Weeks

Days: 5

Reporting Category/Strand: Number and Number Sense

SOL 3.2	The student will recognize and use the inverse relationships between addition/subtraction to complete basic fact sentences. The student will use these relationships to solve problems.
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand how addition and subtraction are related. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Use the inverse relationships between addition/subtraction to solve related basic fact sentences. For example, $5 + 3 = 8$ and $8 - 3 = \underline{\quad}$. • Write three related basic fact sentences when given one basic fact sentence for addition/subtraction . For example, given $3 + 2 = 5$, solve the related facts $\underline{\quad} + 3 = 5$, $5 - 3 = \underline{\quad}$, and $5 - \underline{\quad} = 3$.
Essential Questions	
Instructional Resources	<p>Correlations Super Teacher Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites Addition/Subtraction Fact Families Teacher Pay Teachers Addition SMART Board Louisa County Public Schools Smart Triangles Louisa County Public Schools Fishing For Fact Families Fact Family Powerpoint Fact Families Addition/Subtraction Smart Exchange Fact Families Smart Exchange Addition/Subtraction (That Quiz)</p> <p>Lesson Plans VDOE ESS: Inverse Operations</p> <p>Videos Discovery Education Inverse Operations</p> <p>Literature/Music Connections Trade Books</p>

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Essential Vocabulary	<p><u>addition</u>: to join two or more numbers or quantities to get one number called the sum or total.</p> <p><u>subtraction</u>: to take one quantity away from another</p> <p><u>inverse relationships</u>: opposite, reverse operations</p> <p><u>fact sentence</u>: a mathematical equation</p>
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Marking Period: First Nine Weeks

Days: 2

Reporting Category/Strand: Patterns, Functions, and Algebra

SOL 3.20	<p>The student will</p> <p>a) investigate the identity and the commutative properties for addition; and</p> <p>b) identify examples of the identity and commutative properties for addition</p>
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand that mathematical relationships can be expressed using number sentences. • Understand the identity property for addition. • Understand the commutative property of addition. • Understand that quantities on both sides of an equals sign must be equal. • Understand that quantities on both sides of the not equal sign are not equal. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Investigate the identity property for addition and determine that when the number zero is added to another number or another number is added to the number zero, that number remains unchanged. Examples of the identity property for addition are $0 + 2 = 2$; $5 + 0 = 5$. • Investigate the identity property for addition. • Recognize that the commutative property for addition is an order property. Changing the order of the addends does not change the sum ($5 + 4 = 9$ and $4 + 5 = 9$). • Identify examples of the identity and commutative properties for addition.
Essential Questions	
Instructional Resources	<p>Correlations</p> <p>Addition Properties Super Teacher Worksheets</p> <p>Properties of Addition Teachers Pay Teachers</p> <p>VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites</p>

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	<p>Properties of Addition Smart Exchange Addition Properties IXL Properties of Addition IXL Solve Using Properties of Addition</p> <p>Lesson Plans VDOE ESS: Property Commute VDOE ESS: My Identity is in My Pocket</p> <p>Videos Discovery Education: Properties and Relationships</p> <p>Literature/Music Connections</p>
Essential Vocabulary	<p><u>property</u>: feature or features, characteristic or characteristics <u>identity property of addition</u>: zero is added to another number or another number is added to the number zero, that number remains unchanged ($7 + 0 = 7$) <u>commutative property of addition</u>: order property; changing the order of the addends does not change the sum ($5 + 4 = 9$ and $4 + 5 = 9$)</p>

Marking Period: First Nine Weeks

Days: 23

Reporting Category/Strand: Number and Number Sense

SOL 3.1	<p>The student will</p> <p>a) read and write six-digit numerals and identify the place value and value of each digit; b) round whole numbers, 9,999 or less, to the nearest ten, hundred, and thousand; and c) compare two whole numbers between 0 and 9,999, using symbols ($>$, $<$, or $=$) and words (greater than, less than, or equal to).</p>
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand that knowledge of place value is essential when comparing numbers. • Understand the relationships in the place value system, where each place is ten times the value of the place to its right. • Understand that rounding gives an estimate to use when exact numbers are not needed for the situation. • Understand the relative magnitude of numbers by comparing numbers. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Investigate and identify the place and value for each digit in a six-digit numeral, using Base-10 manipulatives (e.g., Base-10 blocks).

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	<ul style="list-style-type: none"> • Use the patterns in the place value system to read and write numbers. • Read six-digit numerals orally. • Write six-digit numerals that are stated verbally or written in words. • Round a given whole number, 9,999 or less, to the nearest ten, hundred, and thousand. • Solve problems, using rounding of numbers, 9,999 or less, to the nearest ten, hundred, and thousand. • Determine which of two whole numbers between 0 and 9,999 is greater. • Determine which of two whole numbers between 0 and 9,999 is less. • Compare two whole numbers between 0 and 9,999, using the symbols $>$, $<$, or $=$. • Use the terms greater than, less than, and equal to when comparing two whole numbers.
<p>Essential Questions</p>	
<p>Instructional Resources</p>	<p>Correlations Place Value Super Teacher Worksheets Greater, Less Than Super Teacher Worksheets Rounding Super Teacher Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites Greater Than, Less Than SMART Board Rounding SMART Board Place Value SMART Board Toon University: Place Value Golf Word Form Matching Comparing Numbers IXL Place Value Models IXL Value of a Digit IXL Convert to/from a Number IXL Place Value Word Problems IXL Comparing Numbers IXL Rounding Place Value Blocks Place Value (That Quiz)</p> <p>Lesson Plans VDOE ESS: Place Value VDOE ESS: Rounding Whole Numbers VDOE ESS: Comparing Numbers</p>

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	<p>Videos BrainPop Rounding Numbers BrainPop Comparing Numbers</p> <p>Literature/Music Connections Song: "Greater or Less" Book: How Much is A Million? by David M. Schwartz Book: On Beyond A Million by David M. Schwartz Song: Estimating in Paradise Place Value Trade Books</p>
Essential Vocabulary	<p><u>place value</u>: place value refers to the value of each digit and depends upon the position of the digit in the number <u>value</u>: how much it is worth according to a specific place value <u>standard form</u>: format of using numbers <u>expanded form</u>: format of writing numbers by showing the value of each digit <u>word form</u>: format of using the words for each number <u>digit</u>: number <u>periods</u>: numbers are arranged into groups of three places (ones, thousands, millions, and so on) <u>estimate</u>: round</p>

Marking Period: First Nine Weeks

Days: 10

Reporting Category/Strand: Computation and Estimation

SOL 3.4	<p>The student will estimate solutions to and solve single-step and multistep problems involving the sum of two whole numbers, each 9,999 or less, with or without regrouping.</p>
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand that estimation skills are valuable, timesaving tools particularly in practical situations when exact answers are not required or needed. • Understand that estimation skills are also valuable in determining the reasonableness of the sum or difference when solving for the exact answer is needed. • Develop and use strategies to estimate whole number sums to determine the reasonableness of an exact answer. • Develop flexible methods of adding whole numbers by combining numbers in a variety of ways, most depending on place values. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Determine whether an estimate or an exact answer is an appropriate solution for practical addition and subtraction problems situations

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	<p>involving single step and multistep problems.</p> <ul style="list-style-type: none"> • Determine whether to add in practical problem situations. • Estimate the sum of two whole numbers, each 9,999 or less when an exact answer is not required. • Add two whole numbers, each 9,999 or less. • Solve practical problems involving the sum of two whole numbers, each 9,999 or less, with or without regrouping, using calculators, paper and pencil, or mental computation in practical problem situations. • Solve single-step and multistep problems involving the sum of two whole numbers, each 9,999 or less.
Essential Questions	
Instructional Resources	<p>Correlations Addition Super Teacher Worksheets Word Problem Super Teacher Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites IXL Adding 4-Digit Numbers IXL Addition Word Problems Addition Flashcards Addition (Advanced) SMART Exchange Math Magician Math Word Problems</p> <p>Lesson Plans VDOE ESS: Addition and Subtraction</p> <p>Videos</p> <p>Literature/Music Connections Addition Trade Books</p>
Essential Vocabulary	<p><u>estimate</u>: round <u>sum</u>: answer to an addition problem <u>addend</u>: number being added <u>regroup</u>: process known as “carrying” in addition <u>algorithm</u>: step-by-step method for computing</p>

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Days: 5 (ongoing)

Reporting Category/Strand: Patterns, Functions, and Algebra

SOL 3.19	The student will recognize and describe a variety of patterns formed using numbers, tables, and pictures, and extend the patterns, using the same or different forms.
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand that numeric and geometric patterns can be expressed in words or symbols. • Understand the structure of a pattern and how it grows or changes. • Understand that mathematical relationships exist in patterns. • Understand that patterns can be translated from one representation to another. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Recognize repeating and growing numeric and geometric patterns (e.g., skip counting, addition tables, and multiplication tables). • Describe repeating and growing numeric and geometric patterns formed using numbers, tables, and/or pictures, using the same or different forms. • Extend repeating and growing patterns of numbers or figures using concrete objects, numbers, tables, and/or pictures.
Essential Questions	
Instructional Resources	<p>Correlations Pattern Super Teacher Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites IXL Even and Odd IXL Skip Counting Puzzles IXL Number Sequences</p> <p>Lesson Plans VDOE ESS: Patterns on the Hundred Chart VDOE ESS: Patterns in a Staircase</p> <p>Videos BrainPop Patterns BrainPop Even and Odd</p>

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	<p>Literature/Music Connections Pattern Read Alouds</p>
Essential Vocabulary	<p><u>pattern</u>: things that are arranged following a rule or rules <u>numeric pattern</u>: a list of numbers that follow a certain sequence or pattern <u>geometric pattern</u>: pictures or symbols that follow a certain sequence or pattern <u>repeating pattern</u>: identify the basic unit of the pattern and repeat it <u>growing pattern</u>: determine what comes next, they must also begin the process of generalization</p>

Marking Period: Second Nine Weeks

Days: 10

Reporting Category/Strand: Computation and Estimation

SOL 3.4	<p>The student will estimate solutions to and solve single-step and multistep problems involving the sum or difference of two whole numbers, each 9,999 or less, with or without regrouping.</p>
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand that estimation skills are valuable, timesaving tools particularly in practical situations when exact answers are not required or needed. • Understand that estimation skills are also valuable in determining the reasonableness of the sum or difference when solving for the exact answer is needed. • Develop and use strategies to estimate whole number sums and differences to determine the reasonableness of an exact answer. • Develop flexible methods of adding whole numbers by combining numbers in a variety of ways, most depending on place values. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Determine whether an estimate or an exact answer is an appropriate solution for practical addition and subtraction problems situations involving single step and multistep problems. • Determine whether to add or subtract in practical problem situations. • Estimate the sum or difference of two whole numbers, each 9,999 or less when an exact answer is not required. • Add or subtract two whole numbers, each 9,999 or less. • Solve practical problems involving the sum of two whole numbers, each 9,999 or less, with or without regrouping, using calculators, paper and pencil, or mental computation in practical problem situations. • Solve practical problems involving the difference of two whole numbers, each 9,999 or less, with or without regrouping, using calculators, paper and pencil, or mental computation in practical problem situations. • Solve single-step and multistep problems involving the sum or difference of two whole numbers, each 9,999 or less, with or without regrouping.

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Essential Questions	
Instructional Resources	<p>Correlations Addition Super Teacher Worksheets Subtraction Super Teacher Worksheets Mixed Addition/Subtraction Worksheets Word Problems Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites Subtraction (Advanced) SMART Board IXL Subtraction 4 digit Numbers Subtraction Flashcards IXL Add/Subtract Money Amounts IXL Adding Money- Word Problems IXL Do You Have Enough?- Price Lists Math Magician Word Problem Games</p> <p>Lesson Plans VDOE ESS: Addition and Subtraction</p> <p>Videos</p> <p>Literature/Music Connections Subtraction Trade Books</p>
Essential Vocabulary	<p><u>estimate</u>: round <u>difference</u>: answer to a subtraction problem <u>regroup</u>: process known as “borrowing” in subtraction <u>algorithm</u>: step-by-step method for computing</p>

Marking Period: Second Nine Weeks

Days: 8

Reporting Category/Strand: Measurement

SOL 3.8	The student will determine, by counting, the value of a collection of bills and coins whose total value is \$5.00 or less, compare the
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	<p>value of the bills and coins, and make change.</p>
<p>Essential Knowledge/Skills/Understandings</p>	<p>All students should</p> <ul style="list-style-type: none"> • Understand that a collection of coins and bills has a value that can be counted. • Understand how to make change from \$5.00 or less. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Count the value of collections of coins and bills up to \$5.00. • Compare the values of two sets of coins or bills, up to \$5.00, using the terms greater than, less than, and equal to. • Make change from \$5.00 or less
<p>Essential Questions</p>	
<p>Instructional Resources</p>	<p>Correlations Money Super Teacher Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites IXL Counting Bills and Coins IXL Compare Sets of Coins and Bills IXL Enough Money to Purchase Item IXL Making Change Money SMART Board Making Change Game Money (That Quiz)</p> <p>Lesson Plans VDOE ESS: Money Counts</p> <p>Videos BrainPop Dollars and Cents BrainPop Counting Coins BrainPop Money Discovery Education Minting Money</p> <p>Literature/Music Connections Money Trade Books</p>

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Essential Vocabulary	<u>coin</u> : a small piece of metal, usually flat and circular, authorized by a government for use as money <u>bill</u> : a piece of paper money worth a specified amount <u>value</u> : how much something is worth
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Marking Period: Second Nine Weeks

Days: 8

Reporting Category/Strand: Measurement

SOL 3.11	The student will a) tell time to the nearest minute, using analog and digital clocks; and b) determine elapsed time in one-hour increments over a 12-hour period.
Essential Knowledge/Skills/Understandings	All students should <ul style="list-style-type: none"> • Apply appropriate techniques to determine time to the nearest minute, using analog and digital clocks. • Understand how to determine elapsed time in one hour increments over a 12-hour period. The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to <ul style="list-style-type: none"> • Tell time to the nearest minute, using analog and digital clocks. • Match the times shown on analog and digital clocks to written times and to each other. • When given the beginning time and ending time, determine the elapsed time in one-hour increments within a 12-hour period (times do not cross between a.m. and p.m.). • Solve practical problems in relation to time that has elapsed.
Essential Questions	
Instructional Resources	Correlations Telling Time Super Teacher Worksheets Elapsed Time Super Teacher Worksheets VDOE Mathematics Vocabulary Cards Interactive Websites Telling Time Time SMART Board IXL Read Clocks and Write Times IXL Elapsed Time Nearest Five Minute Game

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	<p>Elapsed Time Game Telling Time (That Quiz)</p> <p>Lesson Plans VDOE ESS: It's About Time VDOE ESS: Where Did the Time Go? VDOE ESS: Hoppin' on the Elapsed Time Line</p> <p>Videos BrainPop Telling Time to Quarter Hour and Half Hour BrainPop Elapsed Time</p> <p>Literature/Music Connections Measurement Trade Books</p>
Essential Vocabulary	<p><u>analog clock</u>: a clock or watch is called "analog" when it has moving hands, and hours marked from 1 to 12, to show you the time <u>digital clock</u>: a clock or watch that shows the time using numbers, not hands <u>quarter hour</u>: a period of 15 minutes <u>half hour</u>: a period of 30 minutes <u>hour hand</u>: the small hand on a clock that points to the hours; it goes once around the clock every 12 hours (half a day) <u>minute hand</u>: the large hand on a clock that points to the minutes; it goes once around the clock every hour</p>

Marking Period: Second Nine Weeks

Days: 5

Reporting Category/Strand: Measurement

SOL 3.12	The student will identify equivalent periods of time, including relationships among days, months, and years, as well as minutes and hours.
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand the relationship that exists among periods of time, using calendars, and clocks. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Identify equivalent relationships observed in a calendar, including the number of days in a given month, the number of days in a week, the number of days in a year, and the number of months in a year. • Identify the number of minutes in an hour and the number of hours in a day.

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Essential Questions	
Instructional Resources	<p>Correlations Calendar Super Teacher Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites Calendar Game IXL Reading A Calendar</p> <p>Lesson Plans VDOE ESS: Calendar Math</p> <p>Videos BrainPop Calendar and Dates</p> <p>Literature/Music Connections Calendar Trade Books</p>
Essential Vocabulary	<p><u>equivalent relationships of time</u>: including the number of days in a given month, the number of days in a week, the number of days in a year, and the number of months in a year</p> <p><u>hour</u>: a unit of measure for time equivalent 60 minutes</p> <p><u>minutes</u>: a unite of measure for time equivalent 60 seconds</p>

Marking Period: Second Nine Weeks

Days: 10 (ongoing)

Reporting Category/Strand: Number and Number Sense

SOL 3.5, 3.2	<p>The student will recall multiplication facts through the twelves table, and the corresponding division facts. 0s,1s,2s,5s,10s,9s</p> <p>The student will recognize and use the inverse relationships between addition/subtraction and multiplication/division to complete basic fact sentences. The student will use these relationships to solve problems.</p>
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Develop fluency with number combinations for multiplication and division. • Understand that multiplication is repeated addition. • Understand that division is the inverse of multiplication.

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	<ul style="list-style-type: none"> • Understand that patterns and relationships exist in the facts. • Understand that number relationships can be used to learn and retain the facts. • Understand how multiplication and division are related. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Recall and state the multiplication and division facts through the twelves table. • Recall and write the multiplication and division facts through the twelves table. • Use the inverse relationships between multiplication/division to solve related basic fact sentences. For example, $4 \times 3 = 12$ and $12 \div 4 = \underline{\quad}$. • Write three related basic fact sentences when given one basic fact sentence for addition/subtraction and for multiplication/division. For example, given $3 \times 2 = 6$, solve the related facts $\underline{\quad} \times 3 = 6$, $6 \div 3 = \underline{\quad}$, and $6 \div \underline{\quad} = 3$.
<p>Essential Questions</p>	
<p>Instructional Resources</p>	<p>Correlations Multiplication Super Teacher Worksheets Division Super Teacher Worksheets Multiplication SMART Board Division Smart Board VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites Math Magician Multiplication Games Facts (That Quiz)</p> <p>Lesson Plans VDOE ESS: Inverse Relationships VDOE ESS: Multiplication and Division</p> <p>Videos BrainPop Multiplication BrainPop Division BrainPop Making Equal Groups</p>

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	Literature/Music Connections Multiplication Trade Books Division Trade Books
Essential Vocabulary	<u>inverse relationship:</u>

Marking Period: Third Nine Weeks

Days: 9 (ongoing)

Reporting Category/Strand: Computation and Estimation; Number and Number Sense

SOL 3.5,3.2	<p>The student will recall multiplication facts through the twelves table, and the corresponding division facts. 3s,4s,7s,8s,11s,12s</p> <p>The student will recognize and use the inverse relationships between addition/subtraction and multiplication/division to complete basic fact sentences. The student will use these relationships to solve problems.</p>
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Develop fluency with number combinations for multiplication and division. • Understand that multiplication is repeated addition. • Understand that division is the inverse of multiplication. • Understand that patterns and relationships exist in the facts. • Understand that number relationships can be used to learn and retain the facts. • Understand how multiplication and division are related. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Recall and state the multiplication and division facts through the twelves table. • Recall and write the multiplication and division facts through the twelves table. • Use the inverse relationships between multiplication/division to solve related basic fact sentences. For example, $4 \times 3 = 12$ and $12 \div 4 = \underline{\quad}$. • Write three related basic fact sentences when given one basic fact sentence for addition/subtraction and for multiplication/division. For example, given $3 \times 2 = 6$, solve the related facts $\underline{\quad} \times 3 = 6$, $6 \div 3 = \underline{\quad}$, and $6 \div \underline{\quad} = 3$.
Essential Questions	
Instructional Resources	<p>Correlations</p> <p>Multiplication Super Teacher Worksheets</p> <p>Division Super Teacher Worksheets</p> <p>VDOE Mathematics Vocabulary Cards</p>

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	<p>Interactive Websites Multiplication SMART Board Division SMART Board Math Magician Multiplication Games Facts (That Quiz)</p> <p>Lesson Plans VDOE ESS: Multiplication and Division</p> <p>Videos BrainPop Multiplication BrainPop Division</p> <p>Literature/Music Connections Song: 3 Times Table Song: 4 Times Table-Blurred Lines Song: 7 Times Table-Cups Multiplication Trade Books Division Trade Books</p>
Essential Vocabulary	<p><u>numeral</u>: number <u>array</u>: an arrangement of objects, pictures, or numbers in columns and rows <u>dividend</u>: the amount that you want to divide up <u>divisor</u>: the number you divide by <u>quotient</u>: answer to a division problem</p>

Marking Period: Third Nine Weeks

Days: 2

Reporting Category/Strand: Patterns, Functions, and Algebra

SOL 3.20	<p>The student will</p> <p>a) investigate the identity and the commutative properties for multiplication; and</p> <p>b) identify examples of the identity and commutative properties for multiplication.</p>
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<p>Essential Knowledge/Skills/Understandings</p>	<p>All students should</p> <ul style="list-style-type: none"> • Understand that mathematical relationships can be expressed using number sentences. • Understand the identity property for addition. • Understand the commutative property of addition • Understand that quantities on both sides of an equals sign must be equal. • Understand that quantities on both sides of the not equal sign are not equal. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Investigate the identity property for multiplication and determine that when the number one is multiplied by another number or another number is multiplied by the number one, that number remains unchanged. Examples of the identity property for multiplication are $1 \times 3 = 3$; $6 \times 1 = 6$. • Recognize that the commutative property for multiplication is an order property. Changing the order of the factors does not change the product ($2 \times 3 = 3 \times 2$). • Write number sentences to represent equivalent mathematical relationships (e.g., $4 \times 3 = 14 - 2$). • Identify examples of the identity and commutative properties for multiplication.
<p>Essential Questions</p>	
<p>Instructional Resources</p>	<p>Correlations Multiplication Properties Super Teacher Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites IXL Properties of Multiplication IXL Solve Using Properties of Multiplication</p> <p>Lesson Plans VDOE ESS: ARRAY for the Commutative Property for Multiplication</p> <p>Videos Discovery Education: Properties and Relationships BrainPop Commutative Property</p> <p>Literature/Music Connections</p>
<p>Essential Vocabulary</p>	<p><u>identity property of multiplication</u>: the product of 1 and any number or variable is the number or variable itself ($3 \times 1=3$) <u>commutative property of multiplication</u>: changing the order of factors does not change the product</p>

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Days: 15

Reporting Category/Strand: Number and Number Sense

SOL 3.3	<p>The student will</p> <p>a) name and write fractions (including mixed numbers) represented by a model;</p> <p>b) model fractions (including mixed numbers) and write the fractions' names; and</p> <p>c) compare fractions having like and unlike denominators, using words and symbols ($>$, $<$, or $=$).</p>
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand that the whole must be defined. • Understand that the denominator tells the number of equal parts that represent a whole. • Understand that the numerator is a counting number that tells how many equal size parts are being considered. • Understand that the value of a fraction is dependent on both the number of parts in a whole (denominator) and the number of those parts being considered (numerator). • Understand that a proper fraction is a fraction whose numerator is smaller than its denominator. • Understand that an improper fraction is a fraction whose numerator is greater than or equal to the denominator and is one or greater than one. • Understand that an improper fraction can be expressed as a whole number or a mixed number. • Understand that a mixed number is written as a whole number and a proper fraction. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Name and write fractions (including mixed numbers) represented by a model to include halves, thirds, fourths, eighths, tenths, and twelfths. • Use concrete materials and pictures to model at least halves, thirds, fourths, eighths, tenths, and twelfths. • Compare fractions using the terms greater than, less than, or equal to and the symbols ($<$, $>$, and $=$). Comparisons are made between fractions with both like and unlike denominators, using models, concrete materials and pictures.
Essential Questions	
Instructional Resources	<p>Correlations</p> <p>Fractions Super Teacher Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites</p> <p>Fractions SMART Board</p>

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	<p>Comparing Fractions Fraction Tutorial IXL Fraction Review IXL Fractions on a Number Line IXL Compare Fractions IXL Equivalent Fractions IXL Order Fractions IXL Mixed Numbers IXL Write Mixed Numbers Identify Fractions (That Quiz) Compare Fractions (That Quiz)</p> <p>Lesson Plans VDOE ESS: Naming and Writing Fractions VDOE ESS: Modeling Fractions VDOE ESS: Comparing Fractions</p> <p>Videos Discovery Education Understanding Fractions Discovery Education Equivalent Fractions BrainPop Mixed Numbers BrainPop Fractions</p> <p>Literature/Music Connections Book: Fraction Fun by David A. Adler Song: Fractions Fraction Trade Books</p>
Essential Vocabulary	<p><u>numerator</u>: the number that appears on the top of the fraction <u>denominator</u>: the number that appears on the bottom of the fraction <u>mixed number</u>: a whole number and a fraction combined into one <u>equivalent fraction</u>: fractions which have the same value, even though they may look different</p>

Marking Period: Third Nine Weeks

Days: 4

Reporting Category/Strand: Computation and Estimation

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SOL 3.7	The student will add and subtract proper fractions having like denominators of 12 or less.
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand that a proper fraction is a fraction whose numerator is smaller than its denominator. • Understand that an improper fraction is a fraction whose numerator is greater than or equal to the denominator and is one or greater than one. • Understand that an improper fraction can be expressed as a whole number or a mixed number. • Understand that a mixed number is written as a whole number and a proper fraction. A mixed number is the sum of a whole number and the proper fraction. • Understand that computation with fractions uses the same strategies as whole number computation. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Demonstrate a fractional part of a whole, using – region/area models (e.g., pie pieces, pattern blocks, geoboards, drawings); – set models (e.g., chips, counters, cubes, drawings); and– length/measurement models (e.g., nonstandard units such as rods, connecting cubes, and drawings). • Name and write fractions and mixed numbers represented by drawings or concrete materials. • Represent a given fraction or mixed number, using concrete materials, pictures, and symbols. For example, write the symbol for one-fourth and represent it with concrete materials and/or pictures. • Add and subtract with proper fractions having like denominators of 12 or less, using concrete materials and pictorial models representing area/regions (circles, squares, and rectangles), length/measurements (fraction bars and strips), and sets (counters).
Essential Questions	
Instructional Resources	<p>Correlations Adding/Subtracting Fractions Super Teacher Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites Adding/Subtracting Fractions SMART Board IXL Add and Subtract Fractions Adding/Subtracting Fractions (That Quiz)</p> <p>Lesson Plans VDOE ESS: Adding and Subtracting Fractions</p> <p>Videos Discovery Education Adding and Subtracting Fractions with Like Denominators BrainPop Adding and Subtracting Fractions</p>

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	Literature/Music Connections
Essential Vocabulary	<p><u>numerator</u>: the number that appears on the top of the fraction</p> <p><u>denominator</u>: the number that appears on the bottom of the fraction</p> <p><u>proper fraction</u>: a fraction where the numerator (the top number) is less than the denominator (the bottom number)</p> <p><u>whole number</u>: the numbers {0, 1, 2, 3, ...} etc; there is no fractional or decimal part</p>

Marking Period: Third Nine Weeks

Days: 15

Reporting Category/Strand: Measurement

SOL 3.9, 3.13, 3.10	<p>All students should</p> <ul style="list-style-type: none"> • Understand how to measure temperature in Celsius and Fahrenheit with a thermometer. <p>The student will estimate and use U.S. Customary and metric units to measure</p> <ul style="list-style-type: none"> a) length to the nearest 12inch, inch, foot, yard, centimeter, and meter; b) liquid volume in cups, pints, quarts, gallons, and liters; c) weight/mass in ounces, pounds, grams, and kilograms; and d) area and perimeter. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Read temperature to the nearest degree from real Celsius and Fahrenheit thermometers and from physical models (including pictorial representations) of such thermometers. <p>The student will a) measure the distance around a polygon in order to determine perimeter; and b) count the number of square units needed to cover a given surface in order to determine area.</p>
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand how to estimate measures of length, liquid volume, weight/mass, area and perimeter. • Understand how to determine the actual measure of length, liquid volume, weight/mass, area and perimeter. • Understand that perimeter is a measure of the distance around a polygon. • Understand that area is a measure of square units needed to cover a surface. • Understand how to measure temperature in Celsius and Fahrenheit with a thermometer. • Understand the meaning of a polygon as a closed figure with at least three sides. None of the sides are curved and there are no

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	<p>intersecting lines.</p> <ul style="list-style-type: none"> • Understand that perimeter is a measure of the distance around a polygon. • Understand how to determine the perimeter by counting the number of units around a polygon. • Understand that area is a measure of square units needed to cover a surface. • Understand how to determine the area by counting the number of square units. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Estimate and use U.S. Customary and metric units to measure lengths of objects to the nearest $\frac{1}{2}$ of an inch, inch, foot, yard, centimeter, and meter. • Determine the actual measure of length using U.S. Customary and metric units to measure objects to the nearest $\frac{1}{2}$ of an inch, foot, yard, centimeter, and meter. • Estimate and use U.S. Customary and metric units to measure liquid volume to the nearest cup, pint, quart, gallon, and liter. • Determine the actual measure of liquid volume using U.S. Customary and metric units to measure to the nearest cup, pint, quart, gallon, and liter. • Estimate and use U.S. Customary and metric units to measure the weight/mass of objects to the nearest ounce, pound, gram, and kilogram. • Determine the actual measure of weight/mass using U.S. Customary and metric units to measure the weight/mass of objects to the nearest ounce, pound, gram, and kilogram. • Estimate and use U.S. Customary and metric units to measure area and perimeter. • Determine the actual measure of area or perimeter • Read temperature to the nearest degree from real Celsius and Fahrenheit thermometers and from physical models (including pictorial representations) of such thermometers. • Measure each side of a variety of polygons and add the measures of the sides to determine the perimeter of each polygon. • Determine the area of a given surface by estimating and then counting the number of square units needed to cover the surface.
Essential Questions	
Instructional Resources	<p>Correlations Measurement Super Teacher Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites Ruler Games Perimeter Game Thermometer Game Measurement SMART Board IXL Read a Thermometer Measurement (That Quiz)</p>

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	<p>IXL Which Customary Unit is Appropriate IXL Which Metric Unit is Appropriate IXL Perimeter IXL Area</p> <p>Lesson Plans VDOE ESS: Measuring Length VDOE ESS: Measuring Liquid Volume VDOE ESS: Measuring Weight/Mass VDOE ESS: Measuring Area and Perimeter VDOE ESS: Determining Perimeter VDOE ESS: Measuring Surface Area VDOE ESS: Reading Temperature</p> <p>Videos Discovery Education Understanding Units of Length, Weight, and Volume BrainPop Centimeters, Meters, and Kilometers BrainPop Perimeter BrainPop Inches and Feet BrainPop Metric vs Customary BrainPop Capacity BrainPop Ounces, Pounds, and Tons BrainPop Grams and Kilograms BrainPop Area BrainPop Perimeter BrainPop Temperature</p> <p>Literature/Music Connections Song: Perimeter and Area Measurement Trade Books</p>
Essential Vocabulary	<p><u>length</u>: distance; how far from end to end <u>foot</u>: customary unit of measure; used to measure the height of a door <u>yard</u>: customary unit of measure; used to measure the length of a guitar <u>meter</u>: standard metric unit used for measuring the lengths of the objects <u>volume</u>: the amount of 3-dimensional space an object occupies; capacity. <u>area</u>: The size of a surface; the amount of space inside the boundary of a flat (2-dimensional) object such as a triangle or circle</p>

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Marking Period: Fourth Nine Weeks

Days: 5

Reporting Category/Strand: Computation and Estimation

SOL 3.6	The student will represent multiplication and division, using area, set, and number line models, and create and solve problems that involve multiplication of two whole numbers, one factor 99 or less and the second factor 5 or less.
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand the meanings of multiplication and division. • Understand the models used to represent multiplying and dividing whole numbers. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Model multiplication, using area, set, and number line models. • Model division, using area, set, and number line models. • Solve multiplication problems, using the multiplication algorithm, where one factor is 99 or less and the second factor is 5 or less. • Create and solve word problems involving multiplication, where one factor is 99 or less and the second factor is 5 or less.
Essential Questions	
Instructional Resources	<p>Correlations Arrays Super Teacher Worksheets Two Digit x One Digit Super Teacher Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites IXL Multiplication Sentences</p> <p>Lesson Plans VDOE ESS: Multiplication and Division Representations</p> <p>Videos BrainPop Arrays BrainPop Multiplication</p> <p>Literature/Music Connections</p>

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	Multiplication Trade Books
Essential Vocabulary	

Marking Period: Fourth Nine Weeks

Days: 5

Reporting Category/Strand: Geometry

SOL 3.14, 3.15, 3.16	<p>The student will identify, describe, compare, and contrast characteristics of plane and solid geometric figures (circle, square, rectangle, triangle, cube, rectangular prism, square pyramid, sphere, cone, and cylinder) by identifying relevant characteristics, including the number of angles, vertices, and edges, and the number and shape of faces, using concrete models.</p> <p>The student will identify and draw representations of points, line segments, rays, angles, and lines.</p> <p>The student will identify and describe congruent and non-congruent plane figures.</p>
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand how to identify and describe plane and solid geometric figures by using relevant characteristics. • Understand the similarities and differences between plane and solid figures. • Understand that line segments and angles are fundamental components of plane polygons. • Understand that a line segment is a part of a line, has two end points, and contains all the points between those two endpoints. • Understand that points make up a line. • Understand that a line continues indefinitely in two opposite directions. • Understand that a ray is part of a line, has one endpoint, and continues indefinitely in only one direction. • Understand that an angle is formed by two rays having a common endpoint. • Understand that congruent plane figures match exactly. • Understand that non-congruent plane figures do not match exactly. • Understand that congruent plane figures remain congruent even if they are in different spatial orientations. • Understand that non-congruent plane figures remain non-congruent even if they are in different spatial orientations. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Identify models and pictures of plane geometric figures (circle, square, rectangle, and triangle) and solid geometric figures (cube, rectangular prism, square pyramid, sphere, cone, and cylinder) by name. • Identify and describe plane geometric figures by counting the number of sides and angles. • Identify and describe solid geometric figures by counting the number of angles, vertices, edges, and by the number and shape of faces. • Compare and contrast characteristics of plane and solid geometric figures (e.g., circle/sphere, square/cube, triangle/square pyramid, and rectangle/rectangular prism), by counting the number of sides, angles, vertices, edges, and the number and shape of faces.

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	<ul style="list-style-type: none"> • Compare and contrast characteristics of solid geometric figures (i.e., cube, rectangular prism, square pyramid, sphere, cylinder, and cone) to similar objects in everyday life (e.g., a party hat is like a cone). • Identify characteristics of solid geometric figures (cylinder, cone, cube, square pyramid, and rectangular prism). • Identify examples of points, line segments, rays, angles, and lines. • Draw representations of points, line segments, rays, angles, and lines, using a ruler or straightedge. • Identify examples of congruent and non-congruent figures. Verify their congruence by laying one on top of the other using drawings or models. • Determine and explain why plane figures are congruent or non-congruent, using tracing procedures.
<p>Essential Questions</p>	
<p>Instructional Resources</p>	<p>Correlations Geometry Super Teacher Worksheets VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites Geometry Smart Board IXL Symmetry IXL Naming 2-d shapes IXL Similar and Congruent IXL Lines, Line Segments, and Rays IXL Polygons</p> <p>Lesson Plans VDOE ESS: Plane Geometry Sort VDOE ESS: What Am I? VDOE ESS: Secret Sort for Geometry VDOE ESS: Folded Geometry VDOE ESS: Fit to be Congruent</p> <p>Videos BrainPop Plane Shapes BrainPop Solid Shapes BrainPop Congruent and Similar Shapes BrainPop Points, Lines, Segments, and Rays BrainPop Geometry</p>

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	<p>Literature/Music Connections Geometry Trade Books</p>
Essential Vocabulary	<p><u>plane figure:</u> <u>right angle:</u> <u>solid figure:</u> <u>sphere:</u> <u>cube:</u> <u>rectangular prism:</u> <u>vertices:</u> <u>edges:</u> <u>faces:</u> <u>square pyramid:</u> <u>cone:</u> <u>cylinder:</u></p>

Marking Period: Fourth Nine Weeks

Days: 10

Reporting Category/Strand: Probability and Statistics

SOL 3.17	<p>The student will</p> <p>a) collect and organize data, using observations, measurements, surveys, or experiments;</p> <p>b) construct a line plot, a picture graph, or a bar graph to represent the data; and</p> <p>c) read and interpret the data represented in line plots, bar graphs, and picture graphs and write a sentence analyzing the data.</p>
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Understand how data can be collected and organized. • Understand that data can be displayed in different types of graphs depending on the data. • Understand how to construct a line plot, picture graph, or bar graph. • Understand that data sets can be interpreted and analyzed to draw conclusions. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Formulate questions to investigate. • Design data investigations to answer formulated questions, limiting the number of categories for data collection to four. • Collect data, using surveys, polls, questionnaires, scientific experiments, and observations.

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	<ul style="list-style-type: none"> • Organize data and construct a bar graph on grid paper representing 16 or fewer data points for no more than four categories. • Construct a line plot with no more than 30 data points. • Read, interpret and analyze information from line plots by writing at least one statement. • Label each axis on a bar graph and give the bar graph a title. Limit increments on the numerical axis to whole numbers representing multiples of 1, 2, 5, or 10. • Read the information presented on a simple bar or picture graph (e.g., the title, the categories, the description of the two axes). • Analyze and interpret information from picture and bar graphs, with up to 30 data points and up to 8 categories, by writing at least one sentence. • Describe the categories of data and the data as a whole (e.g., data were collected on four ways to cook or prepare eggs — scrambled, fried, hard boiled, and egg salad — eaten by students). • Identify parts of the data that have special characteristics, including categories with the greatest, the least, or the same (e.g., most students prefer scrambled eggs). • Select a correct interpretation of a graph from a set of interpretations of the graph, where one is correct and the remaining are incorrect. For example, a bar graph containing data on four ways to cook or prepare eggs — eaten by students show that more students prefer scrambled eggs. A correct answer response, if given, would be that more students prefer scrambled eggs than any other way to cook or prepare eggs.
<p>Essential Questions</p>	
<p>Instructional Resources</p>	<p>Correlations Graphs Super Teacher Worksheets Graphing SMART Board VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites IXL Interpret Bar Graphs IXL Create Bar Graphs IXL Interpret Line Plots IXL Create Line Plots IXL Interpret Pictographs IXL Create Pictographs Create Graphs Graphs (That Quiz)</p> <p>Lesson Plans VDOE ESS: Statistics Through the Years VDOE ESS: Data Mania</p>

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	<p>Videos BrainPop Introduction to Graphs BrainPop Pictographs BrainPop Bar Graphs</p> <p>Literature/Music Connections Graphs and Charts Trade Books</p>
Essential Vocabulary	

Marking Period: Fourth Nine Weeks

Days: 5

Reporting Category/Strand: Probability and Statistics

SOL 3.18	The student will investigate and describe the concept of probability as chance and list possible results of a given situation.
Essential Knowledge/Skills/Understandings	<p>All students should</p> <ul style="list-style-type: none"> • Investigate, understand, and apply basic concepts of probability. • Understand that probability is the chance of an event happening. <p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <ul style="list-style-type: none"> • Define probability as the chance that an event will happen. • List all possible outcomes for a given situation (e.g., heads and tails are the two possible outcomes of flipping a coin). • Identify the degree of likelihood of an outcome occurring using terms such as impossible, unlikely, as likely as, equally likely, likely, and certain.
Essential Questions	
Instructional Resources	<p>Correlations Probability VDOE Mathematics Vocabulary Cards</p> <p>Interactive Websites Probability Circus Probability (That Quiz) IXL Probability</p>

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	<p>Lesson Plans VDOE ESS: Two-Color Counter Toss VDOE ESS: Probability Boxes VDOE ESS: Is There Probability in Third?</p> <p>Videos BrainPop Basic Probability</p> <p>Literature/Music Connections</p>
Essential Vocabulary	