

Chesterfield County Public Schools
Office of English as a Second Language (ESL)
Curriculum Framework

Subject: ESL Mathematics (SLIFE) & ESL Resource (Math)					
Grades: 6-8; 9-12			ESL Level: all levels; SLIFE students		
Topics/Themes	Essential Questions	Subtopics	Tiered Vocabulary	WIDA ELD Standards	SOL Standards
<p><i>Integers and Basic Operations</i> <i>(*as necessary)</i></p>	<ul style="list-style-type: none"> ★ What is a Whole Number? ★ What are even and odd numbers? ★ How do you round to the nearest _____ place? ★ What is addition? ★ How do you add larger numbers? ★ How do you regroup? ★ What is subtraction? ★ How do you subtract large numbers? ★ Why is regrouping important when adding or subtracting? ★ How do you regroup with zeros? 	<ul style="list-style-type: none"> ★ Whole Numbers ★ Even & Odd Numbers ★ Place Value ★ Ordering Whole Numbers ★ Rounding Whole Numbers ★ Addition ★ Adding Large Numbers ★ Adding with One Regrouping ★ Adding with More Than One Regrouping ★ Estimating Sums ★ Subtraction ★ Subtracting Large Numbers ★ Subtracting with One Regrouping ★ Subtracting with More Than One Regrouping ★ Regrouping with 	<p>Tier 1: Numbers, comma, more, less, zero</p> <p>Tier 2: Sum, digit, millions, calculator, compare, contrast, smallest, greatest, ordering, number line, equals, larger, how much?</p> <p>Tier 3: Adding, subtracting, whole number, even, odd, regroup, thousands, hundreds, tenths, place value, minus, difference, expenses, solve</p>	<p>The Language of Mathematics</p> <p>The Language of Science</p> <p>Social & Instructional Language</p> <p>The Language of Social Studies</p>	

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		Zeros			
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<p><i>Multiplying & Dividing Whole Numbers</i></p>	<ul style="list-style-type: none"> ★ What does multiplication represent? ★ What is a multiple? ★ What strategies can you use to memorize multiplication facts? ★ What strategies can you use to memorize multiplication facts for 7-9? ★ What strategies can you use for multiplication? ★ What does long division represent? ★ How does long division work? ★ What is the relationship between multiplication & division? ★ How are multiplication & division used in the real world? 	<ul style="list-style-type: none"> ★ Multiplication ★ Counting by 2s, 5s, 10s ★ Multiplication facts ★ Breaking down numbers ★ Multiplication algorithm ★ Division & long division ★ Inverse operations ★ Applications of Multiplication & division 	<p>Tier 1: Even number, equals, hundreds, tens, ones</p> <p>Tier 2: Subtraction, multiplication, division, product, column, multiples, double, repeated addition, partial product, sum, times, rows, facts</p> <p>Tier 3: Array, algorithm, divisor, dividend, quotient, long division, remainder, inverse operations, factor pair</p>	<p>The Language of Mathematics</p> <p>The Language of Science</p> <p>Social & Instructional Language</p> <p>The Language of Arts</p>	<p>6.4</p> <p>7.2</p> <p>8.2</p>
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<p><i>Fraction Concepts</i></p>	<ul style="list-style-type: none"> ★ What do fractions represent? ★ How can you describe the numbers 1 & 0 as fractions? ★ What do the numerator & denominator of a fraction tell you? ★ How do fractions describe parts of a set? ★ How are fractions related to division? ★ How can you tell whether two fractions describe the same value? ★ How do the numerator & denominator affect the value of a fraction? ★ How do you combine fractions? ★ How are improper fractions & mixed numbers related? ★ How do you find a fraction on the number line? 	<ul style="list-style-type: none"> ★ Parts of a Whole ★ Fractions Equal to 1 & 0 ★ Representing fractions ★ Parts of a Set ★ Fractions & Division ★ Equivalent Fractions ★ Comparing Fractions ★ Adding Fractions ★ Improper Fractions & Mixed numbers ★ Fractions on the Number Line 	<p>Tier 1: Equal, parts, division</p> <p>Tier 2: Fractions, numerator, denominator, parts of, shaded, whole, greater than, less than, division, divide, equivalent, lowest terms, simplest form, simplify, common denominators, compare, multiples, closer to, point, between, in the middle, represent, estimates, value</p> <p>Tier 3: inequalities, improper fractions, mixed numbers, convert, number line, whole numbers, regroup</p>	<p>The Language of Mathematics</p> <p>The Language of Science</p> <p>Social & Instructional Language</p>	<p>6.2a</p> <p>6.5 a,b,c</p>
<p><i>Fraction Operations</i></p>	<ul style="list-style-type: none"> ★ How is combining fractions like combining whole numbers, and how it 	<ul style="list-style-type: none"> ★ Adding & Subtracting Fractions with Common 	<p>Tier 1: Add</p> <p>Tier 2:</p>	<p>The Language of Mathematics</p> <p>The Language of</p>	<p>6.2 a</p> <p>6.5 a,b,c</p>

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	<p>different?</p> <ul style="list-style-type: none"> ★ How do you add & subtract fractions when they do not have the same denominator? ★ How do you regroup when you add improper fractions & mixed numbers? ★ When do you add & subtract fractions in the real world? ★ What strategies can you use to multiply a whole number by a fraction? ★ How do you multiply a fraction by a fraction? ★ What does dividing by a fraction represent? ★ When do you multiply & divide fractions in the real world? ★ How do you decide which operation to use? 	<p>Denominator and Unlike Denominators</p> <ul style="list-style-type: none"> ★ Adding & Subtracting Improper Fractions & Mixed Numbers ★ Applications of Addition & Subtraction ★ Understanding Fraction Multiplication ★ Multiplying Fractions ★ Fraction Division ★ Applications of Multiplication & Division ★ Choosing an Operation 	<p>Sum, subtract, take away, difference, shade, venn diagram, product, reciprocal, table, column, pattern, operation</p> <p>Tier 3: Common denominator, improper fraction, mixed number, regroup, simplest form, word problems, unit fraction, canceling, invert</p>	<p>Science</p> <p>Social & Instructional Language</p>	
<p><i>Decimal Operations</i></p>	<ul style="list-style-type: none"> ★ How do you determine the value of a group of coins & 	<ul style="list-style-type: none"> ★ Representing Money ★ Representing 	<p>Tier 1: Dollar, group, money</p>	<p>The Language of Mathematics</p>	<p>6.2</p> <p>6.5 a,b,c</p>

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	<p>bills?</p> <ul style="list-style-type: none"> ★ How are decimals & fractions related to money? ★ Where do decimals fall on a number line? ★ How can you tell how big a decimal is? ★ How can you compare fractions & decimals? ★ How is adding decimals like adding whole numbers & how is it like subtracting fractions? ★ How do you multiply decimals? ★ How do you divide decimals? ★ How do you decide what operation to use? 	<p>Decimals</p> <ul style="list-style-type: none"> ★ Decimals on the Number Line ★ Comparing Decimals ★ Comparing Fractions & Decimals ★ Adding & Subtracting Decimals ★ Multiplying & Dividing Decimals ★ Applications of Decimal Operations 	<p>Tier 2: Cents symbol, greater value, least value, different values, how much?, total, closer to, thermometer, similar, alike, eliminate, point, amount, convert, meters, recorded</p> <p>Tier 3: penny, dime, nickel, quarter, currency, number line, tenths, quantity, inequality, repeating decimal, terminating decimal, measurement</p>	<p>The Language of Science</p> <p>Social & Instructional Language</p>	
<i>Percents</i>	<ul style="list-style-type: none"> ★ What is a percent? ★ How are percents & fractions related? ★ How can you convert among the fraction, decimal, percent forms of a number? ★ How do you compare data that describes sets of 	<ul style="list-style-type: none"> ★ Percents ★ Percents & Fractions ★ Percents, Fractions, & Decimals ★ Common Percents (25% & 50%) ★ Common 	<p>Tier 1: More, add, how many?</p> <p>Tier 2: Out of, divide, equivalent, lowest term, ratio, data, graph, gather, collect, misleading, advertisement,</p>	<p>The Language of Mathematics</p> <p>The Language of Science</p> <p>Social & Instructional Language</p> <p>The Language of</p>	6.5 a,b,c

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	<p>different sizes?</p> <ul style="list-style-type: none"> ★ How can you use common percents to compute any percent of a number? ★ How can you use multiplication to compute a percent of a number? ★ How are percents used in the real world? ★ How can you use percents to describe change? 	<p>Percents (10% & 1%)</p> <ul style="list-style-type: none"> ★ Multiplying by Percents ★ Applications of Percents to Money ★ Simple & Compound Interest ★ Percent Change 	<p>comparing, table, patterns, estimate, result, more than, cost, discount, commission, fill in, contains, sale price, mark up, tax, tip, compute, balance, interest, principal, invest</p> <p>Tier 3: Percent, fraction, lowest terms, survey, repeating decimal, terminating decimal, misleading, advertisement, profit, interest, principal, beginning balance, savings account, increase, decrease, length</p>	<p>Language Arts</p>	
<p style="text-align: center;"><i>Two-Dimensional & Three-Dimensional Geometry</i></p>	<ul style="list-style-type: none"> ★ What is perimeter? ★ How can you calculate the perimeter of a composite figure? ★ What is pi? ★ How can you calculate the distance around the edge of a circle? ★ How can you calculate the area of rectangle, triangle, 	<ul style="list-style-type: none"> ★ Perimeter ★ Understanding Pi ★ Circumference ★ Area ★ Applications of Area ★ Surface Area ★ Volume ★ Applications of Surface Area & Volume 	<p>Tier 1:</p> <p>Tier 2: Circle, squares, centimeters, approximately, ratio, contain, value, half, distance, edge, irregular, rectangle, units, base, parallel, cube, formula, area, perimeter</p>	<p>The Language of Mathematics</p> <p>The Language of Science</p> <p>Social & Instructional Language</p>	<p>6.7 a,b,c</p> <p>7.4 a,b</p> <p>8.6 a,b</p> <p>8.8</p> <p>G.13</p> <p>G.14 a,b,c</p>

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	<p>circle, and parallelogram?</p> <ul style="list-style-type: none"> ★ Applications of Area ★ What is surface area? ★ How can you calculate the surface area of a cylinder & pyramid? ★ How is surface area used in the real world? ★ What is volume? ★ How can you calculate the volume of a triangular prism, cylinder, pyramid, and rectangular prism? ★ How is value used in the real world? 		<p>Tier 3: Inches, pi, surface area, volume, shape, side, length, width, measures, composite figure, corners, circumference, diameter, radius, square unit, polygon, height, variables, parallelogram, quadrilateral, opposite, right angle, rectangular prism, pyramid, cylinder</p>		
<p><i>Operations on Rational Numbers</i></p>	<ul style="list-style-type: none"> ★ What is a positive & negative number? ★ How is adding negative numbers like adding positive numbers & how is different? ★ How is subtracting negative numbers like subtracting positive numbers & how is it different? ★ How is multiplying & dividing negative numbers like positive 	<ul style="list-style-type: none"> ★ Positive & Negative Numbers ★ Adding & Subtracting Integers ★ Multiplying & Dividing Integers ★ Comparing Rational Numbers ★ Adding & Subtracting Improper Fractions to Mixed Numbers 	<p>Tier 1: Plus, minus, how many?</p> <p>Tier 2: Less than, more than, equal to, greater than, temperature, product, factor, parenthesis, vertical, estimate, result, comparing, squared, double, itself</p> <p>Tier 3: Integers, negative</p>	<p>The Language of Mathematics</p> <p>The Language of Science</p> <p>The Language of Language Arts</p> <p>Social & Instructional Language</p>	<p>6.6 a,b,c</p> <p>8.14</p>

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	<ul style="list-style-type: none"> ★ numbers? ★ Where do positive and negative fractions fall on the number line? ★ How do you regroup to add & subtract improper fractions and mixed numbers? ★ What strategies can you use to add & subtract rational numbers more easily? ★ What do exponents represent? 	<ul style="list-style-type: none"> ★ Multiplying & Dividing Improper Fractions & Mixed Numbers ★ Adding & Subtracting Rational Numbers ★ Exponents 	<p>number, plot, positive number, opposites, number line, degrees, chart, dividend, divisor, quotient, order of operations, rational numbers, improper fraction, mixed number, canceling, compute, average, to the ___ power, repeated multiplication</p>		
<i>Data Display</i>	<ul style="list-style-type: none"> ★ How are pictographs used to interpret data? ★ How can you understand the information in a bar graph? ★ How are line graphs used to interpret data? ★ How do you create a line graph? ★ How are double-bar and double-line graphs used to interpret data? ★ How do you create a double-line & double-bar graph? ★ How do you choose the type of graph that best represents the data? 	<ul style="list-style-type: none"> ★ Pictographs ★ Interpreting Bar Graphs ★ Interpreting Line Graphs ★ Creating Bar Graphs & Line Graphs ★ Interpreting Double-Bar & Double-Line Graphs ★ Creating Double-Bar & Double-Line Graphs ★ Circle Graphs ★ Which Graph Is Best? 	<p>Tier 1: How many?, How much?</p> <p>Tier 2: Factor, maximum, minimum, prediction, scale, approximate, most, few, least, vertical, horizontal, points, data, consume, between, difference, category</p> <p>Tier 3: Pictograph, bar graph, trend, average, population, places, line graph, stock prices, change, approximate, interval, scale, axis, y-</p>	<p>The Language of Mathematics</p> <p>The Language of Science</p> <p>The Language of Social Studies</p> <p>Social & Instructional Language</p>	<p>6.10 a,b,c</p> <p>7.9 a</p>

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			axis, x-axis, display, label, double-graph, double-line, line graph, consume, between, difference, category, increase, decrease		
<i>Variables & Number Properties</i>	<ul style="list-style-type: none"> ★ What is a variable? ★ How do you find the value of an expression? ★ How do you represent multiplication and division in algebra? ★ How do you show more than one operation in an expression? ★ What is the order of operations and why do we need it? ★ How can you use two or more variables to model real-world situations? ★ What is the commutative property and how can it be used? ★ What is the associative property and how can it be used? ★ What is the distributive property and how can it be 	<ul style="list-style-type: none"> ★ Variables ★ Evaluating Expressions ★ Representing Multiplication & Division ★ Expressions with More Than One Operation ★ The Order of Operations ★ Expressions with More Than One Unknown ★ Commutative Property ★ Associative Property ★ Distributive Property ★ Simplifying Expressions 	<p>Tier 1: Add, money</p> <p>Tier 2: Minus, plus, symbol, evaluate, expression, substitute, less than, more than, greater than, means, order, represent, compute, parenthesis, exponent, if, simplificar, equals to, formula, satisfy, solution, cost, product, times, half, quarter</p> <p>Tier 3: Equation, variable, subtract, value, unknown number, represent, opposite, order of operations, grouping, numerator, dimes, commutative property of addition, commutative property of multiplication, associative property of addition, associative</p>	<p>The Language of Mathematics</p> <p>The Language of Science</p> <p>The Language of Language Arts</p> <p>Social & Instructional Language</p>	<p>6.13</p> <p>7.11</p> <p>A.3 a</p>

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	<p>used?</p> <ul style="list-style-type: none"> ★ How can number properties help you simplify expressions? 		<p>property of multiplication, distributive property, factoring, expanded form, additive inverse property, multiplicative inverse property</p>		
<p><i>Equations & Inequalities</i></p>	<ul style="list-style-type: none"> ★ What is a balance equation? ★ How do you balance an equation with addition & subtraction? ★ How do you balance an equation with multiplication & division? ★ How do you isolate a variable in more than one step? ★ How can the distributive property help you simplify an equation before you solve it? ★ When do you use an equation in the real world? ★ How can you use an equation to solve a percent problem? ★ What is an inequality? ★ When do you use inequalities in the real world? 	<ul style="list-style-type: none"> ★ Equality ★ Equations by Adding & Subtracting ★ Equations by Multiplying & Dividing ★ Strategies for Solving Multistep Equations ★ Distributive Property ★ Application of Equations ★ Equations & Percent Problems ★ Graphing Inequalities ★ Solving Inequalities ★ Applications of Inequalities 	<p>Tier 1:</p> <p>Tier 2: Variables, equal to,</p> <p>Tier 3: Balance equation, distributive property</p>	<p>The Language of Mathematics</p>	<p>6.13</p> <p>6.14 a,b</p> <p>7.12</p> <p>7.13</p> <p>A.4 e</p> <p>A.5 c</p>

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Student Supports/Scaffolds: Levels 1-4

- ★ Modeling
- ★ Manipulatives
- ★ Maps
- ★ Timelines
- ★ Graphic Organizers
- ★ Buddy Reading
- ★ Videos/films
- ★ Realia
- ★ Cooperative groups
- ★ Conversation models/frames
- ★ Interactive notebook

- ★ Station rotations
- ★ Technology
- ★ Sort cards
- ★ Whole group instruction
- ★ Physical activities
- ★ Software programs
- ★ Word banks
- ★ Pictures
- ★ Sentence stems
- ★ Dictionary
- ★ Projects

Resources

[ESL Math/ESL Resource \(Math\)](#)
[Word Wall Vocabulary- Grades 6-8](#)
[Word Wall Vocabulary- Algebra 1](#)
[Word Wall Vocabulary- Geometry](#)
[VDOE Formula Sheet-Grade 8](#)
[VDOE Formula Sheet- Geometry](#)
[Algebraic Properties Worksheet](#)
[SOLs: Grade 6](#)
[SOLs: Grade 7](#)
[SOLs: Grade 8](#)
[SOLs: Algebra I](#)
[SOLs: Geometry](#)
[ESL Vocabulary Template](#)
[Other Resources](#)
Momentum Math Level G & F Student Books
Momentum Math Level G & F Assessment Guide