Subject/Course: Math	Grade: 5					
	Suggested Timeline: 4 weeks					
Unit Title: Whole Number and Decimal Fraction Place Value to the One-Thousandths	In Module 1, whole number patterns with number disks on the place value table are easily generalized to decimal numbers. As students work word problems with measurements in the metric system, where the same patterns occur, they begin to appreciate the value and the meaning of decimals. Fractions of the form 1/10, 1/100, 1/1000 also play a prominent role in the first module and are used to investigate patterns on the place value table.					
I Can Statements / Essential Questions / Objectives	**Content / Concepts**	**Skills / Competencies**	**Vocabulary**	**Assessments**	**Focus Standards**	**Standards for Math Practice**

Demonstrate an understanding that in a multi-digit number, a digit in one place represents 1/10 of what it represents in the place to its left	Decimals	Demonstrate an understanding of rounding as it pertains to whole numbers and decimals.	addend, associative property of addition, associative property of multiplication, base-ten numeral form, benchmark, capacity, centimeter, commutative property of addition, commutative property of multiplication, compose, cup, customary system, decimal, decimal point, decimeter, decameter, decompose, difference, distributive property, elapsed time, estimate, expanded form, exponent, factor, fluid ounce, foot, gallon, gram, greater than, hundredth, hundredths, inch, inequality, kilogram, kilometer, less than, liter, mass, measurement systems, measurement units, meter, metric system, mile, milligram, milliliter, millimeter, minuend, order of operations, ounce, partial product, pattern, pint, place value, pound, powers of 10, product, quart, rounding, sequence, standard		Apply place value to show an understanding of operations and rounding as they pertain to whole numbers and decimals.	MP# 1,2,4,5,6,7,8

			form, subtrahend, sum, tenth, tenths, term, thousandth, thousandths, ton, unit fractions, weight, yard.			
Explain patterns in the number of zeroes in the product when multiplying a number by powers of 10	Place Value and Properties of Operations	Read, write and compare decimals			Solve problems using conversions within a given measurement system.	
Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10		Solve problems using simple conversions.				
Use whole number exponents to denote powers of 10						
Read and write decimals to thousandths using base 10 numerals, word form, and expanded form						
Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols						
Round decimals to ones, tenths, hundredths, or thousandths place						
Convert among different sized measurement units within a given measurement system using a provided table of equivalencies.						

Important Standards Addressed in This Unit	Misconceptions	Proper Conceptions
There are no standards currently aligned to this resource	A common misconception students have when extending their understanding of whole number place value to decimal place value is thinking that the digits to the right of the decimal point increase in value.	Reinforcing the concept of powers of ten is essential for addressing this issue.
	A second misconception directly related to comparing whole numbers is the longer the number the greater the number. With whole numbers, a 5-digit number is always greater that a 1-, 2-, 3-, or 4-digit number. However, with decimals a number with one decimal place may be greater than a number with two or three decimal places. For example, 0.5 is greater than 0.12, 0.009 or 0.499.	Reinforcing the concept of powers of ten is essential for addressing this issue. Rewrite all numbers to include the same number of digits to the right of the decimal point by adding zeros to the number, such as 0.500, 0.120, 0.009 and 0.499. Use a place-value chart to place the numerals for comparison. Rewrite the numbers vertically, lining up the decimal point. Grid paper may be helpful to keep numbers aligned.

	Students fail to convert units in the problem so they are consistent. For example, when subtracting 5 inches from 6 feet. Students obtain an answer of 1 foot.	Use a unit box to organize information. Require students to write the units for each number in the problem.
	When solving problems that require renaming of units, students fail to use the conversion chart and revert to the base 10 system of renaming. For example, when subtracting 5 inches from 2 feet, students fail to convert 1 foot 12 inches and instead write 1 foot 10 inches.	Provide students with a conversion chart when working with this type of task. It is important for students to realize that methods used to solve whole number problems without a unit of measurement are different than methods used to solve problems involving units of measurement.

Subject/Course: Math	**Grade: 5**					
	Suggested Timeline: 6 weeks					
Unit Title: Multi-Digit Whole Number and Decimal Fraction Operations	Module 2 starts by giving students a chance to sharpen their skills in multiplying and dividing (decimal) numbers by 1-digit whole numbers. Now they are ready to generalize the 1-digit algorithms to the multi-digit whole number versions (multi-digit decimal multiplication such as 4.1. 3.4 and division such as 4.5 ÷ 1.5 are studied in Module 4). For multiplication, students must grapple with and fully understand the distributive property (one of the key reasons for teaching the multi-digit algorithm). While the multi-digit multiplication algorithm is a straightforward generalization of the one-digit multiplication algorithm, the division algorithm with two-digit divisor requires far more care to teach because students have to also learn estimation strategies, error correction strategies, and the idea of successive approximation (all of which are central concepts in math, science, and engineering).					
I Can Statements / Essential Questions / Objectives	**Content / Concepts**	**Skills / Competencies**	**Vocabulary**	**Assessments**	**Focus Standards**	**Standards for Math Practice**

Multiply multi-digit whole numbers, not to exceed three digits by three digits	Decimals	Evaluate expressions using the order of operations	Additive Identity property of 0, Algorithm, Area model, Array, Associative Property of Addition, Associative Property of Multiplication, Base of an exponent, Braces, Brackets, Commutative Property of Addition, Commutative Property of Multiplication, Compatible numbers, Decimal, Decimal point, Distributive Property, Dividend, Divisor, Equation, Equivalent fractions, Estimate, Evaluate, Exponent, Expression, Factor, Hundredth, Hundredths, Inverse operations, Long division, Multiplicative Identity Property of 1, Multiply, Numerical expression, Order of Operations, Parentheses, Period, Place value, Powers of ten, Product, Quotient, Remainder, Sum, Tenth, Tenths, Thousandth, Thousandths, Unit Fractions, Whole numbers		Extend an understanding of operations with whole numbers to perform operations including decimals.	MP# 1,2,4,5,6,7,8

Find whole number quotients of whole numbers with up to four digit dividends and two digit divisors	Numerical Expressions	Use whole numbers and decimals to compute accurately			Interpret and evaluate numerical expressions using order of operations.	
Add, subtract, multiply, and divide decimals to hundredths (no divisors with decimals)	Order of Operations	Write and interpret numerical expressions.				
Use multiple grouping symbols (parentheses, brackets, or braces) in numerical expressions, and evaluate expressions containing these symbols						
Write simple expressions that model calculations with numbers						
Interpret numerical expressions without evaluating them						

Important Standards Addressed in This Unit	Misconceptions	Proper Conceptions
There are no standards currently aligned to this resource.	Students may believe the order in which a problem with mixed operations is written is the order to solve the problem.	Allow students to use calculators to determine the value of the expression, and then discuss the order the calculator used to evaluate the expression. Do this with four-function and scientific calculators.
	Students might compute the sum or difference of decimals by lining up the right-hand digits as they would whole number.	To help students add and subtract decimals correctly, have them first estimate the sum or difference. Providing students with a decimal-place value chart will enable them to place the digits in the proper place.
	Students may believe that multiplication always results in a larger number. Additionally, students may believe that division always results in a smaller number.	Using models when multiplying with fractions will enable students to see that the results will be smaller.
		Using models when dividing with fractions will enable students to see that the results will be larger.

Subject/Course: Math	**Grade: 5**					
	Suggested Timeline: 7 weeks					
Unit Title: Addition and Subtraction of Fractions	Work with place value units in the first two modules paves the path to fractions and arithmetic with fractions in Module 3 as elementary math's place value emphasis shifts to a focus on the larger set of fractional units for algebra. Like units are added to and subtracted from like units. The new complexity is that if units are not equivalent, they must be changed for smaller equal units so that they can be added or subtracted. Probably the best model for showing this is the rectangular fraction model pictured below. The equivalence is then represented symbolically as students engage in active meaning making rather than obeying the perhaps mysterious command to "multiply the top and bottom by the same number". Relating different fractional units to one another requires extensive work with area and number line diagrams. Tape diagrams are used often in word problems. Tape diagrams, which students began using in the early grades and which become increasingly useful as students applied them to a greater and greater variety of word problems, hit their full strength as a model when applied to fraction word problems. At the heart of a tape diagram is the now-familiar idea of forming units. In fact, forming units to solve word problems is one of the most powerful examples of the unit theme and is particularly helpful for understanding fraction arithmetic.					
I Can Statements / Essential Questions / Objectives	**Content / Concepts**	**Skills / Competencies**	**Vocabulary**	**Assessments**	**Focus Standards**	**Standards for Math Practice**

Add and subtract fractions (including mixed numbers) with unlike denominators	Fractions	Add, Subtract, Multiply and Divide fractions to solve problems.	Addend, Associative Property of Addition, Benchmark fractions, Common denominators, Common multiples, Commutative Property of Addition, Denominator, difference, Equivalent fractions, Estimate, Fraction, Fraction greater than 1, Fraction less than 1, Like denominators, Lowest terms, minuend, Mixed number, Numerator, Reasonableness, Simplest form, Simplify,Subtrahend, Sum, Unit fractions, Unlike denominators		Use the understanding of equivalency to add and subtract fractions	MP# 1,2,4,5,6,7,8
Solve problems using computation of fractions by using information presented in line plots		Explain operations as they pertain to fractions.				
		Solve problems involving computation with fractions using information obtained from data displays.				

Important Standards Addressed in This Unit	Misconceptions	Proper Conceptions
Solve problems involving computation of fractions using information provided in a line plot.	Students often mix models when adding, subtracting or comparing fractions. Students will use a circle for thirds and a rectangle for fourths when comparing fractions with thirds and fourths.	Remind students that the representations need to be from the same whole models with the same shape and size.

Subject/Course: Math	**Grade: 5**					
	Suggested Timeline: 7 weeks					
Unit Title: Multiplication and Division of Fractions and Decimal Fractions	Near the end of Module 4 students know enough about fractions and whole number operations to begin to explore multi-digit decimal multiplication and division. In multiplying 2.1 x 3.8, for example, students now have multiple skills and strategies that they can use to locate the decimal point in the final answer. Similar strategies enrich students' understanding of division and help them to see multi-digit decimal division as whole number division in a different unit. For example, we divide to find, "How many groups of 3 apples are there in 45 apples?" and write 45 apples ÷ 3 apples = 15. Similarly, 4.5 ÷ 0.3 can be written as "45 tenths ÷ 3 tenths" with the same answer: There are 15 groups of 0.3 in 4.5. This idea was used to introduce fraction division earlier in the module, thus gluing division to whole numbers, fractions and decimals together through an understanding of units.					
I Can Statements / Essential Questions / Objectives	**Content / Concepts**	**Skills / Competencies**	**Vocabulary**	**Assessments**	**Focus Standards**	**Standards for Math Practice**

Solve word problems, including division of whole numbers, leading to answers in the form of fractions	Data Displays	Add, Subtract, Multiply and Divide fractions to solve problems.	Area, area model, Array, Capacity, Centimeter, Compatible numbers, Cup, Customary system, Decimal, Decimeter, Dekameter, Denominator, Distributive Property, Dividend, Divisor, Elapsed time, Equation, Equivalent fractions, Estimate, Factor, Fluid ounce, Foot, Fraction bar, Fraction greater than 1, Fraction less than 1, Gallon, Gram, Inch, Inverse operations, Kilogram, Kilometer, Liter, Long division, Mass, Measurement system, Mile, Milligram, Milliliter, Millimeter,Mixed number, Multiplicative Identity Property of 1, Numerator, Ounce, Parital quotients, Pint, Place value, Pound, Product, Quart, Quotient, Rectangle, Remainder, Scaline (resizing), Simplest form, Simplify, Square unit, Ton, Unit fraction, Weight, Whole numbers, Yard		Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	
Multiply a fraction and mixed numbers by a fraction	Fractions	Explain operations as they pertain to fractions.				

Demonstrate an understanding of multiplication as scaling/resizing		Represent and interpret data using appropriate scale.				
Divide unit fractions by whole numbers and whole numbers by unit fractions		Solve problems involving computation with fractions using information obtained from data displays.				
Convert among different sized measurement units within a given measurement system using a provided table of equivalencies						
Solve problems involving computation of fractions by using information presented in line plots						
Display and interpret data shown in tallies, tables, charts, pictographs, bar graphs, and line graphs						
Display and interpret data using the title, appropriate scale, and labels						

Important Standards Addressed in This Unit	Misconceptions	Proper Conceptions
Solve problems using conversions within a given measurement system.	Students may believe that multiplication always results in a larger number.	Using models when multiplying with fractions will enable students to see that the results will be smaller.
Represent and interpret data using appropriate scale.	Additionally, students may believe that division always results in a smaller number.	Using models when dividing with fractions will enable students to see that the results will be larger.

Solve problems involving computation of fractions using information provided in a line plot.	When solving problems that require renaming units, students use their knowledge of renaming the numbers as with whole numbers. Students need to pay attention to the unit of measurement which dictates the renaming and the number to use. The same procedures used in renaming whole numbers should not be taught when solving problems involving measurement conversions. For example, when subtracting 5 inches from 2 feet, students may take one foot from the 2 feet and use it as 10 inches. Since there were no inches with the 2 feet, they put 1 with 0 inches and make it 10 inches.	

Subject/Course: Math	**Grade: 5**					
	Suggested Timeline: 6 weeks					
Unit Title: Addition and Multiplication with Volume and Area	Through the daily use of area models, the fraction module prepares students for an in-depth discussion of area and volume in Module 5. But the module on area and volume also reinforces work done in the fraction module: Now, questions about how the area changes when a rectangle is scaled by a whole or fractional scale factor may be asked. Measuring volume once again highlights the unit theme, as a unit cube is chosen to represent a volume unit and used to measure the volume of simple shapes composed out of rectangular prisms.					
I Can Statements / Essential Questions / Objectives	**Content / Concepts**	**Skills / Competencies**	**Vocabulary**	**Assessments**	**Focus Standards**	**Standards for Math Practice**

Classify two dimensional figures in a hierarchy based on properties	Measurement	Classify two-dimensional figures based on their properties.	Acute triangle, Associative Property of Multiplication, Attribute, Base of a solid figure, Congruent, Cubic unit, Decagon, Decagonal prism, Equilateral triangle, Formula, Isosceles triangle, Hierarchy, Heptagon, hexagon, Hexagonal prism, Lateral face,Measurement systems, Measurement unit, Nonagon, Obtuse triangle, Octagon, Otcagonal prism, Parallel lines, Parallelogram, Pentagon, Pentagonal prism, Pentagonal pyramid, Perpendicular lines, Polygon, Polyhedron, Prism, Pyramid, Quadrilateral, Rectangle, Regular polygon, Rhombus, Right rectangular prism, Right triangle, Scalen triangle, Solid figure, Three-dimensional figures, Trapezoid, Two-dimensional figures, Unit cube, Volume		Classify two-dimensional figures into categories based on an understanding of their properties.	

Apply the formulas V = l x w x h and V = B x h for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems given the appropriate formula	Two Dimensional Figures	Relate volume to multiplication and to addition.				
Find volumes of solid figures composed of two non-overlapping right rectangular prisms	Volume					

Important Standards Addressed in This Unit	Misconceptions	Proper Conceptions
There are no standards currently aligned to this resource.	Students think that when describing geometric shapes and placing them in subcategories, the last category is the only classification that can be used.	Clarify the properties of each classification, reinforcing the idea that shapes can “fit” into more than one classification based on properties.

Subject/Course: Math	Grade: 5					
	Suggested Timeline: 6 weeks					
Unit Title: Graph Points on the Coordinate Plane to Solve Problems	Scaling is revisited in the last module on the coordinate plane. Ever since the growth and shrinking patterns were first introduced in Kindergarten, students have been using bar graphs to display data and patterns. Extensive bar-graph work has set the stage for line plots, which are both the natural extension of bar graphs and the precursor to linear functions. It is in this final module of K-5 that a simple line plot of a straight line is presented on a coordinate plane and students are asked about the scaling relationship between the increases in the units of the vertical axis for 1 unit of increase in the horizontal axis. This is the first hint of slope and marks the beginning of the major theme of middle school: ratios and proportions.					
I Can Statements / Essential Questions / Objectives	**Content / Concepts**	**Skills / Competencies**	**Vocabulary**	**Assessments**	**Focus Standards**	**Standards for Math Practice**
Generate two numerical patterns using two given rules	Coordinate Plane	Describe and interpret points given an ordered pair	Axis, axes, Coordinate plane, Coordinate system, Coordinates, Corresponding terms, Data, Fraction, Intersect, Interval, Line graph, Line plot, Ordered pair, Origin, Perpendicular, Plane, Quadrants, Scale, Sequence, Unit fraction, X-axis, X-coordinate, Y-axis, Y-coordinate		Analyze patterns and relationships using two rules.	MP# 1,2,4,5,6,7,8
Identify apparent relationships between corresponding terms of two patterns with the same starting numbers that follow different rules	Data Displays	Generate, analyze and compare patterns			Graph points in the first quadrant on the coordinate plane and interpret these points when solving real world and mathematical problems.	

Identify parts of the coordinate plane (x-axis, y-axis, and the origin) and the ordered pair (x-coordinate and y-coordinate). Limit the coordinate plane to quadrant I	Measurement	Identify parts of a coordinate grid.				
Represent real-world and mathematical problems by plotting points in quadrant I of the coordinate plane, and interpret coordinate values of points in the context of a situation	Patterns	Organize and display data in order to answer questions.				
Solve problems involving computation of fractions by using information presented in line plots		Plot points in quadrant I.				
Display and interpret data shown in tallies, tables, charts, pictographs, bar graphs, and line graphs		Represent and interpret data using appropriate scale.				
Display and interpret data using a title, appropriate scale, and labels		Solve problems involving computation with fractions using information obtained from data displays.				

Important Standards Addressed in This Unit	Misconceptions	Proper Conceptions
Represent and interpret data using appropriate scale.	Students reverse the points when plotting them on the coordinate plane. They count up first on the y-axis and then over on the x-axis.	The location of every point in the plane has a specific place. Have students plot points where the numbers are reversed, such as (4, 5) and (5, 4). Begin with students providing a verbal description of how to plot each point. Then, have them follow the verbal description and plot each point.
Solve problems involving computation of fractions using information provided in a line plot.		