Select a Course:	Math Grade 5
Teacher:	CORE Math Grade 5
Course:	Math Grade 5
Year:	2016-17
Months:	- All -

August

Enduring Understandings	Essential Questions	Standards	Knowledge & Skills	Academic Language

September

Grade 5 Math Whole Number Computation Whole Number Computation (4 weeks)

Algeba: Order of Operations Imbedded at supporting standard. (5.OA.1)

Enduring Understandings	Essential Questions	Standards	Knowledge & Skills	Academic Language
Parentheses, brackets, and braces are used to guide the order of operations when simplifying expressions. A standard algorithm is used to fluently multiply multi-digit whole numbers. A variety of different strategies can be used to divide multi-digit numbers, visual models (rectangular array, equations, and/or area model) and strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.	How do parentheses, brackets, and braces affect the way you simplify expressions? How do you multiply multi-digit numbers using a standard algorithm? How do you choose different division strategies to divide multi-digit numbers?	5.NBT.B.5 - Perform operations with multi-digit whole numbers and with decimals to hundredths ~ Fluently multiply multi-digit whole numbers using the standard algorithm. 5.NBT.B.6 - Perform operations with multi-digit whole numbers and with decimals to hundredths ~ Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. 5.OA.A.1 - Write and interpret numerical expressions ~ Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	How to illustrate and explain division (up to 4-digit whole numbers by up to 2-digit whole numbers) calculations by using a visual model (rectangular array, equations, and/or area model) (5.NBT.6). Fluently multiply multi-digit whole numbers. (5.NBT.5) Divide up to 4-digit whole numbers by up to 2-digit whole numbers by using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. (5.NBT.6) Use parentheses, brackets, and braces in numerical expressions. And evaluate those expressions.(5.OA.1)	Critical Terms: Expressions Parentheses Brackets Braces Supplemental Terms: Dividend Divisor Quotient Remainder Array Area model Equation

Grade 5 Math Volume 4-5 Weeks

Enduring	Essential	Standards	Knowledge	Academic

	Understandings	Questions		& Skills	Language
October	Measurement problems can be solved by using appropriate tools. Volume of three-dimensional figures is measured in cubic units. Volume is additive. Multiple rectangular prisms can have the same volume. Volume can be found by repeatedly adding the area of the base or by multiplying all three dimensions. Volume can be used to solve a variety of real life problems.	What is volume and how is it used in real life? How does the area of rectangles relate to the volume of rectangular prisms? Why is volume measured in cubic units?	5.MD.C.3 - Geometric measurement: understand concepts of volume ~ Recognize volume as an attribute of solid figures and understand concepts of volume measurement. 5.MD.C.4 - Geometric measurement: understand concepts of volume ~ Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. 5.MD.C.5 - Geometric measurement: understand concepts of volume ~ Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. 5.NBT.A.2 - Understand the place value system ~ Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. 5.MD.C.3a - Geometric measurement: understand concepts of volume ~ A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume. 5.MD.C.3b - Geometric measurement: understand concepts of volume ~ A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. 5.MD.C.5a - Geometric measurement: understand concepts of volume ~ Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. 5.MD.C.5c - Geometric measurement: understand concepts of volume ~ Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.	That volume of three-dimensional figures is measured in cubic units. The cubic unit can be written with an exponent (e.g., in3, m3) The formula for volume and when and how to use it. Define volume as the measurement of the space inside a solid three-dimensional figure. (5.MD.3) Identify and describe unit cubes as representing 1 cubic unit of volume, and how they are used to measure volume of three-dimensional shapes. (5.MD.3) Model how a solid figure is packed with unit without gaps or overlaps to measure volume. (5.MD.3) Use the term “cubic units” to describe units of volume measurement. (5.MD.3) Measure volumes by counting cubes first with manipulatives and then by pictures using cubic cm, cubic in, cubic ft, and improvised units. (5.MD.4) Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes. (5.MD.5) Prerequisite: Find the volume of a right rectangular prism by finding the area of the base and using repetitive addition to add the layers of height.	Critical Terms: Unit cube (as a manipulative) Volume Cubic unit Right rectangular prism Supplemental Terms: Area Gap Overlap Solid figure Attribute Edge lengths

				Find the volume of a right rectangular prism by finding the area of the base and multiplying by the number of layers in the prism (height). (5.MD.5) Show that the volume is the same as it would be if volume were found by multiplying the edge lengths. (5.MD.5) Build a right rectangular prism model to represent a 3 factor multiplication expression. (5.MD.5) Apply the formula to find volumes of right rectangular prisms with whole number edge lengths in real world and mathematical problems. (5.MD.5) Find the volume of composite rectangular prisms by adding the volumes of the non-overlapping parts and applying the technique to solve real world problems. (5.MD.5)	

November

Grade 5 Math Fraction Computation and Application Fraction Unit 8-9 weeks

Measurement standards imbedded:
5 MD. 1 (Convert measurements in fraction form and customary system)
5 MD. 2 (Line plot of measurement up to the nearest 1/8)

Enduring Understandings	Essential Questions	Standards	Knowledge & Skills	Academic Language
Benchmark fractions and other strategies aid in estimating the reasonableness of results of operations with fractions. The use of area models, fraction strips, and number lines, are effective strategies to model sums, differences, products, and quotients. Equivalent fractions are critical when adding and	What is a reasonable estimate for the answer? How do operations with fractions relate to operations with whole numbers? What do equivalent fractions represent and why are they useful when	5.MD.A.1 - Convert like measurement units within a given measurement system ~ Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. 5.MD.B.2 - Represent and interpret data ~ Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.	Add fractions with unlike denominators by replacing given fractions with equivalent fractions. (5.NF.1) Add mixed numbers with unlike denominators by replacing given fractions with equivalent fractions. (5.NF.1)	Critical Terms: scaling (drawing to scale) ike/unlike denominators equivalent/equal units estimate benchmark fractions fraction mixed number fractional side lengths U.S. customary measurement Conversion/convert

	subtracting fractions with unlike denominators. Fractions are division models. Multiplication can be interpreted as scaling/resizing (multiplying a given number by a fraction greater than 1 results in a product greater than the given number and multiplying a given number by a fraction less than 1 results in a product smaller than the given number). . Use your knowledge of fractions and equivalence of fractions to develop algorithms for adding, subtracting, multiplying, and dividing fractions	solving equations with fractions? What models or pictures could aid in understanding a mathematical or real-world problem and the relationships among the quantities? What models or pictures can be used when solving a mathematical or real-world problem to help decide which operation to use? What are the effects of multiplying by quantities greater than 1 compared to the effects of multiplying by quantities less than 1?	5.NF.A.1 - Use equivalent fractions as a strategy to add and subtract fractions ~ Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. 5.NF.A.2 - Use equivalent fractions as a strategy to add and subtract fractions ~ Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. 5.NF.B.3 - Apply and extend previous understandings of multiplication and division ~ Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. 5.NF.B.4 - Apply and extend previous understandings of multiplication and division ~ Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. 5.NF.B.5 - Apply and extend previous understandings of multiplication and division ~ Interpret multiplication as scaling (resizing), by: 5.NF.B.6 - Apply and extend previous understandings of multiplication and division ~ Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. 5.NF.B.7 - Apply and extend previous understandings of multiplication and division ~ Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.	Subtract fractions with unlike denominators by replacing given fractions with equivalent fractions. (5.NF.1) Subtract mixed numbers with unlike denominators by replacing given fractions with equivalent fractions (5.NF.1) Solve word problems involving addition of fractions referring to the same whole, including cases of unlike denominators using visual fraction models and/or equations. (5.NF.2) Solve word problems involving subtraction of fractions referring to the same whole, including cases of unlike denominators using visual fraction models and/or equations. (5.NF.2) Use benchmark fractions and number sense to estimate mentally and assess reasonableness of answers. (5.NF.2) Interpret a fraction as division of the numerator by the denominator. (5.NF.3) Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers using visual fraction models or equations. (5.NF.3) Multiply a fraction by a whole number. (5.NF.4) Use visual fraction models and/or language to interpret multiplication of a fraction by a whole	Supplemental Terms: factor product equivalence factor multiple numerator denominator operations multiplication/multiply division/divide product quotient unit fraction area side lengths comparing

number as multiplying the numerator by the whole and dividing by the denominator. (5.NF.4)

Multiply a fraction by a fraction. (5.NF.4)

Use visual fraction models and/or language to interpret multiplication of fractions as multiplying numerators and multiplying denominators. (5.NF.4)

Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. (5.NF.4)

Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. (5.NF.4)

Use language and visuals to explain how multiplication of fractions represents scaling (resizing). (5.NF.5)

Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication using visuals, real-life situations and/or language. (5.NF.5)

Explain why multiplying a number by a fraction less than 1, results in a smaller product using visuals, equations, language and real-life examples (5.NF.5)

				Explain why multiplying a number by a fraction equal to 1, results in the same product using visuals, equations, language and real-life examples (5.NF.5) Explain why multiplying a number by a fraction greater than 1, results in a larger product using visuals, equations, language and real-life examples (5.NF.5) Solve real world problems involving multiplication of fractions using visual fraction models and equations. (5.NF.6) Solve real world problems involving multiplication of mixed numbers using visual fraction models and equations. (5.NF.6) Divide a unit fraction by a non-zero whole number using manipulatives, pictures, equations, real life examples and language. (5.NF.7) Divide a non-zero whole number by a unit fraction using manipulatives, pictures, equations, real life examples and language. (5.NF.7) Solve real world problems involving division of a unit fraction by a non-zero whole number and division of a non-zero whole number by a unit fraction using visual models and equations to represent the problem. (5.NF.7) Convert measurements within the metric system to solve multi-step, real world problems. (100cm = 1 meter) (5.MD.1)	

December

Enduring Understandings	Essential Questions	Standards	Knowledge & Skills	Academic Language

January

Grade 5 Math Decimals Decimal Unit 8-9 weeks

Measurement Standards Imbedded
5 MD. 1 (Convert measurements in decimal form and metric system)
5 MD. 2 (Line plot of measurement up to the nearest 1/8)

Enduring Understandings	Essential Questions	Standards	Knowledge & Skills	Academic Language
		5.MD.A.1 - Convert like measurement units within a given measurement system ~ Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. 5.MD.B.2 - Represent and interpret data ~ Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. 5.NBT.A.1 - Understand the place value system ~ Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. 5.NBT.A.2 - Understand the place value system ~ Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. 5.NBT.A.3 - Understand the place value system ~ Read, write, and compare decimals to thousandths. 5.NBT.A.4 - Understand the place value system ~ Use place value understanding to round decimals to any place. 5.NBT.B.7 - Perform operations with multi-digit whole numbers and with decimals to hundredths ~ Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.		

			5.NBT.A.3a - Understand the place value system ~ Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000). 5.NBT.A.3b - Understand the place value system ~ Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. 5.NBT.B.5 - Perform operations with multi-digit whole numbers and with decimals to hundredths ~ Fluently multiply multi-digit whole numbers using the standard algorithm. 5.NBT.B.6 - Perform operations with multi-digit whole numbers and with decimals to hundredths ~ Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. IL.SEL.3-5.3.B.2a - Identify and apply the steps of systematic decision making.		

February

Enduring Understandings	Essential Questions	Standards	Knowledge & Skills	Academic Language

March

Enduring Understandings	Essential Questions	Standards	Knowledge & Skills	Academic Language

April

Grade 5 Math Two Dimensional Geometry 2-3 weeks

Enduring Understandings	Essential Questions	Standards	Knowledge & Skills	Academic Language
Two-dimensional geometric figures are composed of various parts that are described with precise vocabulary. Two-dimensional geometric figures can be classified based upon their properties.	Why is it important to use precise language and mathematical tools in the study of 2-dimensional and 3-dimensional figures? How can describing, classifying and comparing properties of 2-dimesional shapes be useful in solving problems in our 3-	5.G.B.3 - Classify two-dimensional figures into categories based on their properties ~ Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles. 5.G.B.4 - Classify two-dimensional figures into categories based on their properties ~ Classify two-dimensional figures in a hierarchy based on properties.	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. (5.G.4) Identify two-dimensional shapes that can be classified into more than one category based on their attributes. (5.G.3)	Critical Terms: Hierarchy Supplemental Terms: Rhombus Quadrilateral Area Polygon Square Triangle Rectangle Parallelogram Pentagon Hexagon

		dimensional world?		Explain why figures belong in a category or multiple categories. (5.G.3) Classify two-dimensional figures in a hierarchy based on properties (5.G.4)	Cube Trapezoid

May

Grade 5 Math Coordinate Geometry 3-4 weeks

Enduring Understandings	Essential Questions	Standards	Knowledge & Skills	Academic Language
In a coordinate plane, the first number indicates how far to travel from the origin in the direction of one axis and the second number indicates how far to travel in the direction of the second axis. The coordinate plane can be used to model and compare numerical patterns.	What is the purpose of a coordinate plane? How can graphing points on the coordinate plane help to solve real world and mathematical problems?	5.G.A.1 - Graph points on the coordinate plane to solve real-world and mathematical problems ~ Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). 5.G.A.2 - Graph points on the coordinate plane to solve real-world and mathematical problems ~ Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. 5.OA.A.1 - Write and interpret numerical expressions ~ Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. 5.OA.A.2 - Write and interpret numerical expressions ~ Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. 5.OA.B.3 - Analyze patterns and relationships ~ Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.	The necessary terminology for working with the coordinate plane (e.g. first quadrant, points, lines, etc). Which axis is the x-axis and which is the y-axis? Which is the x-coordinate and which is the y-coordinate? Generate two numerical patterns using two given rules. (5.OA.3) Identify numerical relationships between corresponding terms in 2 different expressions. (5.OA.3) Form ordered pairs from the two patterns. (5.OA.3) Graph the ordered pairs on the coordinate plane. (5.OA.3) Graph on the coordinate plane. (5.G.1) Identify, describe and explain the relationship between the names of the components of the coordinate plane including origin, x- and y- axis and x- and y-coordinates. (5.G.1) Explain how to plot	Critical Terms: Coordinate system Coordinate plane First quadrant Points Lines Axis/axes x-axis y-axis Intersection of lines Origin Ordered pairs Coordinates x-coordinate y-coordinate Supplemental Terms: Horizontal Vertical Perpendicular Parallel Line segment Expressions Calculations Evaluating expressions Equation

				points on the coordinate plane. (5.G.1) Graph points from a real-life situation, oral/written language or a written expression on the coordinate plane. (5.G.2) Explain the relationship or value of the plotted points in the context of the situation. (5.G.2)	
June	**Enduring Understandings**	**Essential Questions**	**Standards**	**Knowledge & Skills**	**Academic Language**
July	**Enduring Understandings**	**Essential Questions**	**Standards**	**Knowledge & Skills**	**Academic Language**