

# COMMON CORE RESOURCE FOR GRADE 5

## OPERATIONS AND ALGEBRAIC THINKING

CCSS	Math Concept	Standards and References
5.OA.1.	<b>Create and Evaluate Expressions having Parentheses, Brackets, or Braces (Order of Operations)</b>	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
	Working with brackets, braces and parentheses	<a href="http://www.mrmaffesoli.com/Videos/5OA1.swf">http://www.mrmaffesoli.com/Videos/5OA1.swf</a>
	How Do You Simplify an Expression Using the Order of Operations?	<a href="http://www.virtualnerd.com/common-core/grade-5/5_OA-operations-algebraic-thinking/A/1/simplify-expression-order-operations">http://www.virtualnerd.com/common-core/grade-5/5_OA-operations-algebraic-thinking/A/1/simplify-expression-order-operations</a>
	Evaluate expressions with parentheses	<a href="http://www.youtube.com/watch?v=Taz_gYyrhml">http://www.youtube.com/watch?v=Taz_gYyrhml</a>
	Order of Operations	<a href="http://www.mathsisfun.com/operation-order-pemdas.html">http://www.mathsisfun.com/operation-order-pemdas.html</a>
	Introduction to Order of Operations Order of Operations	<a href="http://www.khanacademy.org/math/arithmetic/multiplication-division/order_of_operations/v/introduction-to-order-of-operations">http://www.khanacademy.org/math/arithmetic/multiplication-division/order_of_operations/v/introduction-to-order-of-operations</a>
	Order of Operations	<a href="http://www.khanacademy.org/math/arithmetic/multiplication-division/order_of_operations/v/order-of-operations">http://www.khanacademy.org/math/arithmetic/multiplication-division/order_of_operations/v/order-of-operations</a>
5.OA.2.	<b>Write and Interpret Numerical Expressions</b>	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>For example, express the calculation "add 8 and 7, then multiply by 2" as <math>2 \times (8 + 7)</math>. Recognize that <math>3 \times (18932 + 921)</math> is three times as large as <math>18932 + 921</math>, without having to calculate the indicated sum or product.</i>
	Writing and interpreting numerical expressions	<a href="http://www.mrmaffesoli.com/Videos/5OA2.swf">http://www.mrmaffesoli.com/Videos/5OA2.swf</a>
	Translating words into algebraic expressions	<a href="http://www.youtube.com/watch?v=g6jeSuHYhyY">http://www.youtube.com/watch?v=g6jeSuHYhyY</a>

	<b>5.OA.2. CONTINUED</b>	
	Writing mathematical expressions from words	<a href="http://www.youtube.com/watch?v=CfUvzKZgPJQ">http://www.youtube.com/watch?v=CfUvzKZgPJQ</a>
	How Do You Translate Phrases into Numerical Expressions?	<a href="http://www.virtualnerd.com/common-core/grade-5/5_OA-operations-algebraic-thinking/A/2/phrase-translate-to-numerical-expression">http://www.virtualnerd.com/common-core/grade-5/5_OA-operations-algebraic-thinking/A/2/phrase-translate-to-numerical-expression</a>
	Number Words Framing Video	<a href="http://www.youtube.com/watch?v=OCP0DJLiE2M">http://www.youtube.com/watch?v=OCP0DJLiE2M</a>
<b>5.OA.3.</b>	<b>Analyze Patterns and Relationships</b>	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. <i>For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.</i>
	Generating and comparing patterns using two different rules	<a href="http://www.mrmaffesoli.com/Videos/5OA3.swf">http://www.mrmaffesoli.com/Videos/5OA3.swf</a>
	Arithmetic sequences	<a href="http://www.khanacademy.org/math/trigonometry/seq_induction/seq_and_series/v/arithmetic-sequences">http://www.khanacademy.org/math/trigonometry/seq_induction/seq_and_series/v/arithmetic-sequences</a>
	Geometric sequences introduction	<a href="http://www.khanacademy.org/math/trigonometry/seq_induction/seq_and_series/v/geometric-sequences--introduction">http://www.khanacademy.org/math/trigonometry/seq_induction/seq_and_series/v/geometric-sequences--introduction</a>
	Math Made Easy: Solving Number Sequences	<a href="http://www.youtube.com/watch?v=xum1sg-TEb4">http://www.youtube.com/watch?v=xum1sg-TEb4</a>
<b>NUMBERS AND OPERATIONS IN BASE TEN</b>		
<b>5.NBT.1</b>	<b>Understand the Place Value System</b>	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.
<b>1</b>	<b>Place values for Decimals</b>	
	Understand that the value of a digit in one place is 10 times the value of the digit to the right (using decimal numbers)	<a href="http://learnzillion.com/lessons/426-understand-that-the-value-of-a-digit-in-one-place-is-10-times-the-value-of-the-digit-to-the-right-using-decimals">http://learnzillion.com/lessons/426-understand-that-the-value-of-a-digit-in-one-place-is-10-times-the-value-of-the-digit-to-the-right-using-decimals</a>
	Understand that the value of a digit in one place is 1/10 the value of the digit to the left (using decimals)	<a href="http://learnzillion.com/lessons/423-understand-that-the-value-of-a-digit-in-one-place-is-110-the-value-of-the-digit-to-the-left-using-decimals">http://learnzillion.com/lessons/423-understand-that-the-value-of-a-digit-in-one-place-is-110-the-value-of-the-digit-to-the-left-using-decimals</a>
<b>2</b>	<b>Place values for Whole Numbers</b>	
	Understand that the value of a digit in one place is 10 times the value of the digit to the right (using whole numbers)	<a href="http://learnzillion.com/lessons/422-understand-that-the-value-of-a-digit-in-one-place-is-10-times-the-value-of-the-digit-to-the-right-using-whole-numbers">http://learnzillion.com/lessons/422-understand-that-the-value-of-a-digit-in-one-place-is-10-times-the-value-of-the-digit-to-the-right-using-whole-numbers</a>

<b>5.NBT.2.</b>	<b>Multiplying and Dividing By Powers of Ten</b>	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.
	Multiply whole numbers by powers of ten	<a href="http://learnzillion.com/lessons/434-multiply-whole-numbers-by-powers-of-ten">http://learnzillion.com/lessons/434-multiply-whole-numbers-by-powers-of-ten</a>
	Multiply decimal numbers by a power of ten	<a href="http://learnzillion.com/lessons/435-multiply-decimal-numbers-by-a-power-of-ten">http://learnzillion.com/lessons/435-multiply-decimal-numbers-by-a-power-of-ten</a>
	Divide a whole number by a power of ten	<a href="http://learnzillion.com/lessons/436-divide-a-whole-number-by-a-power-of-ten">http://learnzillion.com/lessons/436-divide-a-whole-number-by-a-power-of-ten</a>
	Divide a decimal number by a power of ten	<a href="http://learnzillion.com/lessons/437-divide-a-decimal-number-by-a-power-of-ten">http://learnzillion.com/lessons/437-divide-a-decimal-number-by-a-power-of-ten</a>
<b>5.NBT.3.a</b>	<b>Read And Write Decimals to Thousandths Using Base-Ten Numerals, Number Names, and Expanded Form</b>	Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$ .
<b>1</b>	<b>Using place value to name and compare decimals</b>	
	Name decimals through the thousandths place	<a href="http://learnzillion.com/lessons/428-name-decimals-through-the-thousandths-place">http://learnzillion.com/lessons/428-name-decimals-through-the-thousandths-place</a>
	Write thousandths as decimal numbers	<a href="http://learnzillion.com/lessons/427-write-thousandths-as-decimal-numbers">http://learnzillion.com/lessons/427-write-thousandths-as-decimal-numbers</a>
	Identify equivalent decimals by comparing tenths and hundredths	<a href="http://learnzillion.com/lessons/430-identify-equivalent-decimals-by-comparing-tenths-and-hundredths">http://learnzillion.com/lessons/430-identify-equivalent-decimals-by-comparing-tenths-and-hundredths</a>
<b>2</b>	<b>Writing Decimals in Expanded Form</b>	
	Write decimals in expanded notation	<a href="http://learnzillion.com/lessons/429-write-decimals-in-expanded-notation">http://learnzillion.com/lessons/429-write-decimals-in-expanded-notation</a>
<b>5.NBT.3.b</b>	<b>Compare two decimals to thousandths</b>	Compare two decimals to thousandths based on the meanings of the digits in each place, using $>$ , $=$ , and $<$ symbols to record the results of comparisons.
	Compare decimals using fractions	<a href="http://learnzillion.com/lessons/562-compare-decimals-using-fractions">http://learnzillion.com/lessons/562-compare-decimals-using-fractions</a>
	Compare decimals using a number line	<a href="http://learnzillion.com/lessons/563-compare-decimals-using-a-number-line">http://learnzillion.com/lessons/563-compare-decimals-using-a-number-line</a>
	Compare decimals using base ten blocks	<a href="http://learnzillion.com/lessons/564-compare-decimals-using-base-ten-blocks">http://learnzillion.com/lessons/564-compare-decimals-using-base-ten-blocks</a>

<b>5.NBT.4</b>	<b>Round Decimals to any Place</b>	Use place value understanding to round decimals to any place.
	Round decimals to the nearest whole number using a number line	<a href="http://learnzillion.com/lessons/431-round-decimals-to-the-nearest-whole-number-using-a-number-line">http://learnzillion.com/lessons/431-round-decimals-to-the-nearest-whole-number-using-a-number-line</a>
	Round decimals to the nearest tenth using a number line	<a href="http://learnzillion.com/lessons/432-round-decimals-to-the-nearest-tenth-using-a-number-line">http://learnzillion.com/lessons/432-round-decimals-to-the-nearest-tenth-using-a-number-line</a>
	Round decimals to the nearest hundredth using a number line	<a href="http://learnzillion.com/lessons/433-round-decimals-to-the-nearest-hundredth-using-a-number-line">http://learnzillion.com/lessons/433-round-decimals-to-the-nearest-hundredth-using-a-number-line</a>
<b>5.NBT.5</b>	<b>Multiply Multi-digit Whole Numbers</b>	Fluently multiply multi-digit whole numbers using the standard algorithm.
	Multiply using the standard algorithm	<a href="http://learnzillion.com/lessons/530-multiply-using-the-standard-algorithm">http://learnzillion.com/lessons/530-multiply-using-the-standard-algorithm</a>
	Multiply multi-digit numbers using an area model	<a href="http://learnzillion.com/lessons/528-multiply-multidigit-numbers-using-an-area-model">http://learnzillion.com/lessons/528-multiply-multidigit-numbers-using-an-area-model</a>
	Multiply multi-digit numbers using partial products	<a href="http://learnzillion.com/lessons/529-multiply-multidigit-numbers-using-partial-products">http://learnzillion.com/lessons/529-multiply-multidigit-numbers-using-partial-products</a>
<b>5.NBT.6</b>	<b>Divide Multi-digit Whole Numbers</b>	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.
<b>1</b>	<b>Division Using Equations</b>	
	Divide 4-digit dividends by 2-digit divisors by setting up an equation	<a href="http://learnzillion.com/lessons/550-divide-4digit-dividends-by-2-digit-divisors-by-setting-up-an-equation">http://learnzillion.com/lessons/550-divide-4digit-dividends-by-2-digit-divisors-by-setting-up-an-equation</a>
<b>2</b>	<b>Division Using Rectangular Arrays</b>	
	Divide 4-digit dividends by 2-digit divisors by using a rectangular array	<a href="http://learnzillion.com/lessons/553-divide-4digit-dividends-by-2digit-divisors-by-using-a-rectangular-array">http://learnzillion.com/lessons/553-divide-4digit-dividends-by-2digit-divisors-by-using-a-rectangular-array</a>
<b>3</b>	<b>Division Using Area Models</b>	
	Divide 4-digit dividends by 2-digit divisors by using an area model	<a href="http://learnzillion.com/lessons/552-divide-4digit-dividends-by-2digit-divisors-by-using-an-area-model">http://learnzillion.com/lessons/552-divide-4digit-dividends-by-2digit-divisors-by-using-an-area-model</a>
<b>4</b>	<b>How the standard long division algorithm works</b>	
	INTERACTIVE: Long Division - How It Works	<a href="http://www.mathsisfun.com/numbers/long-division-how-works.html">http://www.mathsisfun.com/numbers/long-division-how-works.html</a>
	Why the Standard Algorithm for Long Division Works .	<a href="http://www.youtube.com/watch?v=WCdxMKf9_Qs">http://www.youtube.com/watch?v=WCdxMKf9_Qs</a>
<b>5</b>	<b>Long division which considers place value (similar concept to division using an area model)</b>	
	Interpret and explain the long division algorithm	<a href="http://learnzillion.com/lessons/1681-interpret-and-explain-the-long-division-algorithm">http://learnzillion.com/lessons/1681-interpret-and-explain-the-long-division-algorithm</a>

<b>5.NBT.7</b>	<b>Subtract, Multiply and Divide Decimal to Hundredths</b>	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.
1	<b>Decimal Multiplication using an Area Model</b>	
	Multiply decimals by whole numbers by using an area model	<a href="http://learnzillion.com/lessons/556-multiply-decimals-by-whole-numbers-by-using-an-area-model">http://learnzillion.com/lessons/556-multiply-decimals-by-whole-numbers-by-using-an-area-model</a>
	Multiply decimals by decimals using an area model	<a href="http://learnzillion.com/lessons/557-multiply-decimals-by-decimals-using-an-area-model">http://learnzillion.com/lessons/557-multiply-decimals-by-decimals-using-an-area-model</a>
2	<b>Decimal Division using a Number Line</b>	
	Divide decimals using knowledge of multiplication	<a href="http://learnzillion.com/lessons/561-divide-decimals-using-knowledge-of-multiplication">http://learnzillion.com/lessons/561-divide-decimals-using-knowledge-of-multiplication</a>
3	<b>Decimal Division using Repeated Subtraction</b>	
	Multiplying and dividing by decimals to the hundredths	<a href="http://www.youtube.com/watch?v=sy38Krh3H4Y">http://www.youtube.com/watch?v=sy38Krh3H4Y</a>
<b>NUMBERS AND OPERATIONS - FRACTIONS</b>		
<b>5.NF.1.</b>	<b>Add and Subtract Fractions with unlike Denominators</b>	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. For example, $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$ . (In general, $\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$ .)
1	<b>Add and subtract fractions using fraction bars</b>	
	Add fractions with different denominators using fraction bars	<a href="http://learnzillion.com/lessons/973-add-fractions-with-different-denominators-using-fraction-bars">http://learnzillion.com/lessons/973-add-fractions-with-different-denominators-using-fraction-bars</a>
	Subtract fractions with different denominators using fraction bars	<a href="http://learnzillion.com/lessons/974-subtract-fractions-with-different-denominators-using-fraction-bars">http://learnzillion.com/lessons/974-subtract-fractions-with-different-denominators-using-fraction-bars</a>
2	<b>Add and subtract fractions using equivalent fractions</b>	
	Add unlike fractions using equivalent fractions and the number line	<a href="http://learnzillion.com/lessons/977-add-unlike-fractions-using-equivalent-fractions-and-the-number-line">http://learnzillion.com/lessons/977-add-unlike-fractions-using-equivalent-fractions-and-the-number-line</a>
	Subtract unlike fractions using equivalent fractions and the number line	<a href="http://learnzillion.com/lessons/978-subtract-unlike-fractions-using-equivalent-fractions-and-the-number-line">http://learnzillion.com/lessons/978-subtract-unlike-fractions-using-equivalent-fractions-and-the-number-line</a>

	<b>5.NF.1. CONTINUED</b>	
3	<b>Add and subtract using regrouping and improper fractions</b>	
	Add and subtract mixed numbers: by grouping and renaming	<a href="http://learnzillion.com/lessons/119-add-and-subtract-mixed-numbers-by-grouping-and-renaming">http://learnzillion.com/lessons/119-add-and-subtract-mixed-numbers-by-grouping-and-renaming</a>
	Subtract mixed numbers: converting them into improper fractions	<a href="http://learnzillion.com/lessons/118-subtract-mixed-numbers-converting-them-into-improper-fractions">http://learnzillion.com/lessons/118-subtract-mixed-numbers-converting-them-into-improper-fractions</a>
<b>5.NF.2.</b>	<b>Solve Word Problems involving Addition and Subtraction of Fractions</b>	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. For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$ , by observing that $\frac{3}{7} < \frac{1}{2}$ .
1	<b>Solve Fraction Word Problems by Creating Like Denominators</b>	
	Solve word problems with addition of unlike denominators by creating like denominators.	<a href="http://learnzillion.com/lessons/1055-solve-word-problems-with-addition-of-unlike-denominators-by-creating-like-denominators">http://learnzillion.com/lessons/1055-solve-word-problems-with-addition-of-unlike-denominators-by-creating-like-denominators</a>
	Solve word problems with subtraction of unlike denominators by creating like denominators	<a href="http://learnzillion.com/lessons/1056-solve-word-problems-with-subtraction-of-unlike-denominators-by-creating-like-denominators">http://learnzillion.com/lessons/1056-solve-word-problems-with-subtraction-of-unlike-denominators-by-creating-like-denominators</a>
2	<b>Solve Fraction Word Problems using Models and Number line</b>	
	Use a model to solve word problems involving subtraction of fractions with unlike denominators	<a href="http://learnzillion.com/lessons/1052-use-a-model-to-solve-word-problems-involving-subtraction-of-fractions-with-unlike-denominators">http://learnzillion.com/lessons/1052-use-a-model-to-solve-word-problems-involving-subtraction-of-fractions-with-unlike-denominators</a>
	Use a number line to solve word problems involving subtraction of fractions with unlike denominators	<a href="http://learnzillion.com/lessons/1054-use-a-number-line-to-solve-word-problems-involving-subtraction-of-fractions-with-unlike-denominators">http://learnzillion.com/lessons/1054-use-a-number-line-to-solve-word-problems-involving-subtraction-of-fractions-with-unlike-denominators</a>
3	<b>Estimate the Solution to Fraction Word Problems using Benchmarks</b>	
	Estimate the addition of fractions with unlike denominators using a benchmark fraction	<a href="http://learnzillion.com/lessons/1049-estimate-the-addition-of-fractions-with-unlike-denominators-using-a-benchmark-fraction">http://learnzillion.com/lessons/1049-estimate-the-addition-of-fractions-with-unlike-denominators-using-a-benchmark-fraction</a>
	Estimate the subtraction of fractions with unlike denominators using a benchmark fraction	<a href="http://learnzillion.com/lessons/1050-estimate-the-subtraction-of-fractions-with-unlike-denominators-using-a-benchmark-fraction">http://learnzillion.com/lessons/1050-estimate-the-subtraction-of-fractions-with-unlike-denominators-using-a-benchmark-fraction</a>

5.NF.3	<b>Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.</b>	Interpret a fraction as division of the numerator by the denominator ( $a/b = a \div b$ ). 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. For example, interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$ . If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?
1	<b>Interpret fractions as the division of whole numbers to solve word problems</b>	
	Solve division problems by partitioning the whole (lesson 1 of 4)	<a href="http://learnzillion.com/lessons/979-solve-division-problems-by-partioning-the-whole-lesson-1-of-4">http://learnzillion.com/lessons/979-solve-division-problems-by-partioning-the-whole-lesson-1-of-4</a>
	Solve division story problems by representing the answer as an equal share (lesson 2 of 4)	<a href="http://learnzillion.com/lessons/980-solve-division-story-problems-by-representing-the-answer-as-an-equal-share-lesson-2-of-4">http://learnzillion.com/lessons/980-solve-division-story-problems-by-representing-the-answer-as-an-equal-share-lesson-2-of-4</a>
	Solve word problems involving division of whole numbers that lead to fractional answers (Lesson 3 of 4)	<a href="http://learnzillion.com/lessons/981-solve-word-problems-involving-division-of-whole-numbers-that-lead-to-fractional-answers-lesson-3-of-4">http://learnzillion.com/lessons/981-solve-word-problems-involving-division-of-whole-numbers-that-lead-to-fractional-answers-lesson-3-of-4</a>
	Solve word problems involving division of whole numbers that lead to fractional answers (lesson 4 of 4)	<a href="http://learnzillion.com/lessons/982-solve-word-problems-involving-division-of-whole-numbers-that-lead-to-fractional-answers-lesson-4-of-4">http://learnzillion.com/lessons/982-solve-word-problems-involving-division-of-whole-numbers-that-lead-to-fractional-answers-lesson-4-of-4</a>
2	<b>Divide using a visual model</b>	
	Divide a fraction by a fraction using a visual fraction model	<a href="http://learnzillion.com/lessons/1251-divide-a-fraction-by-a-fraction">http://learnzillion.com/lessons/1251-divide-a-fraction-by-a-fraction</a>
3	<b>Divide using a number line</b>	
	Divide whole numbers by unit fractions using a number line	<a href="http://learnzillion.com/lessons/1541-divide-whole-numbers-by-unit-fractions-using-a-number-line">http://learnzillion.com/lessons/1541-divide-whole-numbers-by-unit-fractions-using-a-number-line</a>
	Place fractions on a number line	<a href="http://learnzillion.com/lessons/94-place-fractions-on-a-number-line-3">http://learnzillion.com/lessons/94-place-fractions-on-a-number-line-3</a>

5.NF.4.a	<b>Interpret the product <math>(a/b) \times q</math> as a parts of a partition of <math>q</math> into <math>b</math> equal parts</b>	Interpret the product $(a/b) \times q$ as a parts of a partition of $q$ into $b$ equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$ . For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$ , and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$ . (In general, $(a/b) \times (c/d) = ac/bd$ )
1	<b>Multiplying Fractions Using an Area Model</b>	
	Multiply a whole number by a fraction using area models (1)	<a href="http://learnzillion.com/lessons/1547-multiply-a-whole-number-by-a-fraction-using-area-models-1">http://learnzillion.com/lessons/1547-multiply-a-whole-number-by-a-fraction-using-area-models-1</a>
	Multiply a whole number by a fraction using area models (2)	<a href="http://learnzillion.com/lessons/1548-multiply-a-whole-number-by-a-fraction-using-area-models-2">http://learnzillion.com/lessons/1548-multiply-a-whole-number-by-a-fraction-using-area-models-2</a>
	Multiply a fraction by a fraction using area models (1)	<a href="http://learnzillion.com/lessons/1549-multiply-a-fraction-by-a-fraction-using-area-models-1">http://learnzillion.com/lessons/1549-multiply-a-fraction-by-a-fraction-using-area-models-1</a>
	Multiply a fraction by a fraction using area models (2)	<a href="http://learnzillion.com/lessons/1550-multiply-a-fraction-by-a-fraction-using-area-models-2">http://learnzillion.com/lessons/1550-multiply-a-fraction-by-a-fraction-using-area-models-2</a>
2	<b>Multiplying Fractions Using a Sequence of Operations</b>	
	Multiply fractions by fractions: using a sequence of operations	<a href="http://learnzillion.com/lessons/128-multiply-fractions-by-fractions-using-a-sequence-of-operations">http://learnzillion.com/lessons/128-multiply-fractions-by-fractions-using-a-sequence-of-operations</a>
5.NF.4.b	<b>Find the Area of a Rectangle with Fractional Side Lengths</b>	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. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
	<b>Determining Area by Tiling</b>	
	Find the area of a rectangle with fractional side lengths by tiling	<a href="http://learnzillion.com/lessons/1542-find-the-area-of-a-rectangle-with-fractional-side-lengths-by-tiling">http://learnzillion.com/lessons/1542-find-the-area-of-a-rectangle-with-fractional-side-lengths-by-tiling</a>
	<b>Determining Area by Tiling and Then Multiplying</b>	
	Find the area of a rectangle with fractional side lengths by tiling and then multiplying	<a href="http://learnzillion.com/lessons/1543-find-the-area-of-a-rectangle-with-fractional-side-lengths-by-tiling-and-then-multiplying">http://learnzillion.com/lessons/1543-find-the-area-of-a-rectangle-with-fractional-side-lengths-by-tiling-and-then-multiplying</a>
	<b>Determining Area by Multiplying Length x Width</b>	
	Find the area of a rectangle by multiplying a fraction and a whole number	<a href="http://learnzillion.com/lessons/1544-find-the-area-of-a-rectangle-by-multiplying-a-fraction-and-a-whole-number">http://learnzillion.com/lessons/1544-find-the-area-of-a-rectangle-by-multiplying-a-fraction-and-a-whole-number</a>



<b>5.NF.5.a.</b>	<b>Interpret Multiplication as Scaling (resizing)</b>	Interpret multiplication as scaling (resizing), by: Comparing 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.
	Comparing the size of a product by multiplying by a factor greater or less than 1.	<a href="http://www.mrmaffesoli.com/Videos/5NF5A.swf">http://www.mrmaffesoli.com/Videos/5NF5A.swf</a>
	Compare the size of a product to the size of one factor on the basis of the size of the other factor	<a href="http://www.uen.org/core/math/downloads/5NF5a.pdf">www.uen.org/core/math/downloads/5NF5a.pdf</a>
<b>5.NF.5.b.</b>	<b>Multiplying a Number by Fractions Larger and Smaller than 1</b>	Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying $a/b$ by 1
	Multiplying a Number by Fractions Larger and Smaller than 1a	<a href="http://www.mrmaffesoli.com/Videos/5NF5B.swf">http://www.mrmaffesoli.com/Videos/5NF5B.swf</a>
	Multiplying a Number by Fractions Larger and Smaller than 1b	<a href="http://www.uen.org/core/math/downloads/5NF5b.pdf">www.uen.org/core/math/downloads/5NF5b.pdf</a>
<b>5.NF.6</b>	<b>Solve real world problems involving multiplication of fractions and mixed numbers using visual models</b>	Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
	Multiply fractions using a visual model	<a href="http://www.mrmaffesoli.com/Videos/5NF6.swf">http://www.mrmaffesoli.com/Videos/5NF6.swf</a>
	Multiply mixed numbers: using pictures	<a href="http://learnzillion.com/lessons/129-multiply-mixed-numbers-using-pictures">http://learnzillion.com/lessons/129-multiply-mixed-numbers-using-pictures</a>
<b>5.NF.7.a</b>	<b>Interpret division of a unit fraction by a non-zero whole number, and compute such quotients</b>	Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$ , and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$ .
	Divide unit fractions by whole numbers by drawing a visual model	<a href="http://learnzillion.com/lessons/1037-divide-unit-fractions-by-whole-numbers-by-drawing-a-model">http://learnzillion.com/lessons/1037-divide-unit-fractions-by-whole-numbers-by-drawing-a-model</a>
	Divide unit fractions by whole numbers by drawing a number line	<a href="http://learnzillion.com/lessons/1038-divide-unit-fractions-by-whole-numbers-by-drawing-a-number-line">http://learnzillion.com/lessons/1038-divide-unit-fractions-by-whole-numbers-by-drawing-a-number-line</a>
	Divide unit fractions by whole numbers by using the multiplicative inverse	<a href="http://learnzillion.com/lessons/1039-divide-unit-fractions-by-whole-numbers-by-using-the-multiplicative-inverse">http://learnzillion.com/lessons/1039-divide-unit-fractions-by-whole-numbers-by-using-the-multiplicative-inverse</a>
	Divide by unit fractions: using the number line	<a href="http://learnzillion.com/lessons/131-divide-by-unit-fractions-using-the-number-line">http://learnzillion.com/lessons/131-divide-by-unit-fractions-using-the-number-line</a>

<b>5.NF.7.b.</b>	<b>Interpret division of a whole number by a unit fraction, and compute such quotients</b>	Interpret division of a whole number by a unit fraction, and compute such quotients. <i>For example, create a story context for <math>4 \div (1/5)</math>, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that <math>4 \div (1/5) = 20</math> because <math>20 \times (1/5) = 4</math>.</i>
	Divide whole numbers by unit fractions using a visual model	<a href="http://learnzillion.com/lessons/1040-divide-whole-numbers-by-unit-fractions-using-a-model">http://learnzillion.com/lessons/1040-divide-whole-numbers-by-unit-fractions-using-a-model</a>
	Divide whole numbers by unit fractions using a number line	<a href="http://learnzillion.com/lessons/1041-divide-whole-numbers-by-unit-fractions-using-a-number-line">http://learnzillion.com/lessons/1041-divide-whole-numbers-by-unit-fractions-using-a-number-line</a>
	Divide whole numbers by unit fractions using the multiplicative inverse	<a href="http://learnzillion.com/lessons/1042-divide-whole-numbers-by-unit-fractions-using-the-multiplicative-inverse">http://learnzillion.com/lessons/1042-divide-whole-numbers-by-unit-fractions-using-the-multiplicative-inverse</a>
<b>5.NF.7.c</b>	<b>Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions</b>	Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins?
<b>1</b>	<b>Divide unit fractions by whole numbers</b>	
	Solve word problems involving division of fractions by whole numbers by drawing a model	<a href="http://learnzillion.com/lessons/1043-solve-word-problems-involving-division-of-fractions-by-whole-numbers-by-drawing-a-model">http://learnzillion.com/lessons/1043-solve-word-problems-involving-division-of-fractions-by-whole-numbers-by-drawing-a-model</a>
	Solve word problems involving division of fractions by whole numbers by drawing a number line	<a href="http://learnzillion.com/lessons/1044-solve-word-problems-involving-division-of-fractions-by-whole-numbers-by-drawing-a-number-line">http://learnzillion.com/lessons/1044-solve-word-problems-involving-division-of-fractions-by-whole-numbers-by-drawing-a-number-line</a>
Solve word problems involving division of fractions by whole numbers by using the multiplicative inverse	<a href="http://learnzillion.com/lessons/1045-solve-word-problems-involving-division-of-fractions-by-whole-numbers-by-using-the-multiplicative-inverse">http://learnzillion.com/lessons/1045-solve-word-problems-involving-division-of-fractions-by-whole-numbers-by-using-the-multiplicative-inverse</a>	
<b>2</b>	<b>Divide whole numbers by unit fractions</b>	
	Solve word problems involving division of whole numbers by fractions by drawing a model	<a href="http://learnzillion.com/lessons/1046-solve-word-problems-involving-division-of-whole-numbers-by-fractions-by-drawing-a-model">http://learnzillion.com/lessons/1046-solve-word-problems-involving-division-of-whole-numbers-by-fractions-by-drawing-a-model</a>
	Solve word problems involving division of whole numbers by fractions by drawing a number line	<a href="http://learnzillion.com/lessons/1047-solve-word-problems-involving-division-of-whole-numbers-by-fractions-by-drawing-a-number-line">http://learnzillion.com/lessons/1047-solve-word-problems-involving-division-of-whole-numbers-by-fractions-by-drawing-a-number-line</a>
Solve word problems involving division of whole numbers by fractions by using the multiplicative inverse	<a href="http://learnzillion.com/lessons/1048-solve-word-problems-involving-division-of-whole-numbers-by-fractions-by-using-the-multiplicative-inverse">http://learnzillion.com/lessons/1048-solve-word-problems-involving-division-of-whole-numbers-by-fractions-by-using-the-multiplicative-inverse</a>	

## MEASUREMENT AND DATA

<b>5.MD.1.</b>	<b>Convert Different Sized Standard Measurement Units within the Same Measurement System</b>	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.
<b>1</b>	<b>Customary Units</b>	
	The names of customary and metric units	<a href="http://www.khanacademy.org/math/arithmetic/rates-and-ratios/metric-system-tutorial/v/u-s--customary-and-metric-units">http://www.khanacademy.org/math/arithmetic/rates-and-ratios/metric-system-tutorial/v/u-s--customary-and-metric-units</a>
	Convert metric size, weight and volume	<a href="http://www.mrmaffesoli.com/Videos/5MD1.swf">http://www.mrmaffesoli.com/Videos/5MD1.swf</a>
	Conversion among customary units	<a href="http://www.mathsisfun.com/measure/us-standard-units-introduction.html">http://www.mathsisfun.com/measure/us-standard-units-introduction.html</a>
<b>2</b>	<b>Metric Units</b>	
	Conversion between metric units	<a href="http://www.khanacademy.org/math/arithmetic/rates-and-ratios/metric-system-tutorial/v/conversion-between-metric-units">http://www.khanacademy.org/math/arithmetic/rates-and-ratios/metric-system-tutorial/v/conversion-between-metric-units</a>
<b>3</b>	<b>Real World Problems involving unit conversion</b>	
	Using Dimensional Analysis	<a href="http://www.alysion.org/dimensional/fun.htm">http://www.alysion.org/dimensional/fun.htm</a>
<b>5.MD.2.</b>	<b>Make a line plot to display a data set of measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>).</b>	Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ ). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.
	Line plot so measurement in fractions of a unit	<a href="http://www.mrmaffesoli.com/Videos/5MD2.swf">http://www.mrmaffesoli.com/Videos/5MD2.swf</a>
	Fractions on a Number Line	<a href="http://www.mathsisfun.com/numbers/fraction-number-line.html">http://www.mathsisfun.com/numbers/fraction-number-line.html</a>
<b>5.MD.3.a.</b>	<b>Recognize volume as an attribute of solid figures and understand concepts of volume measurement.</b>	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. 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.
	Find volume by counting cubes	<a href="http://learnzillion.com/lessons/1264-find-volume-by-counting-cubes">http://learnzillion.com/lessons/1264-find-volume-by-counting-cubes</a>
	Understanding volume	<a href="http://learnzillion.com/lessons/1796-understanding-volume">http://learnzillion.com/lessons/1796-understanding-volume</a>
	Find volume by multiplying the base by the height	<a href="http://learnzillion.com/lessons/1266-find-volume-by-multiplying-the-base-by-the-height">http://learnzillion.com/lessons/1266-find-volume-by-multiplying-the-base-by-the-height</a>
	Understanding volume	<a href="http://learnzillion.com/lessons/1796-understanding-volume">http://learnzillion.com/lessons/1796-understanding-volume</a>

<b>5.MD.3.b.</b>	<b>Understand Volume in terms of Unit Cubes</b>	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.
	Understanding volume in terms of unit cubes that are packed without gaps	<a href="http://www.mrmaffesoli.com/Videos/5MD3B.swf">http://www.mrmaffesoli.com/Videos/5MD3B.swf</a>
<b>5.MD.4.</b>	<b>Measure Volume by Counting Unit Cubes</b>	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
	Compute surface area and volume using knowledge of nets	<a href="http://learnzillion.com/lessons/1801-compute-volume-using-knowledge-of-nets">http://learnzillion.com/lessons/1801-compute-volume-using-knowledge-of-nets</a>
	Count unit cubes in a rectangular prism	<a href="http://learnzillion.com/lessons/1799-count-unit-cubes-in-a-rectangular-prism">http://learnzillion.com/lessons/1799-count-unit-cubes-in-a-rectangular-prism</a>
<b>5.MD.5.a.</b>	<b>Show the Volume of a Rectangular Prism Calculated by counting cubes is equivalent to multiplying the area of the base by the height</b>	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.
	Find the volume of a solid figure by multiplying ( $V = l \cdot w \cdot h$ )	<a href="http://learnzillion.com/lessons/1803-find-the-volume-of-a-solid-figure-by-multiplying-v-l-x-w-x-h">http://learnzillion.com/lessons/1803-find-the-volume-of-a-solid-figure-by-multiplying-v-l-x-w-x-h</a>
	Find the volume of a solid figure using the base x height formula ( $V = b \cdot h$ )	<a href="http://learnzillion.com/lessons/1804-find-the-volume-of-a-solid-figure-using-the-base-x-height-formula-v-b-x-h">http://learnzillion.com/lessons/1804-find-the-volume-of-a-solid-figure-using-the-base-x-height-formula-v-b-x-h</a>
	Count unit cubes in a rectangular prism	<a href="http://learnzillion.com/lessons/1799-count-unit-cubes-in-a-rectangular-prism">http://learnzillion.com/lessons/1799-count-unit-cubes-in-a-rectangular-prism</a>
	Use volume to understand the associative property of multiplication	<a href="http://learnzillion.com/lessons/1805-use-volume-to-understand-the-associative-property-of-multiplication">http://learnzillion.com/lessons/1805-use-volume-to-understand-the-associative-property-of-multiplication</a>
<b>5.MD.5.b.</b>	<b>Use <math>V = l \cdot w \cdot h</math> and <math>V = b \cdot h</math> to calculate volume of rectangular prisms.</b>	Apply the formulas $V = l \times w \times h$ and $V = b \times h$ 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.
	Find the volume of a solid figure by multiplying ( $V = l \cdot w \cdot h$ )	<a href="http://learnzillion.com/lessons/1803-find-the-volume-of-a-solid-figure-by-multiplying-v-l-x-w-x-h">http://learnzillion.com/lessons/1803-find-the-volume-of-a-solid-figure-by-multiplying-v-l-x-w-x-h</a>
	Find the volume of a solid figure using the base x height formula ( $V = b \cdot h$ )	<a href="http://learnzillion.com/lessons/1804-find-the-volume-of-a-solid-figure-using-the-base-x-height-formula-v-b-x-h">http://learnzillion.com/lessons/1804-find-the-volume-of-a-solid-figure-using-the-base-x-height-formula-v-b-x-h</a>
	Find the missing dimensions of 3-D figures using the volume formula	<a href="http://learnzillion.com/lessons/1808-find-the-missing-dimensions-of-3d-figures-using-the-volume-formula">http://learnzillion.com/lessons/1808-find-the-missing-dimensions-of-3d-figures-using-the-volume-formula</a>

<b>5.MD.5.c.</b>	<b>Find the volume of complex rectangular prisms</b>	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
	Find the volume of complex rectangular prisms	<a href="http://learnzillion.com/lessons/1809-find-the-volume-of-complex-rectangular-prisms">http://learnzillion.com/lessons/1809-find-the-volume-of-complex-rectangular-prisms</a>
<b>GEOMETRY</b>		
<b>5.G.1.</b>	<b>Understand the Coordinate Grid</b>	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).
	Use a model to identify parts of a coordinate plane	<a href="http://learnzillion.com/lessons/1700-use-a-model-to-identify-parts-of-a-coordinate-plane">http://learnzillion.com/lessons/1700-use-a-model-to-identify-parts-of-a-coordinate-plane</a>
	Plot points on a coordinate grid	<a href="http://learnzillion.com/lessons/1791-plot-points-on-a-coordinate-grid">http://learnzillion.com/lessons/1791-plot-points-on-a-coordinate-grid</a>
	Plot points on a coordinate plane	<a href="http://learnzillion.com/lessons/1701-plot-points-on-a-coordinate-plane">http://learnzillion.com/lessons/1701-plot-points-on-a-coordinate-plane</a>
	Name the location of points on a coordinate grid	<a href="http://learnzillion.com/lessons/1792-name-the-location-of-points-on-a-coordinate-grid">http://learnzillion.com/lessons/1792-name-the-location-of-points-on-a-coordinate-grid</a>
<b>5.G.2.</b>	<b>Represent Real World Problems by Graphing Points in the First Quadrant.</b>	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.
	Examine mathematical relationships between coordinate pairs	<a href="http://learnzillion.com/lessons/1795-examine-mathematical-relationships-between-coordinate-pairs">http://learnzillion.com/lessons/1795-examine-mathematical-relationships-between-coordinate-pairs</a>
	Find distance between points on a coordinate plane by counting	<a href="http://learnzillion.com/lessons/1703-find-distance-between-points-on-a-coordinate-plane-by-counting">http://learnzillion.com/lessons/1703-find-distance-between-points-on-a-coordinate-plane-by-counting</a>
	Move a point and describe its location on a coordinate plane	<a href="http://learnzillion.com/lessons/1703-find-distance-between-points-on-a-coordinate-plane-by-counting">http://learnzillion.com/lessons/1703-find-distance-between-points-on-a-coordinate-plane-by-counting</a>
	Determine the shortest distance between two points on a coordinate plane	<a href="http://learnzillion.com/lessons/1705-determine-the-shortest-distance-between-two-points-on-a-coordinate-plane">http://learnzillion.com/lessons/1705-determine-the-shortest-distance-between-two-points-on-a-coordinate-plane</a>

5.G.3.	<b>Attributes belonging to a category of 2-D figures also belong to all subcategories of that category.</b>	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.
	Count sides and angles to identify polygons	<a href="http://learnzillion.com/lessons/1707-count-sides-and-angles-to-identify-polygons">http://learnzillion.com/lessons/1707-count-sides-and-angles-to-identify-polygons</a>
	Identify quadrilaterals based on attributes	<a href="http://learnzillion.com/lessons/1708-identify-quadrilaterals-based-on-attributes">http://learnzillion.com/lessons/1708-identify-quadrilaterals-based-on-attributes</a>
	Classify quadrilaterals by looking at multiple attributes	<a href="http://learnzillion.com/lessons/1710-classify-quadrilaterals-by-looking-at-multiple-attributes">http://learnzillion.com/lessons/1710-classify-quadrilaterals-by-looking-at-multiple-attributes</a>
5.G.4.	<b>Classify two-dimensional figures in a hierarchy based on properties.</b>	Classify two-dimensional figures in a hierarchy based on properties.
	Classify quadrilaterals by looking at multiple attributes	<a href="http://learnzillion.com/lessons/1710-classify-quadrilaterals-by-looking-at-multiple-attributes">http://learnzillion.com/lessons/1710-classify-quadrilaterals-by-looking-at-multiple-attributes</a>
	Compare quadrilaterals based on attributes	<a href="http://learnzillion.com/lessons/1709-compare-quadrilaterals-based-on-attributes">http://learnzillion.com/lessons/1709-compare-quadrilaterals-based-on-attributes</a>