



to the

# California Common Core State Standards for Mathematics



Grade 5

California Common Core State Standards for Mathematics Grade 5		i-Ready Classroom Mathematics Lessons Grade 5
Grade 5		
5.OA	Operations and Algebraic Thinking	
	Write and interpret numerical expressions.	
5.OA.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	<b>Lesson 30:</b> Evaluate, Write, and Interpret Expressions  <u><b>Supporting Content:</b></u> Lesson 3: Find Volume Using Formulas; Lesson 8: Read and Write Decimals <b>Math in Action:</b> pp. 702–709
5.OA.2	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>	<b>Lesson 30:</b> Evaluate, Write, and Interpret Expressions  <u><b>Supporting Content:</b></u> <b>Math in Action:</b> pp. 702–709
5.OA.2.1	Express a whole number in the range 2–50 as a product of its prime factors. <i>For example, find the prime factors of 24 and express 24 as <math>2 \times 2 \times 2 \times 3</math>.</i>	<b>See Grade 4:</b>  <u><b>Supporting Content:</b></u> Lesson 8: Multiples and Factors <b>Math in Action:</b> pp. 214–221, 350–357

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	Analyze patterns and relationships.	
5.OA.3	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>	<b>Lesson 33:</b> Analyze Patterns and Relationships
<b>5.NBT</b>	<b>Number and Operations in Base Ten</b>	
	Understand the place value system.	
5.NBT.1	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>Lesson 6:</b> <i>Understand</i> Decimal Place Value  <b>Supporting Content:</b> Lesson 7: <i>Understand</i> Powers of 10; Lesson 15: Multiply a Decimal by a Whole Number; Lesson 16: Multiply Decimals; Lesson 17: Divide Decimals <b>Math in Action:</b> pp. 292–299
5.NBT.2	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.	<b>Lesson 7:</b> <i>Understand</i> Powers of 10  <b>Supporting Content:</b> Lesson 25: Convert Measurement Units; Lesson 26: Solve Word Problems Involving Conversions <b>Math in Action:</b> pp. 292–299
5.NBT.3	Read, write, and compare decimals to thousandths.	
5.NBT.3.a	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>Lesson 8:</b> Read and Write Decimals  <b>Supporting Content:</b> Lesson 6: <i>Understand</i> Decimal Place Value <b>Math in Action:</b> pp. 292–299

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5.NBT.3.b	Compare two decimals to thousandths based on meanings of the digits in each place, using $>$ , $=$ , and $<$ symbols to record the results of comparisons.	<b>Lesson 9:</b> Compare and Round Decimals  <b>Supporting Content:</b> Lesson 8: Read and Write Decimals <b>Math in Action:</b> pp. 292–299
5.NBT.4	Use place value understanding to round decimals to any place.	<b>Lesson 9:</b> Compare and Round Decimals  <b>Supporting Content:</b> Lesson 14: Add and Subtract in Word Problems <b>Math in Action:</b> pp. 292–299
Perform operations with multi-digit whole numbers and with decimals to hundredths.		
5.NBT.5	Fluently multiply multi-digit whole numbers using the standard algorithm.	<b>Lesson 4:</b> Multiply Multi-Digit Numbers  <b>Supporting Content:</b> Lesson 3: Find Volume Using Formulas; Lesson 26: Solve Word Problems Involving Conversions <b>Math in Action:</b> pp. 104–111
5.NBT.6	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>Lesson 5:</b> Divide Multi-Digit Numbers  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 104–111
5.NBT.7	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.	<b>Lesson 10:</b> Add Decimals <b>Lesson 11:</b> Subtract Decimals <b>Lesson 14:</b> Add and Subtract in Word Problems <b>Lesson 15:</b> Multiply a Decimal by a Whole Number <b>Lesson 16:</b> Multiply Decimals <b>Lesson 17:</b> Divide Decimals  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 292–299, 492–499

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<b>5.NF</b>	<b>Number and Operations—Fractions</b>	
	Use equivalent fractions as a strategy to add and subtract fractions.	
5.NF.1	<p>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.</p> <p><i>For example, <math>\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}</math>. (In general, <math>\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}</math>.)</i></p>	<p><b>Lesson 12:</b> Add Fractions <b>Lesson 13:</b> Subtract Fractions</p> <p><b>Supporting Content:</b> Lesson 14: Add and Subtract in Word Problems; Lesson 27: Make Line Plots and Interpret Data <b>Math in Action:</b> pp. 292–299</p>
5.NF.2	<p>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.</p> <p><i>For example, recognize an incorrect result <math>\frac{2}{5} + \frac{1}{2} = \frac{3}{7}</math>, by observing that <math>\frac{3}{7} &lt; \frac{1}{2}</math>.</i></p>	<p><b>Lesson 12:</b> Add Fractions <b>Lesson 13:</b> Subtract Fractions <b>Lesson 14:</b> Add and Subtract in Word Problems</p> <p><b>Supporting Content:</b> Lesson 27: Make Line Plots and Interpret Data <b>Math in Action:</b> pp. 292–299</p>

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	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	
5.NF.3	<p>Interpret a fraction as division of the numerator by the denominator (<math>a/b = a \div b</math>). 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.</p> <p><i>For example, interpret <math>3/4</math> as the result of dividing 3 by 4, noting that <math>3/4</math> multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size <math>3/4</math>. 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?</i></p>	<p><b>Lesson 18:</b> Fractions as Division</p> <p><b>Supporting Content:</b> Lesson 25: Convert Measurement Units; Lesson 26: Solve Word Problems Involving Conversions <b>Math in Action:</b> pp. 492–499</p>
5.NF.4	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.	
5.NF.4.a	<p>Interpret the product <math>(a/b) \times q</math> as <math>a</math> parts of a partition of <math>q</math> into <math>b</math> equal parts; equivalently, as the result of a sequence of operations <math>a \times q \div b</math>.</p> <p><i>For example, use a visual fraction model to show <math>(2/3) \times 4 = 8/3</math>, and create a story context for this equation. Do the same with <math>(2/3) \times (4/5) = 8/15</math>. (In general, <math>(a/b) \times (c/d) = ac/bd</math>.)</i></p>	<p><b>Lesson 19:</b> Understand Multiplication by a Fraction</p> <p><b>Supporting Content:</b> Lesson 20: Multiply Fractions to Find Area; Lesson 22: Multiply Fractions in Word Problems <b>Math in Action:</b> pp. 492–499</p>
5.NF.4.b	<p>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.</p>	<p><b>Lesson 20:</b> Multiply Fractions to Find Area</p> <p><b>Supporting Content:</b> Lesson 19: Understand Multiplication by a Fraction; Lesson 22: Multiply Fractions in Word Problems <b>Math in Action:</b> pp. 492–499</p>

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5.NF.5	Interpret multiplication as scaling (resizing), by:	
5.NF.5.a	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.	<b>Lesson 21:</b> <i>Understand</i> Multiplication as Scaling
5.NF.5.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.	<b>Lesson 21:</b> <i>Understand</i> Multiplication as Scaling
5.NF.6	Solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	<b>Lesson 22:</b> Multiply Fractions in Word Problems  <b>Supporting Content:</b> Lesson 20: Multiply Fractions to Find Area; Lesson 26: Solve Word Problems Involving Conversions; Lesson 27: Make Line Plots and Interpret Data <b>Math in Action:</b> pp. 492–499
5.NF.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.	
5.NF.7.a	Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. <i>For example, create a story context for <math>(1/3) \div 4</math>, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that <math>(1/3) \div 4 = 1/12</math> because <math>(1/12) \times 4 = 1/3</math>.</i>	<b>Lesson 23:</b> <i>Understand</i> Division with Unit Fractions  <b>Supporting Content:</b> Lesson 24: Divide Unit Fractions in Word Problems <b>Math in Action:</b> pp. 492–499



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5.NF.7.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>	<b>Lesson 23:</b> <i>Understand</i> Division with Unit Fractions  <b>Supporting Content:</b> Lesson 24: Divide Unit Fractions in Word Problems <b>Math in Action:</b> pp. 492–499
5.NF.7.c	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. <i>For example, how much chocolate will each person get if 3 people share <math>1/2</math> lb of chocolate equally? How many <math>1/3</math>-cup servings are in 2 cups of raisins?</i>	<b>Lesson 24:</b> Divide Unit Fractions in Word Problems  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 492–499
<b>5.MD</b>	<b>Measurement and Data</b>	
	Convert like measurement units within a given measurement system.	
5.MD.1	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>Lesson 25:</b> Convert Measurement Units <b>Lesson 26:</b> Solve Word Problems Involving Conversions  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 608–615
	Represent and interpret data.	
5.MD.2	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. <i>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.</i>	<b>Lesson 27:</b> Make Line Plots and Interpret Data  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 608–615



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	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	
5.MD.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement.	
5.MD.3.a	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.	<b>Lesson 1: Understand Volume</b>  <b>Supporting Content:</b> Lesson 2: Find Volume Using Unit Cubes <b>Math in Action:</b> pp. 104–111
5.MD.3.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.	<b>Lesson 1: Understand Volume</b>  <b>Supporting Content:</b> Lesson 2: Find Volume Using Unit Cubes <b>Math in Action:</b> pp. 104–111
5.MD.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	<b>Lesson 2: Find Volume Using Unit Cubes</b>  <b>Supporting Content:</b> Lesson 1: Understand Volume <b>Math in Action:</b> pp. 104–111
5.MD.5	Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume.	
5.MD.5.a	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.	<b>Lesson 2: Find Volume Using Unit Cubes</b> <b>Lesson 3: Find Volume Using Formulas</b>  <b>Supporting Content:</b> Lesson 4: Multiply Multi-Digit Numbers; Lesson 5: Divide Multi-Digit Numbers <b>Math in Action:</b> pp. 104–111

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5.MD.5.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.	<b>Lesson 3:</b> Find Volume Using Formulas  <b>Supporting Content:</b> Lesson 4: Multiply Multi-Digit Numbers <b>Math in Action:</b> pp. 104–111
5.MD.5.c	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.	<b>Lesson 3:</b> Find Volume Using Formulas  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 104–111
<b>5.G</b>	<b>Geometry</b>	
	Graph points on the coordinate plane to solve real-world and mathematical problems.	
5.G.1	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).	<b>Lesson 31:</b> <i>Understand</i> the Coordinate Plane  <b>Supporting Content:</b> Lesson 32: Represent Problems in the Coordinate Plane <b>Math in Action:</b> pp. 702–709
5.G.2	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.	<b>Lesson 32:</b> Represent Problems in the Coordinate Plane  <b>Supporting Content:</b> Lesson 31: <i>Understand</i> the Coordinate Plane; Lesson 33: Analyze Patterns and Relationships <b>Math in Action:</b> pp. 702–709

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	Classify two-dimensional figures into categories based on their properties.	
5.G.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	<b>Lesson 28:</b> <i>Understand</i> Categories of Two-Dimensional Figures <b>Supporting Content:</b> Lesson 29: Classify Two-Dimensional Figures <b>Math in Action:</b> pp. 608–615
5.G.4	Classify two-dimensional figures in a hierarchy based on properties.	<b>Lesson 29:</b> Classify Two-Dimensional Figures <b>Supporting Content:</b> Lesson 28: <i>Understand</i> Categories of Two-Dimensional Figures <b>Math in Action:</b> pp. 608–615