



to the

# California Common Core State Standards for Mathematics



Grade 6

California Common Core State Standards for Mathematics Grade 6		i-Ready Classroom Mathematics Lessons Grade 6
Grade 6		
6.RP	Ratios and Proportional Relationships	
	Understand ratio concepts and use ratio reasoning to solve problems.	
6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.	<b>Lesson 12:</b> Understand Ratio Concepts  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 329–337
6.RP.2	Understand the concept of a unit rate $a/b$ associated with a ratio $a : b$ with $b \neq 0$ , and use rate language in the context of a ratio relationship. <i>For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.”</i> <i>“For every vote candidate A received, candidate C received nearly three votes.”</i>	<b>Lesson 15:</b> Understand Rate Concepts  <b>Supporting Content:</b> Lesson 12: Understand Ratio Concepts; Lesson 16: Use Unit Rates to Solve Problems <b>Math in Action:</b> pp. 419–427
6.RP.3	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	<b>Lesson 13:</b> Find Equivalent Ratios <b>Lesson 14:</b> Use Part-to-Part and Part-to-Whole Ratios <b>Lesson 16:</b> Use Unit Rates to Solve Problems <b>Lesson 17:</b> Understand Percents <b>Lesson 18:</b> Use Percents to Solve Problems  <b>Supporting Content:</b> Lesson 12: Understand Ratio Concepts; Lesson 15: Understand Rate Concepts; Lesson 21: Write and Solve One-Variable Equations; Lesson 22: Analyze Two-Variable Relationships <b>Math in Action:</b> pp. 329–337
6.RP.3.a	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	<b>Lesson 13:</b> Find Equivalent Ratios <b>Lesson 14:</b> Use Part-to-Part and Part-to-Whole Ratios  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 329–337

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6.RP.3.b	Solve unit rate problems including those involving unit pricing and constant speed. <i>For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?</i>	<b>Lesson 16:</b> Use Unit Rates to Solve Problems  <b>Supporting Content:</b> Lesson 13: Find Equivalent Ratios <b>Math in Action:</b> pp. 419–427
6.RP.3.c	Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.	<b>Lesson 17:</b> Understand Percents <b>Lesson 18:</b> Use Percents to Solve Problems  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 419–427
6.RP.3.d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	<b>Lesson 16:</b> Use Unit Rates to Solve Problems  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 419–427
<b>6.NS</b>	<b>The Number System</b>	
	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	
6.NS.1	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. <i>For example, create a story context for <math>(2/3) \div (3/4)</math> and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that <math>(2/3) \div (3/4) = 8/9</math> because <math>3/4</math> of <math>8/9</math> is <math>2/3</math>. (In general, <math>(a/b) \div (c/d) = ad/bc</math>.) <i>How much chocolate will each person get if 3 people share <math>1/2</math> lb of chocolate equally? How many <math>3/4</math>-cup servings are in <math>2/3</math> of a cup of yogurt? How wide is a rectangular strip of land with length <math>3/4</math> mi and area <math>1/2</math> square mi?</i></i>	<b>Lesson 9:</b> Understand Division with Fractions <b>Lesson 10:</b> Divide Fractions  <b>Supporting Content:</b> Lesson 11: Solve Volume Problems with Fractions; Lesson 21: Write and Solve One-Variable Equations <b>Math in Action:</b> pp. 251–259

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	Compute fluently with multi-digit numbers and find common factors and multiples.	
6.NS.2	Fluently divide multi-digit numbers using the standard algorithm.	<b>Lesson 8:</b> Divide Whole Numbers and Multi-Digit Decimals  <b>Supporting Content:</b> Lesson 21: Write and Solve One-Variable Equations; Lesson 32: Interpret Mean and Mean Absolute Deviation; Lesson 33: Use Measures of Center and Variability to Summarize Data <b>Math in Action:</b> 251–259
6.NS.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	<b>Lesson 7:</b> Add, Subtract, and Multiply Multi-Digit Decimals <b>Lesson 8:</b> Divide Whole Numbers and Multi-Digit Decimals  <b>Supporting Content:</b> Lesson 1: Find the Area of a Parallelogram; Lesson 2: Find the Area of Triangles and Other Polygons; Lesson 3: Use Nets to Find Surface Area; Lesson 16: Use Unit Rates to Solve Problems; Lesson 18: Use Percents to Solve Problems; Lesson 21: Write and Solve One-Variable Equations; Lesson 31: Interpret Median and Interquartile Range in Box Plots; Lesson 32: Interpret Mean and Mean Absolute Deviation; Lesson 33: Use Measures of Center and Variability to Summarize Data <b>Math in Action:</b> pp. 251–259
6.NS.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. <i>For example, express <math>36 + 8</math> as <math>4(9 + 2)</math>.</i>	<b>Lesson 6:</b> Find Greatest Common Factor and Least Common Multiple <b>Lesson 19:</b> Write and Identify Equivalent Expressions  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 129–137; 525–533

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	Apply and extend previous understandings of numbers to the system of rational numbers.	
6.NS.5	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	<b>Lesson 23:</b> Understand Positive and Negative Numbers  <b>Supporting Content:</b> Lesson 24: Order Positive and Negative Numbers; Lesson 25: Understand Absolute Value; Lesson 26: Write and Graph One-Variable Inequalities; Lesson 27: Understand the Four-Quadrant Coordinate Plane <b>Math in Action:</b> pp. 643–651
6.NS.6	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.	
6.NS.6.a	Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$ , and that 0 is its own opposite.	<b>Lesson 23:</b> Understand Positive and Negative Numbers  <b>Supporting Content:</b> Lesson 27: Understand the Four-Quadrant Coordinate Plane
6.NS.6.b	Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	<b>Lesson 27:</b> Understand the Four-Quadrant Coordinate Plane  <b>Supporting Content:</b> Lesson 28: Solve Problems in the Coordinate Plane <b>Math in Action:</b> pp. 643–651
6.NS.6.c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	<b>Lesson 23:</b> Understand Positive and Negative Numbers <b>Lesson 27:</b> Understand the Four-Quadrant Coordinate Plane  <b>Supporting Content:</b> Lesson 24: Order Positive and Negative Numbers; Lesson 26: Write and Graph One-Variable Inequalities; Lesson 28: Solve Problems in the Coordinate Plane <b>Math in Action:</b> pp. 643–651

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6.NS.7	Understand ordering and absolute value of rational numbers.	
6.NS.7.a	Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. <i>For example, interpret <math>-3 &gt; -7</math> as a statement that <math>-3</math> is located to the right of <math>-7</math> on a number line oriented from left to right.</i>	<b>Lesson 24:</b> Order Positive and Negative Numbers  <b><u>Supporting Content:</u></b> Lesson 26: Write and Graph One-Variable Inequalities
6.NS.7.b	Write, interpret, and explain statements of order for rational numbers in real-world contexts. <i>For example, write <math>-3^{\circ}\text{C} &gt; -7^{\circ}\text{C}</math> to express the fact that <math>-3^{\circ}\text{C}</math> is warmer than <math>-7^{\circ}\text{C}</math>.</i>	<b>Lesson 24:</b> Order Positive and Negative Numbers  <b><u>Supporting Content:</u></b> Lesson 26: Write and Graph One-Variable Inequalities
6.NS.7.c	Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. <i>For example, for an account balance of <math>-30</math> dollars, write <math> -30  = 30</math> to describe the size of the debt in dollars.</i>	<b>Lesson 25:</b> Understand Absolute Value  <b><u>Supporting Content:</u></b> Lesson 28: Solve Problems in the Coordinate Plane <b>Math in Action:</b> pp. 643–651
6.NS.7.d	Distinguish comparisons of absolute value from statements about order. <i>For example, recognize that an account balance less than <math>-30</math> dollars represents a debt greater than 30 dollars.</i>	<b>Lesson 25:</b> Understand Absolute Value  <b><u>Supporting Content:</u></b> <b>Math in Action:</b> pp. 643–651
6.NS.8	Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	<b>Lesson 28:</b> Solve Problems in the Coordinate Plane  <b><u>Supporting Content:</u></b> <b>Math in Action:</b> pp. 643–651

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<b>6.EE</b>	<b>Expressions and Equations</b>	
	Apply and extend previous understandings of arithmetic to algebraic expressions.	
6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.	<b>Lesson 5:</b> Write and Evaluate Expressions with Exponents  <b>Supporting Content:</b> Lesson 6: Find Greatest Common Factor and Least Common Multiple; Lesson 7: Add, Subtract, and Multiply Multi-Digit Decimals
6.EE.2	Write, read, and evaluate expressions in which letters stand for numbers.	
6.EE.2.a	Write expressions that record operations with numbers and with letters standing for numbers. <i>For example, express the calculation "Subtract y from 5" as <math>5 - y</math>.</i>	<b>Lesson 4:</b> Work with Algebraic Expressions  <b>Supporting Content:</b> Lesson 1: Find the Area of a Parallelogram; Lesson 2: Find the Area of Triangles and Other Polygons; Lesson 3: Use Nets to Find Surface Area; Lesson 5: Write and Evaluate Expressions with Exponents <b>Math in Action:</b> pp. 129–137
6.EE.2.b	Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.	<b>Lesson 4:</b> Work with Algebraic Expressions  <b>Supporting Content:</b> Lesson 5: Write and Evaluate Expressions with Exponents; Lesson 19: Write and Identify Equivalent Expressions
6.EE.2.c	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). <i>For example, use the formulas <math>V = s^3</math> and <math>A = 6s^2</math> to find the volume and surface area of a cube with sides of length <math>s = \frac{1}{2}</math>.</i>	<b>Lesson 4:</b> Work with Algebraic Expressions <b>Lesson 5:</b> Write and Evaluate Expressions with Exponents  <b>Supporting Content:</b> Lesson 1: Find the Area of a Parallelogram; Lesson 2: Find the Area of Triangles and Other Polygons; Lesson 3: Use Nets to Find Surface Area; Lesson 7: Add, Subtract, and Multiply Multi-Digit Decimals; Lesson 11: Solve Volume Problems with Fractions; Lesson 20: Understand Solutions of Equations <b>Math in Action:</b> pp. 129–137



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6.EE.3	<p>Apply the properties of operations to generate equivalent expressions.  <i>For example, apply the distributive property to the expression <math>3(2 + x)</math> to produce the equivalent expression <math>6 + 3x</math>; apply the distributive property to the expression <math>24x + 18y</math> to produce the equivalent expression <math>6(4x + 3y)</math>; apply properties of operations to <math>y + y + y</math> to produce the equivalent expression <math>3y</math>.</i></p>	<p><b>Lesson 19:</b> Write and Identify Equivalent Expressions</p> <p><b>Supporting Content:</b>  Lesson 4: Work with Algebraic Expressions;  Lesson 21: Write and Solve One-Variable Equations  <b>Math in Action:</b> pp. 525–533</p>
6.EE.4	<p>Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).  <i>For example, the expressions <math>y + y + y</math> and <math>3y</math> are equivalent because they name the same number regardless of which number <math>y</math> stands for.</i></p>	<p><b>Lesson 19:</b> Write and Identify Equivalent Expressions</p> <p><b>Supporting Content:</b>  Lesson 4: Work with Algebraic Expressions  <b>Math in Action:</b> pp. 525–533</p>
Reason about and solve one-variable equations and inequalities.		
6.EE.5	<p>Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</p>	<p><b>Lesson 20:</b> Understand Solutions of Equations  <b>Lesson 26:</b> Write and Graph One-Variable Inequalities</p> <p><b>Supporting Content:</b>  Lesson 21: Write and Solve One-Variable Equations  <b>Math in Action:</b> pp. 643–651</p>



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6.EE.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	<b>Lesson 4:</b> Work with Algebraic Expressions  <u><b>Supporting Content:</b></u> Lesson 1: Find the Area of a Parallelogram; Lesson 2: Find the Area of Triangles and Other Polygons; Lesson 19: Write and Identify Equivalent Expressions; Lesson 20: Understand Solutions of Equations; Lesson 21: Write and Solve One-Variable Equations; Lesson 22: Analyze Two-Variable Relationships; Lesson 26: Write and Graph One-Variable Inequalities
6.EE.7	Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which $p$ , $q$ , and $x$ are all nonnegative rational numbers.	<b>Lesson 21:</b> Write and Solve One-Variable Equations
6.EE.8	Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.	<b>Lesson 26:</b> Write and Graph One-Variable Inequalities

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	Represent and analyze quantitative relationships between dependent and independent variables.	
6.EE.9	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. <i>For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation <math>d = 65t</math> to represent the relationship between distance and time.</i>	<b>Lesson 22:</b> Analyze Two-Variable Relationships  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 525–533
<b>6.G</b>	<b>Geometry</b>	
	Solve real-world and mathematical problems involving area, surface area, and volume.	
6.G.1	Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	<b>Lesson 1:</b> Find the Area of a Parallelogram <b>Lesson 2:</b> Find the Area of Triangles and Other Polygons  <b>Supporting Content:</b> Lesson 7: Add, Subtract, and Multiply Multi-Digit Decimals; Lesson 8: Divide Whole Numbers and Multi-Digit Decimals; Lesson 10: Divide Fractions; Lesson 28: Solve Problems in the Coordinate Plane <b>Math in Action:</b> pp. 129–137

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6.G.2	Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	<b>Lesson 11:</b> Solve Volume Problems with Fractions  <b>Supporting Content:</b> Lesson 21: Write and Solve One-Variable Equations <b>Math in Action:</b> pp. 251–259
6.G.3	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	<b>Lesson 28:</b> Solve Problems in the Coordinate Plane  <b>Supporting Content:</b> Lesson 27: Understand the Four-Quadrant Coordinate Plane <b>Math in Action:</b> pp. 643–651
6.G.4	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	<b>Lesson 3:</b> Use Nets to Find Surface Area  <b>Supporting Content:</b> Lesson 5: Write and Evaluate Expressions with Exponents; Lesson 7: Add, Subtract, and Multiply Multi-Digit Decimals <b>Math in Action:</b> pp. 129–137
<b>6.SP</b>	<b>Statistics and Probability</b>	
	Develop understanding of statistical variability.	
6.SP.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. <i>For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.</i>	<b>Lesson 29:</b> Understand Statistical Questions and Data Distributions  <b>Supporting Content:</b> <b>Math in Action:</b> pp. 753–761

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6.SP.2	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.	<p><b>Lesson 29:</b> Understand Statistical Questions and Data Distributions</p> <p><b>Lesson 30:</b> Use Dot Plots and Histograms to Describe Data Distributions</p> <p><b>Supporting Content:</b> Lesson 31: Interpret Median and Interquartile Range in Box Plots; Lesson 33: Use Measures of Center and Variability to Summarize Data</p> <p><b>Math in Action:</b> pp. 753–761</p>
6.SP.3	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.	<p><b>Lesson 31:</b> Interpret Median and Interquartile Range in Box Plots</p> <p><b>Lesson 32:</b> Interpret Mean and Mean Absolute Deviation</p> <p><b>Supporting Content:</b> Lesson 33: Use Measures of Center and Variability to Summarize Data</p> <p><b>Math in Action:</b> pp. 753–761</p>
Summarize and describe distributions.		
6.SP.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	<p><b>Lesson 30:</b> Use Dot Plots and Histograms to Describe Data Distributions</p> <p><b>Lesson 31:</b> Interpret Median and Interquartile Range in Box Plots</p> <p><b>Supporting Content:</b> Lesson 29: Understand Statistical Questions and Data Distributions; Lesson 32: Interpret Mean and Mean Absolute Deviation; Lesson 33: Use Measures of Center and Variability to Summarize Data</p> <p><b>Math in Action:</b> pp. 753–761</p>

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6.SP.5	Summarize numerical data sets in relation to their context, such as by:	
6.SP.5.a	Reporting the number of observations.	<b>Lesson 29:</b> Understand Statistical Questions and Data Distributions  <b>Supporting Content:</b> <b>Lesson 30:</b> Use Dot Plots and Histograms to Describe Data Distributions
6.SP.5.b	Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.	<b>Lesson 30:</b> Use Dot Plots and Histograms to Describe Data Distributions  <b>Supporting Content:</b> Lesson 29: Understand Statistical Questions and Data Distributions <b>Math in Action:</b> pp. 753–761
6.SP.5.c	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.	<b>Lesson 31:</b> Interpret Median and Interquartile Range in Box Plots <b>Lesson 32:</b> Interpret Mean and Mean Absolute Deviation  <b>Supporting Content:</b> Lesson 33: Use Measures of Center and Variability to Summarize Data <b>Math in Action:</b> pp. 753–761
6.SP.5.d	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	<b>Lesson 33:</b> Use Measures of Center and Variability to Summarize Data  <b>Supporting Content:</b> Lesson 30: Use Dot Plots and Histograms to Describe Data Distributions <b>Math in Action:</b> pp. 753–761