COMMON CORE STATE STANDARDS
GRADES 6 to 8 MATHEMATICS
Correlated to *Mathematics in Context*® (*MiC*)

Number	STANDARDS FOR MATHEMATICAL PRACTICES
1	**Make sense of problems and persevere in solving them.**
	Most problems can be solved with more than one strategy. *Mathematics in Context* recognizes that students come to each unit with prior knowledge and encourages students to solve problems in their own way—by using their own strategies at their own level of sophistication. It is the teacher's responsibility to orchestrate class discussions to reveal the variety of strategies students are using. Students enrich their understanding of mathematics and increase their ability to select appropriate problem-solving strategies by comparing and analyzing their own and other students' strategies.
2	**Reason abstractly and quantitatively.**
	The teacher's role in the instructional process involves capitalizing on students' reasoning and continually introducing and negotiating with students the emergence of shared terms, symbols, rules, and strategies, with an eye to encouraging students to reflect on what they learn. Students are seen as reinventors, with the teacher guiding and making conscious to students the mathematization of reality, with symbolizations emerging and developing meaning in the social situation of the classroom. Students are encouraged to communicate their knowledge, either verbally, in writing, or through some other means like pictures, diagrams, or models to other students and the teacher.
3	**Construct viable arguments and critique the reasoning of others.**
	Interaction between teacher and student, student and student, and teacher and teacher is an integral part of creating mathematical knowledge. The problems posed in *Mathematics in Context* provide a natural way for students to interact before, during, and after finding a solution. Central to this interactive classroom is the development of students' abilities to use mathematical argumentation to support their own conjectures.
4	**Model with mathematics.**
	Mathematics in Context recognizes and makes use of students' prior conceptions and representations (models) to support the development of more formal mathematics (i.e., progressive formalization). It provides instructional sequences that involve activities in which students reveal and create models of their informal mathematical activity. At the "general level," as a result of generalization, exploration, and reflection, students are expected to mathematize their informal modeling activity and begin to focus on interpretations and solutions independent of situation-specific imagery. Models at this level are considered

	"models-for" and are used as a basis for reasoning and reflection. The "formal level" involves reasoning with conventional symbols.
5	**Use appropriate tools strategically.**
	Mathematics in Context consists of mathematical tasks and questions designed to stimulate mathematical thinking and to promote discussion among students. Students are expected to explore mathematical relationships; develop and explain their own reasoning and strategies for solving problems; use problem-solving tools appropriately; and listen to, understand, and value each other's strategies.
6	**Attend to precision.**
	Students must recognize, understand, and extract the mathematical relationships embedded in a broad range of situations. They need to know how to represent quantitative and spatial relationships and how to use the language of mathematics to express these relationships. They must know how and when to use technology. Effective problem-solving also requires the ability to predict and interpret results. *Mathematics in Context* is a connected curriculum that requires students to deepen their understanding of significant mathematics through integrated activities across units and grades.
7	**Look for and make use of structure.**
	An important tenet of the theory behind *Mathematics in Context* is that the starting point should be justifiable in terms of the potential end point of a learning sequence. To accomplish this, the domain needs to be well mapped. This involves identifying the key features and resources of the domain that are important for students to find, discover, use, or even invent for themselves, and then relating them via long learning lines. The situations that serve as starting points for a domain are critical and should continue to function as paradigm cases that involve rich imagery and, thus, anchor students' increasingly abstract activity. The students' initially informal mathematical activity should constitute a basis from which they can abstract and construct increasingly sophisticated mathematical conceptions.
8	**Look for and express regularity in repeated reasoning.**
	Real-world contexts support and motivate learning. Mathematics is a tool to help students make sense of their world. *Mathematics in Context* uses real-life situations as a starting point for learning; these situations illustrate the variety of ways in which students can use mathematics. Models help students learn mathematics at different levels of abstraction. The ratio tables, double number lines, chance ladders, percent bars, and other models in *Mathematics in Context* allow students to solve problems at different levels of abstraction. The models also serve as mediating tools between the concrete world of real-life problems and the abstract world of mathematical knowledge.

	STANDARDS FOR MATHEMATICAL CONTENT	
Standards in this Domain	**Ratios and Proportional Relationships**	**MiC Correlation**
	Understand ratio concepts and use ratio reasoning to solve problems.	
6.RP.A.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *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." "For every vote candidate A received, candidate C received nearly three votes."*	*Models You Can Count On* pp. 1-12, 40-49, 52-61; *Fraction Times* pp. 7-9, 33-39; Ratio tables are used throughout the curriculum.
6.RP.A.2	Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."*	*Models You Can Count On* pp. 1-9, 55-61; *Fraction Times* – New section: Quotients of Fractions
6.RP.A.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.	*Models You Can Count On* pp. 1-12, 13-25, 40-49; *Fraction Times* pp. 14-25
.3a	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.	*Models You Can Count On* pp. 1-12; *Fraction Times* pp. 18-24; *Expressions and Formulas* 18-21, 24
.3b	Solve unit rate problems including those involving unit pricing and constant speed. *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 rates were lawns being mowed?*	*Expressions and Formulas* pp. 12-15;
.3c	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.	*Models You Can Count On* pp. 18- 25, 62, 68-69; *Fraction Times* pp. 23-42, 49-50; *Take a Chance* pp. 13-15, 16-19
.3d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	*Expressions and Formulas* pp. 25-26;

Standards in this Domain	The Number System	MiC Correlation
	Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	
6.NS.A.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. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?*	*Fraction Times* – New section: Quotients of Fractions
	Compute fluently with multi-digit numbers and find common factors and multiples.	
6.NS.B.2	Fluently divide multi-digit numbers using the standard algorithm.	*Focus On* Support Materials: Long Division; Note: *Facts and Factors* explores divisibility rules and factoring
6.NS.B.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	*Focus On* Support Materials: Decimals
6.NS.B.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. *For example, express 36 + 8 as 4(9 + 2).*	*Fraction Times* pp. 7, 19-23; *Facts and Factors* pp. 30-34; *Expressions and Formulas* – New section: Symbols, Blocks and Patterns; *Focus On* Support Materials: GCF and LCM
	Apply and extend previous understandings of numbers to the system of rational numbers.	
6.NS.C.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.	*Operations* pp. 1-11, 12-21

6.NS.C.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.	*Operations* pp. 12-21, 46-47, 50-51
.6a	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.	*Operations* pp. 12-18, 38-40
.6b	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 location points are related by reflections across one or both axes.	*Operations* pp. 46-51, 57
.6c	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.	*Operations* pp. 6-15, 46-51, 57
6.NS.C.7	Understand ordering and absolute value of rational numbers.	
.7a	Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret -3 > -7 as a statement that -3 is located to the right of -7 on a number line oriented from left to right.*	*Operations* pp. 12-15, 20-21, 54
.7b	Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write -3° C > -7° C to express the fact that -3° C is warmer than -7° C.*	*Operations* pp. 6-15, 20-21, 54
.7c	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. *For example, for an account balance of -30 dollars, write* I*-30*I *= 30 to describe the size of the debt in dollars.*	*Operations* – New Section: Absolute Value
.7d	Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.*	*Operations* – New Section: Absolute Value; *Operations* pp. 6-13, 52-53, 58-59
6.NS.C.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.	*Operations* – New Section: Distance between points using Absolute Value; *Operations* pp. 46-51

Standards in this Domain	Expressions & Equations	MiC Correlation
	Apply and extend previous understandings of arithmetic to algebraic expressions.	
6.EE.A.1	Write and evaluate numerical expressions involving whole-number exponents.	*Reallotment* pp. 44-46; *Facts and Factors* pp. 6-12, 35-43, 44-53
6.EE.A.2	Write, read, and evaluate expressions in which letters stand for numbers.	*Comparing Quantities* pp. 28-33 *Expressions and Formulas* pp. 12-24, 25-30, 38-45; *Expressions and Formulas* – New Sections: Symbols, Blocks and Patterns, and Making Comparisons
.2a	Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as 5-y.	*Comparing Quantities* pp. 22-27 *Focus On* Support Materials: Algebraic Expressions
.2b	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. *For example, describe the expression 2(8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.*	*Expressions and Formulas* – New Section: Symbols, Blocks and Patterns; *Expressions and Formulas* – New Section: Making Comparisons
.2c	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). *For example, use the formulas* $V = s^3$ *and* $A = 6s^2$ *to find the volume and surface area of a cube with sides of length* $s = 1/2$.	*Reallotment* pp. 20-24; *Expressions and Formulas* pp. 18-21, 25-31, 38-45; *Comparing Quantities* pp. 16-21
6.EE.A.3	Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3(2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6(4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.*	*Expressions and Formulas* – New Section: Symbols, Blocks and Patterns; *Expressions and Formulas* – New Section: Making Comparisons

6.EE.A.4	Identify when two expressions are equivalent (i.e., when two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*	*Comparing Quantities* pp. 1-5; *Expressions and Formulas* pp. 6-11 *Expressions and Formulas* – New Section: Symbols, Blocks and Patterns; *Expressions and Formulas* – New Section: Making Comparisons
	Reason about and solve one-variable equations and inequalities.	
6.EE.B.5	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.	*Comparing Quantities* pp. 16-21; *Expressions and Formulas* pp. 15, 16-24, 25-27, 32-33; *Operations* – New Section: Inequalities and Number Lines
6.EE.B.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.	*Expressions and Formulas* pp. 12-24; *Comparing Quantities* pp. 16-27; *Operations* – New Section: Inequalities and Number Lines
6.EE.B.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.	*Expressions and Formulas* pp. 12-24; *Comparing Quantities* pp. 16-27, 28-33
6.EE.B.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.	*Operations* – New Section: Inequalities and Number Lines

	Represent and analyze quantitative relationships between dependent and independent variables.	
6.EE.C.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. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.*	*Expressions and Formulas* pp. 12-24, 38, 40-41; *Expressions and Formulas* – New Section: Symbols, Blocks and Patterns
Standards in this Domain	**Geometry**	**MiC Correlation**
	Solve real-world and mathematical problems involving area, surface area, and volume.	
6.G.A.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.	*Reallotment* pp. 13-24, 65, 67-77
6.G.A.2	Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of appropriate unit fraction edge lengths, and show that the volume is the same as would by 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.	*Reallotment* pp. 49-63, 67-69, 75-78
6.G.A.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.	*Operations* pp. 46-51 *Operations* – New Section: Distance between points using Absolute Value
6.G.A.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.	*Reallotment* pp. 49-52

Standards in this Domain	Statistics and Probability	MiC Correlation
	Develop understanding of statistical variability.	
6.SP.A.1	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *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.*	*Dealing with Data* pp. 1-6; *Fraction Times* pp. 1-13, 14-24
6.SP.A.2	Understand that a set of data collected to answer a statistical question has a distribution which can be describe by its center, spread, and overall shape.	*Dealing with Data* pp. 12-45
6.SP.A.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.	*Dealing with Data* pp. 12-45; *Operations* pp. 28-33, 36-37
	Summarize and describe distributions.	
6.SP.B.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	*Dealing with Data* pp. 12-45
6.SP.B.5	Summarize numerical data sets in relation to their context, such as by:	
.5a	Reporting the number of observations.	*Dealing with Data* pp. 12-22, 34-45; *Fraction Times* pp. 1-13, 33-42
.5b	Describing the nature of the attribute under investigation, including how it was measured and its units of measurement	*Dealing with Data* pp. 12-22, 34-45
.5c	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.	*Dealing with Data* pp. 12-22, 34-45; *Operations* pp. 36-37, 56
.5d	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.	*Dealing with Data* pp. 12-22, 34-45

	STANDARDS FOR MATHEMATICAL CONTENT	
Standards in this Domain	**Ratios and Proportional Relationships**	**MiC Correlation**
	Analyze proportional relationships and use them to solve real-world and mathematical problems.	
7.RP.A.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction* $^{1/2}/_{1/4}$ *miles per hour, equivalently 2 miles per hour.*	*Ratio and Rates* pp 3-10, 50, 56-57;
7.RP.A.2	Recognize and represent proportional relationships between quantities.	
.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.	*Ratios and Rates* – New Section: Graphing Unit Rate; *Ratios and Rates* pp. 41-49, 54, 61; *More or Less* pp. 26-34;
.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationship.	*Ratios and Rates* – New Section: Graphing Unit Rate; *Ratios and Rates* pp 1-9, 41-49; *Building Formulas* pp 1-10, 14-33, 44-51, 54, 55-56, 60-62;
.2c	Represent proportional relationships by equations. *For example, of total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.*	*Building Formulas* pp 1-10, 44-51, 54, 55-56, 60-62; *Ratios and Rates* pp 2-10; *More or Less* pp 1-8
.2d	Explain what a point (x,y) on the graph of a proportional relationship means in terms of the situation, with the special attention to the point (0,0) and (1,r) where r is the unit rate.	*Ratios and Rates* – New Section: Graphing Unit Rate
7.RP.A.3	Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*	*More or Less* pp. 11-47; *Ratio and Rate* pp 30-49, 53-54, 59-61

Standards in this Domain	The Number System	MiC Correlation
	Apply and extend previous understandings of operations with fractions to add, subtract, multiply and divide rational numbers.	
7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.	*Go Rational* – Section B, D, E;
.1a	Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.*	*Go Rational* – Section C
.1b	Understand $p + q$ as the number located a distance $\lvert q \rvert$ from p, in positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	*Go Rational* – Section C
.1c	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.	*Go Rational*- Section C
.1d	Apply properties of operations as strategies to add and subtract rational numbers.	*Go Rational* – Sections C, E
7.NS.A.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	*Go Rational* – Section A
.2a	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.	*Go Rational*- Section D; *Operations* pp. 36-43, 44-51
.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts.	*Go Rational* – Sections A, D

.2c	Apply properties of operations as strategies to multiply and divide rational numbers.	*Go Rational* – Sections A, D, E; *Building Formulas* pp. 1-12, 16, 22-25, 30, 34-42; *Packages and Polygons* pp 43-52
.2d	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.	*Go Rational* – Sections A, E; *Ratios and Rates* pp 21-29; *Building Formulas* pp. 37-42
7.NS.A.3	Solve real-world and mathematical problems involving the four operations with rational numbers.	*Go Rational* – Sections C, D, E*;* *Building Formulas* pp. 1-12, 16, 22-25, 30, 34-42; *Packages and Polygons* pp 36-52, 56-58, 63-66;
Standards in this Domain	**Expressions & Equations**	**MiC Correlation**
	Use properties of operations to generate equivalent expressions.	
7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	*Building Formulas* pp. 6-21, 58-59; *Go Rational* – Section E
7.EE.A.2	Understand that rewriting an expression is different forms in a problem context, can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05"*	*More or Less* pp 18-34; *Building Formulas* pp 6-21, 62-63, 67-69; *Go Rational* – Sections D, E
	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.	
7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. *For example; If a woman make $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check of the exact computation.*	*Building Formulas* pp 22-51, 54-56, 60-64; *Ratios and Rates* pp 4-10, 50, 56-57; *Expressions and Formulas* p. 12-45; *Go Rational!* – Sections D, E

7.EE.B.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.	
.4a	Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r *are* specific rational numbers. Solve evaluations of these forms fluently. Compare an algebraic solution to an arithmetic solution; identify the sequence of the operations used in each approach. *For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*	*Building Formulas* pp 22-51, 54-56, 60-64; *Go Rational!* – Sections D, E; *Expressions and Formulas* p. 12-45
.4b	Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, *where* p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a sales person, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solution.*	*Building Formulas* pp 31; *Building Formulas* New section: Solving Inequalities

Standards in this Domain	**Geometry**	**MiC Correlation**
	Draw, construct, and describe geometrical figures and describe the relationships between them.	
7.G.A.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.	*Ratios and Rates* pp 30-48, 53-54, 59-62
7.G.A.2	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, notice when the conditions determine a unique triangle, more than one triangle or no triangle.	*Triangles and Beyond* pp 8-34, 45-53, 54-56, 58-59
7.G.A.3	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	*Packages and Polygons* pp 3-13, 37-39; *Packages and Polygons* – Slicing 3D Figures

	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	
7.G.B.4	Know the formulas for the area and circumference of a circle and use them to solve problem; give an informal derivation of the relationship between the circumference and area of a circle.	*Building Formulas* pp 34-39; *Packages and Polygons* pp 47-50; *Triangles and Beyond* – New Section – Perimeter and Area
7.G.B.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.	*Triangles and Beyond* pp 16-23; *Focus On* Support Materials: Supplementary, Complementary, Vertical, and Adjacent Angles
7.G.B.6	Solve real-world and mathematical problems involving area, volume, and surface area of two-and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	*Building Formulas* pp 34 - 43, 54-55, 62; *Packages and Polygons* pp 43 - 52, 57 - 58, 65-66; *Packages and Polygons* New sections - Volume and Solids; Volume of Prims

Standards in this Domain	**Statistics and Probability**	**MiC Correlation**
	Use random sampling to draw inferences about a population.	
7.SP.A.1	Understand that statistics can be used to gain information about a population by examining a sample of population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative sample and support valid inferences.	*Second Chance* – New Section– Selecting Samples*; Ratios and Rates* pp. 1-4, 21-29
7.SP.A.2	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of school elections based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*	*Second Chance* – New Section– Selecting Samples*; Second Chance* pp 10 -22, 46-47, 52-54

	Draw informal comparative inferences about two populations.	
7.SP.B.3	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.*	*Second Chance* – New Section: Comparing Two Populations
7.SP.B.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.*	*Second Chance* – New Section: Comparing Two Populations
	Investigate chance processes and develop, use, and evaluate probability models.	
7.SP.C.5	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely not likely, and a probability near 1 indicates a likely event.	*Second Chance* pp 10-22, 46-47, 52-54
7.SP.C.6	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency give the probability. *For example, when rolling a number cube 500 times, precinct that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.*	*Second Chance* pp. 23-34, 36-44, 48-50, 54-56
7.SP.C.7	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of discrepancy.	
.7a	Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.*	*Second Chance* pp 1-9, 10-21, 45, 51-52

.7b	Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes from the spinning penny appear to be equally likely based on the observed frequencies?*	*Second Chance* pp 10-14, 16, 26, 28, 30
7.SP.C.8	Find the probabilities of compound events using organized lists, tables, tree diagrams, and simulation.	
.8a	Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.	*Second Chance* pp 1-9, 35-44, 50, 55-56
.8b	Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g. "rolling double sixes"), identify the outcome in the sample space which compose the event.	*Second Chance* pp 1-9, 35-44, 46-47, 50, 52-54, 55-56
.8c	Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*	*Second Chance* pp 16-22, 35

	STANDARDS FOR MATHEMATICAL CONTENT	
	The Number System	**MiC Correlation**
	Know that there are numbers that are not rational, and approximate them by rational numbers.	
8.NS.A.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.	*Revisiting Numbers* pp. 45-53, 59, 68
8.NS.A.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., ^{2}). *For example, by truncating the decimal expansion of √2 shows that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximation.*	*Revisiting Numbers* pp. 50-51; *Patterns and Figures* pp. 20-23, 26-27, 47;

Standards in this Domain	**Expressions & Equations**	**MiC Correlation**
	Expressions and Equations: Work with radicals and integer exponents.	
8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.	*Revisiting Numbers* pp. 17-24, 55-56, 62-63; *Focus On* Support Materials: Property of Integer Exponents
8.EE.A.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.	*Revisiting Numbers* pp. 50-53, 68; *Focus On* Support Materials: Equations with Exponents
8.EE.A.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United states as* 3×10^8 *and the population of the world as* 7×10^9, *and determine that the world population is more than 20 times larger.*	*Revisiting Numbers* pp. 16-24

8.EE.A.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notations are used. Use scientific notation and choose units of appropriate size for measurement of very large and small quantities (e.g., use millimeters per year for seafloor spreading.). Interpret scientific notation that has been generated by technology.	*Revisiting Numbers* pp. 8-24
	Understand the connections between proportional relationships, lines, and linear equations.	
8.EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*	*Ups and Downs* pp. 18-22, 49-50, 54-55; *Algebra Rules* pp. 13-24, 56
8.EE.B.6	Use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation *y = mx* for a line through the origin and the equation *y = mx + b* for a line intercepting the vertical axis at *b.*	*It's All the Same* pp. 12-13, 45-51, 53, 56; *Algebra Rules* pp. 16-24; *Graphing Equations* pp. 21-27
	Analyze and solve linear equations and pairs of simultaneous linear equations.	
8.EE.BC.7	Solve linear equations in one variable.	
.7a	Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form *x = a, a= a,* or *a = no r*esults (Where *a* and *b* are different numbers).	*Graphing Equations* pp. 28-43, 47, 50-53; *Algebra Rules* pp. 37-41, 58; *Focus On* Support Materials: Solving Linear Equations
.7b	Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	*Graphing Equations* p. 28-37, 38-43, 47; *Ups and Downs* pp. 13-22, 49-50, 54-55; *Patterns and Figures* pp. 20-27, 41-42, 47
8.EE.C.8	Analyze and solve pairs of simultaneous linear equations.	
.8a	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.	*Graphing Equations* pp. 38-43; *Algebra Rules* pp. 36-41, 58; *Graphing Equations* - New Section: Systems of Equations

.8b	Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6.*	*Algebra Rules* pp. 36; *Graphing Equations* - New Section: Systems of Equations
.8c	Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, give coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*	*Ups and Downs* pp. 18 - 19; *Algebra Rules* pp. 36; *Graphing Equations* - New Section: Systems of Equations

Standards in this Domain	**Functions**	**MiC Correlation**
	Define, evaluate, and compare functions.	
8.F.A.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	*Ups and Downs* pp 13 - 34, 43-46
8.F.A.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal description). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.*	*Graphing Equations* pp. 21-27 *Ups and Downs* pp 17-21, 54-55
8.F.A.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ given the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.*	*Ups and Downs* pp 8-9, 13-34, 35-42, 43-46, 49-51, 54-58; *Algebra Rules* pp. 13-24
	Use functions to model relationships between quantities.	
8.F.B.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x,y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	*Patterns and Figures* pp. 1-15; *Ups and Downs* pp. 13 – 22; *Algebra Rules* pp. 1-12, 13-24

8.F.B.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.	*Ups and Downs* pp. 7-12, 36-42, 43-46,49-51, 54-58; *Algebra Rules* pp. 13-24, 56, 61-62
Standards in this Domain	**Geometry**	**MiC Correlation**
	Understand congruence and similarity using physical models, transparencies, or geometry software.	
8.G.A.1	Verify experimentally the properties of rotations, reflections, and translations:	
.1a	Lines are taken to lines, and line segments to lines segments of the same length.	*It's All the Same* pp.49-51, 63-64; *It's All the Same*- New Section – Congruence and Similarity
.1b	Angles are taken to angles of the same measure.	*It's All the Same* pp. 2-7, 22-36, 52, 57; *It's All the Same*- New Section – Congruence and Similarity
.1c	Parallel lines are taken to parallel lines.	*It's All the Same* pp. 2-7, 29-34, 35-36, 45; *It's All the Same*- New Section – Congruence and Similarity
8.G.A.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; give two congruent figures, describe a sequence that exhibits the congruence between them.	*It's All the Same* p. 9-14; *It's All the Same*- New Section – Congruence and Similarity; *It's All the Same*- New Section – Symmetry and Graphing
8.G.A.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	*It's All the Same* pp. 45-51, 56, 63-64; *It's All the Same*- New Section – Symmetry and Graphing
8.G.A.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	*It's All the Same*- New Section – Congruence and Similarity; *It's All the Same*- New Section – Symmetry and Graphing

8.G.A.5	Use informal arguments to establish facts about the angle sum and exterior angles of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example,* arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversal why this is so.	*It's All the Same*- New Section – Congruence and Similarity; *It's All The Same* pp. 22-34
	Understand and apply the Pythagorean Theorem.	
8.G.B.6	Explain a proof of the Pythagorean Theorem and its converse.	*It's All the Same*- New Section: Distances: Pythagoras
8.G.B.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	*It's All the Same*- New Section: Distances: Pythagoras
8.G.B.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	*It's All the Same*- New Section: Distances: Pythagoras
	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	
8.G.C.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	*Revisiting Numbers* – New Section: Area, Volume, and Solids
Standards in this Domain	**Statistics and Probability**	**MiC Correlation**
	Investigate Patterns of association in bivariate data.	
8.SP.A.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive and negative association, linear association, and nonlinear association.	*Insights into Data* pp. 3 - 10, 64, 70-71
8.SP.A.2	Know that straight lines are widely used to model relationships between two quantities variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.	*Insights into Data* pp. 53-61, 77-78

8.SP.A.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.*	*Insights into Data* pp. 53 - 63, 69, 77 - 78
8.SP.A.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*	*Great Predictions* pp. 12 - 23, 51 - 52, 56 - 58