The Common Core State Standards for Mathematical Practice are emphasized throughout the entire course. We do not specifically label where they are being used throughout the course. This was done intentionally. We want you to choose when it is appropriate to apply one of these practices while you are teaching particular topics.

Common Core State Standards	Lesson(s)
Ratios and Proportional Relationships	
Analyze proportional relationships and use them to solve real-world and mathematical problems.	
7.RP.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 ½/¼ miles per hour, equivalently 2 miles per hour.	**4-1**
7.RP.2 Recognize and represent proportional relationships between quantities.	
7.RP.2.a 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.	**4-2**
7.RP.2.b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.	**4-2**
7.RP.2.c Represent proportional relationships by equations. For example, if 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.	**4-2**
7.RP.2.d Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.	**4-2**
7.RP.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.	**4-3, 4-4, 4-5**
The Number System	
Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.	
7.NS.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.	
7.NS.1.a Describe situations in which opposite quantities combine to make 0.	**1-3, 1-4**

For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.	
7.NS.1.b Understand p + q as the number located a distance |q| from p, in the 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.	**1-3, 1-4**
7.NS.1.c 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.	**1-4**
7.NS.1.d Apply properties of operations as strategies to add and subtract rational numbers.	**1-3, 1-4**
7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	

Common Core State Standards	Lesson(s)
7.NS.2.a 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.	**1-5**
7.NS.2.b 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.	**1-6**
7.NS.2.c Apply properties of operations as strategies to multiply and divide rational numbers.	**1-5, 1-6**
7.NS.2.d 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.	**1-2**
7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers.	**1-3—1-6**
Expressions and Equations	
Use the properties of operations to generate equivalent expressions.	
7.EE.2 Understand that rewriting an expression in 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."	**4-4, 4-5**
Solve real-life and mathematical problems using numerical and algebraic expressions and quantities.	
7.EE.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 making $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 on the exact computation.	**4-4, 4-5**
7.EE.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.	
7.EE.4.b Solve word problems leading to inequalities of the form px + q > r or	**5-3—5-5**

	$px + q < r$, 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 salesperson, 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 solutions.	
Geometry		
Draw, construct, and describe geometrical figures and describe the relationships between them.		
7.G.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.	**4-2**

Common Core State Standards	Lesson(s)
Domain 8.NS The Number System	
Know that there are numbers that are not rational, and approximate them by rational numbers.	
8.NS.1 Know that the 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.	**1-1**
8.NS.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., π^2). For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	**1-7**
Domain 8.EE Expressions and Equations	
Work with radicals and integer exponents.	
8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$	**1-7, 3-4, 3-5**
8.EE.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 $\sqrt{2}$ is irrational.	**1-7**
8.EE.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.	**3-6**
8.EE.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	**3-6**
Understand the connections between proportional relationships, lines, and linear equations.	
8.EE.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 the two moving objects has greater speed.	**6-3—6-5**
8.EE.6 Use similar triangles to explain why the slope m is the same between any two district 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.	**6-3—6-5**

Common Core State Standards	Lesson(s)
Analyze and solve linear equations and pairs of simultaneous linear equations.	
8.EE.7 Solve linear equations in one variable.	
8.EE.7.a 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 = b results (where a and b are different numbers).	**2-4, 2-5, 2-7**
8.EE.7.b Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	**2-6—2-8**
8.EE.8 Analyze and solve pairs of simultaneous linear equations.	
8.EE.8.a 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.	**7-1**
8.EE.8.b Solve systems of two 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.	**7-1, 7-2**
8.EE.8.c Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.	**7-1, 7-2**
Domain 8.F Functions	
Define, evaluate, and compare functions.	
8.F.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.	**6-2, 6-3, 6-7**
8.F.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). 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.	**6-2—6-5**
8.F.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 $A = s^2$ giving 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.	**6-3, 6-5, 6-7**

Common Core State Standards	Lesson(s)
Use functions to model relationships between quantities.	
8.F.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.	**4-5, 6-3—6-5**
8.F.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.	**6-7**
Domain 8.SP Statistics and Probability	
Investigate patterns of association in bivariate data.	
8.SP.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.	**6-6**
8.SP.2 Know that straight lines are widely used to model relationships between two quantitative 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.	**6-6**
8.SP.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 1.5cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.	**6-5, 6-6**
Algebra	
Seeing Structure in Expressions	
Interpret the structure of expressions.	
A.SSE.1 Interpret expressions that represent a quantity in terms of its context.	**1-1**
Analyze functions using different representations.	
F.IF.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.	
F.IF.8.a Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	**3-3**