Wyoming Department of Education Required Virtual Education Course Syllabus

Natrona County School District # 1

Program Name	Natrona Virtual Learning	Conten Area	MA
NVA037007	NVA03700712	Grade Level	7
Course Name	MTH07A Pr Algebra	o Credits	
SCE Code	37007	Curriculum Type	K1 Inc

COURSE DESCRIPTION

In K12's Math 7Pre-Algebra Sem. 1 Summit course, students focus on real-word scenarios and mathematical problems involving algebraic expressions and linear equations and begin to apply their understanding of rational numbers with increased complexity. The course lays the foundation for exploring concepts of angle, similarity an   congruence, more formally addressed in Math 8, as students work with scale drawings and construct and analyze relationships among geometric figures. Students also develop an   apply understandings of proportional relationships.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK_(Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets
5.OA.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
6.EE.2a	Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as $5 - y$.
6.EE.2c	Evaluate expressions at specific values for their variables. Include expressions that arise from formulas in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify particular order (Order of Operations). For example, use the formulas $V = s^3$ and $= 6 s^2$ to find the volume and surface area of cube with sides of length s $1/2$.
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 o the purpose at hand, any number in a specified set.
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. For example, create story context for $(2/3) \div (3/4)$ and use visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ 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?
6.NS.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 $\lvert -30 \rvert$ 3 to describe the size of the debt in dollars.
6.RP.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 received, candidate C received nearly three votes."
6.RP.2	Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0 (b not equal to zero), and use rate language in the context of ratio relationship. For example, "This recipe has 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 1 hamburgers, which is rate of $ per hamburger." (Expectations for unit rates in this grade are limited to non-complex fractions.)
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.
6.RP.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.
6.RP.3c	Find percent of quantity as rate per 10 (e.g., 30% of quantity means 30/100 times the quantity); solve problems involving finding the whole given a part and the percent.
7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
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 as strategies 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 new salary of $27.50. If you want to place towel bar 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.
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.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 equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, The perimeter of rectangle is 5 cm. Its length is cm. What is its width?
7.NS.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.
7.NS.1b	Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending o whether 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.
7.NS.1c	Understand subtraction of rational numbers as adding the additive inverse, 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.
7.NS.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) and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
7.NS.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.

7.NS.2c	Apply properties of operations as strategies to multiply and divide rational numbers.
7.NS.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.
7.RP.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on coordinate plane and observing whether the graph is straight line through the origin.
7.RP.2c	Represent proportional relationships by equations. For example, if total cost t is proportional to the number 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.
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.

SCOPE AND SEQUENCE		
UNIT OUTLINE	STANDARD#	OUTCOMES OBJECTIVES/STUDENT CENTERED GOALS
Course Introduction		
Readiness Checkpoint		
Unit 1: Expressions and Problem Solving Lesson 1: Exchange Ideas		Evaluate numerical expressions with multiple operations (whole numbers only, no grouping symbols). Evaluate numerical expressions with grouping symbols (whole numbers only). Determine where to place grouping symbols in an expression to get a specified value.
Unit 1: Expressions and Problem Solving Lesson 2: Order of Operations	5.OA.1: Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.; 6.EE.2c: Evaluate expressions at specific values for their variables. Include expressions that arise from formulas 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 s^2 to find the volume and surface area of cube with sides of length = 1/2.	Evaluate expressions with several operations. Evaluate expressions with grouping symbols. Place grouping symbols in an expression to get a specific value.

Unit 1: Expressions and Problem Solving Lesson 3: Variable Expressions	6.EE.2c: Evaluate expressions at specific values for their variables. Include expressions that arise from formulas 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 = 6 s^2 to find the volume and surface area of a cube with sides of length s = 1/2	Evaluate variable expressions for given values of the variable.
Unit 1: Expressions and Problem Solving Lesson 4: Write Expressions for Word Phrases	6.EE.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.; 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.	Translate word phrases into variable expressions, including word phrases for real-world situations.

Translate variable expressions into word phrases. |
Unit 1: Expressions and Problem Solving Lesson 5: Related Equations	7.EE.4a: 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. a. 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 equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying 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?	Write and solve equations in the form x + p = q Write and solve equations in the form px = q
Unit 1: Expressions and Problem Solving Lesson 6: Your Choice		
Unit 1: Expressions and Problem Solving Lesson 7: Solve Problems	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.	Apply the five-step problem-solving plan to solve real-world problems
Unit 1: Expressions and Problem Solving Lesson 8: Word Problems	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	Use the five-step problem-solving plan to solve real-world problems. Use the five-step problem-solving plan to solve real-world problems.

	reasoning about the quantities.; 6.NS.B.3: Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	Solve real-world problems by adding or subtracting multidigit decimals. Solve real-world problems by multiplying or dividing multidigit decimals.
Unit 1: Expressions and Problem Solving Lesson 9: Interpret Expressions	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.; 7.EE.A.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."	Use variable expressions to represent mathematical problems. Explain how rewriting an expression in different forms can show how the quantities in the problem are related
Unit 1: Expressions and Problem Solving Lesson 10: Unit Review		Revisit Review activities located before each quiz in the unit. Look at the Summary activities in each lesson. Read through the Reference Guide pages linked in each lesson. Read through the Reference Guide pages linked in each lesson.
Unit 1: Expressions and Problem Solving Lesson 11: Unit Test		
Unit 1: Expressions and Problem Solving Lesson 12: Extended Problems		
Unit 2: Adding and Subtracting Rational Numbers Lesson 1: Exchange Ideas		Add and subtract rational numbers.
Unit 2: Adding and Subtracting Rational Numbers Lesson 2: Number Lines and Absolute Value	6.NS.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 $|-30| = 30$ to describe the size of the debt in dollars.	Use a number line to find the absolute value of a number.
Unit 2: Adding and Subtracting Rational Numbers Lesson 3: Additive Inverses	7.NS.1.a: 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. a. Describe situations in which	Explain that the sum of a number and its opposite is 0. Use a number line to find the additive inverse of a number.

	opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.; 7.NS.1.b: 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. 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.	
Unit 2: Adding and Subtracting Rational Numbers Lesson 4: Your Choice		
Unit 2: Adding and Subtracting Rational NumbersLesson 5: Equidistant Points	7.NS.1.b: 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. 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.	Use a number line to identify numbers that are equidistant from a given number.Find the distance between two numbers on a number line.
Unit 2: Adding and Subtracting Rational Numbers Lesson 6: Add Rational Numbers 1	7.NS.1.b: 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. 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.; 7.NS.1.d: Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers;	Use a number line to identify numbers that are equidistant from a given number. Add integers using a number line. Add positive and negative fractions using a number line. Add positive and negative decimals using a number line.

	represent addition and subtraction on a horizontal or vertical number line diagram. d. Apply properties of operations as strategies to add and subtract rational numbers.	
Unit 2: Adding and Subtracting Rational Numbers Lesson 7: Add Rational Numbers 2	7.NS.1.b: 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. 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.; 7.NS.1.d: 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. d. Apply properties of operations as strategies to add and subtract rational numbers.	Use a number line to add fractions. Use a number line to add decimals.
Unit 2: Adding and Subtracting Rational Numbers Lesson 8: Subtract Rational Numbers 1	7.NS.1.b: 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. 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.; 7.NS.1.c: 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.; 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	Subtract integers by adding the opposite of the integer. Use a number line to subtract integers.

	of their difference, and apply this principle in real-world contexts.; 7.NS.1.d: 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. d. Apply properties of operations as strategies to add and subtract rational numbers.	
Unit 2: Adding and Subtracting Rational Numbers Lesson 9: Subtract Rational Numbers 2	7.NS.1.b: 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. 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.; 7.NS.1.c: 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.; 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.; 7.NS.1.d: 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. d. Apply properties of operations as strategies to add and subtract rational numbers.	Use a number line to subtract fractions. Use a number line to subtract decimals. Use rules to subtract fractions. Use rules to subtract decimals.
Unit 2: Adding and Subtracting Rational Numbers Lesson 10: Addition and Subtraction Properties	7.EE.1: Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	Use the commutative property as a strategy for adding and subtracting numbers. Use the associative property as a strategy for adding and subtracting numbers. Use the opposite of a sum property as a strategy for adding and subtracting

		numbers.
Unit 2: Adding and Subtracting Rational Numbers Lesson 11: Your Choice		
Unit 2: Adding and Subtracting Rational Numbers Lesson 12: Distance on a Number Line 1	7.NS.1.c: 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.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.	Find the distance between two numbers on a number line using absolute value.
Unit 2: Adding and Subtracting Rational Numbers Lesson 13: Distance on a Number Line 2	7.NS.1.c: 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.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.	Find the distance between two numbers on a number line using absolute value. Solve real-world problems using absolute value.
Unit 2: Adding and Subtracting Rational Numbers Lesson 14: Unit Review		
Unit 2: Adding and Subtracting Rational Numbers Lesson 15: Unit Test		
Unit 2: Adding and Subtracting Rational Numbers Lesson 16: Extended Problems		
Interim Checkpoint 1		
Your Choice		
Your Choice		
Unit 3: Multiplying and Dividing Rational Numbers Lesson 1: Exchange Ideas		Solve real-world problems using the multiplication of positive and negative fractions. Solve real-world problems using the multiplication of positive and negative

		decimals. Solve real-world problems using the division of positive and negative fractions. Solve real-world problems using the division of positive and negative fractions.
Unit 3: Multiplying and Dividing Rational Numbers Lesson 2: Multiply Integers	7.NS.2.a: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. 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) and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.; 7.NS.2.c: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.	Use a number line to multiply integers. Multiply integers using sign rules.
Unit 3: Multiplying and Dividing Rational Numbers Lesson 3: Multiply Rational Numbers 1	7.NS.2.a: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. 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) and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.; 7.NS.2.c: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.	Model multiplication of fractions on a number line. Multiply rational numbers using sign rules.
Unit 3: Multiplying and Dividing Rational Numbers Lesson 4: Multiplying Rational Numbers 2	7.NS.2.a: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. a. Understand that multiplication is extended from fractions to rational numbers by requiring that	Use multiplication of positive and negative fractions to solve real-world problems. Use multiplication of positive and negative decimals to solve real-world problems.

	operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (−1)(−1) and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.; 7.NS.2.c: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.	
Unit 3: Multiplying and Dividing Rational Numbers Lesson 5: Multiply Mixed Numbers	7.NS.2.c: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.	Mixed numbers are numbers that can be written as an integer and a proper fraction that represent a single amount. When a mixed number is multiplied by other numbers, the following rules apply: When the signs of the factors are the same, the product is positive. When the signs of the factors are different, the product is negative.
Unit 3: Multiplying and Dividing Rational Numbers Lesson 6: Your Choice		
Unit 3: Multiplying and Dividing Rational Numbers Lesson 7: Divide Integers	7.NS.2.b: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is 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.; 7.NS.2.c: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.	Use sign rules to divide integers. Use division of integers to solve real-world problems.
Unit 3: Multiplying and Dividing Rational Numbers Lesson 8: Divide Rational Numbers 1	7.NS.2.c: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.	Divide positive and negative fractions using sign rules. Use division of fractions to solve real-world problems.

Unit 3: Multiplying and Dividing Rational Numbers Lesson 9: Divide Rational Numbers 2	7.NS.2.c: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.	Divide positive and negative decimals using sign rules. Use division of decimals to solve real-world problems.
Unit 3: Multiplying and Dividing Rational Numbers Lesson 10: Divide Mixed Numbers	7.NS.2.c: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.	Divide mixed numbers, including negative mixed numbers.
Unit 3: Multiplying and Dividing Rational Numbers Lesson 11: Your Choice		
Unit 3: Multiplying and Dividing Rational Numbers Lesson 12: Multiplication and Division Properties 1	7.NS.2.c: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.	Use mental math to simplify expressions. Use the properties of multiplication to simplify expressions. Factor expressions. Use the properties of division to simplify expressions.
Unit 3: Multiplying and Dividing Rational Numbers Lesson 13: Multiplication and Division Properties 2	7.NS.2.c: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. c. Apply properties of operations as strategies to multiply and divide rational numbers.	Use properties of multiplication and division to help solve real-world problems.
Unit 3: Multiplying and Dividing Rational Numbers Lesson 14: Unit Review		
Unit 3: Multiplying and Dividing Rational Numbers Lesson 15: Unit Test		
Unit 3: Multiplying and Dividing Rational Numbers Lesson 16: Extended Problems		
Unit 4: Problem Solving with Rational Numbers Lesson 1: Exchange Ideas		Solve real-world problems involving the conversion of fractions to decimals.
Unit 4: Problem Solving with Rational Numbers Lesson 2: Write Rational Numbers as Decimals 1	7.NS.2.d: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. 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.	Classify fractions as terminating or repeating decimals. Write fractions as terminating or repeating decimals.
Unit 4: Problem Solving with Rational Numbers Lesson 3: Write Rational Numbers as Decimals 2	7.NS.2.d: Apply and extend previous understandings of multiplication and division and of	Convert fractions to decimals to solve real-world problems.

	fractions to multiply and divide rational numbers. 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.	
Unit 4: Problem Solving with Rational Numbers Lesson 4: Your Choice		
Unit 4: Problem Solving with Rational Numbers Lesson 5: Solve One-Step Problems 1	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. 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?; 5.NF.B.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.; 6.NS.B.3: Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.; 7.NS.1.d: 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. d. Apply properties of operations as strategies to add and subtract rational numbers.; 7.NS.A.3: Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)	Add or subtract decimals to solve real-world problems. Add or subtract fractions to solve real-world problems.
Unit 4: Problem Solving with Rational Numbers Lesson 6: Solve One-Step Problems 2	6.NS.1: Interpret and compute quotients of fractions, and solve word problems involving division	Solve real-world problems using the division of decimals. Solve real-world problems using the

	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?; 5.NF.B.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.; 6.NS.B.3: Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.; 7.NS.1.d: 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. d. Apply properties of operations as strategies to add and subtract rational numbers.; 7.NS.A.3: Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)	multiplication of decimals. Solve real-world problems using the division of fractions and mixed numbers. Solve real-world problems using the multiplication of fractions and mixed numbers.
Unit 4: Problem Solving with Rational Numbers Lesson 7: Solve Multistep Problems 1	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 as strategies 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	Use numerical expressions containing rational numbers to solve multi-step real-world problems.

	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.; 7.NS.A.3: Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)	
Unit 4: Problem Solving with Rational Numbers Lesson 8: Solve Multistep Problems 2	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 as strategies 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.; 7.NS.A.3: Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)	Solve multistep real-world problems involving fractions and decimals.
Unit 4: Problem Solving with Rational Numbers Lesson 9: Unit Review		
Unit 4: Problem Solving with Rational Numbers Lesson 10: Unit Test		
Unit 4: Problem Solving with Rational Numbers Lesson 11: Extended Problems		

Interim Checkpoint 2		
Your Choice		
Your Choice		
Unit 5: Ratios, Rates, and Percents Lesson 1: Exchange Ideas		Solve problems involving tax. Solve problems involving gratuities.
Unit 5: Ratios, Rates, and Percents Lesson 2: Ratios and Rates	6.RP.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."; 6.RP.2: Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0 (b not equal to zero), 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." (Expectations for unit rates in this grade are limited to non-complex fractions.)	Write ratios and rates as fractions. Simplify ratios and rates.
Unit 5: Ratios, Rates, and Percents Lesson 3: Unit Rates 1	6.RP.2: Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0 (b not equal to zero), 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." (Expectations for unit rates in this grade are limited to non-complex fractions.); 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.	Write rates and unit rates. Interpret unit rates.

Unit 5: Ratios, Rates, and Percents Lesson 4: Unit Rates 2	6.RP.2: Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0 (b not equal to zero), 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." (Expectations for unit rates in this grade are limited to non-complex fractions.); 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.	Compute unit rates using decimals. Compute unit rates using fractions.
Unit 5: Ratios, Rates, and Percents Lesson 5: Your Choice		
Unit 5: Ratios, Rates, and Percents Lesson 6: Work with Percent	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 as strategies 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.	Convert fractions and decimals to percent form. Convert percents to fractions and decimals.
Unit 5: Ratios, Rates, and Percents Lesson 7: Percent Increase or Decrease 1	6.RP.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.; 7.RP.3: Use proportional relationships to solve multistep	Find the missing value in a percent equation. Find the percent of change between two quantities.

	ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.	
Unit 5: Ratios, Rates, and PercentsLesson 8: Percent Increase or Decrease 2	6.RP.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.; 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.	Solve problems involving percent increase or decrease.Solve problems involving markups or markdowns.Solve problems involving tax.Solve problems involving commissions.Solve problems involving gratuities.
Unit 5: Ratios, Rates, and Percents Lesson 9: Your Choice		
Unit 5: Ratios, Rates, and Percents Lesson 10: Percent Error	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.	Calculate percent error and absolute error to determine the accuracy of a measurement.
Unit 5: Ratios, Rates, and Percents Lesson 11: Multistep Percent Problems	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.	Solve multistep real-world problems using percent increase or percent increase.
Unit 5: Ratios, Rates, and Percents Lesson 12: Simple Interest	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.	Find simple interest when borrowing or lending money.
Unit 5: Ratios, Rates, and Percents Lesson 13: Unit Review		

Unit 5: Ratios, Rates, and Percents Lesson 14: Unit Test		
Unit 5: Ratios, Rates, and Percents Lesson 15: Extended Problems		
Unit 6: Proportional Relationships Lesson 1: Exchange Ideas		Determine whether two quantities are in a proportional relationship by comparing simplified fractions.
Unit 6: Proportional Relationships Lesson 2: Proportion	6.RP.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.; 7.RP.2.a: Recognize and represent proportional relationships between quantities. 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.	Find equivalent ratios. Determine whether two ratios form a proportion.
Unit 6: Proportional Relationships Lesson 3: Identify Proportional Relationships	6.RP.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.; 7.RP.2.a: Recognize and represent proportional relationships between quantities. a. Decide whether two quantities	Identify proportional relationships represented in a table. Identify the constant of proportionality in a proportional relationship represented in a table.

	are in 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.	
Unit 6: Proportional Relationships Lesson 4: Graph Proportional Relationships	7.RP.2.a: Recognize and represent proportional relationships between quantities. 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.	Graph paired values on a coordinate plane. Use a graph to determine whether paired values represent a proportional relatonship.
Unit 6: Proportional Relationships Lesson 5: Your Choice		
Unit 6: Proportional Relationships Lesson 6: Constant of Proportionality and Unit Rate	7.RP.2.a: Recognize and represent proportional relationships between quantities. 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 straight line through the origin.; 7.RP.2.b: Recognize and represent proportional relationships between quantities. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.; 7.RP.2.d: Recognize and represent proportional relationships between quantities. d. Explain what a point (x, y) on the graph of 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.	Identify the constant of proportionality (unit rate) of proportional relationships.
Unit 6: Proportional Relationships Lesson 7: Equations and Proportional Relationships 1	7.RP.2.c: Recognize and represent proportional relationships between quantities. c. Represent proportional relationships by equations. For example, if total cost t is proportional to the number 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.	Determine whether an equation represents a proportional relationship. Represent a proportional relationship using an equation.

Unit 6: Proportional Relationships Lesson 8: Equations and Proportional Relationships 2	7.RP.2.c: Recognize and represent proportional relationships between quantities. 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.	Represent proportional relationships by equations. Determine missing values in an equation that represents a proportional relationship.
Unit 6: Proportional Relationships Lesson 9: Proportional Relationship Applications	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.	Determine missing values in an equation that represents a proportional relationship.
Unit 6: Proportional Relationships Lesson 10: Unit Review		
Unit 6: Proportional Relationships Lesson 11: Unit Test		
Unit 6: Proportional Relationships Lesson 12: Extended Problems		