Course of Study Information Page

COURSE TITLE **Algebra Foundations**	
DISTRICT COURSE NUMBER **#0239**	4-DIGIT STATE COURSE CODE (COMPLETED BY SILT) **2402**

Rationale:	This course is designed to meet the needs of 9th grade students who are not yet prepared for success in Algebra 1.
Course Description that will be in the Course Directory:	This course will prepare students for success in Algebra 1. Students will achieve proficiency on prerequisite skills for Algebra and selected Algebra 1 standards. Upon completion of this course, students will enroll in Algebra 1. Enrollment is limited to 9th grade students who were not enrolled in Algebra 1 in the 8th grade and who have been identified by their 8th grade teachers as having not yet mastered basic operations on numbers.
How Does this Course align with or meet State and District content standards?	This course prepares students to meet 2 of the California State Standards for Algebra 1 and 15 of the California State Standards for 6th grade math.

Core Subjects:	*Select up to two that apply:*
	☐ Arts ☐ Civics and Government ☐ Not Core Subject ☐ Economics ☐ History ☐ English ☒ Mathematics ☐ Foreign Language ☐ Reading / Language Arts ☐ Geography ☐ Science

CDE CALPADS Course Descriptors: (See Page 2 for Definitions)	CTE TECH PREP COURSE INDICATORS	CTE COURSE CONTENT CODE	INSTRUCTIONAL LEVEL CODE
	☐ Tech Prep (32) (Higher Ed) ☐ Tech Prep & ROP(33) (Higher Ed) ☐ ROP (30) ☒ N/A	☐ CTE Introductory (01) ☐ CTE Concentrator (02) ☐ CTE Completer (03) ☐ Voc Subject _____ ☒ N/A	☐ Remedial (35) ☐ Honors UC-Certified (39) ☐ Honors Non UC-Certified (34) ☐ College (40) ☒ N/A

Length of Course:	☒ Year ☐ Semester
Grade Level(s):	☒ 9 ☐ 10 ☐ 11 ☐ 12

Credit:	☒ Number of credits: **5 per semester** ☒ Meets graduation requirements (subject **Math**) ☐ Request for UC "a–g" requirements CSU/UC requirement _____	☐ College Prep

Prerequisites:	Students must show proficiency in all basic number operations, including: ● adding, subtracting, and multiplying numbers one through ten ● basic division facts ● long division with two and three digit numbers
Department(s):	Mathematics
District Sites:	EDHS, ORHS, PHS, UMHS
Board of Trustees COS Adoption Date:	6/14/2016
Textbooks / Instructional Materials:	**Big Ideas Math: Advanced 1**, Ron Larson & Laurie Boswell, Houghton Mifflin Harcourt, 20015 – 1st Edition, 978-1-608-40673-9

Funding Source:	General Fund
Board of Trustees Textbook Adoption Date:	6/28/2016

Definitions

CALPADS	California Longitudinal Pupil Achievement Data System
CTE Technical Prep	A course within a CTE technical career pathway or program that has been articulated with a postsecondary education or through an apprenticeship program of at least 2 years following secondary instruction.
Instructional Level Code	Represents a nonstandard instructional level at which the content of a specific course is either above or below a 'standard' course instructional level. These levels may be identified by the actual level of instruction or identified by equating the course content and level of instruction with a state or nationally recognized advanced course of study, such as IB or AP.
Instructional Level Honors, UC Certified	Includes all AP courses.
Instructional Level Honors, non UC Certified	Requires Board approval.
Instructional Level College	Includes ACE courses. Equivalent to college course and content, but not an AP course. Not related to section, but to course.

EDUCATIONAL SERVICES

Course Title: Algebra Foundations (#0239)

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Department: **Math**

Course Title: **Algebra Foundations**   Course Number: **#0239**

Unit Title: **Reasoning with Equations and Inequalities**

Content Area Standards (Please identify the source): List content standards students will master in this unit.
- A.REI.1 - Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
- A.REI.3 - Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

CA Common Core State Standards, Algebra 1

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will solve one, two, and multi-step linear equations in one variable.
Students will be able to write and solve equations from word problems.
Students will explain each step in solving an equation.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Anchor Standards.

Diagnostic pre-test for each learning outcome
Differentiated instruction based on diagnostic pre-test
Whole class direct instruction as needed
Small group direct instruction as needed
Small group activities/investigations
Guided practice

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

Formative assessments for each skill
Skill tests until mastery achieved
Summative final exam (semester)

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

Remediation during the class period
Reteach unlearned objectives identified through formative assessments
Another teacher or instructional technician in the classroom when available

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EDUCATIONAL SERVICES

Department: **Math**

Course Title: **Algebra Foundations**   Course Number: **#0239**

Unit Title: **Expressions and Equations**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

- 8.EE.7b - Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
- 6.EE.1 - Write and evaluate numerical expressions involving whole-number exponents.
- 6.EE.2 - Write, read, and evaluate expressions in which letters stand for numbers.
    a. Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as $5 - y$.
    b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. 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. Grade 6 K–8 Standards | 43 44 | K–8 Standards 6 Grade 6 Grade 6
    c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s3$ and $A = 6 s2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.
- 6.EE.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 $3y$.
- 6.EE.4 - Identify when two expressions are equivalent (i.e., when the 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.

CA Common Core State Standards, 8th and 6th grade math

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will solve linear equations involving the distributive property and combining like terms.
Students will write and evaluate expressions involving whole-number exponents.
Students will write, read, and evaluate expressions with variables.
Students will apply properties of operations to write and identify equivalent expressions.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Anchor Standards.

Diagnostic pre-test for each learning outcome
Differentiated instruction based on diagnostic pre-test
Whole class direct instruction as needed
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Small group activities/investigations
Guided practice

Assessments: Describe the Formative and Summative assessments that will be used to demonstrate learning and mastery of the standards.

Formative assessments for each skill
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Summative final exam (semester)

Interventions: Describe methods used to support students who fail to master unit Formative and Summative assessments.

Remediation during the class period
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EDUCATIONAL SERVICES

Department: **Math**

Course Title: **Algebra Foundations**   Course Number: **#0239**

Unit Title: **Ratios and Proportional Relationships**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

- 7.RPR.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.
- 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, 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."
- 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.
  - a. Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
  - b. 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 rate were lawns being mowed?
  - c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
  - d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

CA Common Core State Standards, 7th and 6th grade math

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will solve multistep problems that involve discounts, markups, commissions, and profits.
Students will understand and explain the concept of a ratio.
Students will understand and write unit rates.
Students will solve problems involving unit rates.
Students will solve problems involving finding the whole, given the part and the percent.
Students will use ratio reasoning to convert measurement units.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Anchor Standards.

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Remediation during the class period
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EDUCATIONAL SERVICES

Department: **Math**

Course Title: **Algebra Foundations**   Course Number: **#0239**

Unit Title: **The Number System**

Content Area Standards (Please identify the source): List content standards students will master in this unit.

- 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.
    - a. 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.
    - 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.
    - 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.
    - d. Apply properties of operations as strategies to add and subtract rational numbers.
- 7.NS.2 - 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 $(-1)(-1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
    - 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.
    - c. Apply properties of operations as strategies 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.
- 7.NS.3 - Solve real-world and mathematical problems involving the four operations with rational numbers.
- 6.NS.2 - Fluently divide multi-digit numbers using the standard algorithm.
- 6.NS.3 - Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
- 6.NS.4 - Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express $36 + 8$ as $4 (9 + 2)$.
- 6.NS.5 - Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
- 6.NS.6 - Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
    - a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.
    - b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
    - c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
- 6.NS.7- Understand ordering and absolute value of rational numbers.

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a. 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.

b. 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.

c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars.

d. 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.

● 6.NS.8 - Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

CA Common Core State Standards, 7th and 6th grade math

Unit Outline: A detailed descriptive summary of all topics covered in the unit. Explain what the students will learn, know and be able to do.

Students will solve real world and mathematical problems by adding, subtracting, multiplying and dividing rational numbers.
Students will multiply and divide multi-digit numbers.
Students will add, subtract, multiply, and divide multi-digit decimals.
Students will find the greatest common factor of two numbers.
Students will understand the opposite relationship of positive and negative numbers.
Students will place and identify rational numbers on a number line.
Students will understand the absolute value of a rational number as its distance from 0 on the number line.
Students will graph and identify points in all four quadrants in the coordinate plane.

Instructional Strategies: Indicate how the Instructional Strategies support the delivery of the curriculum and the course goals. Indicate how assignments support the Anchor Standards.

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