Sacramento City Unified School District

Curriculum Map

Mathematics Grade 6

DRAFT Last Updated August 18, 2014

Sacramento City Unified School District

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6th Grade Year-at-a-Glance

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Unit #1: Number Sense with Fractions, Decimals, and Whole Numbers

(Approx. # of Days _____)

Content Standards: 6.NS.1-4

In this unit, students will work with multiplication and division of fractions, decimals, and whole numbers.

Common Core State Standards–Mathematics:

The Number System   6.NS

Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

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?*

Compute fluently with multi-digit numbers and find common factors and multiples.

2. Fluently divide multi-digit numbers using the standard algorithm.

3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

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).*

Standards for Mathematical Practice:

SMP.4 – Model with mathematics

SMP.6 – Attend to precision

SEL Competencies:

Self-awareness

Self-management

Social awareness

Relationship skills

Responsible decision making

ELD Standards to Support Unit

Part I: Interacting in Meaningful Ways:

   A. Collaborative:
        2. Interacting with others in written English in various communicative forms
        4. Adapting language choices to various contexts

   B. Interpretive:
        5. Listening actively to spoken English in a range of social and academic contexts.

   C. Productive:
        11. Supporting own opinions and evaluating others' opinions in speaking and writing.

Part II: Learning About How English Works

   A. Expanding and Enriching Ideas

     5. Modifying to add details.

   B. Connecting and Condensing Ideas

     6. Connecting Ideas

     7. Condensing Ideas

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Unit #1 Number Sense with Fractions, Decimals, and Whole Numbers					
Essential Questions	**Assessments for Learning**	**Sequence for Learning Outcomes 6.NS.1-.4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**

Essential Questions are thought- provoking, open-ended questions to be used within daily lessons that and are therefore connected to the Sequence of Learning Outcomes	Assessments for Learning address Diagnostic, Formative, and Summative assessments used throughout the unit to inform instruction connected to the Sequence of Learning Outcomes.
	
	Note: These assessments are suggested, not required.
		Sequence of Learning Outcomes is intentionally organized for student success. Each outcome is not necessarily intended to be taught within one class session.
		
		Each Outcome begins with
		
		Students will be able to…
			Strategies to support Unit:
			From the *CA Mathematics Framework*
			• "Instructional Strategies" chapter provides research-based strategies for teaching math, K-12
			• "Supporting High Quality Common Core Instruction" chapter addresses the development, implementation, and maintenance of high-quality, standards-based mathematics instructional programs
			
			"Universal Design for Learning" from CAST, the Center for Applied Special Technology
				Differentiation support for Unit:
				Use of math journals for differentiation and formative assessment. See Teaching Channel Video
				
				Flexible grouping:
				• Content
				• Interest
				• Project/product
				• Level (Heterogeneous/ Homogeneous)
				
				Tiered:
				1. Independent Management Plan (Must Do/May Do)
				2. Grouping
				  o Content
				  o Rigor w/in the concept
				  o Project-based learning
				  o Homework
					CCSS Support for the Unit:
					CA Mathematics Framework Gr. 6
					• p. 1-6 "What Students Learn in Grade 5"
					• p. 20-31 *The Number System*
					• p. 55-57 "Essential Learnings for the Next Grade"
					Progressions for CCSS-M
					• Narrative documents describing the progression of a topic across a number of grade levels, informed both by research on children's cognitive development and by the logical structure of mathematics.
					• Progression on The Number System
					  o p. 2-4 Overview
					  o p. 5-8 Grade 6
					Kansas Association of Teachers of Mathematics (KATM) 6th Grade Flipbook
					• Provide illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard.
					• p. 15-23 *The Number System*
					North Carolina Department of Public Instruction: Unpacked Content
					• Provides illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard.
					• P. 14-22 *The Number System*

Unit #1 Number Sense with Fractions, Decimals, and Whole Numbers					
Essential Questions	**Assessments for Learning**	**Sequence for Learning Outcomes 6.NS.1-.4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• How can you use prime factorization to find the greatest common factor (GCF) and least common multiple (LCM) of two numbers at the same time?	*For learning outcomes 1-4:* From Mathematics Assessment Resource Service (MARS) "Factors and Multiples" From Illustrative Mathematics: • "Adding Multiples" • "Bake Sale"	1) Factor composite numbers up to 100 and use the prime factors to list all factor pairs. 6.NS.4	From SCUSD strategy development: Strategy for finding factor pairs through prime factorization	o Grouping o Formative Assessment **Anchor Activities:** • Content-related • Tasks for early finishers o Game o Investigation o Partner Activity o Stations	CA Framework p. 25-31 Flipbook p. 21-23 NC Unpacking p. 20-22 *enVision*, **Topic 6** • Lesson 6-1 "Greatest Common Factor"
• How can you use prime factorization to find the greatest common factor (GCF) and least common multiple (LCM) of two numbers at the same time?		2) Use prime factorization to create lists of factor pairs to find the greatest common factor of two numbers (1–100). 6.NS.4	From SCUSD strategy development: Strategy for using primes to find GCF As an extension to Learning Outcome 2, students should make the connection to the fact that the GCF of two numbers is the product of all common prime factors. Study of GCF and LCM may provide opportunity for review of fraction operations learned in grades 4 and 5.	**Depth and Complexity Prompts/Icons:** • Depth o Language of the Discipline o Patterns o Unanswered Questions o Rules o Trends o Big Ideas o Complexity	CA Framework p. 25-31 Flipbook p. 21-23 NC Unpacking p. 20-22 *enVision*, **Topic 6** • Lesson 6-1 "Greatest Common Factor"
• How does finding all the prime factors of two numbers help to find all common factors including the GCF?		3) Use greatest common factor to solve real world problems. See example * 6.NS.4	*Nick baked 32 cupcakes and Gillian baked 48 cupcakes. They wanted to put the same number of cupcakes in each box. What is the greatest number of cupcakes that can fit in a box? How many boxes will they have altogether? Solution: 2 boxes of 16 and 3 boxes of 16 for a total of 5 boxes of 16 cupcakes.		CA Framework p. 25-31 Flipbook p. 21-23 NC Unpacking p. 20-22 ==*enVision*==
• How does finding the GCF of two numbers lead you to find the 'LC"M of		4) Find the least common multiple of two numbers (1-12) by creating organized lists of multiples of each number.		Differentiation Resources from SCUSD Wikispace	CA Framework p. 25-31 • See "The Ladder Method for Finding GCF and LCM" p. 31 Flipbook p. 21-23

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	Unit #1 Number Sense with Fractions, Decimals, and Whole Numbers				
Essential Questions	**Assessments for Learning**	**Sequence for Learning Outcomes 6.NS.1-.4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
two numbers?		6.NS.4			NC Unpacking p. 20-22 ***enVision*, Topic 6** • Lesson 6-2 "Least Common Multiple"
For Learning Outcomes 5 – 9: • What are the multiple ways to decompose 3.125 as a fraction? • How do you know what the denominator is when writing a decimal number as a fraction?	*For Learning Outcomes 5 – 9:* From Illustrative Mathematics: "Jayden's Snacks"	5) Analyze a decimal number, representing it numerically and pictorially, as both a single fraction and as a sum of the place value pieces of the fraction (e.g. 6.32 = $$6+\frac{32}{100}=6+\frac{30}{100}+\frac{2}{100}=$$ $$6+\frac{3}{10}+\frac{2}{100}$$) in order to recognize that ten or more of any place value can be re-written in a place value representing the next smaller power of ten. 6.NS.3	From SCUSD strategy development: Strategy for Writing Decimals as Fractions in Multiple Ways		CA Framework p. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 ==*enVision*==

Unit #1 Number Sense with Fractions, Decimals, and Whole Numbers					
Essential Questions	**Assessments for Learning**	**Sequence for Learning Outcomes 6.NS.1-.4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• When adding, why does "twelve-hundredths" get re-grouped as "one-tenth" and "two-hundredths"? • What similarities are there between whole digit addition/subtract-tion and decimal addition/subtract-tion? • Why and when do we use common denominators with addition, subtraction, and division?	*For Learning Outcomes 5 – 9:* From Illustrative Mathematics: "Jayden's Snacks"	6) Add and subtract multi-digit decimals with the same terminating place value (without re-grouping (e.g. 6.32 + 3.15), or borrowing, by decomposing the quantities into terms of whole numbers and fractions to understand place value. 6.NS.3	From SCUSD strategy development: Strategies for Using Place Value to Add and Subtract Decimals p. 1 When performing all operations with decimals and fractions, incorporate estimation into the experience throughout the problem.		CA Frameworkp. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 **enVision** Lesson 4-1
		7) Add and subtract multi-digit decimals with different terminating place value (e.g. 6.3 + 3.561), without re-grouping, by decomposing the quantities into terms of whole numbers and fractions to understand place value. 6.NS.3	From SCUSD strategy development: Strategies for Using Place Value to Add and Subtract Decimals p. 2 When performing all operations with decimals and fractions, incorporate estimation into the experience throughout the problem.		CA Framework p. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 **envision** Lesson 4-1
		8) Add and subtract multi-digit decimals with re-grouping (e.g. 6.79 +3.54 or 6.3 – 4.83), by decomposing the quantities into terms of whole numbers and fractions to understand place value. 6.NS.3	From SCUSD strategy development: Strategies for Using Place Value to Add and Subtract Decimals p. 3 When performing all operations with decimals and fractions, incorporate estimation into the experience throughout the problem.		CA Framework p. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 **envision** Lesson 4-1

Unit #1 Number Sense with Fractions, Decimals, and Whole Numbers					
Essential Questions	**Assessments for Learning**	**Sequence for Learning Outcomes 6.NS.1-.4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
		9) Make connections to strategies for addition and subtraction with multi-digit whole numbers. 6.NS.3	Strategies to connect include decomposition, adding up, and finally, standard algorithms.		CA Framework p. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 *enVision*
• What would be a reasonable estimate for the product of 3.8 and 5.12? (extend this question to addition, subtraction, and division of decimals)	*For Learning Outcomes 10-11:* From Illustrative Mathematics: Reasoning about Multiplication and Division and Place Value, Part 1	10) Estimate products of decimal numbers using front-end estimation and by rounding to the largest place value. Compare the results the estimations without finding the exact answer. 6.NS.3	From SCUSD strategy development/Wikispace: Strategy for "Multiplying Decimals" Use rounding as a tool to estimate reasonableness of decimal placement throughout multiplication of decimals When performing all operations with decimals and fractions, incorporate estimation into the experience throughout the problem.		CA Framework p. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 *enVision*, **Topic 4** • Lesson 4-4 "Estimating Products"
• How do you know what the denominator is when writing a decimal number as a fraction? • For multiplication, why is finding a common denominator not helpful?		11) Write decimals as fractions and multiply, using the denominator of the product to determine place value. 6.NS.3	From SCUSD strategy development/Wikispace: Strategy for "Multiplying Decimals" When performing all operations with decimals and fractions, incorporate estimation into the experience throughout the problem.		CA Framework p. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 *enVision*

Unit #1 Number Sense with Fractions, Decimals, and Whole Numbers					
Essential Questions	**Assessments for Learning**	**Sequence for Learning Outcomes 6.NS.1-.4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
For Learning Outcomes 12-14: • Which method for dividing multi-digit whole numbers do you prefer – "scaffolded" or "stacking" –and why?	*For Learning Outcomes 12-18:* From Illustrative Mathematics: • "Baking Cookies" • "Price per Pound and Pound per Dollar" • "Reasoning about Multiplication and Division and Place Value" • "The Florist Shop"	12) Divide multi-digit whole numbers using scaffold long division. 6.NS.2	From SCUSD strategy development: Connection of Division and Repeated Subtraction Recognize the connection between division and repeated subtraction. Write quotients as mixed numbers where appropriate.		CA Framework p. 25-31 Flipbook p. 18-19 NC Unpacking p. 16-17 Example of Scaffold Division from SCUSD resource development Long Division Scaffolding video from showme.com *envision* Lessons 5-1, 5-2, 5-3
		13) Divide multi-digit whole numbers using stacked long division recognizing place value throughout the process. 6.NS.2	Stacked division is a method of using repeated subtraction for division which connects place value to the standard division algorithm. Write quotients as mixed numbers where appropriate.		CA Framework p. 25-31 • "Connecting Place Value and Division Algorithms", p. 27 Flipbook p. 18-19 NC Unpacking p. 16-17 Partial Quotients (Stacked) for Division video from YouTube *enVision* Lessons 5-1, 5-2, 5-3
		14) Make connections between different strategies for long division of multi-digit whole numbers building towards fluency. 6.NS.2	Strategies to connect include scaffold division, stacked division, and standard division algorithms. Write quotients as mixed numbers where appropriate.		CA Framework p. 25-31 • Scaffold Division example, p. 26 Flipbook p. 18-19 NC Unpacking p. 16-17 *enVision*, **Topic 5:** • Lesson 5-1 "Estimating Quotients: 2-Digit Divisors" • Lesson 5-2 "Dividing Whole Numbers: 2-Digit Divisors" • Lesson 5-3 "More Dividing Whole Numbers"

Unit #1 Number Sense with Fractions, Decimals, and Whole Numbers					
Essential Questions	**Assessments for Learning**	**Sequence for Learning Outcomes 6.NS.1-.4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• Why is finding a common denominator helpful for dividing fractions by fractions? • How do you know what the denominator is when writing a decimal number as a fraction?	*For Learning Outcomes 12-18:* From Illustrative Mathematics: • "Baking Cookies" • "Price per Pound and Pound per Dollar" • "Reasoning about Multiplication and Division and Place Value" • "The Florist Shop"	15) Divide fractions with common denominators with models. 6.NS.1	From SCUSD strategy development: Strategies for Dividing Fractions		CA Framework p. 20-25 Flipbook p. 15-17 NC Unpacking p. 14-15 *enVision*, Topic 6 • Lesson 6-3 "Understanding Division of Fractions" • Lesson 6-4 "Dividing Whole Numbers by Fractions" • Lesson 6-5 "Modeling Division of Fractions",
• Why is finding a common denominator helpful for dividing fractions by fractions? • Why and when do we use common denominators with addition, subtraction, and division?		16) Divide fractions without common denominators with models to find common denominator and to show that division means how many of one quantity goes into another. 6.NS.1	From SCUSD strategy development: Strategies for Dividing Fractions		CA Framework p. 20-25 Flipbook p. 15-17 NC Unpacking p. 14-15 *enVision*, Topic 6 • Lesson 6-8 "Dividing Mixed Numbers" • "Problem-Based Interactive Learning," p.166B
• Why and when do we use common denominators with addition, subtraction, and		17) Divide fractions by fractions "straight across" where the numerators are divisible and the denominators are divisible. (Example) Include the special	From SCUSD strategy development: Strategies for Dividing Fractions		CA Framework p. 20-25 Flipbook p. 15-17 NC Unpacking p. 14-15 envision Lessons 6-3, 6-5

Unit #1 Number Sense with Fractions, Decimals, and Whole Numbers					
Essential Questions	**Assessments for Learning**	**Sequence for Learning Outcomes 6.NS.1-.4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
division?	*For Learning Outcomes 12-18:* From Illustrative Mathematics:	case of common denominators. 6.NS.1			
• Why is finding a common denominator helpful for dividing fractions by fractions? • Why and when do we use common denominators with addition, subtraction, and division?	• "Baking Cookies" • "Price per Pound and Pound per Dollar" • "Reasoning about Multiplication and Division and Place Value" • "The Florist Shop"	18) Divide fractions by fractions "straight across" where only one pair, numerator or denominator, are originally divisible by finding a fraction equivalent to the dividend. 6.NS.1	From SCUSD strategy development: Strategies for Dividing Fractions		CA Framework p. 20-25 Flipbook p. 15-17 NC Unpacking p. 14-15 *envision* Lessons 6-3, 6-5
• Why and when do we use common denominators with addition, subtraction, and division? • Why can you multiply by the reciprocal when dividing fractions?	From Illustrative Mathematics: "Traffic Jam"	19) Divide fractions by fractions "straight across" where no pairs are originally divisible by finding a common denominator. 6.NS.1	From SCUSD strategy development: Strategies for Dividing Fractions		CA Framework p. 20-25 Flipbook p. 15-17 NC Unpacking p. 14-15 *envision* Lessons 6-3, 6-5

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Unit #1 Number Sense with Fractions, Decimals, and Whole Numbers					
Essential Questions	**Assessments for Learning**	**Sequence for Learning Outcomes 6.NS.1-.4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• Why can you multiply by the reciprocal when dividing fractions?	From Illustrative Mathematics: "Baking Cookies"	20) Analyze different cases of dividing fractions by fractions to generalize that one can multiply by the reciprocal. 6.NS.1	"Teaching the invert and multiply model for dividing fraction without developing an understanding of why it works can confuse students and interfere with their ability to apply division of fractions to solve word problems." (*CA Math Framework* p.24) From SCUSD strategy development: Strategies for Dividing Fractions		CA Framework p. 20-25 Flipbook p. 15-17 NC Unpacking p. 14-15 *enVision*, **Topic 6** • Lesson 6-6 "Dividing Fractions"
• How are dividing with whole numbers and dividing with decimals similar and different? • How can dividing with decimals be made easier by converting to fractions?	From Illustrative Mathematics: "Buying Gas"	21) Divide multi-digit decimals with different terminating place values by writing as two fractions, finding a common denominator, then dividing straight across in order to perform long division with whole numbers*. 6.NS.3	From SCUSD strategy development: Example of dividing multi-digit decimals with whole number quotients *For Learning Outcomes* 21-22, all quotients in decimal division problems should be whole numbers. Learning Outcomes 24-26 will concentrate on decimal quotients that terminate.		CA Framework p. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 *enVision* **Topic 5** • Lesson 5-5 "Dividing Decimals" p. 134 (problem 23)
• How would you explain the reason we can "move the decimal" to create whole numbers and perform long division?	From Illustrative Mathematics: "Reasoning about Multiplication and Division" • Part 1 • Part 2	22) Analyze the process used for dividing decimals to generalize and create short-cuts of moving the decimal and dividing whole numbers*. 6.NS.3			CA Framework p. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 *envision* Lessons 5-1, 5-2

Unit #1 Number Sense with Fractions, Decimals, and Whole Numbers					
Essential Questions	**Assessments for Learning**	**Sequence for Learning Outcomes 6.NS.1-.4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• What is really happening when we "bring up the decimal" when doing the traditional division algorithm?	From Illustrative Mathematics: "Gifts From Grandma"	23) Understand that when dividing a decimal by a whole number, the integrity of the place value is maintained by first multiplying by the appropriate power of 10, completing the division, and then dividing by the same power of 10 in order to maintain identity. 6.NS.3	Learning Outcome 23 provides the justification for why we can "bring up the decimal" when using the traditional division algorithm. See Strategies for Dividing Decimals Ex: $2.4 \div 6 = \left(\frac{2.4}{6} \times \frac{10}{1}\right) \times \frac{1}{10} = 4 \times \frac{1}{10} = \frac{4}{10}$		CA Framework p. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 *envision* Lessons 5-4, 5-5
• How do we temporarily remove the decimal point when doing division? • How do we re-establish the decimal point (place value)?	From Illustrative Mathematics: "Movie Tickets"	24) Divide a decimal number by a whole number where the quotient is a decimal (e.g. 56.58 ÷ 3 = 18.86) using the algorithms developed in unit 1, paying close attention to place value. 6.NS.3	*For Learning Outcomes 24 and 25,* there should be no need to extend place value by adding zeroes. (This takes place in Learning Outcome 26.) All decimals should be terminating.		CA Framework p. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 Student work examples of Learning Outcomes 24-26 *enVision*
	From Illustrative Mathematics: "Setting Goals"	25) Divide a decimal number by a decimal number where the quotient is a decimal (e.g. 16.728 ÷ 3.4 = 4.92) using the algorithms developed in Unit 1, multiplying by powers of 10 to make the divisor a whole number. 6.NS.3			CA Framework p. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 Student work examples of Learning Outcomes 24-26 *enVision,* **Topic 5** • Lesson 5-5 Dividing Decimals

Unit #1 Number Sense with Fractions, Decimals, and Whole Numbers					
Essential Questions	**Assessments for Learning**	**Sequence for Learning Outcomes 6.NS.1-.4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• Why are we allowed to add zeroes to the end of a number to the right of the decimal? Why can't we do this to the left of the decimal?	From Illustrative Mathematics: "Movie Tickets" From engage[ny] "Dividing with Decimals" from Mod. 2, Topic C, Lesson 14	26) Divide a decimal number by a decimal number where the quotient is a decimal (e.g. 3.3 ÷ 1.2 = 2.75) using the algorithms developed in unit 1, extending the place value of the dividend by adding zeroes. 6.NS.3	When doing Learning Outcome 26, verify that extending the place value by adding zeroes does not change the value of the dividend		CA Framework p. 25-31 Flipbook p. 20 NC Unpacking p. 18-19 Student work examples of Learning Outcomes 24-26 **enVision, Topic 5** • Lesson 5-4 Dividing Decimals by a Whole Number • Another Example – Step 3 p.132

Unit #2: Ratio and Unit Rates

(Approx. # of Days ___)

Content Standards: 6.RP.1-3

In this unit, students will be able to make and use ratios and proportions appropriately.

Common Core State Standards-Mathematics:

Ratio and Proportional Relationships   6.RP

Understand ratio concepts and use ratio reasoning to solve problems

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."*

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."*

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.

Standards for Mathematical Practice of Emphasis:

SMP.2 – Reason abstractly and quantitatively

SMP.4 – Model with mathematics

SMP.6 – Attend to precision.

SMP.7 - Look for and make use of structure.

ELD Standards to Support Unit:

Part I: Interacting in Meaningful Ways:

  D. Collaborative:

      3. Interacting with others in written English in various communicative forms

      6. Adapting language choices to various contexts

  E. Interpretive:

      7. Listening actively to spoken English in a range of social and academic contexts.

  F. Productive:

      11. Supporting own opinions and evaluating others' opinions in speaking and writing.

Part II: Learning About How English Works

  C. Expanding and Enriching Ideas

     5. Modifying to add details.

  D. Connecting and Condensing Ideas

     6. Connecting Ideas

     7. Condensing Ideas

SEL Competencies:

Self-awareness

Self-management

Social awareness

Relationship skills

Responsible decision making

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Unit #2 Ratio and Unit Rates					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.RP.1-3**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**

Essential Questions are thought- provoking, open-ended questions to be used within daily lessons that and are therefore connected to the Sequence of Learning Outcomes	Assessments for Learning address Diagnostic, Formative, and Summative assessments used throughout the unit to inform instruction connected to the Sequence of Learning Outcomes.
	
	Note: These assessments are suggested, not required.
		Sequence of Learning Outcomes is intentionally organized for student success. Each outcome is not necessarily intended to be taught within one class session.
		
		Each Outcome begins with
		
		Students will be able to…
			Strategies to support Unit:
			From the *CA Mathematics Framework*
			• "Instructional Strategies" chapter provides research-based strategies for teaching math, K-12
			• "Supporting High Quality Common Core Instruction" chapter addresses the development, implementation, and maintenance of high-quality, standards-based mathematics instructional programs
			
			"Universal Design for Learning" from CAST, the Center for Applied Special Technology
				Differentiation support for Unit:
				Use of math journals for differentiation and formative assessment. See Teaching Channel Video
				
				Flexible grouping:
				• Content
				• Interest
				• Project/product
				• Level (Heterogeneous/ Homogeneous)
				
				Tiered:
				3. Independent Management Plan (Must Do/May Do)
				4. Grouping
				  o Content
				  o Rigor w/in the concept
				  o Project-based learning
				  o Homework
				  o Grouping
					CCSS Support for the Unit:
					CA Mathematics Framework Gr. 6
					• p. 1-6 "What Students Learn in Grade 5"
					• p. 7-20 *Ratios and Proportional Reasoning*
					• p. 55-57 "Essential Learnings for the Next Grade"
					Progressions for CCSS-M
					• Narrative documents describing the progression of a topic across a number of grade levels, informed both by research on children's cognitive development and by the logical structure of mathematics.
					• Progression on *Ratios and Proportional Reasoning*
					  o p. 2-4 Overview
					  o p. 5-7 Grade 6
					Kansas Association of Teachers of Mathematics (KATM) 6th Grade Flipbook
					• Provide illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard.
					• p. 7-14 *Ratios and Proportional Reasoning*
					North Carolina Department of Public Instruction: Unpacked Content
					• Provides illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard.
					• p. 7-13 *Ratios and Proportional Reasoning*

Unit #2 Ratio and Unit Rates					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.RP.1-3**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**

• What kind of problems can I solve with ratios?
• When is it useful to be able to relate one quantity to another?
• How can I compare two different quantities?
	From Illustrative Mathematics:
	
	 • "Games at Recess"
		1) Use ratio and rate language, orally and in writing to describe the relationship between two quantities including for each, per, to, each, 1/5, 1:5, etc.
		
		6.RP.1
			Omit discussion of percent in ratio and rate language until Learning Outcome 8	o Formative Assessment
				
				Anchor Activities:
				• Content-related
				• Tasks for early finishers
				  o Game
				  o Investigation
				  o Partner Activity
				  o Stations
					CA Framework p. 7-9
					Flipbook p. 7-9
					NC Unpacking p. 7
					
					enVision, **Topic 9: Lesson 1**

• When is it useful to be able to relate one quantity to another?
• How can I compare two different quantities?
• How are ratios and rates similar and different?
• Which model makes the most sense to you? Why?
	From Illustrative Mathematics:
	
	 • "Jim and Jesse's Money"
	
	 • "Painting a Barn"
		2) Use, tape diagrams/bar models, table of equivalent values, double number lines and equations to solve real world problems.
		
		6.RP.3a
			For Learning Outcome 2, all problems are "simple"
			
			From SCUSD strategy development:
			Benefits of Tape Diagrams
			
			Equations with rate problems in 6th grade should be treated as equivalent fraction problems. (p19 Framework)
				Depth and Complexity Prompts/Icons:
				• Depth
				  o Language of the Discipline
				  o Patterns
				  o Unanswered Questions
				  o Rules
				  o Trends
				  o Big Ideas
				  o Complexity
				
				Differentiation
					CA Framework p. 9-20
					Flipbook p. 11-14
					NC Unpacking p. 9-13
					
					enVision, **Topic 9: Lessons 2 & 3**

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Unit #2 Ratio and Unit Rates					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.RP.1-3**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• How can I compare two different quantities? • Why is unit rate important? What does unit rate mean? • How do you choose a model that is appropriate for solving a problem? • Which model makes the most sense to you? Why?	From Illustrative Mathematics: • "Running at Constant Speed"	3) Make and manipulate tables of equivalent ratios to solve real world problems paying special attention to the additive and multiplicative relationships within the table. 6.RP.3a	Students should focus on both additive and multiplicative properties. See Tables of equivalent ratios	Resources from SCUSD Wikispace	CA Framework p. 9-20 Flipbook p. 11-14 NC Unpacking p. 9-13 *enVision*, **Topic 9: Lessons 2 & 3**
• When is it useful to be able to relate one quantity to another? • How are ratios and rates similar and different? • How do you choose a model that is appropriate for solving a problem?	From Illustrative Mathematics: • "Gianna's Job"	4) Use tables of equivalent ratios to plot pairs of values on the coordinate plane to solve real world problems paying special attention to the additive and multiplicative relationships on the graph. 6.RP.3a	The intent here is to focus on basic graphing on a coordinate plane. The connections to slope will be made in later grades.		CA Framework p. 9-20 Flipbook p. 11-14 NC Unpacking p. 9-13 *enVision*, **Topic 9: Lesson 5**
• How do you find unit rate if it's not given to you? • When creating a unit rate, which quantity do you want the 1 in the unit rate to be?	From Illustrative Mathematics: • "Climbing the Steps of El Castillo"	5) Convert between measurement units given the unit rate for conversion using tape diagrams/bar models, double number lines and equations. 6.RP.3d	Address unit rate as per 1 and as 1 per, e.g. For speed, how many miles can be driven in one hour and how long does it take to drive one mile? Address student mis/preconceptions about differences in US customary system and metric.		CA Framework p. 9-20 Flipbook p. 11-14 NC Unpacking p. 9-13 *enVision*, **Topic 10: Lesson 6**

Unit #2 Ratio and Unit Rates					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.RP.1-3**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• How do you choose a model that is appropriate for solving a problem?					
• How do you find unit rate if it's not given to you? • When creating a unit rate, which quantity do you want the 1 in the unit rate to be?	From Illustrative Mathematics: • "Data Transfer"	6) Solve real-world problems involving unit rate, including those with constant speed, with a variety of models. Discuss the meaning and usefulness of unit rate when solving problems. 6.RP.2 and 3b	Students may have the misconception about the 1 always having to be in the denominator (i.e. mpg, mph, etc.)		CA Framework p. 7-20 Flipbook p. 10-14 NC Unpacking p. 7-13 *enVision*, **Topic 10: Lesson 5**
• When creating a unit rate, which quantity do you want the 1 in the unit rate to be?	From Illustrative Mathematics: • "Currency Exchange"	7) Solve real-world problems by first finding the unit rate with a variety of models, in particular tables and double number lines. Include problems of unit pricing to find the best value. 6.RP.2 and 3b	"Use ratio reasoning on double number lines to generate equivalent ratios and solve ratio problems" from LearnZillion describes how to use ratio reasoning. This is a full lesson plan, which includes videos that assist with teaching strategies on ratio reasoning. Remind students to use SMP 4 (Model with Mathematics) to help them understand the unit rate.		CA Framework p. 7-20 Flipbook p. 10-14 NC Unpacking p. 7-13 *enVision,* **Topic 10: Lessons 3 & 4**
• What's the connection between percentages, rates, fractions and decimals? • Why and how do you use benchmark percentages? • What does a	*For Learning Outcomes 8-10* From Illustrative Mathematics: • "Shirt Sale"	8) Represent percentages as a rate per 100. Compare values written as fractions, decimals and percentages. 6.RP.3c	Use double number lines and unit rate reasoning to reinforce the idea that percentages are per 100 and to solve percent problems. Include percentages greater than 100%.		CA Framework p. 9-20 Flipbook p. 11-14 NC Unpacking p. 9-13 *enVision*, **Topic 11: Lessons** 11-1 and 11-2

Unit #2 Ratio and Unit Rates					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.RP.1-3**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
percentage more than 100% mean? How is it different from a percentage less than 100%?					
• Why and how do you use benchmark percentages?	*For Learning Outcomes 8-10* From Illustrative Mathematics: "Shirt Sale"	9) Recognize benchmark percentages (1%, 10%, 25%, 50%) as a fraction of 100%. Use benchmark percentages to build any percentage. (e.g. 60% = 50% + 10%) 6.RP.3c	Use benchmarks percentages for estimation and to assist students' perseverance.		CA Framework p. 9-20 Flipbook p. 11-14 NC Unpacking p. 9-13 *enVision*, **Topic 11: Lesson** 11-4
• What does a percentage more than 100% mean? How is it different from a percentage less than 100%?		10) Solve percentage problems involving unknown part, unknown percentage and unknown whole using a variety of strategies. 6.RP.3c	Include percentages greater than 100%.		CA Framework p. 9-20 • p. 18 "More Examples of Percent Problems" Flipbook p. 11-14 NC Unpacking p. 9-13 *envision* Lessons 10-5

Unit #3: Algebraic Expressions
(Approx. # of Days ___)
6.EE.1-4

In this unit students will be able to write, read, and evaluate expressions, as well as apply properties of operations to generate and determine equivalency.

Common Core State Standards-Mathematics:

Expressions and Equations   6.EE

Apply and extend previous understandings of arithmetic to algebraic expressions.
1. Write and evaluate numerical expressions involving whole-number exponents.
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.*
    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 $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length s = 1/2.*
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.*
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.*

Standards for Mathematical Practice:
SMP.1 – Make sense of problems and persevere in solving them
SMP.2 – Reason abstractly and quantitatively
SMP.3 – Construct viable arguments and critique the reasoning of others
SMP.4 – Model with mathematics
SMP.6 – Attend to precision.

ELD Standards to Support Unit

Part I: Interacting in Meaningful Ways:

G. Collaborative:
   4. Interacting with others in written English in various communicative forms
   8. Adapting language choices to various contexts

H. Interpretive:
   9. Listening actively to spoken English in a range of social and academic contexts.

I. Productive:
   11. Supporting own opinions and evaluating others' opinions in speaking and writing.

Part II: Learning About How English Works

E. Expanding and Enriching Ideas

   5. Modifying to add details.

F. Connecting and Condensing Ideas

   6. Connecting Ideas

   7. Condensing Ideas

SEL Competencies:

Self-awareness

Self-management

Social awareness

Relationship skills

Responsible decision making

Unit #3 Algebraic Expressions					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.EE.1-4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**

Essential Questions are thought- provoking, open-ended questions to be used within daily lessons that and are therefore connected to the Sequence of Learning Outcomes	Assessments for Learning address Diagnostic, Formative, and Summative assessments used throughout the unit to inform instruction connected to the Sequence of Learning Outcomes. *Note: These assessments are suggested, not required.*	Sequence of Learning Outcomes is intentionally organized for student success. Each outcome is not necessarily intended to be taught within one class session. Each Outcome begins with *Students will be able to…*	**Strategies to support Unit:** From the *CA Mathematics Framework*
			• "Instructional Strategies" chapter provides research-based strategies for teaching math, K-12
			• "Supporting High Quality Common Core Instruction" chapter addresses the development, implementation, and maintenance of high-quality, standards-based mathematics instructional programs
			
			 "Universal Design for Learning" from CAST, the Center for Applied Special Technology
				Differentiation support for Unit: Use of math journals for differentiation and formative assessment. See Teaching Channel Video
				
				 Flexible grouping:
				• Content
				• Interest
				• Project/product
				• Level (Heterogeneous/ Homogeneous)
				
				 Tiered:
				5. Independent Management Plan (Must Do/May Do)
				6. Grouping
				   o Content
				   o Rigor w/in the concept
				   o Project-based learning
				   o Homework
				   o Grouping
				   o Formative Assessment
					CCSS Support for the Unit: *CA Mathematics Framework Gr. 6*
					• p. 1-6 "What Students Learn in Grade 5"
					• p. 37-41 *Expressions and Equations*
					• p. 55-57 "Essential Learnings for the Next Grade"
					 Progressions for CCSS-M
					• Narrative documents describing the progression of a topic across a number of grade levels, informed both by research on children's cognitive development and by the logical structure of mathematics.
					• Progression on *Expressions and Equations*
					   o p. 2-3 Overview
					   o p. 4-7 Grade 6
					 Kansas Association of Teachers of Mathematics (KATM) 6th Grade Flipbook
					• Provide illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard.
					• p. 34-40 *Expressions and Equations*
					 North Carolina Department of Public Instruction: Unpacked Content
					• Provides illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard.
					• p. 29-35 *Expressions and Equations*

Unit #3 Algebraic Expressions					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.EE.1-4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**

• What does x^5 mean?	*For Learning Outcomes 1 – 6:*
	
	From Illustrative Mathematics:
	
	• The Djinni's Offer
	
	• Watch Out for Parenthesis
		1) Express any term of the form x^n as n factors of x (e.g. $4^3 = 4·4·4$). Evaluate terms of the form x^n as the product of n factors in real-world and mathematical contexts. The base(s) should be whole numbers, positive decimals or positive fractions.
		6.EE.1
			Compare and contrast the meaning of 4(3) as the sum of 4 terms of 3 (3 + 3 + 3 + 3) and 4^3 as the product of 3 factors of 4 (4·4·4)	**Anchor Activities:**
				• Content-related
				• Tasks for early finishers
				  o Game
				  o Investigation
				  o Partner Activity
				  o Stations
					CA Framework p. 37-40
					Flipbook p. 34-35
					NC Unpacking p. 29
					
					enVision

• How do you determine the order in which you simplify an expression?
• How do you identify the terms in an expression?
• What is the difference between an expression and an equation?
		2) Evaluate numerical expressions with exponents, factors and terms by identifying the structure of the expression: simplify the exponents, factors, then the terms.
		6.EE.2
			From SCUSD strategy development:
			Strategies for simplifying expressions
			
			Notice that PEMDAS was not used here, because students may develop misconceptions when using PEMDAS. For example, student always multiplies before dividing.
				Depth and Complexity Prompts/Icons:
				• Depth
				  o Language of the Discipline
				  o Patterns
				  o Unanswered Questions
				  o Rules
				  o Trends
				  o Big Ideas
				  o Complexity
					CA Framework p. 37-40
					Flipbook p. 36-37
					NC Unpacking p. 30-32
					
					enVision

• What are all the different ways to represent multiplication? • Why don't we use x as a symbol for multiplication?		3) Translate the expression into words, given an expression with one of the four operations, including at least one variable, (5 – y describes subtracting y from 5). Also, given a description in words, write an appropriate mathematical expression. 6.EE.2		Differentiation Resources from SCUSD Wikispace	CA Framework p. 37-40 Flipbook p. 36-37 NC Unpacking p. 30-32 *enVision*

Unit #3 Algebraic Expressions					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.EE.1-4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• Why is 3x + 2 not equal to 5x? • Why is 2x + 3x not equal to $5x^2$?	*For Learning Outcomes 1 – 6:* From Illustrative Mathematics: • The Djinni's Offer • Watch Out for Parenthesis	4) Understand the structure of a term as a product of factors and as a sum of terms in order to generate equivalent expressions ($3y = 3 \cdot y = y + y + y$ and $3x^2 = 3 \cdot x^2 = x^2 + x^2 + x^2$) 6.EE.4 5) Combine like terms by decomposing the terms into groups of the same quantity in order to generate equivalent expressions (i.e. $3x + 2x + 2y = (x + x + x) + (x + x) + (y + y)$= 5 terms of x and 2 terms of y = 5x + 2y). 6.EE.4	Combining like terms using the commutative and associative properties https://learnzillion.com/lessons/3341-combine-like-terms-using-commutative-and-associative-properties Common Misconceptions Students may have when combining terms: 3x + 2y = 5xy $5x^2 + 6x^4 = 11x^6$ 3x + 5x + x = 8x		CA Framework p. 40-41 Flipbook p. 35-40 NC Unpacking p. 34-35 ==*enVision*==
• How do you identify the terms in an expression?		6) Identify the structure of an expression by identifying the terms, describing each term using mathematical language (*sum, difference, product, factor, quotient, term, constant, variable, coefficient, base, exponent*) and then make meaning of each term using decomposition. (Framework – Examples of Expression Language pg. 39-40) 6.EE.2			CA Framework p. 37-40 Flipbook p. 36-37 NC Unpacking p. 30-32 ==*enVision*==

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Unit #3 Algebraic Expressions					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.EE.1-4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• When evaluating the expression 4x for x = 5, why doesn't it create the number 45?	From Howard County Public Schools Office of Secondary Mathematics Curricular Projects: • My First Fish Tank • What's the Plan?	7) Evaluate expressions that arise from formulas used in real world problems by substituting for the appropriate variables and simplifying the expression using the structure established in Learning Outcome 2. 6.EE.2			CA Framework p. 37-40 Flipbook p. 36-37 NC Unpacking p. 30-32 *enVision*
• What is the coefficient for x in the expression (2 + x)? • Explain why 5(6 + 3x) is equal to 30 + 15x? • How do you determine if two or more expressions are equivalent? • Why does substituting a value not always work for determining equivalence of expressions?	*For Learning Outcomes 8 – 12:* From Mathematics Assessment Project (A Formative Assmt Lesson) • "Laws of Arithmetic" From Illustrative Mathematics: • "Rectangle Perimeter 3" • "Equivalent Expressions"	8) Describe a numerical expression, such as 2(8+7), as a product of factors 2(15) and as a sum of terms (8+7) + (8+7). 6.EE.2 and 3			CA Framework p. 37-41 Flipbook p. 36-38 NC Unpacking p. 30-34 "Apply Distributive Property by Using a Visual Model" lesson from LearnZillion *enVision*
		9) Use the sum of terms (learning experience 7) to rewrite 2(8+7) as (8+7) + (8+7) and then regroup into (8+8) + (7+7) for the purpose of discovering the distributive property 2(8) + 2(7). 6.EE.2 and 3			CA Framework p. 37-41 Flipbook p. 36-38 NC Unpacking p. 30-34 *enVision*
		10) Decompose an expression such as 2(3 + x) into (3+x)+(3+x) in order to regroup like terms (3+3)+(x+x) = 6 + 2x. Use this process to discover the short cut of multiplying by the coefficient (the distributive property).			CA Framework p. 37-41 Flipbook p. 36-38 NC Unpacking p. 30-34 *enVision*

Unit #3 Algebraic Expressions					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.EE.1-4**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
End of unit question that encompasses learning of entire unit: • What are all the ways you can write a given expression (such as 5x + 2y)?	From Mathematics Assessment Project (A Formative Assmt Lesson) • "Laws of Arithmetic" From Illustrative Mathematics: • "Rectangle Perimeter 3" • "Equivalent Expressions"	6.EE.2 and 3 11) Use previous learning experiences, the distributive property, and combining like terms to determine if two expressions are equivalent. (Example – Are the two following expressions equal? $5(n+3) + 7n \text{ and } 12n + 15$ Justify your answer.) 6.EE.3 and 4	As students are dealing with equivalent expressions, choosing numbers to plug in and test is wise.		CA Framework p. 40-41 Flipbook p. 38-40 NC Unpacking p. 33-35 ==enVision==
		12) Compare a given expression to multiple other expressions, to identify those that are equivalent and justify their reasoning using the structures of simplifying expressions including combining like terms and the distributive property. 6.EE.3 and 4			CA Framework p. 40-41 Flipbook p. 38-40 NC Unpacking p. 33-35 ==enVision==

Unit #4: Equations and Inequalities

(Approx. # of Days ___)

Content Standards: 6.EE.5-9

In this unit, students will be able to solve one-variable equations and inequalities, and understand the relationship between independent and dependent variables.

Common Core State Standards-Mathematics:

Expressions and Equations   6.EE

Reason about and solve one-variable equations and inequalities.

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.

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. 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.

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.

Represent and analyze quantitative relationships between dependent and independent variables.

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.*

Standards for Mathematical Practice:

SMP.3 – Construct viable arguments and critique the reasoning of others
SMP.4 – Model with mathematics
SMP.6 – Attend to precision.

ELD Standards to Support Unit

Part I: Interacting in Meaningful Ways:

J.   Collaborative:
5.   Interacting with others in written English in various communicative forms
10. Adapting language choices to various contexts

K.   Interpretive:
11. Listening actively to spoken English in a range of social and academic contexts.

L.   Productive:
11. Supporting own opinions and evaluating others' opinions in speaking and writing.

Part II: Learning About How English Works

G.   Expanding and Enriching Ideas
5.   Modifying to add details.

H.   Connecting and Condensing Ideas
6.   Connecting Ideas
7.   Condensing Ideas

SEL Competencies:

Self-awareness

Self-management

Social awareness

Relationship skills

Responsible decision making

Unit #4 Equations and Inequalities					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.EE.5-9**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**

Essential Questions are thought- provoking, open-ended questions to be used within daily lessons that and are therefore connected to the Sequence of Learning Outcomes	Assessments for Learning address Diagnostic, Formative, and Summative assessments used throughout the unit to inform instruction connected to the Sequence of Learning Outcomes.
	
	Note: These assessments are suggested, not required.
		Sequence of Learning Outcomes is intentionally organized for student success. Each outcome is not necessarily intended to be taught within one class session.
		
		Each Outcome begins with
		
		Students will be able to…
			Strategies to support Unit:
			From the *CA Mathematics Framework*
			• "Instructional Strategies" chapter provides research-based strategies for teaching math, K-12
			• "Supporting High Quality Common Core Instruction" chapter addresses the development, implementation, and maintenance of high-quality, standards-based mathematics instructional programs
			
			"Universal Design for Learning" from CAST, the Center for Applied Special Technology
				Differentiation support for Unit:
				Use of math journals for differentiation and formative assessment. See Teaching Channel Video
				
				Flexible grouping:
				• Content
				• Interest
				• Project/product
				• Level (Heterogeneous/Homogeneous)
				
				Tiered:
				7. Independent Management Plan (Must Do/May Do)
				8. Grouping
				   ○ Content
				   ○ Rigor w/in the concept
				   ○ Project-based learning
				   ○ Homework
				   ○ Grouping
					CCSS Support for the Unit:
					CA Mathematics Framework Gr. 6
					• p. 1-6 "What Students Learn in Grade 5"
					• p. 42-46 *Expressions and Equations*
					• p. 55-57 "Essential Learnings for the Next Grade"
					Progressions for CCSS-M
					• Narrative documents describing the progression of a topic across a number of grade levels, informed both by research on children's cognitive development and by the logical structure of mathematics.
					• Progression on *Expressions and Equations*
					   ○ p. 2-3 Overview
					   ○ p. 4-7 Grade 6
					Kansas Association of Teachers of Mathematics (KATM) 6th Grade Flipbook
					• Provide illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard.
					• p. 41-49 *Expressions and Equations*
					North Carolina Department of Public Instruction: Unpacked Content
					• Provides illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard.
					• p. 36-42 *Expressions and Equations*

Unit #4 Equations and Inequalities					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.EE.5-9**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
 • What's the difference between an expression and an equation? • What's the difference between a situation represented by x + p and one represented by px?	*For Learning Outcomes 1 – 5:* **Party Planning**	1) Represent real-world situations by writing expressions of the form x + p. Clearly define the meaning of the variable and the expression.. 6.EE.6	Learning Outcomes 1 and 2 should focus only on writing and representing expressions (no equality) with mathematical symbols and tape diagrams/bar models.	o Formative Assessment **Anchor Activities:** • Content-related • Tasks for early finishers o Game	CA Framework p. 42-44 Flipbook p. 43 NC Unpacking p. 37-38 *enVision*
		2) Write and evaluate expressions representing real-world situations, of the form x + p, for multiple values of the variable. Use bar models and numeric representations. Define the meaning of the variable and expression. 6.EE.6	*For Use with Learning Outcomes 1-12* Videos of using tape diagrams for representing expressions and solving equations: • Solving equations with addition (learnzillion) • Solving equations with subtraction (learnzillion)	o Investigation o Partner Activity o Stations **Depth and Complexity Prompts/Icons:** • Depth o Language of the Discipline o Patterns o Unanswered Questions o Rules o Trends o Big Ideas o Complexity	CA Framework p. 42-44 Flipbook p. 43 NC Unpacking p. 37-38 *enVision*
• What's the difference between an expression and an equation? • How are bar models used to solve equations?		3) Write equations in the form x + p = q and create tape diagrams/bar models to represent real-world situations. Clearly define the meaning of the variable and the both expressions in the equations. 6.EE.7	• Solving equations with multiplication (learnzillion) • Solving equations with division (learnzillion)	Differentiation Resources from	CA Framework p. 42-44 Flipbook p. 44-45 NC Unpacking p. 39-40 *enVision*

Unit #4 Equations and Inequalities					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.EE.5-9**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• How is substitution used to prove or disprove an answer? • Which inverse operations create zeroes? Which inverse operations create 1's? • Which strategies can you use to solve equations? When are they appropriate?	*For Learning Outcomes 1 – 5:* **Party Planning**	4) Solve equations of the form x + p = q using bar models and tables to facilitate guess and check. Use substitution to prove that a solution makes the equation true. 6.EE.5 and 7	• http://vimeo.com/71593727 In $p + x = q$, keep in mind that p, x and q are rational numbers but student work should begin with whole numbers	SCUSD Wikispace	CA Framework p. 42-44 Flipbook p. 41-42, 44-45 NC Unpacking p. 36-37, 39-40 *enVision*
		5) Solve equations of the form x + p = q using inverse operations. Use substitution to prove that a solution makes the equation true. 6.EE.5 and7	*Note*:Tape diagrams/bar modeling should be used as a tool to build the concept of solving using inverse operations. From SCUSD strategy development: • Bar Modeling (Google Doc) • Guess and Check Tables (Google Doc)		CA Framework p. 42-44 Flipbook p. 41-42, 44-45 NC Unpacking p. 36-37, 39-40 *enVision*
• What's the difference between an expression and an equation?	*For Learning Outcomes 6 – 12:* http://map.mathshell.org/materials/download.php?fileid=1529 Cookies Galore https://www.illustrativemathematics.org/illustrations/494 https://www.illustrativemathematics.org/i	6) Represent real-world situations by writing expressions of the form px. Clearly define the meaning of the variable and the expression. Framework p.42. 6.EE.6			CA Framework p. 42-44 Flipbook p. 43 NC Unpacking p. 37-38 *enVision*
		7) Write and evaluate expressions representing real-world situations, of the form px, for multiple values of the variable. Use bar models and numeric representations.			CA Framework p. 42-44 Flipbook p. 43 NC Unpacking p. 37-38 *enVision*

Unit #4 Equations and Inequalities					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.EE.5-9**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
	llustrations/985 https://www.illustrativemathematics.org/illustrations/425	Define the meaning of the variable and expression. 6.EE.6			
• What's the difference between an expression and an equation? • In solving px = q, how are multiplying by the reciprocal of p and dividing by p related? • How are bar models used to solve equations? • How is substitution used to prove or disprove an answer? • Which inverse operations create zeroes? Which inverse operations create 1's? • Which strategies can you use to solve equations? When are they appropriate?	https://www.illustrativemathematics.org/illustrations/1291 https://www.illustrativemathematics.org/illustrations/1107 https://www.illustrativemathematics.org/illustrations/997	8) Write equations in the form px = q and create bar models to represent real-world situations. Clearly define the meaning of the variable and the both expressions in the equations. 6.EE.5 and 7	When solving equations in the form px = q, students should be exposed to inverse operation as both dividing by p and as multiplying by the reciprocal of p. Students need to understand the connection between both and should be able to identify when it is easiest to use each operation.		CA Framework p. 42-44 Flipbook p. 41-42, 44-45 NC Unpacking p. 36-37, 39-40 *enVision*
		9) Solve equations of the form px = q using bar models and tables to facilitate guess and check. Use substitution to prove that a solution makes the equation true. 6.EE.5 and 7	In px = q, keep in mind that p, x and q are rational numbers but student work should begin with whole numbers *For Use with Learning Outcomes 1-12 (repeated from above)*		CA Framework p. 42-44 Flipbook p. 41-42, 44-45 NC Unpacking p. 36-37, 39-40 *enVision*
		10) Solve equations of the form px = q using inverse operations, where p is a whole number and then a fraction. Use substitution to prove that a solution makes the equation true.	Videos of using tape diagrams for representing expressions and solving equations: • Solving equations with addition		CA Framework p. 42-44 Flipbook p. 41-42, 44-45 NC Unpacking p. 36-37, 39-40 *enVision*

Unit #4 Equations and Inequalities					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.EE.5-9**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
		6.EE.5 and 7	(learnzillion)		
		11) Solve equations of the form px = q using inverse operations, where p is a decimal. Use substitution to prove that a solution makes the equation true. 6.EE.5 and 7	• Solving equations with subtraction (learnzillion) • Solving equations with multiplication (learnzillion)		CA Framework p. 42-44 Flipbook p. 41-42, 44-45 NC Unpacking p. 36-37, 39-40 *enVision*
		12) Distinguish between real-world situations represented by p + x = q and px = q, solving problems of each type using inverse operations. 6.EE.7	• Solving equations with division (learnzillion) • http://vimeo.com/71593727		CA Framework p. 42-44 Flipbook p. 44-45 NC Unpacking p. 39-40 *enVision*
• How are equations and inequalities similar? Different? • How are the solutions of equations and inequalities different?	*For Learning Outcomes 13-14:* Hershey Park Inequalities https://www.illustrativemathematics.org/illustrations/642	13) Write inequalities to represent real-world situations and identify possible solutions, recognizing that there can be infinitely many solutions. 6.EE. 5 and 8	Learning Outcomes 13 and 14 involve inequalities represented by the symbols > and < only. Students should make sense of why an open circle is used to represent that the boundary number is not a solution to the inequality.		CA Framework p. 42-44 Flipbook p. 41-42, 46 NC Unpacking p. 36-37, 40-41 *enVision*
		14) Represent inequalities on a number line numerically and in real-world situations, representing constraints appropriately.			CA Framework p. 42-44 Flipbook p. 41-42, 46 NC Unpacking p. 36-37, 40-41 *enVision*

Unit #4 Equations and Inequalities					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.EE.5-9**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
		6.EE.5 and 8			
• What does it mean for a variable to be dependent? Independent? • In the coordinate plane, which axis goes with the independent variable? The dependent variable? • Where can the independent/dependent variable be seen in a table? Graph? Equation?	*For Learning Outcomes 15-18:* https://www.illustrativemathematics.org/illustrations/806	15) Analyze a real-world situation for the purpose of identifying the two quantities that change in relationship to one another, defining them with variables, and determining which variable is dependent upon the other variable in the relationship (dependent and independent variables). 6.EE.9	Learning Outcomes 15 – 18 may be taught concurrently rather than as distinct learning experiences in order to relate the situation, table, graph, and equation of a given real-world problem. The use of multiple representations simultaneously is key here. Translating between multiple representations helps students understand that each form represents the same relationship and provides different perspective on the relationship.		CA Framework p. 44-46 Flipbook p. 47-49 NC Unpacking p. 42 *enVision*
		16) Create a table of values to represent a real-world situation with independent and dependent variables and represent the relationship with a list of values for the independent variable and corresponding values for the dependent variable. 6.EE.9			CA Framework p. 44-46 Flipbook p. 47-49 NC Unpacking p. 42 *enVision*
	For Learning Outcomes 15-18:	17) Represent a series of values for independent (x axis) and corresponding dependent			CA Framework p. 44-46 Flipbook p. 47-49 NC Unpacking p. 42

Unit #4 Equations and Inequalities					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.EE.5-9**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
	https://www.illustrativemathematics.org/illustrations/806	variables (y axis) on quadrant 1 of a coordinate plane and determine whether the points should be discrete or continuous based on the context of the problem. 6.EE.9	Learning Outcomes 15 – 18 may be taught concurrently rather than as distinct learning experiences in order to relate the situation, table, graph, and equation of a given real-world problem. The use of multiple representations simultaneously is key here. Translating between multiple representations helps students understand that each form represents the same relationship and provides different perspective on the relationship.		*enVision*
		18) Model the relationship between independent and dependent variables by creating a table, graphing the coordinates, and analyzing the relationship between the two variables in the table and graph in order to write the associated equation. 6.EE.9			CA Framework p. 44-46 Flipbook p. 47-49 NC Unpacking p. 42 *enVision*

Unit #5: Rational Numbers

(Approx. # of Days ___)

Content Standards: 6.NS.5-8

In this unit, students will be able to use positive and negative numbers and absolute value.

Common Core State Standards-Mathematics:

Number System 6.NS

Apply and extend previous understandings of numbers to the system of rational numbers.

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. 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.
7. Understand ordering and absolute value of rational numbers.
    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.*
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.

Standards for Mathematical Practice:

SMP.1 – Make sense of problems and persevere in solving them

SMP.2 – Reason abstractly and quantitatively

SMP.4 – Model with mathematics

40

ELD Standards to Support Unit:

Part I: Interacting in Meaningful Ways:

M. Collaborative:
   6.   Interacting with others in written English in various communicative forms
   12. Adapting language choices to various contexts
N. Interpretive:
   13. Listening actively to spoken English in a range of social and academic contexts.
O. Productive:
   11. Supporting own opinions and evaluating others' opinions in speaking and writing.

Part II: Learning About How English Works

I. Expanding and Enriching Ideas

   5. Modifying to add details.

J. Connecting and Condensing Ideas

   6. Connecting Ideas

   7. Condensing Ideas

SEL Competencies:

Self-awareness

Self-management

Social awareness

Relationship skills

Responsible decision making

Unit #5 Rational Numbers					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.NS.5-8**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
Essential Questions are thought- provoking, open-ended questions to be used within daily lessons that and are therefore connected to the Sequence of Learning Outcomes	Assessments for Learning address Diagnostic, Formative, and Summative assessments used throughout the unit to inform instruction connected to the Sequence of Learning Outcomes. *Note: These assessments are suggested, not required.*	Sequence of Learning Outcomes is intentionally organized for student success. Each outcome is not necessarily intended to be taught within one class session. Each Outcome begins with *Students will be able to…*	**Strategies to support Unit:** From the *CA Mathematics Framework* • "Instructional Strategies" chapter provides research-based strategies for teaching math, K-12 • "Supporting High Quality Common Core Instruction" chapter addresses the development, implementation, and maintenance of high-quality, standards-based mathematics instructional programs "Universal Design for Learning" from CAST, the Center for Applied Special Technology	**Differentiation support for Unit:** Use of math journals for differentiation and formative assessment. See Teaching Channel Video **Flexible grouping:** • Content • Interest • Project/product • Level (Heterogeneous/ Homogeneous) **Tiered:** 9. Independent Management Plan (Must Do/May Do) 10. Grouping o Content o Rigor w/in the concept o Project-based learning o Homework o Grouping o Formative	**CCSS Support for the Unit:** *CA Mathematics Framework Gr. 6* • p. 1-6 "What Students Learn in Grade 5" • p. 31-36 *The Number System* • p. 55-57 "Essential Learnings for the Next Grade" *Progressions for CCSS-M* • Narrative documents describing the progression of a topic across a number of grade levels, informed both by research on children's cognitive development and by the logical structure of mathematics. • Progression on The Number System o p. 2-3 Overview o p. 31-36 Grade 6 *Kansas Association of Teachers of Mathematics (KATM) 6th Grade Flipbook* • Provide illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard. • p. 24-33 *The Number System* *North Carolina Department of Public Instruction: Unpacked Content* • Provides illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard. • p. 23-28 *The Number System*

Unit #5 Rational Numbers					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.NS.5-8**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**

• What is the relationship between positive and negative numbers?
 • Is zero positive or negative? Explain.
 • Where do we see negative numbers in the real world?
	For Learning Outcomes 1 – 6:
	
	 Contest Winner
	
	 Positive and negative events story
		1) Make sense of positive and negative rational numbers in context of a real-world situation, explaining the meaning of zero in each situation.
		
		 6.NS.5
			Note 1: In this unit, rational numbers refers more specifically to all positive and negative real numbers, including <u>but not limited to</u> integers.
			
			 Note 2: Teachers should attend to precision in using the word "minus" only when referring to the operation of subtraction. Teachers should refer to numbers such as "-1/2" as negative one-half or the opposite of one-half.
			
			 Real-world contexts for rational numbers: temperature, elevation, banking, electric charge
				Assessment
				
				 Anchor Activities:
				 • Content-related
				 • Tasks for early finishers
				    o Game
				    o Investigation
				    o Partner Activity
				    o Stations
					CA Framework p. 31-35
					 Flipbook p. 24
					 NC Unpacking p. 23
					
					 enVision

• What are rational numbers?
 • How do you use a number line to represent magnitude of a number?
 • Why are bigger negative numbers really smaller?
 • What does it mean for numbers to be opposites?
	https://www.illustrativemathematics.org/illustrations/278
	
	 http://ccsstoolbox.agilemind.com/parcc/about_middle_3794.html
	
	 http://www.ixl.com/math/grade-6/put-rational-numbers-in-order
	
	 https://www.illustrativemathematics.org/illustrations/284
	
	 http://www.engageny.org
		2) Plot rational numbers on number lines, both horizontal and vertical, in context of a real-world situation such as temperature or elevation.
		 6.NS.6
				Depth and Complexity Prompts/Icons:
				 • Depth
				    o Language of the Discipline
				    o Patterns
				    o Unanswered Questions
				    o Rules
				    o Trends
				    o Big Ideas
				    o Complexity
				
				 Differentiation Resources from SCUSD Wikispace
					CA Framework p. 31-35
					 Flipbook p. 25-26
					 NC Unpacking p. 23-24
					
					 enVision

		3) Understand positive and negative rational numbers as numbers on opposite sides of 0 on the number line, e. g. –(-3) as the opposite of -3 otherwise known as 3. Graph opposites on a number line. 6.NS.6			CA Framework p. 31-35 Flipbook p. 25-26 NC Unpacking p. 23-24 ***enVision***
		4) Graph all different types of rational numbers on the same number line, paying attention to the order of the numbers. 6.NS.6			CA Framework p. 31-35 Flipbook p. 25-26 NC Unpacking p. 23-24 ***enVision***
		5) Use number lines to make sense of relative size based on location, both in and out of real-world context, recognizing that a number			CA Framework p. 31-35 Flipbook p. 25-26 NC Unpacking p. 23-24

Unit #5 Rational Numbers					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.NS.5-8**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
	/sites/default/files/resource/attachments/g6-m3-teacher-materials.pdf	to the right is always greater than a number to the left. 　　　　　　　6.NS.6	Note 1: In this unit, rational numbers refers more specifically to all positive and negative real numbers, including <u>but not limited to</u> integers.		<mark>*enVision*</mark>
		6) Write, interpret and explain inequality statements with rational numbers, using a number line to justify reasoning. 　　　　　　　6.NS.7	Note 2: Teachers should attend to precision in using the word "minus" only when referring to the operation of subtraction. Teachers should refer to numbers such as "-1/2" as negative one-half or the opposite of one-half.		CA Framework p. 35-36 Flipbook p. 27-30 NC Unpacking p. 39-40 <mark>*enVision*</mark>
• What is absolute value? • When is absolute value used in the real world?	For Outcomes 7 – 9: http://www.engageny.org/sites/default/files/resource/attachments/g6-m3-teacher-materials.pdf (Absolute value starts on page 98)	7) Understand absolute value of a rational number as its distance from zero on a number line. 　　　　　　　6.NS.7	Real-world contexts for rational numbers: temperature, elevation, banking, electric charge		CA Framework p. 35-36 Flipbook p. 27-30 NC Unpacking p. 39-40 <mark>*enVision*</mark>
	https://www.illustrativemathematics.org/illustrations/286	8) Understand absolute value as magnitude for a positive or negative quantity in a real-world situation, e.g. owing 30 dollars represents the magnitude of |-30|. 　　　　　　　6.NS.7			CA Framework p. 35-36 Flipbook p. 27-30 NC Unpacking p. 39-40 <mark>*enVision*</mark>
	https://www.illustrativemathematics.org/illustrations/288	9) Interpret absolute value inequality statements in real-world contexts. e.g. x > |-10| may represent a debt greater than 10 dollars. 　　　　　　　6.NS.7			CA Framework p. 35-36 Flipbook p. 27-30 NC Unpacking p. 39-40 <mark>*enVision*</mark>
• What are the relationships between opposites on a	*For Learning Outcomes 10 – 12:* Amusement Park	10) Graph ordered pairs of rational numbers on all four quadrants of the coordinate plane. 　　　　　　　6.NS.6 and 8			GeoGebra http://www.geogebra.org/cms/en/

Unit #5 Rational Numbers					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.NS.5-8**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
coordinate plane?	http://www.internet4classrooms.com/skill_builders/coordinate_plane_math_sixth_6th_grade.htm https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-geometry-topic/cc-6th-coordinate-plane/e/coordinate-plane-word-problems	11) Recognize characteristics of coordinate pairs in each of the four quadrants of the coordinate plane, e.g. (-2, 0.75) must be in quadrant II because the x-coordinate is negative and the y-coordinate is positive. 6.NS.6 and 8 12) Recognize coordinate points with the same x- values and opposite y-values are reflections across the x-axis. Recognize coordinate points with the same y- values and opposite x-values are reflections across the y-axis. 6.NS.6 and 8			Coordinate Plane practice: http://www.ixl.com/math/grade-6/coordinate-graphs-review http://www.ixl.com/math/grade-6/graph-points-on-a-coordinate-plane http://www.ixl.com/math/grade-6/coordinate-graphs-as-maps http://www.ixl.com/math/grade-6/distance-between-two-points http://www.internet4classrooms.com/skill_builders/coordinate_plane_math_sixth_6th_grade.htm

Unit #6: Geometry
(Approx. # of Days ___)
Content Standards: 6.G.1-4 & 6.NS.8
In this unit, students will be able to find area, volume, and represent the polygons in various forms.

Common Core State Standards-Mathematics:

Geometry   6.G

Solve real-world and mathematical problems involving area, surface area, and volume.

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.

2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l\,w\,h$ and $V = b\,h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

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.

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.

Number Sense   6.NS

Apply and extend previous understandings of numbers to the system of rational numbers.

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.

Standards for Mathematical Practice:
SMP 3 – Construct viable arguments and critique the reasoning of others
SMP 4 – Model with mathematics
SMP 6 – Attend to precision
SMP 7 - Look for and make use of structure

ELD Standards to Support Unit:

Part I: Interacting in Meaningful Ways:

P.   Collaborative:

7.   Interacting with others in written English in various communicative forms

14.   Adapting language choices to various contexts

Q.   Interpretive:

15.   Listening actively to spoken English in a range of social and academic contexts.

R.   Productive:

11.   Supporting own opinions and evaluating others' opinions in speaking and writing.

Part II: Learning About How English Works

K.   Expanding and Enriching Ideas

5. Modifying to add details.

L.   Connecting and Condensing Ideas

6. Connecting Ideas

7. Condensing Ideas

SEL Competencies:

Self-awareness

Self-management

Social awareness

Relationship skills

Responsible decision making

Unit #6 Geometry					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.G.1-4, 6.NS.8**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
Essential Questions are thought- provoking, open-ended questions to be used within daily lessons that and are therefore connected to the Sequence of Learning Outcomes	Assessments for Learning address Diagnostic, Formative, and Summative assessments used throughout the unit to inform instruction connected to the Sequence of Learning Outcomes. *Note: These assessments are suggested, not required.*	Sequence of Learning Outcomes is intentionally organized for student success. Each outcome is not necessarily intended to be taught within one class session. Each Outcome begins with *Students will be able to…*	**Strategies to support Unit:** From the *CA Mathematics Framework* • "Instructional Strategies" chapter provides research-based strategies for teaching math, K-12 • "Supporting High Quality Common Core Instruction" chapter addresses the development, implementation, and maintenance of high-quality, standards-based mathematics instructional programs "Universal Design for Learning" from CAST, the Center for Applied Special Technology	**Differentiation support for Unit:** Use of math journals for differentiation and formative assessment. See Teaching Channel Video **Flexible grouping:** • Content • Interest • Project/product • Level (Heterogeneous / Homogeneous) **Tiered:** 11. Independent Management Plan (Must Do/May Do) 12. Grouping o Content o Rigor w/in the concept o Project-based learning	**CCSS Support for the Unit:** *CA Mathematics Framework Gr. 6* • p. 1-6 "What Students Learn in Grade 5" • p. 46-49 *Geometry* • p. 35-36 *The Number System* • p. 55-57 "Essential Learnings for the Next Grade" Progressions for CCSS-M • Narrative documents describing the progression of a topic across a number of grade levels, informed both by research on children's cognitive development and by the logical structure of mathematics. • Progression on The Number System o p. 2-3 Overview o p. 31-36 Grade 6 • Progression on Geometry o p. 2-5 Overview o p. 18-20 Grade 6 *Kansas Association of Teachers of Mathematics (KATM) 6th Grade Flipbook* • Provide illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard. • p. 50-58 *Geometry* • p. 24-33 *The Number System* *North Carolina Department of Public Instruction: Unpacked Content* • Provides illustrated examples, instructional

Unit #6 Geometry					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.G.1-4, 6.NS.8**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
				o Homework o Grouping o Formative Assessment	strategies, additional resources/tools and misconceptions by standard. • P. 43-49 *Geometry* • p. 23-28 *The Number System*

• What is area?
• What does it mean to derive a formula?
• Where do the formulas for triangles, parallelograms and trapezoids come from?
• How can you use decomposition to find the area of irregular shapes?
• How can the coordinate plane be used to help find area?
	https://www.illustrativemathematics.org/illustrations/135
	
	https://www.illustrativemathematics.org/illustrations/647
		1) Derive the area of a right triangle by decomposing the area of a rectangle into two congruent right triangles.
		
		6.G.1
				Anchor Activities:
				• Content-related
				• Tasks for early finishers
				  o Game
				  o Investigation
				  o Partner Activity
				  o Stations
					CA Framework p. 46-49
					Flipbook p. 50-52
					NC Unpacking p. 43-45
					
					enVision

		2) Derive the area of a parallelogram by decomposing and recomposing the parallelogram into a rectangle with congruent area. 6.G.1			CA Framework p. 46-49 Flipbook p. 50-52 NC Unpacking p. 43-45 Derive area of a parallelogram https://learnzillion.com/lessons/1061-find-the-area-of-polygons-by-decomposing-into-triangles-rectangles-parallelograms-and-trapezoids *enVision*

		3) Derive the area of non-right triangles by decomposing the area of a parallelogram into two congruent triangles.
		
		6.G.1
				Depth and Complexity Prompts/Icons:
				• Depth
				  o Language of the Discipline
				  o Patterns
				  o Unanswered Questions
				  o Rules
				  o Trends
				  o Big Ideas
				  o Complexity
					CA Framework p. 46-49
					Flipbook p. 50-52
					NC Unpacking p. 43-45
					Derive the area of a right and non-right triangle. – Learnzillion.com
					
					enVision

		4) Find area of triangles and parallelograms in mathematical and real-world contexts.			CA Framework p. 46-49 Flipbook p. 50-52 NC Unpacking p. 43-45

Unit #6 Geometry					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.G.1-4, 6.NS.8**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
		6.G.1		Differentiation Resources from [SCUSD Wikispace](#)	*enVision*
	https://www.illustrativemathematics.org/illustrations/290 https://www.illustrativemathematics.org/illustrations/1188	5) Create triangles and parallelograms by graphing points on the coordinate plane, where the base of each shape is either a horizontal or vertical line segment. Find the area of the figures using the units of the coordinate plane. e.g. Find the area of the triangle with vertices (-2, 2), (0, 2) and (0, 0). 6.G.1,3, and NS.8	Use absolute value for lengths.		[CA Framework](#) p. 46-49, 35-36 [Flipbook](#) p. 50-52, 55-56, 31-33 [NC Unpacking](#) p. 43-45, 47-18, 27-28 [Create polygons using coordinate plane](#) learnzillion.com *enVision*
		6) Find the area of isosceles trapezoids by decomposing into a rectangle and two congruent triangles. 6.G.1			[CA Framework](#) p. 46-49 [Flipbook](#) p. 50-52 [NC Unpacking](#) p. 43-45 [Derivation of area of trapezoid](#) Learnzillion.com *enVision*
		7) Derive the area of any trapezoid by using an additional congruent trapezoid and creating a parallelogram. 6.G.1			[CA Framework](#) p. 46-49 [Flipbook](#) p. 50-52 [NC Unpacking](#) p. 43-45 [Derivation of area of trapezoid](#) Learnzillion.com *enVision*

		Unit #6 Geometry			
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.G.1-4, 6.NS.8**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
		8) Find the area of irregular polygons that can be decomposed into rectangles and triangles in both mathematical and real-world situations. 6.G.1			CA Framework p. 46-49 Flipbook p. 50-52 NC Unpacking p. 43-45 *enVision*
• How can a net be used to represent a three-dimensional figure? • What is surface area? • Why can you find surface area of a three-dimensional figure? • How can a net be used to find surface area?		9) Create nets composed of rectangles and triangles to represent three-dimensional figures. Recognize which three-dimensional figure a net represents. 6.G.4			CA Framework p. 46-49 Flipbook p. 57-58 NC Unpacking p. 49 Identify different nets Surface area by using nets Learnzillion.com *enVision*
		10) Use a net to find the surface area of a three-dimensional figure. 6.G.4			CA Framework p. 46-49 Flipbook p. 57-58 NC Unpacking p. 49 *enVision*
		11) Find surface area of three-dimensional figures in real-world contexts. 6.G.2			CA Framework p. 46-49 Flipbook p. 53-54 NC Unpacking p. 46-47 *envision*
• What is volume? Why does volume have three dimensions?	https://www.illustrativemathematics.org/illustrations/657	12) Find the volume of a right rectangular prism with fractional side lengths by first determining the	In grade 5 students worked with volume using whole number side lengths. Review may be needed.		CA Framework p. 46-49 Flipbook p. 53-54 NC Unpacking p. 46-47 Fractional volume – learnzillion.com

Unit #6 Geometry					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.G.1-4, 6.NS.8**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• What is a unit cube? What is a 1/8 cubic inch? • How does a $\frac{1}{n}x\frac{1}{n}x\frac{1}{n}$ cubic unit compare to a 1x1x1 cubic unit? • How do you determine what size cubic unit to use for volume when the side lengths are fractional? • What is the relationship between the two formulas we use for volume, V=bh and V=lwh? • What does volume, stated in fractional cubes, mean about the size of the prism? • What is the difference between saying the volume is $\frac{75}{8}in^3$ and the volume is 75 ($\frac{1}{8}cubic\ inches$)		appropriate $\frac{1}{n}x\frac{1}{n}x\frac{1}{n}$ unit cube, then determining how many of those unit cubes fill the base, and finally multiplying by the number of units in the height to find how many $\frac{1}{n}x\frac{1}{n}x\frac{1}{n}$ unit cubes are in the prism. 6.G.2 13) Apply volume formulas, V = bh and V = lwh, to find the volume of right rectangular prisms with fractional edge lengths in mathematical and real world contexts, making sense of the volume in terms of how many 1x1x1 unit cubes it represents and how many $\frac{1}{n}x\frac{1}{n}x\frac{1}{n}$ unit cubes it represents. (Framework p.48) 6.G.2			*enVision* CA Framework p. 46-49 Flipbook p. 53-54 NC Unpacking p. 46-47 *enVision*

Unit #6 Geometry					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.G.1-4, 6.NS.8**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
• How is volume represented in the real-world? What would $\frac{75}{8}in^3$ really mean?					

Unit #7: Statistics and Probability
(Approx. # of Days _____)
Content Standards: 6.SP.1-5
In this unit, students will be able to understand and display statistical variability.

Common Core State Standards-Mathematics:

Statistics and Probability   6.SP

Develop understanding of statistical variability.

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.*

2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

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.

Summarize and describe distributions.

4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

5. Summarize numerical data sets in relation to their context, such as by:
   a. Reporting the number of observations.

   b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
   c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

   d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Standards for Mathematical Practice:
SMP.1 – Make sense of problems and persevere in solving them
SMP.4 – Model with mathematics
SMP.5 – Use appropriate tools strategically
SMP.6 – Attend to precision

ELD Standards to Support Unit:

Part I: Interacting in Meaningful Ways:

S.   Collaborative:

    8.   Interacting with others in written English in various communicative forms

    16. Adapting language choices to various contexts

T.   Interpretive:

    17. Listening actively to spoken English in a range of social and academic contexts.

U.   Productive:

    11. Supporting own opinions and evaluating others' opinions in speaking and writing.

Part II: Learning About How English Works

M.   Expanding and Enriching Ideas

    5. Modifying to add details.

N.   Connecting and Condensing Ideas

    6. Connecting Ideas

    7. Condensing Ideas

SEL Competencies:

Self-awareness

Self-management

Social awareness

Relationship skills

Responsible decision making

Unit #7 Statistics and Probability					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.SP.1-5**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**

Essential Questions are thought- provoking, open-ended questions to be used within daily lessons that and are therefore connected to the Sequence of Learning Outcomes	Assessments for Learning address Diagnostic, Formative, and Summative assessments used throughout the unit to inform instruction connected to the Sequence of Learning Outcomes.
	
	Note: These assessments are suggested, not required.
		Sequence of Learning Outcomes is intentionally organized for student success. Each outcome is not necessarily intended to be taught within one class session.
		
		Each Outcome begins with
		
		Students will be able to…
			Strategies to support Unit:
			From the *CA Mathematics Framework*
			• "Instructional Strategies" chapter provides research-based strategies for teaching math, K-12
			• "Supporting High Quality Common Core Instruction" chapter addresses the development, implementation, and maintenance of high-quality, standards-based mathematics instructional programs
			
			"Universal Design for Learning" from CAST, the Center for Applied Special Technology
				Differentiation support for Unit:
				Use of math journals for differentiation and formative assessment. See Teaching Channel Video
				
				Flexible grouping:
				• Content
				• Interest
				• Project/product
				• Level (Heterogeneous/ Homogeneous)
				
				Tiered:
				13. Independent Management Plan (Must Do/May Do)
				14. Grouping
				  ○ Content
				  ○ Rigor w/in the concept
				  ○ Project-based learning
				  ○ Homework
				  ○ Grouping
					CCSS Support for the Unit:
					CA Mathematics Framework Gr. 6
					• p. 1-6 "What Students Learn in Grade 5"
					• p. 49-55 *Statistics and Probability*
					• p. 55-57 "Essential Learnings for the Next Grade"
					Progressions for CCSS-M
					• Narrative documents describing the progression of a topic across a number of grade levels, informed both by research on children's cognitive development and by the logical structure of mathematics.
					• Progression on Statistics and Probability
					  ○ p. 2-3 Overview
					  ○ p. 4-6 Grade 6
					Kansas Association of Teachers of Mathematics (KATM) 6th Grade Flipbook
					• Provide illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard.
					• p. 59-73 *Statistics and Probability*
					North Carolina Department of Public Instruction: Unpacked Content
					• Provides illustrated examples, instructional strategies, additional resources/tools and misconceptions by standard.
					• p. 50-57 *Statistics and Probability*

Unit #7 Statistics and Probability					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.SP.1-5**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**

• What is a statistical question and how can you gather data?	https://www.illustrativemathematics.org/illustrations/1040	1) Recognize a statistical question as one that is measurable and has variability in response. 6 .SP.1		o Formative Assessment
				
				Anchor Activities:
				• Content-related
				• Tasks for early finishers
				  o Game
				  o Investigation
				  o Partner Activity
				  o Stations
					CA Framework p. 50-53
					Flipbook p. 59-60
					NC Unpacking p. 50
					Examples of Statistical Questions
					
					enVision

	For Learning Outcomes 2-9:
	
	From Howard County Public School System:
	• Ear bud and pedestrian injuries task
		2) Design a statistical investigation and develop a plan for collecting data including how many data points will be collected, how they will be measured, the units of measurement and the process of collection.
		
		6.SP1-2
				Depth and Complexity Prompts/Icons:
				• Depth
				  o Language of the Discipline
				  o Patterns
					CA Framework p. 50-53
					Flipbook p. 59-62
					NC Unpacking p. 50-51
					
					enVision

• Why is the range between 1 and 6 calculated as 6-1 = 5, when there are actually 6 possible values, 1, 2, 3, 4, 5 and 6?
• What are the advantages of each type of graph used to represent data?
• What does the range tell you
	• Article for ear bud task
	
	https://www.illustrativemathematics.org/illustrations/1026
	
	https://www.illustrativemathematics.org/illustrations/1199
	
	https://www.illustrati
		3) Represent data on both a dot plot and a histogram. Determine the number of data points and their range. Make conjectures about the approximate center of the data.
		
		6.SP.2-5
				o Unanswered Questions
				  o Rules
				  o Trends
				  o Big Ideas
				  o Complexity
				
				Differentiation Resources from SCUSD Wikispace
					CA Framework p. 50-55
					Flipbook p. 61-73
					NC Unpacking p. 50-57
					
					enVision
					
					Line plots, Histograms, and Box Plots:
					https://learnzillion.com/lessons/543-describe-attributes-of-a-data-set-by-analyzing-line-plots-histograms-and-box-plots

Unit #7 Statistics and Probability					
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.SP.1-5**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
about the data?	vemathematics.org/illustrations/877				

• What are the measures of central tendency?
• What is the usefulness of each measure of central tendency?
• What can cause differences between mean and median?
•
		4) Understand measures of center by calculating mean and median of a given data set. Interpret mean and median numerically and on a dot plot and histogram.
		
		6.SP.2-5
			Measures of Center in 6th grade are: Median, and Mean		CA Framework p. 50-55
					Flipbook p. 61-73
					NC Unpacking p. 50-57
					Finding Mean:
					  https://learnzillion.com/lessons/2482-find-the-mean-by-equally-distributing-objects
					Finding Median:
					  https://learnzillion.com/lessons/2758-find-the-median-by-elimination
					
					enVision

		5) Compare mean and median for a given data set, informally making sense of why they are similar and/or different based on the shape and spread of the data.
		
		6.SP.2-5
					CA Framework p. 50-55
					Flipbook p. 61-73
					NC Unpacking p. 50-57
					Finding Mean:
					  https://learnzillion.com/lessons/2482-find-the-mean-by-equally-distributing-objects
					Finding Median:
					  https://learnzillion.com/lessons/2758-find-the-median-by-elimination
					
					enVision

• What are the advantages of each type of graph used		6) Investigate the variability of data by calculating and interpreting the MAD (Mean Absolute Deviation) of a set of data that can be represented	Measures of Variability in 6th grade are: MAD and IQR		CA Framework p. 50-55 Flipbook p. 61-73 NC Unpacking p. 50-57 Finding MAD:

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	Unit #7 Statistics and Probability				
Essential Questions	**Assessments for Learning**	**Sequence of Learning Outcomes 6.SP.1-5**	**Strategies for Teaching and Learning**	**Differentiation e.g. EL, SpEd, GATE**	**Resources**
to represent data? • What is variability and what are the different ways it is measured? • What does the range tell you about the data? • What do you need to represent a box plot? • What is not represented by a box plot?		with a dot plot or histogram. 6.SP.2-5			https://learnzillion.com/lessons/3799 *enVision*
		7) Find the median, upper and lower quartile, minimum and maximum and use them to create a box plot to represent a given data set. 6.SP.2-5			CA Framework p. 50-55 Flipbook p. 61-73 NC Unpacking p. 50-57 Line plots, Histograms, and Box Plots: https://learnzillion.com/lessons/543-describe-attributes-of-a-data-set-by-analyzing-line-plots-histograms-and-box-plots *enVision*
		8) Investigate the variability of data represented by a box plot by calculating and interpreting the interquartile range. 6.SP.2-5			CA Framework p. 50-55 Flipbook p. 61-73 NC Unpacking p. 50-57 Interquartile Range: https://learnzillion.com/lessons/544-describe-the-spread-of-data-by-finding-range-interquartile-range-and-mean-absolute-deviation *enVision*
		9) Compare and contrast the different ways of representing a given set of data from a graph, measures of center, and measures of variability, recognizing which graphs and measures are more appropriate given the center and shape. 6.SP.2-5			CA Framework p. 50-55 Flipbook p. 61-73 NC Unpacking p. 50-57 *enVision*

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