Califon Public School Curriculum

Subject: Mathematics	Grade: 6	Unit #: 1	Pacing: 6 weeks
Unit Title: Numbers			

OVERVIEW OF UNIT:

Students recognize, order, and perform computations with integers including: identify a number and its opposite, compare and order integers using a number line, and find the absolute value of a number. Then students will begin to work with factors and multiples: 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, and 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. Finally, students will classify, order, and compare rational numbers.

Unit References	
Big Ideas	**Essential Questions**
• Integers and their opposites • Absolute value • Rational numbers and their opposites • Comparing and ordering rational numbers • Greatest common factor • Least common multiple	• How do you identify an integer and its opposite? • How do you compare and order integers? • How do you find and use absolute value? • How can you find and use the greatest common factor of two whole numbers? • How can you find and use the least common multiple of two whole numbers? • How can you classify rational numbers? • How can you identify opposites and absolute value of rational numbers? • How can you compare and order rational numbers?

Objectives

- Students will be able to identify integers and their opposites
- Students will be able to compare and order integers
- Students will be able to define absolute value and find the absolute value of a given number
- Students will be able to calculate the greatest common factor of two whole numbers
- Students will be able to calculate the least common multiple of two whole numbers
- Students will be able to classify rational numbers into the correct subsets of real numbers
- Students will be able to identify the opposites and absolute value of rational numbers
- Students will be able to compare and order rational numbers

Assessment

Formative Assessment:

- Homework assignments
- Quizzes
- Classwork
- Skill worksheets
- Class discussions

Summative Assessment:

- Module Test
- Unit Test
- Performance Task

Benchmark Assessment:

- Link It Benchmark Assessment

Alternative Assessment:

- Performance Task
- Modified Tests (independently developed by teacher)
- Projects

Key Vocabulary

- equal
- greater than
- less than
- negative sign
- number line
- plus sign
- area
- Distributive Property
- factor
- multiple
- product
- greatest common factor (GCF)

- symbol
- whole number
- absolute value
- inequality
- integers
- negative numbers
- opposites
- positive numbers
- least common multiple (LCM)
- decimal
- dividend
- divisor
- fraction
- rational number
- Venn diagram

Resources & Materials

- Textbook (Go Math Gr. 6)
- SMARTBoard
- Calculator
- Guided notes
- Manipulatives
- Teacher-made materials
- Task cards
- Online games
- www.khanacademy.org
- www.ixl.com/math/
- my.hrw.com (Go Math Resources)
- www.desmos.com
- http://nlvm.usu.edu/
- https://illuminations.nctm.org/

Technology Infusion

Teacher Technology:

- Google Classroom
- SMARTBoard
- Chromebook
- Google Apps for Education

Student Technology:

- Google Classroom
- Chromebook
- Google Apps for Education
- Quizzizz
- Kahoot!

Activities:

- Students will use the Chromebooks to access Google Classroom and Google Apps for Education to write out explanations for how problems were solved or how math connects to real-life situations.
- Students will use the Chromebooks to access websites like Quizzizz and Kahoot! to practice and review the skills learned throughout the unit.

Standard	Standard Description
8.1.8.DA.1	Organize and transform data collected using computational tools to make it usable for a specific purpose.

Interdisciplinary Integration

Activities:

- Students will practice using the unit vocabulary as they talk and write about the problems they are solving. Understanding the vocabulary will aid their understanding of the concepts covered in this unit.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
- What Every Educator Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	Standard Description
ELA-Literacy.RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

21st Century Life Skills	
Activities: ● Students will work in groups to collaborate, at times taking leadership roles, to communicate project ideas to the whole class.	
Standard	**Standard Description**
9.4.8.TL.6	Collaborate to develop and publish work that provides perspectives on a real-world problem.

Careers	
Activities: ● Students will discuss and then write detailed explanations utilizing appropriate mathematical vocabulary to explain their thought process for obtaining solutions to specific problems.	
Standard	**Standard Description**
CRP4	Communicate clearly and effectively and with reason.

Common Core State Standards for Mathematical Practice: Bold all that apply	
MP #	Practice
1	Make sense of problems and persevere in solving them.
2	**Reason abstractly and quantitatively.**
3	**Construct viable arguments and critique the reasoning of others.**
4	**Model with mathematics.**
5	**Use appropriate tools strategically.**
6	Attend to precision.
7	Look for and make use of structure.
8	**Look for and express regularity in repeated reasoning.**

Standards	
Standard #	Standard Description
6.NS.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4 (9 + 2).
6.NS.5	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and

	negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
6.NS.6	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
6.NS.6.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.
6.NS.6.c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
6.NS.7	Understand ordering and absolute value of rational numbers.
6.NS.7.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.
6.NS.7.b	Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write –3 o C > –7 o C to express the fact that –3 o C is warmer than –7 o C
6.NS.7.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.
6.NS.7.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.

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes • Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/ • Math manipulatives • Guided notes • Divisibility rules song/poem • Differentiated task cards	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Interventional Central - http://www.interventioncentral.org/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

Califon Public School
Curriculum

Subject: Mathematics	Grade: 6	Unit #: 2	Pacing: 6 weeks
Unit Title: Number Operations			

OVERVIEW OF UNIT:

Students will learn how to multiply and divide positive rational numbers fluently. In addition, students will learn to multiply and divide positive rational numbers fluently.

Unit References	
Big Ideas	Essential Questions
• Multiplication of fractions and mixed numbers • Division of fractions and mixed numbers • multiplication and division of decimals • addition, subtraction, multiplication, and division of integers	• How do you use the GCF and LCM when adding, subtracting, and multiplying fractions? • How do you divide fractions? • How do you divide mixed numbers? • How can you solve word problems involving more than one fraction operation? • How do you divide multi-digit whole numbers? • How do you add and subtract decimals? • How do you multiply decimals? • How do you divide decimals? • How can you solve problems involving multiplication and division of fractions and decimals?

Objectives

- Students will be able to apply the GCF and LCM to adding, subtracting, and multiplying fractions
- Students will be able to divide fractions
- Students will be able to divide mixed numbers
- Students will be able to evaluate word problems involving more than one fraction operations
- Students will be able to divide multi-digit whole numbers
- Students will be able to evaluate problems involving addition and subtraction of decimals
- Students will be able to evaluate problems involving multiplication of decimals
- Students will be able to evaluate problems involving division of decimals
- Students will be able to evaluate word problems involving multiplication and division of fractions and decimals

Assessment

Formative Assessment:

- Homework assignments
- Quizzes
- Classwork
- Skill worksheets
- Class discussions

Summative Assessment:

- Module Test
- Unit Test
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Benchmark Assessment:

- Link It Benchmark Assessment

Alternative Assessment:

- Performance Task
- Modified Tests (independently developed by teacher)
- Projects

Key Vocabulary	
• area • denominator • fraction • greatest common factor (GCF) • least common multiple (LCM) • length • numerator • product • width • mixed number • order of operations • reciprocals	• decimal • divide • dividend • divisor • fraction bar • multiply • operation • product • quotient • symbol • whole number

Resources & Materials	
• Textbook (Go Math Gr. 6) • SMARTBoard • Calculator • Teacher-made materials • Clue words sheets for choosing operations to use for problem-solving • Task cards	• Online games • Guided notes • www.khanacademy.org • www.ixl.com/math/ • my.hrw.com (Go Math Resources) • www.desmos.com • http://nlvm.usu.edu/ • https://illuminations.nctm.org/

Technology Infusion

Teacher Technology:

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- Chromebook
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Student Technology:

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Interdisciplinary Integration

Activities:

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- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
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7	Look for and make use of structure.
8	Look for and express regularity in repeated reasoning.

Standards	
Standard #	Standard Description
6.NS.1	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of

	8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc). How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4- cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?
6.NS.2	Fluently divide multi-digit numbers using the standard algorithm.
6.NS.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
6.NS.4	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4 (9 + 2).

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
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Califon Public School
Curriculum

Subject: Mathematics	Grade: 6	Unit #: 3	Pacing: 6 weeks
Unit Title: Proportionality: Ratios and Rates			

OVERVIEW OF UNIT:

In this unit, students will understand proportional relationships by representing ratios with concrete models, writing ratios and finding equivalent ratios, using rates and unit rates to compare quantities, and applying qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates. In addition, the students will understand proportional relationships by comparing additive and multiplicative relationships, representing mathematical and real-world problems involving ratios and rates using tables and graphs, solving problems with proportions, and converting units within a measurement system. Furthermore, students will relate fractions, decimals, and percents by representing percents with concrete models and fractions, generating equivalent forms of fractions, decimals, and percents using real-world problems, and solving real-world problems involving percents.

Unit References	
Big Ideas	Essential Questions
• Ratios • Proportions • Rates • Unit Rates • Converting units within a measurement system • Fractions, decimals, and percents	• How do you use ratios and rates to compare quantities? • How can you use ratios to make comparisons and predictions? • How can you represent real-world problems involving ratios and rates with tables and graphs? • How can you solve problems with proportions? • How can you use ratios and proportions to convert measurements? • How can you write equivalent percents, fractions, and decimals? • How do you use percents to solve problems?

Objectives
● Students will be able to compare two quantities by using two ratios ● Students will be able to compare quantities using rates ● Students will be able to make comparisons and predictions using ratios ● Students will be able to use tables and graphs to represent real-world problems involving ratios and rates ● Students will be able to evaluate problems with proportions ● Students will be able to convert measurements within a measurement system ● Students will be able to convert measurements using ratios and proportions ● Students will be able to write a ratio as a percent ● Students will be able to convert between fractions, decimals, and percents to write equivalent forms of each ● Students will be able to solve problems using percents

Assessment
Formative Assessment: ● Homework assignments ● Quizzes ● Classwork ● Skill worksheets ● Class discussions **Summative Assessment:** ● Module Test ● Unit Test ● Performance Task **Benchmark Assessment:** ● Link It Benchmark Assessment **Alternative Assessment:** ● Performance Task ● Modified Tests (independently developed by teacher) ● Projects

Key Vocabulary	
• denominator • fraction bar • numerator • product • quantity • quotient • term • equivalent ratios • rate • ratio • unit rate • equivalent ratios • factor • graph	• unit • conversion factor • proportion • scale • scale drawing • decimal • equivalent fractions • fraction • mixed number • simplest form • equivalent decimal • model • percent • proportional reasoning

Resources & Materials	
• Textbook (Go Math Gr. 6) • SMARTBoard • Calculator • Teacher-made materials • Task cards • Online games • Guided notes	• www.khanacademy.org • www.ixl.com/math/ • my.hrw.com (Go Math Resources) • www.desmos.com • http://nlvm.usu.edu/ https://illuminations.nctm.org/

Technology Infusion

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Standard	Standard Description
8.1.8.DA.1	Organize and transform data collected using computational tools to make it usable for a specific purpose.

Interdisciplinary Integration

Activities:

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- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities

- What Every Educator Should Know About Using Google by Shell Education
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21st Century Life Skills

Activities:

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Standard	Standard Description
9.4.8.TL.6	Collaborate to develop and publish work that provides perspectives on a real-world problem.

Careers

Activities:

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Common Core State Standards for Mathematical Practice: Bold all that apply

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Standards	
Standard #	Standard Description
6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”
6.RP.2	Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship. For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar.” “We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger.”1
6.RP.3	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
6.RP.3.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.
6.RP.3.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?
6.RP.3.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.
6.RP.3.d	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
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Califon Public School
Curriculum

Subject: Mathematics	Grade: 6	Unit #: 4	Pacing: 6 weeks
Unit Title: Equivalent Expressions			

OVERVIEW OF UNIT:

In this unit students will learn to generate equivalent numerical expressions using exponents, generate equivalent numerical expressions using prime factorization, and simplify numerical expressions using the order of operations. In addition, students will learn to determine if two expressions are equivalent using concrete models, pictorial models, and algebraic representations; evaluate algebraic expressions for the given value of a variable; and generate equivalent expressions using the properties of operations (inverse, identity, commutative, associative, and distributive properties).

Unit References	
Big Ideas	Essential Questions
• Generating equivalent numerical expressions • Generating equivalent algebraic expressions	• How do you use exponents to represent numbers? • How do you write the prime factorization of a number? • How do you use the order of operations to simplify expressions with exponents? • How can you write algebraic expressions and use models to decide if expressions are equivalent? • How can you use the order of operations to evaluate algebraic expressions? • How can you identify and write equivalent expressions?

Objectives

- Students will be able to represent numbers using exponents
- Students will be able to determine the prime factorization of a number
- Students will be able to utilize the order of operations to simplify expressions with exponents
- Students will be able to write algebraic expressions and use models to determine if expressions are equivalent
- Students will explain how to use the order of operations to evaluate algebraic expressions
- Students will be able to identify and write equivalent expressions

Assessment

Formative Assessment:

- Homework assignments
- Quizzes
- Classwork
- Skill worksheets
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Summative Assessment:

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Key Vocabulary

- factor
- factor tree
- integers
- numerical expression
- operations
- order of operations
- power
- algebraic expression
- coefficient
- constant

- prime factorization
- repeated multiplication
- simplified expression
- base
- exponent
- equivalent expression
- evaluating
- like terms
- term
- variable

Resources & Materials	
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8.1.8.DA.1	Organize and transform data collected using computational tools to make it usable for a specific purpose.

Interdisciplinary Integration

Activities:

- Students will practice using the unit vocabulary as they talk and write about the problems they are solving. Understanding the vocabulary will aid their understanding of the concepts covered in this unit.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
- NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko
- PBS STEM - http://www.pbs.org/teachers/stem/#content
- STEM Works - http://stem-works.com/activities
- What Every Education Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	Standard Description
ELA-Literacy.RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

21st Century Life Skills

Activities:

- Students will work in groups to collaborate, at times taking leadership roles, to communicate project ideas to the whole class.

Standard	Standard Description
9.4.8.TL.6	Collaborate to develop and publish work that provides perspectives on a real-world problem.

Careers	
Activities: ● Students will discuss and then write detailed explanations utilizing appropriate mathematical vocabulary to explain their thought process for obtaining solutions to specific problems.	
Standard	**Standard Description**
CRP4	Communicate clearly and effectively and with reason.

Common Core State Standards for Mathematical Practice: Bold all that apply	
MP #	Practice
1	Make sense of problems and persevere in solving them.
2	**Reason abstractly and quantitatively.**
3	Construct viable arguments and critique the reasoning of others.
4	Model with mathematics.
5	**Use appropriate tools strategically.**
6	**Attend to precision.**
7	Look for and make use of structure.
8	Look for and express regularity in repeated reasoning.

Standards	
Standard #	Standard Description
6.EE.1	Write and evaluate numerical expressions involving whole-number exponents.
6.EE.2	Write, read, and evaluate expressions in which letters stand for numbers.
6.EE.2.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.
6.EE.2.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.
6.EE.2.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 New Jersey Student Learning Standards for Mathematics 44 involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas V = s3 and A = 6s2 to find the volume and surface area of a cube with sides of length s = 1/2.
6.EE.3	Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.

6.EE.4	Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for
6.EE.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes • Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/ • Math manipulatives	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Interventional Central - http://www.interventioncentral.org/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

Califon Public School
Curriculum

Subject: Mathematics	Grade: 6	Unit #: 5	Pacing: 5 weeks
Unit Title: Equations and Inequalities			

OVERVIEW OF UNIT:

In this unit, students will learn to write one-variable, one-step equations to represent constraints or conditions within problems; model and solve one-variable, one-step equations that represent problems; write corresponding real-world problems given one-variable, one-step equations; and write inequalities. Furthermore, students will learn to identify independent and dependent quantities from tables and graphs, write an equation that represents the relationship between independent and dependent quantities from a table, represent a given situation using verbal descriptions, tables, graphs, and equations in the form y = kx or y = x + b, and graph points in all four quadrants using ordered pairs of rational numbers.

Unit References	
Big Ideas	Essential Questions
• Writing and solving one-step equations and inequalities • Rational numbers as locations on number lines • Signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane	• How do you write equations and determine whether a number is a solution of an equation? • How do you solve equations that contain addition, subtraction, multiplication, and division? • How can you use inequalities to represent real-world conditions? • How do you locate and name points in the coordinate plane? • How can you identify independent and dependent quantities from tables and graphs? • How can you use an equation to show a relationship between two variables?

Objectives

- Students will be able to determine whether a number is a solution of an equation
- Students will be able to solve equations that contain addition and subtraction
- Students will be able to solve equations that contain multiplication and division
- Students will be able to utilize inequalities to represent real-world situations
- Students will be able to determine the location of points on the coordinate plane and name the points
- Students will be able to identify independent and dependent quantities from tables and graphs
- Students will be able to use an equation to show a relationship between two variables
- Students will be able to represent algebraic relationships from verbal descriptions, tables, and graphs

Assessment

Formative Assessment:

- Homework assignments
- Quizzes
- Classwork
- Skill worksheets
- Class discussions

Summative Assessment:

- Module Test
- Unit Test
- Performance Task

Benchmark Assessment:

- Link It Benchmark Assessment

Alternative Assessment:

- Performance Task
- Modified Tests (independently developed by teacher)
- Projects

Key Vocabulary	
• algebraic expression • equivalent expression • evaluating • like terms • term • equation • solution • properties of operations • coefficient • constant • equation • negative number • positive number • scale	• variable • axes • coordinate plane • coordinates • dependent variable • independent variable • ordered pair • origin • quadrants • x-axis • x-coordinate • y-axis • y-coordinate

Resources & Materials	
• Textbook (Go Math Gr. 6) • SMARTBoard • Calculator • Teacher-made materials • Guided notes • Task cards • Online games	• www.khanacademy.org • www.ixl.com/math/ • my.hrw.com (Go Math Resources) • www.desmos.com • http://nlvm.usu.edu/ • https://illuminations.nctm.org/

Technology Infusion

Teacher Technology:

- Google Classroom
- SMARTBoard
- Chromebook
- Google Apps for Education

Student Technology:

- Google Classroom
- Chromebook
- Google Apps for Education
- Quizzizz
- Kahoot!

Activities:

- Students will use the Chromebooks to access Google Classroom and Google Apps for Education to write out explanations for how problems were solved or how math connects to real-life situations.
- Students will use the Chromebooks to access websites like Quizzizz and Kahoot! to practice and review the skills learned throughout the unit.

Standard	Standard Description
8.1.8.DA.1	Organize and transform data collected using computational tools to make it usable for a specific purpose.

Interdisciplinary Integration

Activities:

- Students will practice using the unit vocabulary as they talk and write about the problems they are solving. Understanding the vocabulary will aid their understanding of the concepts covered in this unit.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
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Standard	Standard Description
ELA-Literacy.RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

21st Century Life Skills

Activities:

- Students will work in groups to collaborate, at times taking leadership roles, to communicate project ideas to the whole class.

Standard	Standard Description
9.4.8.TL.6	Collaborate to develop and publish work that provides perspectives on a real-world problem.

Careers

Activities:

- Students will discuss and then write detailed explanations utilizing appropriate mathematical vocabulary to explain their thought process for obtaining solutions to specific problems.

Standard	Standard Description
CRP4	Communicate clearly and effectively and with reason.

Common Core State Standards for Mathematical Practice: Bold all that apply

MP #	Practice
1	**Make sense of problems and persevere in solving them.**
2	**Reason abstractly and quantitatively.**
3	Construct viable arguments and critique the reasoning of others.
4	**Model with mathematics.**
5	**Use appropriate tools strategically.**
6	Attend to precision.
7	Look for and make use of structure.
8	Look for and express regularity in repeated reasoning.

Standards	
Standard #	Standard Description
6.EE.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.EE.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
6.EE.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.
6.EE.8	Write an inequality of the form x > c or x < c to represent a constraint or condition in a realworld 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.
6.EE.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.
6.NS.6.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.
6.NS.6.c	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
6.NS.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.

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes • Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/ • Math manipulatives	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Interventional Central - http://www.interventioncentral.org/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

Califon Public School
Curriculum

Subject: Mathematics	Grade: 6	Unit #: 6	Pacing: 7 weeks
Unit Title: Relationships in Geometry			

OVERVIEW OF UNIT:

In this unit, students will learn how to model area formulas for parallelograms, trapezoids, and rhombuses by decomposing and rearranging parts of those shapes. Model area formulas for triangles by decomposing and rearranging parts of shapes. Write equations that represent problems related to the area of rectangles, parallelograms, trapezoids, and triangles where dimensions are positive rational numbers. Write equations that represent problems related to the volume of right rectangular prisms where dimensions are positive rational numbers. Additionally, students will learn how to use absolute value to find distances between points in the coordinate plane and solve problems that involve drawing polygons in the coordinate plane and finding the length of a side. Finally, students will identify nets and use nets to find the surface area of a solid and calculate the volume of rectangular solids and use volume equations to solve problems.

Unit References	
Big Ideas	Essential Questions
• Triangles and their properties • Area of geometric figures • Surface area and volume of right rectangular prisms	• How can you find the areas of parallelograms, rhombuses, trapezoids, and triangle? • How do you use equations to solve problems about area of rectangles, parallelograms, trapezoids, and triangles? • How can you find the area of a composite polygon? • How can you find the distance between two points with the same x- or y-coordinates? • How can you use nets to find surface areas? • How do you find the volume of a rectangular prism?

Objectives

- Students will be able to calculate the areas of parallelograms, rhombuses, and trapezoids
- Students will be able to calculate the area of a triangle
- Students will be able to use an equation to solve problems about the area of rectangles, parallelograms, trapezoids, and triangles
- Students will be able to dissect a polygon into smaller shapes to find the area
- Students will be able to use the absolute value to find the distance between two points with the same x- or y-coordinates
- Students will be able to draw polygons in the coordinate plane to solve problems
- Students will be able to utilize nets to find the surface area
- Students will be able to calculate the volume of a rectangular prism
- Students will be able to write equations to solve problems involving volume of rectangular prisms

Assessment

Formative Assessment:

- Homework assignments
- Quizzes
- Classwork
- Skill worksheets
- Class discussions

Summative Assessment:

- Module Test
- Unit Test
- Performance Task

Benchmark Assessment:

- Link It Benchmark Assessment

Alternative Assessment:

- Performance Task
- Modified Tests (independently developed by teacher)
- Projects

Key Vocabulary	
• hexagon	• axis
• polygon	• coordinate plane
• quadrilateral	• perimeter
• rectangular prism	• polygon
• right triangle	• reflection
• triangle	• vertex/vertices
• parallelogram	• base
• rhombus	• height
• trapezoid	• net
• absolute value	• pyramid
• area	• surface area

Resources & Materials
• Textbook (Go Math Gr. 6)
• SMARTBoard
• Calculator
• Teacher-made materials
• Guided notes
• Task cards
• Online games
• www.khanacademy.org
• www.ixl.com/math/
• my.hrw.com (Go Math Resources)
• www.desmos.com
• http://nlvm.usu.edu/
• https://illuminations.nctm.org/

Technology Infusion
Teacher Technology: ● Google Classroom ● SMARTBoard ● Chromebook ● Google Apps for Education **Student Technology:** ● Google Classroom ● Chromebook ● Google Apps for Education ● Quizzizz ● Kahoot! **Activities:** ● Students will use the Chromebooks to access Google Classroom and Google Apps for Education to write out explanations for how problems were solved or how math connects to real-life situations. ● Students will use the Chromebooks to access websites like Quizzizz and Kahoot! to practice and review the skills learned throughout the unit.

Standard	Standard Description
8.1.8.DA.1	Organize and transform data collected using computational tools to make it usable for a specific purpose.

Interdisciplinary Integration
Activities: ● Students will practice using the unit vocabulary as they talk and write about the problems they are solving. Understanding the vocabulary will aid their understanding of the concepts covered in this unit. **Resources:** ● Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html ● Engineering Go For It! - http://egfi-k12.org/ ● US Department of Education STEM - http://www.ed.gov/stem ● Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html ● NASA STEM - http://www.nasa.gov/audience/foreducators/expeditions/stem/#.VYrO2flViko ● PBS STEM - http://www.pbs.org/teachers/stem/#content

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ELA-Literacy.RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

21st Century Life Skills

Activities:

- Students will work in groups to collaborate, at times taking leadership roles, to communicate project ideas to the whole class.

Standard	Standard Description
9.4.8.TL.6	Collaborate to develop and publish work that provides perspectives on a real-world problem.

Careers

Activities:

- Students will discuss and then write detailed explanations utilizing appropriate mathematical vocabulary to explain their thought process for obtaining solutions to specific problems.

Standard	Standard Description
CRP4	Communicate clearly and effectively and with reason.

Common Core State Standards for Mathematical Practice: Bold all that apply

MP #	Practice
1	**Make sense of problems and persevere in solving them.**
2	**Reason abstractly and quantitatively.**
3	**Construct viable arguments and critique the reasoning of others.**
4	**Model with mathematics.**
5	Use appropriate tools strategically.
6	**Attend to precision.**
7	Look for and make use of structure.
8	Look for and express regularity in repeated reasoning.

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

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes • Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/ • Math manipulatives	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Interventional Central - http://www.interventioncentral.org/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm

Califon Public School
Curriculum

Subject: Mathematics	Grade: 6	Unit #: 7	Pacing: 4 weeks
Unit Title: Measurement and Data			

OVERVIEW OF UNIT:

Students will learn how to: represent numeric data graphically, including dot plots, histograms, and box plots; use graphical representations of numeric data to describe the center, spread, and shape of a data distribution; summarize numeric data with numerical summaries, including the mean and median and the range and interquartile range (IQR); interpret numeric data summarized in dot plots, histograms, and box plots; summarize categorical data with numerical and graphical summaries, including mode and relative frequency tables.

Unit References	
Big Ideas	Essential Questions
• Numeric data • Representing numeric data graphically • Interpreting numeric data from a dot plot, box plot, or histogram • Categorical data	• How can you use the measures of center to describe a data set? • How can you determine and use the mean absolute deviation of a set of data points? • How can you use a box plot and measures of spread to describe a data set? • How can you summarize and display numeric data? • How can you display data in a histogram?

Objectives:
• Students will be able to describe a data set using measures of center • Students will be able to calculate and use the mean absolute deviation of a data set

- Students will be able to describe a data set using a box plot and measures of spread
- Students will be able to describe how to summarize and display numeric data
- Students will be able to display data using a histogram

Assessment

Formative Assessment:

- Homework assignments
- Quizzes
- Classwork
- Skill worksheets
- Class discussions

Summative Assessment:

- Module Test
- Unit Test
- Performance Task

Benchmark Assessment:

- Link It Benchmark Assessment

Alternative Assessment:

- Performance Task
- Modified Tests (independently developed by teacher)
- Projects

Key Vocabulary

- data
- survey
- box plot
- categorical data
- dot plot
- histogram
- interquartile range
- lower quartile
- mean
- median
- measure of center
- measure of spread
- mode
- range
- statistical question
- upper quartile

Resources & Materials	
• Textbook (Go Math Gr. 6) • SMARTBoard • Calculator • Teacher-made materials • Guided notes • Task cards • Online games	• www.khanacademy.org • www.ixl.com/math/ • my.hrw.com (Go Math Resources) • www.desmos.com • http://nlvm.usu.edu/ • https://illuminations.nctm.org/

Technology Infusion

Teacher Technology:

- Google Classroom
- SMARTBoard
- Chromebook
- Google Apps for Education

Student Technology:

- Google Classroom
- Chromebook
- Google Apps for Education
- Quizzizz
- Kahoot!

Activities:

- Students will use the Chromebooks to access Google Classroom and Google Apps for Education to write out explanations for how problems were solved or how math connects to real-life situations.
- Students will use the Chromebooks to access websites like Quizzizz and Kahoot! to practice and review the skills learned throughout the unit.

Standard	Standard Description
8.1.8.DA.1	Organize and transform data collected using computational tools to make it usable for a specific purpose.

Interdisciplinary Integration

Activities:

- Students are encouraged to practice using the vocabulary as they talk and write about mathematics when completing their classroom assignments and explaining their thought process for the problem of the day assignments.

Resources:

- Teacher Vision Cross Curricular Theme Map - https://www.teachervision.com/teaching-methods/curriculum-planning/7167.html
- Engineering Go For It! - http://egfi-k12.org/
- US Department of Education STEM - http://www.ed.gov/stem
- Intel STEM Resource - http://www.intel.com/content/www/us/en/education/k12/stem.html
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- What Every Education Should Know About Using Google by Shell Education
- Promoting Literacy in all Subjects by Glencoe - http://www.glencoe.com/sec/teachingtoday/subject/promoting_literacy.phtml
- International Literacy Association Read Write Think - http://www.readwritethink.org/

Standard	Standard Description
ELA-Literacy.RST.6-8.4	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

21st Century Life Skills

Activities:

- Students will work in groups to collaborate, at times taking leadership roles, to communicate project ideas to the whole class.

Standard	Standard Description
9.4.8.TL.6	Collaborate to develop and publish work that provides perspectives on a real-world problem.

Careers

Activities:

- Students will summarize data and compare and contrast various data sets using appropriate vocabulary from the unit.

Standard	Standard Description
CRP4	Communicate clearly and effectively and with reason.

Common Core State Standards for Mathematical Practice: Bold all that apply	
MP #	Practice
1	Make sense of problems and persevere in solving them.
2	**Reason abstractly and quantitatively.**
3	**Construct viable arguments and critique the reasoning of others.**
4	**Model with mathematics.**
5	**Use appropriate tools strategically.**
6	Attend to precision.
7	Look for and make use of structure.
8	Look for and express regularity in repeated reasoning.

Standards	
Standard #	Standard Description
6.SP.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.
6.SP.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.
6.SP.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.
6.SP.4	Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
6.SP.5	Summarize numerical data sets in relation to their context, such as by:
6.SP.5.a	Reporting the number of observations.
6.SP.5.b	Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
6.SP.5.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.
6.SP.5.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.

Differentiation			
Special Education	English Language Learners (ELL)	Response to Intervention (RTI)	Enrichment
• Provide modifications & accommodations as listed in the student's IEP • Position student near helping peer or have quick access to teacher • Modify or reduce assignments/tasks • Reduce length of assignment for different mode of delivery • Increase one-to-one time • Prioritize tasks • Use graphic organizers • Use online resources for skill building • Provide teacher notes • Use collaborative grouping strategies such as small groups • NJDOE resources - http://www.state.nj.us/education/specialed/ • Math manipulatives	• Provide text-to-speech • Use of translation dictionary or software • Provide graphic organizers • NJDOE resources - http://www.state.nj.us/education/aps/cccs/ELL.htm • Adapt a Strategy – Adjusting strategies for ESL students - http://www.teachersfirst.com/content/esl/adaptstrat.cfm	• Tiered interventions following RTI framework • Effective RTI strategies for teachers - http://www.specialeducationguide.com/pre-k-12/response-to-intervention/effective-rti-strategies-for-teachers/ • Interventional Central - http://www.interventioncentral.org/	• Process should be modified: higher order thinking skills, open-ended thinking, discovery • Utilize project-based learning for greater depth of knowledge • Utilize exploratory connections to higher grade concepts • Contents should be modified: real world problems, audiences, deadlines, evaluations, transformations • Learning environments should be modified: student-centered learning, independence, openness, complexity, groups varied • NJDOE resources - http://www.state.nj.us/education/aps/cccs/g_and_t_req.htm