July 2022

Califon Public School
Curriculum

Subject: Pre-Algebra	Grade: 7th	Unit #:1	Pacing:Approximately 6 weeks
Unit Title:The Number System			

OVERVIEW OF UNIT*:*

The unit is the introduction of the real number system as well as the review of all four integer operations and application of real-life problems.

Unit References	
Big Ideas	Essential Questions
• There are different types of numbers that are not "pretty positives". • Integers, as part of a real number system, allow us to represent positive and negative whole numbers. • An integer and its opposite have the same absolute value.	• How does the use of real world relationships help you understand integers? • Can you use rational approximations to model irrational numbers accurately?
Objectives	
• Students will be able to use real world relationships to understand and apply integers. • Students will be able to use rational approximations to model irrational numbers accurately.	
Assessment	
Formative: • Homework • Skill Sheets • Classwork	

- Projects
- Exit Slips
- Teacher Observations
- Discussion
- Math Minutes

Summative:

- Tests
- Quizzes

Benchmark:

- LinkIt!

Alternate:

- Performance Tasks
- Extended Projects
- Modified tests independently developed by teacher

Key Vocabulary

- Rational number
- Irrational number
- Integer
- Absolute value
- Rational approximation
- Whole numbers
- Counting/natural numbers
- Operations

Resources& Materials

- Textbook (Glencoe Accelerated Pre-Algebra Program)
- SMARTBoard
- Calculator
- Teacher-made materials

Technology Infusion

Teacher Technology:

- www.khanacademy.com
- www.desmos.com
- Calculator-scientific
- SMARTBoard
- Chromebook
- www.factmonster.com

Student Technology:

- www.khanacademy.com
- www.desmos.com
- Calculator-scientific
- SMARTBoard
- Chromebook
- www.factmonster.com

Activities:

- Students will use www.factmonster.com and the SMARTBoard to perform operations with Integers and Rational numbers.

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 Resources

Activities:

- Students will read and interpret texts in order to solve multi-step word problems.
- Students will compose written explanations of problem solving techniques so that their thinking is clear and supported by mathematical details, containing computation and appropriate vocabulary.

Standard	Standard Description
NJSLSA.SL4	Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

21st Century Life Skills:	
Activities: ● Students will work both individually and in collaborative groups to interpret and organize data and problem solve while utilizing varied strategies to complete a task. ● Students will discuss various solutions to a problem, communicating thinking effectively both verbally and in writing.	
Standard	**Standard Description**
9.4.8.IML.12	Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.

Careers	
Activities: ● Students will complete the Unit 1 Performance Task which provides allows the students to apply the concepts from this unit in real-world problem situations.	
Standard	**Standard Description**
CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.

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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
8.NS.1	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
8.NS.2	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of $\sqrt{2}$, show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations*.

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/ • Hands on 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

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Califon Public School
Curriculum

Subject: Pre-Algebra	Grade: 7th	Unit #:2	Pacing:Approximately 6 weeks
Unit Title:Functions			

OVERVIEW OF UNIT*:*

Functions represent/describe something in the real-world. Certain relationships are described in linear functions.

Unit References	
Big Ideas	Essential Questions
• A function is the relationship between an input and an output. • Identify a graph as a function using characteristics of a function.	• What is a function? • By analyzing a function, what can we determine about the relationship between the two quantities?
Objectives:	
• Students will be able to define and recognize a function. • Students will be able to analyze a function to determine the relationship, if any, between two quantities.	
Assessment	
Formative: • Homework • Classwork • Projects • Exit slips • Skill sheets • Teacher Observation • Discussion • Math Minutes Summative: • Quizzes	

- Tests

Benchmark
- Link It

Alternative
- Performance Tasks
- Extended projects
- Modified tests independently prepared by the teacher

Key Vocabulary

- Relation
- Function
- Domain
- Range
- Input
- Output
- Increasing/decreasing
- Positive correlation
- Negative correlation
- Linear function
- No Correlation

Resources& Materials

- Textbook (Glencoe Accelerated Pre-Algebra)
- SMARTBoard
- Calculator
- Teacher-made materials

Technology Infusion

Teacher Technology:
- www.khanacademy.com
- www.desmos.com
- Calculator-scientific
- SMARTBoard
- Chromebook
- www.factmonster.com

Student Technology:
- www.khanacademy.com
- www.desmos.com
- Calculator-scientific
- SMARTBoard

- Chromebook
- www.factmonster.com

Activities:

- Students will use www.desmos.com and Chrome books to find the relationships between two quantities in a function.

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 Resources

Activities:

- Students will read and interpret texts in order to solve multi-step word problems.
- Students will compose written explanations of problem solving techniques so that their thinking is clear and supported by mathematical details, containing computation and appropriate vocabulary.

Standard	Standard Description
NJSLSA.SL4	Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

21st Century Life Skills:

Activities:

- Students will work both individually and in collaborative groups to interpret and organize data and problem solve while utilizing varied strategies to complete a task.
- Students will discuss various solutions to a problem, communicating thinking effectively both verbally and in writing.

Standard	Standard Description
9.4.8.IML.12	Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.

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
8.F.1	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.
8.F.2	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change*.
8.F.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. *For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line*.
8.F.4	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
8.F.5	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

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/ • Hands on 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

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Califon Public School
Curriculum

Subject: Pre-Algebra	Grade: 7th	Unit #:3	Pacing:Approximately 6 weeks
Unit Title:Expressions & Equations			

OVERVIEW OF UNIT*:*

During this unit, students will solve a system of linear equations by graphing, using the substitution method, and using the elimination method. Very small or very large numbers can be written using exponents. We can also convert between standard form without exponents to scientific form that utilizes exponents. Solve and translate real-life situations into mathematical problems using numerical and algebraic expressions and equations.

Unit References	
Big Ideas	Essential Questions
• The algebraic solution(s) to systems of equations can be used to represent and solve real-world problems. • The solution of a system is any ordered pair that satisfies all equations in the system. • Square roots and cube root symbols represent rational solutions to equations using variables with exponents (equations). • Exponents can be used to represent very small/large quantities in real life. • The process of solving an equation requires balance; any action taken on one side of the equation must also occur on the other side.	• Is there more than one method to solve systems of linear equations? If so, what are they? • How is scientific notation used to write very large or very small numbers? • How do you find decimal approximations of square roots that are irrational? • How can you use an equation to represent and solve a real life problem?
Objectives	
• Students will be able to determine if there is more than one method to solve systems of equations. • Students will be able to use scientific notation to write very large or very small numbers. • Students will be able to use decimal approximations of irrational square roots. • Students will be able to use equations to represent and solve real life problems.	

Assessments:

Formative Assessment:

- Homework
- Classwork
- Projects
- Exit slips
- Skill sheets
- Teacher Observation
- Discussion
- Math Minutes

Summative Assessment:

- Quizzes
- Tests

Benchmarks:

- Link It

Alternative:

- Performance Tasks
- Extended Projects
- Modified tests independently prepared by the teacher

Key Vocabulary

- Power
- Exponent
- Base
- Exponential form
- Root**,** Cube root**,** Fourth root, etc.
- Radicand
- Root index
- Monomials
- Scientific notation
- Standard form
- Constant
- Evaluate
- Inverse
- Inverse operation
- Opposite
- Distributing
- Simplify
- Translate
- Linear equation
- Systems of linear equation

- Expression
- Equation
- Coefficient
- Term
- Substitution method
- Graphing method
- Elimination (with multiplication)
- Point of intersection

Resources& Materials

- Textbook (Glencoe Accelerated Pre-Algebra)
- SMARTBoard
- Calculator
- Teacher-made materials

Technology Infusion

Teacher Technology:

- www.khanacademy.com
- www.desmos.com
- Calculator-scientific
- SMARTBoard
- Chromebook
- www.factmonster.com

Student Technology:

- www.khanacademy.com
- www.desmos.com
- Calculator-scientific
- SMARTBoard
- Chromebook
- www.factmonster.com

Activities:

- Students will use scientific calculators to determine the square root of a number.
- Students will use www.desmos.com to find the solution to a system of equations.

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 Resources
Activities: ● Students will read and interpret texts in order to solve multi-step word problems. ● Students will compose written explanations of problem solving techniques so that their thinking is clear and supported by mathematical details, containing computation and appropriate vocabulary.

Standard	**Standard Description**
NJSLSA.SL4	Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

21st Century Life Skills:	
Activities: ● Students will work both individually and in collaborative groups to interpret and organize data and problem solve while utilizing varied strategies to complete a task. ● Students will discuss various solutions to a problem, communicating thinking effectively both verbally and in writing.	
Standard	**Standard Description**
9.4.8.IML.12	Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.

Careers:	
Activities: ● Students will complete the unit Performance Task which provides the opportunity to apply the concepts from this unit in real-world problem situations.	
Standard	**Standard Description**
CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.

Common Core State Standards for Mathematical Practice	
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.**

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Standards	
Standard #	Standard Description
8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.
8.EE.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.
8.EE.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9, and determine that the world population is more than 20 times larger*.
8.EE.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
8.EE.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.
8.EE.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.
8.EE.7	Solve linear equations in one variable.
8.EE.7a	Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).
8.EE.7b	Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
8.EE.8	Analyze and solve pairs of simultaneous linear equations.
8.EE.8a	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
8.EE.8b	Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example, $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6*.
8.EE.8c	Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair*.

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/ • Hands on 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

July 2022

Califon Public School
Curriculum

Subject: Pre-Algebra	Grade: 7th	Unit #:4	Pacing:Approximately 6 weeks
Unit Title:Geometry			

OVERVIEW OF UNIT*:*

Being that every algebra course needs a review, as well as application of those previously taught geometric concepts, this unit is designed to reflect as well as apply those topics needed to be covered before Algebra 1. Pythagorean Theorem, angle relationships, polygons, formulas with 2 and 3D figures, and congruent/similar polygons using ratios are included. Review classification/hierarchy of quadrilaterals.

Unit References	
Big Ideas	Essential Questions
• The shortest distance between two points is a straight line. The Pythagorean Theorem can be used to calculate it. • Understand congruence and similarity using angle relationships. • General formulas and basic geometric principles can be applied to any polygon. • Volume can be found for 3-dimensional figures in a real-world problem using the appropriate formula.	● How can the Pythagorean Theorem be used to find the missing side length in a right triangle and the distance between two points? ● What do the relationships between angles and sides tell us about polygons and other figures? ● What methods can be used to find similarity between two geometric figures? ● How can we apply calculating the volume of a figure to a real-world problem?
Objectives	
● Students will be able to use the Pythagorean Theorem to find the missing side length in a right triangle. ● Students will be able to use the Pythagorean Theorem to find the distance between two points. ● Students will be able to apply the relationships between angles and sides of a triangle to other polygons. ● Students will be able to find similarities between two geometric figures. ● Students will be able to use the volume of a figure as a real world problem.	

Assessments

Formative:

- Homework
- Skill sheets
- Classwork
- Projects
- Exit slips
- Teacher Observations
- Discussion
- Math Minutes

Summative:

- Quizzes
- Tests

Benchmark:

- Link It

Alternative:

- Performance Tasks
- Extended Projects
- Modified tests independently prepared by teacher

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Key Vocabulary	
● Hypotenuse ● Legs ● Transversal ● Complementary ● Supplementary ● Alternate exterior ● Alternate interior ● Adjacent ● Vertical ● Corresponding ● Acute angle	● Obtuse angle ● Right angle ● Straight angle ● Polygon (triangle, quadrilateral, - thru decagon) ● Quadrilaterals (parallelogram, rhombus, trapezoid, square& rectangle) ● Similar ● Congruence ● Cone ● Cylinder ● Sphere

Resources& Materials

- Textbook (Glencoe Math Accelerated Pre-Algebra)
- SMARTBoard
- Calculator
- Teacher-made materials

Technology Infusion

Teacher Technology:

- www.khanacademy.com
- www.desmos.com
- Calculator-scientific
- SMARTBoard
- Chromebook
- www.factmonster.com

Student Technology:

- www.khanacademy.com
- www.desmos.com
- Calculator-scientific
- SMARTBoard
- Chromebook
- www.factmonster.com

Activities:

- Students will use scientific calculators to find dimensions and then apply the Pythagorean Theorem to a triangle.

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 Resources

Activities:

- Students will read and interpret texts in order to solve multi-step word problems.
- Students will compose written explanations of problem solving techniques so that their thinking is clear and supported by mathematical details, containing computation and appropriate vocabulary.

Standard	Standard Description
NJSLSA.SL4	Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

21st Century Life Skills:	
Activities: ● Students will work both individually and in collaborative groups to interpret and organize data and problem solve while utilizing varied strategies to complete a task. ● Students will discuss various solutions to a problem, communicating thinking effectively both verbally and in writing.	
Standard	**Standard Description**
9.4.8.IML.12	Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.

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
8.G.1	Verify experimentally the properties of rotations, reflections, and translations:
8.G.1a	Lines are taken to lines, and line segments to line segments of the same length.
8.G.1b	Angles are taken to angles of the same measure.
8.G.1c	Parallel lines are taken to parallel lines.
8.G.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
8.G.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
8.G.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so*.
8.G.5	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so*.
8.G.6	Explain a proof of the Pythagorean Theorem and its converse.
8.G.7	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
8.G.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
8.G.9	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

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/ • Hands on 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

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Califon Public School
Curriculum

Subject: Pre-Algebra	Grade: 7th	Unit #:5	Pacing:Approximately 6 weeks
Unit Title: Bivariate Data			

OVERVIEW OF UNIT:

Connect and investigate patterns of association between proportional relationships in bivariate data.

Unit References	
Big Ideas	Essential Questions
• There are two types of relationships - linear and nonlinear. • A relationship between two quantitative variables can be represented in various ways - equation, graph, table.	• How does slope help us determine the relation between two quantities?
Objectives	
• Students will be able to use the slope of a line to determine the relationship between two quantities	
Assessment	
Formative: • Homework • Skill sheets • Classwork • Projects • Exit slips • Teacher observation • Discussion • Math Minutes	

Summative:

- Quizzes
- Tests

Benchmarks:

- Link It

Alternative:

- Performance tasks
- Extended Projects
- Modified tests independently prepared by teacher

Key Vocabulary

- Linear function
- Slope
- Coordinate plane
- Clusters
- Outliers
- Scatter plot
- Positive correlation
- Negative correlation
- No correlation
- Linear relationships
- Nonlinear relationships
- Equation

Resources& Materials

- Textbook (Glencoe Accelerated Pre-Algebra)
- SMARTBoard
- Calculator
- Teacher-made materials

Technology Infusion

Teacher Technology:

- www.khanacademy
- www.ixl.com/math
- www.desmos.com
- Calculator-scientific
- SMARTBoard
- Chromebook

- www.factmonster.com

Student Technology:

- www.khanacademy.com
- www.desmos.com
- Calculator-scientific
- SMARTBoard
- Chromebook
- www.factmonster.com

Activities:

- Students will use www.desmos.com to graph linear equations.

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 Resources

Activities:

- Students will read and interpret texts in order to solve multi-step word problems.
- Students will compose written explanations of problem solving techniques so that their thinking is clear and supported by mathematical details, containing computation and appropriate vocabulary.

Standard	Standard Description
NJSLSA.SL4	Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

21st Century Life Skills	
Activities: ● Students will work both individually and in collaborative groups to interpret and organize data and problem solve while utilizing varied strategies to complete a task. ● Students will discuss various solutions to a problem, communicating thinking effectively both verbally and in writing.	
Standard	**Standard Description**
9.4.8.IML.12	Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.

Careers:	
Activities: ● Students will work together on a project to interpret the results of a survey to determine the validity of their results as it relates to a real world problem.	
Standard	**Standard Description**
CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.

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.**

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Standards	
Standard #	Standard Description
8.SP.1	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
8.SP.2	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
8.SP.3	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. *For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height*.
8.SP.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

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/ • Hands on 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