Summit Public Schools
Summit, New Jersey
Grade Level: 9-12/ Content Area: Sheltered Foundations of Algebra

Overview:
Sheltered Foundations of Algebra establishes the core understandings necessary to succeed in future mathematical courses in conjunction with developing content-specific English language proficiency. Sheltered Foundations of Algebra is designed to expose nonnative speakers of English to the content-specific vocabulary and syntax along with algebraic and mathematical skills necessary to communicate and succeed in subsequent courses. The course will enhance students' linguistic and mathematical confidence when solving simple, complex, multi-step, and real-world problems. Students will grasp the language and algebraic concepts necessary for manipulating symbols in expressions, equations, and inequalities. This course will develop their ability to use numerical, algebraic, graphical, and verbal representations and analyze patterns, relations, and functions with the aid of visuals, graphic organizers, scaffolds, and differentiation. The course will deepen students' understanding of relations and linear functions by providing a repertoire of linguistic and algebraic tools. Additionally, students will learn the appropriate use of technology, such as graphing calculators, presentation softwares, and spreadsheet utilities to model and analyze a wide range of mathematical relationships. By differentiating based on student-level, routinely scaffolding lessons, and connecting concepts to real-life situations, the course will promote English Language Learners' development and engagement in mathematical and algebraic thinking.

Texts and Resources:
Big Ideas Math: Algebra 1 (Big Ideas Learning. ©2016)
Making Content Comprehensible for English Language Learners

Unit 1

Topic Developing Number Sense	Time Frame
Adding and subtracting integers (both negative and positive)	2
Multiplying and dividing signed numbers	2
Exponents	2
Order of operations	2
Mixed Practice	1
Assessment	1
Least Common Denominator + Factors + Simplifying Fractions	3
Adding and subtracting fractions	2
Multiplying and dividing fractions	2
Orders of operations with fractions	1
Mixed Practice	1
Assessment	1
Total	20 days

Unit 2

Topic Solving Linear Equations + Absolute Value	B.I.	Time Frame
Modeling Relations with variables		2
Solving one-step equations	1.1	2

Two-step equations	1.2	2
Combining Like Terms	1.2	2
Distributive Property in multi-step equations	1.2	2
Mixed Practice	1.1/1.2	1
Assessment	1.1/1.2	1
Equations with variables on both sides including grouping symbols	1.3	3
Identity and No Solution Equations	1.3	2
Mixed Practice	1.1-1.3	1
Assessment	1.1-1.3	1
Solving One-step Word Problems	1.1/1.2	2
Solving Multi-Step Word Problems	1.1-1.3	2
Mixed Practice	1.1-1.3	1
Assessment Word Problems	1.1-1.3	1
Absolute Value	1.4	2
Solving Absolute Value Equations	1.4	2
Solving Absolute Value Equations with operations outside of Absolute Value symbol	1.4	2
Mixed Unit Practice		2
Unit Assessment		1

Total		34 days

Quarter 2

Unit 3

Topic Decimals, Percents and Ratios	Time Frame
Decimals, Ratios and Percents	2
Simplifying Fractions & Proportions	2
Using percents to develop equations	2
Mixed Practice	1
Project applying percents including presentations	4
Total	11

Unit 4

Topic Solving Linear Inequalities	B.I.	Time Frame
Writing and graphing simple inequalities and testing a solution	2.1	2
Solving Inequalities with Addition and Subtraction	2.2	2
Solving Inequalities with Multiplication or Division	2.3	2
Mixed Practice	2.1-2.3	1
Assessment	2.1-2.3	1

Two step and variables on both sides inequalities	2.4	3
Inequalities with distributive property	2.4	2
Mixed Practice	2.4	1
Assessment	2.4	1
Writing compound inequalities and solving "and" inequalities	2.5	2
Solving and graphing "and" & "or" inequalities	2.6	2
Mixed Practice	2.5-2.6	1
Assessment	2.5-2.6	1
Word Problems One Step Inequalities	2.1-2.4	2
Word Problems Two Step Inequalities	2.5-2.6	2
Mixed Unit Practice	2.1-2.6	2
Unit Assessment	2.1-2.6	1
Total		28 days

Quarter 3

Unit 5

Topic Understanding Linear Relations & Functions	B.I.	Time Frame
Plotting ordered pairs and identifying quadrants	3.1	2
Positive, Negative, Horizontal, and Vertical Lines Graphing * Focusing on Rate of Change * * continuous & discrete graphs*	3.2	2

Mixed Practice	3.1/ 3.2	1
Checkpoint	3.1 / 3.2	1
Functions in different representations	3.1	1
Identify the independent and dependent variables	3.1	2
Determining if a relation is a function with graphs & define and identify Domain and Range of a function	3.1	2
Identifying linear functions from tables, graphs, and equations	3.1/3.2	2
Evaluating a function for a given domain	3.2	2
Writing equations in function notation and evaluating a function for a given domain	3.2	2
Solve and graph using function notation	3.3	2
Applying functions notation to application problems	3.3	2
Mixed Practice	3.1-3.3	2
Assessment	3.1-3.3	1
Total		24 Days

Unit 6

Topic Graphing and Writing Linear Functions	B.I.	Time Frame
Graphing a line given an equation in slope intercept form	3.5	2
Mixed Practice	3.5	1

Checkpoint	3.5	1
Writing Equation in Slope-Intercept Form given a Graph	4.1	2
Mixed Practice	4.1	1
Assessment	4.1	1
Horizontal and Vertical Line Slopes	3.4	1
Finding slope and y-intercept of a line or slope from two coordinates	4.2	4
Writing equations in slope-intercept form given a point and a slope	4.1	2
Linear models to solve problems	4.1/4.2	1
Mixed Practice	4.1 / 4.2	1
Assessment	4.1 / 4.2	1
Introducing Standard Form and Point-Slope Form	3.4	2
Graphing all types of Equations converting into Slope-Intercept Form	3.4 / 4.3	3
Mixed Practice	3.4-4.3	1
Assessment	3.4-4.3	1
Writing equations of parallel lines and perpendicular lines	4.3	3
Practice of graphing all types of equations	4.3	3
Practice of all types of equations with application	4.1-4.3	1
Mixed Unit Practice		2

Unit Assessment		1
Total		35 days

Quarter 4

Unit 7

Topic Solving Systems of Linear Equations	B.I.	Time Frame
Introduction of a system of equations, solution of a system, and solving by graphing	5.1	3
Determining if a coordinate is a solution and solving by graphing equations in different forms	5.1	2
Mixed Practice	5.1	1
Assessment	5.1	1
Solving by substitution when one variable is isolated	5.2	2
Solving by substitution by isolating a variable as the first step	5.2	2
Mixed Practice	5.2	1
Assessment	5.2	1
Solving by elimination with opposite coefficients	5.3	2
Multiplying equations using elimination	5.3	2
Mixed Practice	5.3	1
Assessment	5.3	1

No solution and infinitely many solution systems	5.1-5.4	2
Practice all types of systems and identifying when to use appropriate method	5.1-5.4	3
Unit Mixed Practice		2
Unit Assessment		1
Total		27 days

TOTAL 179 days

Unit 1: <mark>Developing Number Sense</mark>

Big Ideas: *Course Objectives/Content Statement(s)*

- Clear and strong understanding of operations involving rational numbers
- Identify least common denominator and least common multiple between two rational numbers
- Apply mathematical understanding of the order of operations
- Analyze, simplify and reduce fractions

Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*
- How does rational numbers affect our daily life? - How does analyzing, simplifying, and reducing fractions develop a deeper understanding of fractions? - How does one apply the order of operations to complex, multi-step mathematical expressions? - What is the purpose of identifying least common denominator and least common multiples? :	**Students will understand that:** - Rational numbers and operations are heavily integrated in daily lives especially when using money, going shopping, and making meals. - Being comfortable with analyzing, simplifying, and reducing fractions help develop an understanding of fractions. - The order of operations facilitate computing complex multi-step mathematical expressions. - Identifying the least common denominator and least common multiples strengthen our ability to divide rational numbers and simplify fractions.
1Areas of Focus: Proficiencies **(New Jersey Student Learning Standards)**	**Lessons**

Students will:

NJSLA7.NS.1: Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

NJSLA7.NS.2: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.

NJSLA7.NS.3: . Solve real-world and mathematical problems involving the four operations with rational numbers.

Career-Ready Practices

CRP1: Act as a responsible and contributing citizen and employee.

CRP2: Apply appropriate academic and technical skills.

CRP3: Attend to personal health and financial well-being.

CRP4: Communicate clearly and effectively and with reason.

CRP5: Consider the environmental, social and economic impacts of decisions.

CRP6: Demonstrate creativity and innovation.

CRP7: Employ valid and reliable research strategies.

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

CRP9: Model integrity, ethical leadership and effective management.

CRP10: Plan education and career paths aligned to personal goals.

CRP11: Use technology to enhance productivity.

CRP12: Work productively in teams while using cultural global competence.

Lesson 1:
- Adding and Subtracting Positive and Negative Integers

Students will :
  - Use a number line system to add and subtract positive and negative integers
  - Understand negative + negative makes a smaller number while a negative - negative becomes larger.

Lesson 2:
- Multiplying and Dividing Positive and Negative Integers

Students will:
  - Use a number line system to multiply and divide positive and negative integers
  - Understand the rules of multiplication and division with negative numbers

Lesson 3:
- Exponents

Students will:
  - Understand how exponents work

Lesson 4:
- Order of Operations

Students will:
  - Apply the order of operations

Lesson 5:
- Fractions

Students will:
  - Add / Subtract / Multiply / Divide Fractions
  - Learn how to simplify fractions
  - Learn how to find multiples of numbers
  - Understand how to find the least common denominator
  - Use order of Operations with Fractions

Differentiation	**Assessments**
Interdisciplinary Connections - English language development is integrated into the curriculum as students develop vocabulary and syntax necessary to communicate.	**Formative Assessments:** - Graphic Organizers with Vocabulary, Examples, and Practice Problems - Quizizz Vocabulary Reviews

Technology Integration
- Use a scientific calculator to explore multi-step problems. Introduce advanced functions (grouping symbols and memory functions).

- Digital textbook for instruction and support outside of the classroom.

Supports for English Language Learners		
Sensory Supports	**Graphic Supports**	**Interactive Supports**
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups
Pictures	Tables	In a whole group
Illustrations, diagrams & drawings	Graphs	Using cooperative group
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**
Allow for verbal	Multi-sensory	Modified

- Mixed Practice Review
- Content-Specific Language Speaking and Writing Activities

Summative Assessments, Projects, and Celebrations:

- Interactive Vocabulary Assessment
- 2 Assessments

responses	techniques	tasks/expectations
Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback	Differentiated materials
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews, anticipatory guides, and semantic mapping	Modified assessment grading

Unit 1: Developing Number Sense

Academic Vocabulary:	Academic Discourse and Syntax:
Numbers (i.e. -1,000-1,000) Number Line Negative and Positive Expression and Equation Operation Symbols Operations (addition, subtraction, multiplication, division) Operation verbs (add, subtract, minus, multiply, divide) Order of Operations Coefficient and Variable Substitution Parentheses Exponents (base, power, to the _____) Fractions (over, whole, half, third, etc.) Numerator and Denominator Reciprocal Simplify and Reduce Least Common Denominator Factors and Multiples Equivalent Fractions	Where is this number on the number line? What is _____ ((plus/minus/times/divided by) _____? What operation do you do (first/after/last) in this expression? What operation do you do with coefficients and variables? What is the least common denominator? How can you reduce this fraction? Addition: "_____ plus_____ equals _____" Subtraction: "_____ minus _____ equals _____" Multiplication: "_____ times/multiplied by _____ equals _____" Division: "_____ divided by/ over_____ equals _____" Order of Operations: "First, _____." "Then, _____." "Finally, _____." Variables: "Substitute _____ for the variable" Fractions: "_____ over _____ (plus/minus/times/divided by) _____ over _____ equals _____ over _____" "The reciprocal is _____ over _____" "_____ over _____ is equal to _____ over _____"

Unit 2: Solving Linear Equations + Absolute Value
Big Ideas: *Course Objectives/Content Statement(s)*

- Solve single variable linear equations using the order of operations and inverse operations
- Distinguish between equations with infinite or no solutions
- Understand and apply the concept of absolute value

Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	Enduring Understandings *What will students understand about the big ideas?*
- How can we apply absolute value to real world applications? - How do we build equations from real-life situations? - How do we solve complex multi-step linear equations? - In which situations, do infinite solutions or no solutions exist? :	**Students will understand that:** - Real world situations use absolute value since it implies distance. - Real-life situations often involve solving complex, multi-step situations. - Applying the mathematical concept of inverse operations and order of operations help find a solution to linear equations. - Multi-step equations can result in infinite solutions when both sides are equal, and no solution exists when dividing by zero.
Areas of Focus: Proficiencies **(New Jersey Student Learning Standards)**	**Lessons**
Students will: NJSLA.AREI.A: Understand solving equations as a process of reasoning and explain the reasoning NJSLA.A.REI.B: Solve equations and inequalities in one variable NJSLA.A.CED.A: Create equations that describe numbers or relationships **Career-Ready Practices** **CRP1**: Act as a responsible and contributing citizen and employee. **CRP2**: Apply appropriate academic and technical skills. **CRP3**: Attend to personal health and financial well-being. **CRP4**: Communicate clearly and effectively and with reason. **CRP5**: Consider the environmental, social and economic	**Lesson 1:** - Modeling Relations with Variables Students will: - understand what a variable is - Model real life situations **Lesson 2:** - Solving One and Two Step Linear Equations Students will: - Solve use opposite operations to solve for a missing variable **Lesson 3:** - Combining Like Terms and Distributive Property Students will: - Understand how to combine like terms on one side of the equation - Learn how to distribute within an equation **Lesson 4:** - Solving Linear Equations with Variables on Both sides of the equation

impacts of decisions.

CRP6: Demonstrate creativity and innovation.

CRP7: Employ valid and reliable research strategies.

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

CRP9: Model integrity, ethical leadership and effective management.

CRP10: Plan education and career paths aligned to personal goals.

CRP11: Use technology to enhance productivity.

CRP12: Work productively in teams while using cultural global competence.

Students will:
- Solve use combining like terms, distributive property and opposite operations to solve for a missing variable

Lesson 5:
- Identifying No Solution and Identity Equations

Students will:
- Recognize when there is no solution and infinitely many solutions

Lesson 6:
- Solving One + Multiple Step Word Problems with one Variable

Students will:
- Model and solve one step word problems with one variable
- Apply and solve two step word problems with one variable

Lesson 7:
- Absolute Value Equations

Students will:
- Understand absolute value in terms of distance from 0
- Solve absolute value equations
- Recognize when there is no solution in an absolute value equation

Differentiation	Assessments

Interdisciplinary Connections
- English language development is integrated into the curriculum as students develop vocabulary and syntax necessary to communicate.

Technology Integration
- Use a scientific calculator to explore multi-step problems. Introduce advanced functions (grouping symbols and memory functions).

- Digital textbook for instruction and support outside of the classroom.

Supports for English Language Learners

Formative Assessments:
- Graphic Organizers with Vocabulary, Examples, and Practice Problems
- Quizizz Vocabulary Reviews
- Mixed Practice Review
- Content-Specific Language Speaking and Writing Activities

Summative Assessments, Projects, and Celebrations:
- Interactive Vocabulary Assessment
- 3 checkpoints
- 1 Unit Assessment

Sensory Supports	Graphic Supports	Interactive Supports
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups
Pictures	Tables	In a whole group
Illustrations, diagrams & drawings	Graphs	Using cooperative group
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies

Accommodations	Interventions	Modifications
Allow for verbal responses	Multi-sensory techniques	Modified tasks/expectations
Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback	Differentiated materials
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews,	Modified assessment grading

	anticipatory guides, and semantic mapping		

Unit 2: Solving Linear Equations + Absolute Value

Academic Vocabulary:	Academic Discourse and Syntax:
Coefficient and Variable Solve for Isolate variable Solution One-step, two-step, multi-step equations Equation (equals sign/symbol, equal to) Inverse or Opposite Operations (undo) Combine Like Terms Distribution (distribute, multiply, coefficient, parentheseses) Both Sides Word Problems (hours, dollars, etc.) Per Left Amount (original, initial, total, etc.) Price Absolute Value Distance Zero, No Solution, and Infinitely Many Solutions Arrows Set or Build Equations Plot or graph solutions	How do we solve this equation? What is the inverse or opposite of _____ [operation]? What operation do you do with coefficients and variables? How many…? How much…? Addition is the opposite operation to subtraction. Multiplication is the opposite operation to division What you do on one side, you have to do to the other. When you insert a number for the variable, you multiply by the coefficient. "The variable is equal to _____." "The solution(s) is/are _____." "There are (no solutions/infinitely many solutions because..." "The total is…" "[Variable] is equal to _____." "I _____ [operation] because…" Order of Solving Equations: "First, I _____." "Then, I _____." "Finally, I _____."

Unit 3: <mark>Decimals, Percents, and Ratios</mark>

Big Ideas: *Course Objectives/Content Statement(s)*

- Determine the difference between decimals, percents, and ratios
- Apply the mathematical understanding of percents, decimals and ratios in solving real-world problems

Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*
● How do percentages, ratios, and decimals relate to our daily lives?	**Students will understand that:**

● How do we build equations involving percentages, decimals, and ratios to solve problems from real-life situations? :	● Understanding operations and conversions with percentages, ratios, and decimals are necessary real-life skills. ● Real-life situations such as shopping, cooking, and banking often involve solving equations with ratios, percentages, and decimals.
Areas of Focus: Proficiencies **(New Jersey Student Learning Standards)**	**Lessons**

Students will:
 NJSLA.A.SSE.B: Write expressions in equivalent forms to solve problems
 	
 NJSLA.A.APR.D:. Rewrite rational expressions
 	
 Career-Ready Practices
 CRP1: Act as a responsible and contributing citizen and employee.
 CRP2: Apply appropriate academic and technical skills.
 CRP3: Attend to personal health and financial well-being.
 CRP4: Communicate clearly and effectively and with reason.
 CRP5: Consider the environmental, social and economic impacts of decisions.
 CRP6: Demonstrate creativity and innovation.
 CRP7: Employ valid and reliable research strategies.
 CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.
 CRP9: Model integrity, ethical leadership and effective management.
 CRP10: Plan education and career paths aligned to personal goals.
 CRP11: Use technology to enhance productivity.
 CRP12: Work productively in teams while using cultural global competence.
	Lesson 1:
	 ● Decimals, Ratios, and Percents
	
	 Students will :
	     ○ Convert between fractions, ratios and percents
	     ○ Understand in all forms the amount still remains the same
	
	 Lesson 2:
	 ● Simplifying Fractions and Proportions
	 Students will:
	     ○ Practice finding the least common denominator
	     ○ Identify Ratios that are proportional to one another
	 Lesson 3:
	 ● Operations with Percentages in Equations
	 Students will:
	     ○ Perform operations with percentages
	     ○ Model real life equations with percentages and Decimals
	 Lesson 4:
	 ● Project with Percentages and Decimals
	 Students will:
	     ○ Apply their knowledge to a real life situation involving percentages and decimals
	     ○

Differentiation	**Assessments**
Interdisciplinary Connections ● English language development is integrated into the curriculum as students develop vocabulary and syntax necessary to communicate. ● Financial literacy will be taught during the final	**Formative Assessments:** ● Graphic Organizers with Vocabulary, Examples, and Practice Problems ● Quizizz Vocabulary Reviews ● Mixed Practice Review

unit project since students will create a budget, shopping list and computing discounts.

Technology Integration
- Use a scientific calculator to explore multi-step problems. Introduce advanced functions (grouping symbols and memory functions).

- Digital textbook for instruction and support outside of the classroom.

Supports for English Language Learners		
Sensory Supports	**Graphic Supports**	**Interactive Supports**
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups
Pictures	Tables	In a whole group
Illustrations, diagrams & drawings	Graphs	Using cooperative group
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**

- Content-Specific Language Speaking and Writing Activities

Summative Assessments, Projects, and Celebrations:
- 1 Interactive Project

Allow for verbal responses	Multi-sensory techniques	Modified tasks/expectations
Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback	Differentiated materials
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews, anticipatory guides, and semantic mapping	Modified assessment grading

Unit 3: Decimals, Percents, and Ratios

Academic Vocabulary:	Academic Discourse and Syntax:
Decimal (point, tenths, hundreths, etc.) Percentage Ratio and portions Convert Buy Cost Transfer Price Total (original, after coupon) Coupon Discount Budget Left Bill Wish List Item Quantity	What is _____ % of $_____? How much is a $_____ item if it is _____% off? How much is the total bill? How many can the person buy with $_____? How much money do you have left? "The _____ ratio/decimal/percentage] is equal to _____ [ratio/decimal/percentage]." Justifying Work: "First, I _____." "Then, I _____." "Finally, I _____." "The cost after the coupon is _____." "The total bill is…" "I have $_____ left after shopping."

Unit 4: Solving Linear Inequalities
Big Ideas: *Course Objectives/Content Statement(s)* ● Develop an understanding of inequalities and the rules and rules and concepts involved

- Interpreting and graphing solutions sets in relation to inequalities and visual representations
- Distinguishing the similarities and differences between solving equations and inequalities
- Determining the qualities of different types of compound inequalities
- Relate solutions of simple and compound qualities to visual representations such as graphs and number lines

Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	Enduring Understandings *What will students understand about the big ideas?*
- What do inequalities represent? - How do we use visual representations to understand boundaries of solution sets? - How do mathematical models help us represent inequalities? - How do we distinguish between different compound inequalities?	**Students will understand that:** - Inequalities represent relations between two expressions that are not equal to each other, but follow a similar structure and order of operations as equations. - Graphing inequalities on number lines help us identify boundaries of solution sets. - Mathematical models help us represent inequalities as well as the multiple solutions rendered from solving inequalities. - Compound inequalities allow for multiple boundaries and represent a union or intersection of solution sets.
Areas of Focus: Proficiencies **(New Jersey Student Learning Standards)**	**Lessons**

Students will:
NJSLA.A.REI.B: Solve equations and inequalities in one variable
 	
NJSLA.A.REI.D: Represent and solve equations and inequalities graphically
 	
Career-Ready Practices
CRP1: Act as a responsible and contributing citizen and employee.
CRP2: Apply appropriate academic and technical skills.
CRP3: Attend to personal health and financial well-being.
CRP4: Communicate clearly and effectively and with reason.
CRP5: Consider the environmental, social and economic impacts of decisions.
CRP6: Demonstrate creativity and innovation.
CRP7: Employ valid and reliable research strategies.
CRP8: Utilize critical thinking to make sense of problems
	Lesson 1:
	- Writing and Graphing Simple Linear Inequalities
	
	Students will :
	    ○ Graph simple linear inequalities ($x > 7$)
	    ○ Test numbers to see if they satisfy their inequalities
	Lesson 2:
	- Solving One Step Inequalities with Addition,Subtraction. Multiplication and Division
	
	Students will:
	    ○ Use opposite operations to solve inequalities
	    ○ Graph their final solution on a number line
	
	Lesson 3:
	- Solving Two Step Inequalities with Addition, Subtraction. Multiplication and Division

and persevere in solving them.
CRP9: Model integrity, ethical leadership and effective management.
CRP10: Plan education and career paths aligned to personal goals.
CRP11: Use technology to enhance productivity.
CRP12: Work productively in teams while using cultural global competence.

Students will:
- Use opposite operations to solve inequalities
- Use the distributive property and combining like terms to solve inequalities
- Graph their final solution on a number line

Lesson 4:
- Compound Inequalities in Different Forms "and" "or"

Students will:
- Solve and understand the difference between compound inequalities with "and" verses compound inequalities with "or"
- Use opposite operations to solve compound inequalities
- Graph their final solution on a number line
- Identify when there is no solution in a compound Inequality

Lesson 5:
- Word Problem Application

Students will:
- Model and apply their knowledge about inequalities to real life situations
- Test solutions to see if they satisfy their inequalities

Differentiation	Assessments
Interdisciplinary Connections ● English language development is integrated into the curriculum as students develop vocabulary and syntax necessary to communicate. **Technology Integration** ● Use a scientific calculator to explore multi-step problems. Introduce advanced functions (grouping symbols and memory functions). ● Digital textbook for instruction and support outside of the classroom.	**Formative Assessments:** ● Graphic Organizers with Vocabulary, Examples, and Practice Problems ● Quizizz Vocabulary Reviews ● Mixed Practice Review ● Content-Specific Language Speaking and Writing Activities **Summative Assessments, Projects, and Celebrations:** ● 3 Checkpoints ● 1 Unit assessment

Supports for English Language Learners		
Sensory Supports	**Graphic Supports**	**Interactive Supports**
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups
Pictures	Tables	In a whole group
Illustrations, diagrams & drawings	Graphs	Using cooperative group
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**
Allow for verbal responses	Multi-sensory techniques	Modified tasks/expectations
Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback	Differentiated materials
Permit response	Increase	Individualized

provided via computer or electronic device	opportunities to engage in active academic responding	assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews, anticipatory guides, and semantic mapping	Modified assessment grading

Unit 4: Solving Linear Inequalities

Academic Vocabulary:	Academic Discourse and Syntax:
Inequality Symbols Equal to Less than Greater than Solution Set Test Graph inequality Open or Closed Circle Shade (right, left, together, separate, between, outside) Compound Ineqaulities (and, or) Solve inequality Operations (inverse) Flip Sign or Symbol	Is this a solution to inequality? Do we put an open or closed circle? Do you shade to the right or to the left? What are the steps to solve this inequality? "_____ [number] is [not] a solution to the inequality." "X [variable] is [less than/greater than/less than or equal to/greater than or equal to] _____ [number]." "[Open/closed] circle on _____ [number] shaded to the _____ [right/left]." "X [variable] is [less than/greater than/less than or equal to/greater than or equal to] _____ [number] [AND/OR] _____ X [variable] is [less than/greater than/less than or equal to/greater than or equal to] _____ [number]." "[Open/closed] circle on _____ [number] and _____ [number] shaded to _____ [together/seperate]." Steps to Solve Compound Inequalities: "[First, After, Then, Finally], I _____."

Unit 5: <mark>Understand Linear Relations and Functions</mark>
Big Ideas: *Course Objectives/Content Statement(s)* ● Develop an understanding of the properties of relations and functions ● Interpret and analyze different graphic and written representations of relations and functions ● Identify linear functions from tables, graphs, and equations ● Apply understanding of linear equations to applications problems

Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*

- What are the key properties of relations and functions? - How do we use visual representations to understand relations and functions? - How do mathematical models such as graphs, tables, and equations help us represent linear functions? - How can we apply our understanding of linear function representation to real-life situations? - How do different parts and representations of linear function translate to a graph?	**Students will understand that:** - Linear functions have specific properties including each element of the domain has one matching element of the range. - Graphs, tables, and equations are different representations for relations and linear functions. - Mathematical models help us represent linear functions as well as identify multiple solutions of the relation or function. - Real-life situations involving linear functions can be analyzed and interpreted through tables, graphs, and equations. - Linear functions in forms of equations, tables, and maps can be translated into graphs by developing an understanding of the independent and dependent variables along with determining the domain and range.
Areas of Focus: Proficiencies **(New Jersey Student Learning Standards)**	**Lessons**
Students will: NJSLA.F-IFA: Understand the concept of a function and use function notation NJSLA.F-IFC: Analyze functions using different representations NJSLA.F-BF.A: Build a function that models a relationship between two quantities **Career-Ready Practices** **CRP1**: Act as a responsible and contributing citizen and employee. **CRP2**: Apply appropriate academic and technical skills. **CRP3**: Attend to personal health and financial well-being. **CRP4**: Communicate clearly and effectively and with reason. **CRP5**: Consider the environmental, social and economic impacts of decisions. **CRP6**: Demonstrate creativity and innovation. **CRP7**: Employ valid and reliable research strategies. **CRP8**: Utilize critical thinking to make sense of problems and persevere in solving them. **CRP9**: Model integrity, ethical leadership and effective	**Lesson 1:** - Plotting ordered pairs and identifying quadrants Students will : - Understand x-coordinate moves left to right and y-coordinate moves up and down - Identify the different quadrants - Plot an ordered pair **Lesson 2:** - Positive, Negative, Horizontal and Vertical Lines with Rate of Change Students will: - Identify different type of lines - Understand what Rate of Change Is - Begin to see correlation with positive rate of change with positive lines, negative rate of change with negative lines, zero rate of change with horizontal lines, and no rate of change in vertical lines - Identify continuous vs discrete graphs **Lesson 3:** - Functions with Different Representation

management.

CRP10: Plan education and career paths aligned to personal goals.

CRP11: Use technology to enhance productivity.

CRP12: Work productively in teams while using cultural global competence.

Students will:
  - ○ Determine if there is a positive, negative or zero rate of change in a table, mapping diagram and graph

Lesson 4:
  ● Identifying Independent and Dependent Variables

Students will:
  - ○ Identify independent and dependent variables
  - ○ Learn x variable is independent and y variable is dependent

Lesson 5:
  ● Determining if a Relation is a Function

Students will:
  - ○ Use and understand vertical line test
  - ○ Understand and Identify domain and range of different relations to test if they are functions or not

Lesson 6:
  ● Linear Functions

Students will:
  - ○ Identify what is a linear function
  - ○ Identify slope of line given an equation
  - ○ Evaluate a linear function given a specific domain
  - ○ Graph a linear function based on a specific domain
  - ○ Apply and model to real life situations

Differentiation	Assessments
Interdisciplinary Connections ● English language development is integrated into the curriculum as students develop vocabulary and syntax necessary to communicate. ● Financial Literacy is included in the unit since students' will model real-life situations with representations of linear functions.	**Formative Assessments:** ● Graphic Organizers with Vocabulary, Examples, and Practice Problems ● Quizizz Vocabulary Reviews ● Mixed Practice Review ● Content-Specific Language Speaking and Writing Activities

Technology Integration
- Use a scientific calculator to explore multi-step problems. Introduce advanced functions (grouping symbols and memory functions).

- Digital textbook for instruction and support outside of the classroom.

Supports for English Language Learners		
Sensory Supports	**Graphic Supports**	**Interactive Supports**
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups
Pictures	Tables	In a whole group
Illustrations, diagrams & drawings	Graphs	Using cooperative group
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**
Allow for verbal	Multi-sensory	Modified

- Content-Specific Language Speaking and Writing Activities

Summative Assessments, Projects, and Celebrations:
- 2 Checkpoints
- 1 Unit assessment

responses	techniques	tasks/expectations
Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback	Differentiated materials
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews, anticipatory guides, and semantic mapping	Modified assessment grading

Unit 5: Understanding Linear Functions

Academic Vocabulary:	Academic Discourse and Syntax:
Plot Quadrants Coordinate Plane Horizontal and Vertical Distance (right, left, up, down) X and Y-axises Negative Axises (Left, down) Positive Axises (right, up) Ordered Pair X and Y-coordinates Input and Output Connect Points Horizontal, Vertical, Negative and Positive Lines Input-Output Tables, Mapping Diagrams and Graphs Independent and Dependent Variables Relationships, Relations, and Functions Vertical Line Test Domain and Range Linear Function Rate of Change and Slope Pattern Complete Table Substitute Evaluate	Which direction do you go when plotting? If I have a _____ x-coordinate and a _____ y-coordinate which quadrant am I in? Which variable represents the [independent/dependent] variable? What operation do you do with coefficients and variables? What is the domain and range of this function? Is there a pattern in the output? Is there a rate of change? Is this relation a function? When you insert a number for the variable, you multiply by the coefficient. "The ordered pair is _____, so I go _____ to the [left, right] then _____ [up, down]." "The [vertical/horizontal] distance is _____," "The line is [horizontal/vertical/negative/positive] "This relation [is/is not] a function because…" "The [domain/range] is _____ [number] is [less than/greater than] or equal to [x/y] and [x/y] is [less than/greater than] or equal to _____ [number]." "The rate of change is _____." "Substitute the _____ for the input or x."

Unit 6: <mark>Graphing and Writing Linear Functions</mark>

Big Ideas: *Course Objectives/Content Statement(s)*

- Identify different parts of linear functions and demonstrate how those parts relate on a graph
- Recognize and graph linear functions in a variety of equation forms
- Interpret and write in slope-intercept form and manipulate equation forms into slope-intercept form to facilitate graphing and solving
- Write linear equations from given information such as graph, points, tables, or slope
- Define and evaluate slope utilizing tables, graphs, and points
- Understand the characteristics and classify vertical, horizontal, parallel, and perpendicular lines
- Write equations for different types of lines such as vertical, horizontal, parallel, and perpendicular lines
- Compare and contrast properties of different linear equation forms

Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	**Enduring Understandings** *What will students understand about the big ideas?*
- How do the different parts of a linear equation translate into a graph? - What does the slope of the line represent? - How do you calculate slope? - How is the slope and y-intercept of a linear function represented on the graph? - What are the common characteristics of vertical and horizontal lines when using graphs or equations? - How are different forms of linear equation forms, such as slope-intercept, point-slope, and standard form, related? - How can we represent different data sets or real-life models in a written linear function? - What are the common characteristics of parallel and perpendicular lines when using graphs or equations? - What are the advantages and disadvantages of different equation forms of linear functions? - How can we apply writing linear equations to real world settings and situations?	**Students will understand that:** - Linear functions can be graphed using the x and y-axes on a coordinate plane. - The slope of the line represents a constant rate of change and determines the steepness of a line on a graph. - Slope can be calculated by analyzing rate change on a graph, using slope formula from two points, or identifying the x's coefficient on the slope-intercept form. - The y-intercept is the point on the y-axis which occurs when x is zero, and it is often a common starting point in real-life linear models. - Vertical lines are not linear functions since they have the same input and for different outputs. Therefore they have undefined slopes. - Horizontal lines have different inputs and the same output Therefore they have a slope of 0. - Linear equations in various forms can be manipulated using inverse operations to convert between the different forms. - Linear functions can be written from different representations such as graphs, tables, or other equations, and they can be calculated with a given slope and ordered pairs, two ordered pairs, or slope and y-intercept. - Parallel lines have the same slope and perpendicular lines have opposite reciprocal slope,

	and these lines can be classified using various representations such as graphs, slopes, linear equations, or tables.
Areas of Focus: Proficiencies **(New Jersey Student Learning Standards)**	**Lessons**
Students will: NJSLA.A.REI.B: Solve equations and inequalities in one variable NJSLA.A.REI.D: Represent and solve equations and inequalities graphically **Career-Ready Practices** **CRP1**: Act as a responsible and contributing citizen and employee. **CRP2**: Apply appropriate academic and technical skills. **CRP3**: Attend to personal health and financial well-being. **CRP4**: Communicate clearly and effectively and with reason. **CRP5**: Consider the environmental, social and economic impacts of decisions. **CRP6**: Demonstrate creativity and innovation. **CRP7**: Employ valid and reliable research strategies. **CRP8**: Utilize critical thinking to make sense of problems and persevere in solving them. **CRP9**: Model integrity, ethical leadership and effective management. **CRP10**: Plan education and career paths aligned to personal goals. **CRP11**: Use technology to enhance productivity. **CRP12**: Work productively in teams while using cultural global competence.	**Lesson 1:** ● Linear Functions in Slope Intercept Form Students will: ○ Identify what is a linear function ○ Understand what a y-intercept is ○ Identify slope of line given an equation ○ Evaluate a linear function given a specific domain ○ Graph a linear function based on a specific domain in slope-intercept form ○ Write an equation in slope-intercept form given two points ○ Apply and model to real life situations **Lesson 2:** ● Linear Functions in Standard Form Students will: ○ Understand what a x and y-intercept is ○ Graph linear functions in Standard form ○ Write an equation in standard form given two points ○ Convert from standard form to slope intercept form **Lesson 3:** ● Linear Functions in Point Slope Form Students will: ○ Use the distributive property to convert from point-slope form to slope intercept form ○ Graph linear functions in Point Slope Form ○ Write an equation in standard form given two points **Lesson 4:** ● Horizontal and Vertical Lines

Students will:
- o Identify horizontal and vertical lines based on equations
- o Graph horizontal and vertical lines
- o Recognize horizontal lines have a slope of zero and vertical lines have no slope
- o Recognize horizontal lines only have an x-intercept. Equations are x=
- o Recognize vertical lines only have a y-intercept. Equations are y=

Lesson 5:
- Parallel and Perpendicular Lines

Students will:
- o Identify parallel and perpendicular lines based on equations and graphs
- o Recognize parallel lines have the same slope and perpendicular lines have slopes that are opposite reciprocals of one another based on an equation
- o Graph parallel and perpendicular lines in a coordinate plane

Lesson 6:
- Word Problem Application

Students will:
- o Model and apply linear functions to real life situations

Differentiation	Assessments
Interdisciplinary Connections • English language development is integrated into the curriculum as students develop vocabulary and syntax necessary to communicate. • Financial literacy is embedded in this unit as students interpret financial situations regarding linear functions. **Technology Integration** • Use a scientific calculator to explore multi-step problems. Introduce advanced functions (grouping symbols and memory functions).	**Formative Assessments:** • Graphic Organizers with Vocabulary, Examples, and Practice Problems • Quizizz Vocabulary Reviews • Mixed Practice Review • Content-Specific Language Speaking and Writing Activities **Summative Assessments, Projects, and Celebrations:** • 5 Checkpoints • 1 Unit assessment

- Digital textbook for instruction and support outside of the classroom.

Supports for English Language Learners		
Sensory Supports	**Graphic Supports**	**Interactive Supports**
Real-life objects	Charts	In pairs or partners
Manipulatives	Graphic Organizers	In triands or small groups
Pictures	Tables	In a whole group
Illustrations, diagrams & drawings	Graphs	Using cooperative group
Magazines & Newspapers	Timelines	Structures
Physical activities	Number lines	Internet / Software support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**
Allow for verbal responses	Multi-sensory techniques	Modified tasks/expectations
Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding,	Differentiated materials

	feedback	
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews, anticipatory guides, and semantic mapping	Modified assessment grading

Unit 6: Graphing and Writing Linear Functions

Academic Vocabulary:	Academic Discourse and Syntax:
Linear Equation Forms Slope X and Y-intercept Ordered Pair Graph Line Slope-Intercept Form Isolate the variable Rise over Run Positive, Negative, Horizontal, and Vertical Slope and Lines Zero and Undefined Slope Slope Formula Substitution Insert Standard Form Point-Slope Form Distributive Property (distribute, multiply) Parallel, Perpendicular, and Neither Equivalent and Inverse Reciprocal Slopes Point of Intersection Title and Label Graph (independent, dependent, scale) Initial Amount Fee (initial, annual)	Do we have the slope? Do we have a y-intercept (b)? What input value tells you the y-intercept? What is the [input/output/x-intercept/y-intercept/slope]? What type of line is this going to be? What do we need to write in slope-intercept form? What form is this line in? Slope is the change in y over the change in x. When you insert a number for the variable, you multiply by the coefficient. "The initial amount is…" "If the input is _____ [number], the output is. _____." "The [slope/y-intercept/ordered pair] is _____." "The line is [positive/negative/horizontal/vertical] because it has _____ slope." "The output value is _____ after I substitute the input value." "These lines are [parallel/perpendicular/neither] because…" Steps to write a linear equation: "[First, After, Then, Finally], I _____."

Unit 7: Solving Systems of Linear Equations

Big Ideas: *Course Objectives/Content Statement(s)*
● Identify and graph systems of linear equations to facilitate finding a solution ● Solve systems of equations utilizing various methods such as graphing, elimination, and substitution ● Differentiate between systems of linear equations with one solution, no solution, or infinitely many solutions ● Analyze and distinguish an appropriate method for solving a system of linear equations

Essential Questions *What provocative questions will foster inquiry, understanding, and transfer of learning?*	Enduring Understandings *What will students understand about the big ideas?*
● What does it mean to solve a system of linear equations? ● Where on a graph can you identify the coordinate that is a solution to more than one equation simultaneously? ● How can a system of equations with one, infinite, or no solutions be represented graphically and algebraically? ● How can we use algebraic thinking to solve for the coordinate that is the solution to a system of equations? ● How can we determine the method for solving linear equations in each scenario?	**Students will understand that:** ● To solve a system of equations, one must find an input and output value or coordinate point that both linear equations have in common. ● A solution to a system of equations is the coordinate point that both linear functions have in common, so it can be identified on the graph as a point of intersection for those who have one solution. ● A system of linear equations can have one solution, no solution, or infinite solutions. ● Graphs of systems of equations can have one point of intersection, no points of intersection, or infinite points of intersection. ● Systems of equations with no solution do not have a point of intersection while systems of equations with infinite solutions have intersect infinitely which mean they are equal linear functions. ● Systems of equations can be solved by graphing lines, using substitution, or using elimination. ● By analyzing the form of each linear equation, one can distinguish which method, graphing, substitution, or elimination, would facilitate calculating or identifying the solution to the system of equations.

Areas of Focus: Proficiencies (New Jersey Student Learning Standards)	Lessons
Students will: NJSLA.A.REI.C: Solve systems of equations NJSLA.A.REI.D: Represent and solve equations and inequalities graphically	**Lesson 1:** ● Solution to a system Students will : ○ Understand what a solution to a system is

Career-Ready Practices **CRP1**: Act as a responsible and contributing citizen and employee. **CRP2**: Apply appropriate academic and technical skills. **CRP3**: Attend to personal health and financial well-being. **CRP4**: Communicate clearly and effectively and with reason. **CRP5**: Consider the environmental, social and economic impacts of decisions. **CRP6**: Demonstrate creativity and innovation. **CRP7**: Employ valid and reliable research strategies. **CRP8**: Utilize critical thinking to make sense of problems and persevere in solving them. **CRP9**: Model integrity, ethical leadership and effective management. **CRP10**: Plan education and career paths aligned to personal goals. **CRP11**: Use technology to enhance productivity. **CRP12**: Work productively in teams while using cultural global competence.	○ Identify where to find a solution to a system of linear functions ○ Identify how many solutions to a system there are ○ Test an ordered pair to see if it is a solution to a system **Lesson 2:** ● Solving a System of Linear Equations Students will: ○ Solve a system of equations algebraically using substitution or elimination ○ Test their solution to see if it satisfies the system **Lesson 3:** ● Graph a System of Linear Equations Students will: ○ Solve a system of equations graphically ○ Identify and test the ordered pair to see if it is a solution. **Lesson 4:** ● Systems with no or infinitely many solutions Students will: ○ Solve systems of equations algebraically and graphically ○ Identify when a system has infinitely many graphically, same line ○ Identify when there is no solution graphically, parallel lines ○ Identify when there is no solution and infinitely many solutions in a system algebraically ○ Identify and test the ordered pair to see if it is a solution
Differentiation	**Assessments**
Interdisciplinary Connections ● English language development is integrated into the curriculum as students develop vocabulary and syntax necessary to communicate.	**Formative Assessments:** ● Graphic Organizers with Vocabulary, Examples, and Practice Problems ● Quizizz Vocabulary Reviews ● Mixed Practice Review

Technology Integration
- Use a scientific calculator to explore multi-step problems. Introduce advanced functions (grouping symbols and memory functions).

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Supports for English Language Learners		
Sensory Supports	**Graphic Supports**	**Interactive Supports**
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Physical activities	Number lines	Internet / Software support
Videos & Film		In the home language
Broadcasts		With mentors
Models & Figures		

Intervention Strategies		
Accommodations	**Interventions**	**Modifications**
Allow for verbal responses	Multi-sensory techniques	Modified tasks/expectations

- Content-Specific Language Speaking and Writing Activities

Summative Assessments, Projects, and Celebrations:
- 3 Checkpoints
- 1 Unit assessment

Repeat/confirm directions	Increase task structure (e.g. directions, checks for understanding, feedback)	Differentiated materials
Permit response provided via computer or electronic device	Increase opportunities to engage in active academic responding	Individualized assessment tools based on student need
Audio Books	Utilize pre-reading strategies and activities previews, anticipatory guides, and semantic mapping	Modified assessment grading

Unit 7: Systems of Linear Equations

Academic Vocabulary:	Academic Discourse and Syntax:
System of Linear Equations Common Input and Output Value Point of Intersection Graphing Isolate the variable Substitution Make Equal to Insert or Plug Elimination Cancel Out (inverse terms) Multiply by factor Combine Like Terms Rewrite Solution (ordered pair) One, Infinite, and No Intersection(s) Types of solutions (one, none, infinitely many) Test and Check Solution (Iinsert input and output)	Where is the point of intersection? What is the best method for solving the equation? Are one of the variables isolated on one side? Can you cancel out these terms? Is _____ a solution to the system of equations? After you find the [input/output] value, you must inser to find the [input/output] value to have a ordered pair, or solution. When you insert a number for the variable, you multiply by the coefficient. "I will use the [graphing/substitution/elimination] method because…" "There are [one/no/infinitely many] solutions because…" "[Ordered pair] [is/is not] a solution because…" Steps to Solve System of Equations: "[First, After, Then, Finally], I _____."