## Subject Area

$\qquad$ Algebra 1 $\qquad$

## Curriculum Map

Subject
Algebra
Grade :
9
Last revision date:
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Rationale: To provide a curriculum that accurately reflects the NYS Next Generations Mathematical Learning Standards

| Unit 1 |  | Essential Question: What is the structure of an expression and how can we manipulate it? |  |  |  |  |
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| Supporting <br> Questions: | NYS Standard | Conceptual Understandings: <br> What students must know <br> vocabulary | Content Specifications: <br> What students must be <br> able to do (verbs) | Suggested <br> Sources and <br> Protocols: | Assessments: <br> (Formative and <br> Summative) |  |
| Unit 1 Lesson 1 <br> - Variables and <br> Expressions | A.SSE.1.A | Expression, Variable, Order of <br> Operations, Simplify, Evaluate | Evaluate, Simplify | Emath <br> DeltaMath <br> (for all <br> subsequent) | Homework <br> Exit Ticket <br> Spiral Reviews |  |
| Unit 1 Lesson 2 <br> - The <br> Commutative <br> and Associative <br> Properties | Prep for A-REI.1 | Commutative, Associative, <br> Equivalence, Order of <br> Operations | Name property |  |  |  |
| Unit 1 Lesson 3 <br> -The <br> Distributive <br> Property | Prep for A-REI.1 | Distribute, Binomial, <br> Expression, product | Distribute |  |  |  |
| Unit 1 Lesson 4 <br> - Equivalent <br> Expressions | A.REI.1 |  | Equivalent, Simplify, <br> Evaluate, Distribute, Factor | Simplify |  |  |


| Unit 1 Lesson 5 <br> - Like Terms | Prep for A-REI.1 | Terms, monomial, binomial, <br> trinomial, coefficient, <br> constant, leading coefficient | Simplify |  |  |
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| Unit 1 Lesson 6 <br> -Seeing <br> Structure in <br> Expressions | A.SSE.1.B, A.SSE.2 |  |  |  |  |
| Unit 1 Lesson 7 <br> - Exponent <br> Review <br> (product and <br> power to power) | A.SSE.3 |  | Expanding, product, Exponent <br> property | Simplify and Expand |  |
| Unit 1 Lesson 8 <br> - Multiplying <br> Binomials | A.APR.1 | Linear Expression, Quadratic <br> Expression, Associative <br> Property, Commutative <br> Property, Polynomial, <br> Binomial, Trinomial | Multiply Polynomials, <br> Simplify |  |  |
| Unit 1 Lesson 9 <br> - Multiplying |  |  |  |  |  |
| Binomials Using <br> Area Models |  | A.SSE.1.B, A.SSE.2 |  |  |  |
| Unit 1 Lesson <br> 10 - More <br> Structure Work <br> (Differentiation <br> -review vs this) |  | Prep for A.CED.1 | Sum, difference, product, <br> quotient, less than, from, the <br> quantity of, twice, ... | Written to algebraic <br> expressions |  |
| Unit 1 Lesson <br> 11 - Translating <br> English to <br> Algebra |  |  |  |  |  |


| Unit 1 Lesson <br> $12-$ Algebraic <br> Puzzles | A.SSE.1.B |  |  |  | Unit Test |
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| Unit 2 Essential Question: What is a solution to an equation and inequality? |  |  |  |  |  |
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| Supporting Questions: | NYS Standard | Conceptual Understandings: What students must know vocabulary | Content Specifications: What students must be able to do (verbs) | Suggested Sources and Protocols: | Assessments: (Formative and Summative) |
| Unit 2 Lesson 1 <br> Equations and Their Solutions | A.REI. 3 | Equality, Equation, Solution, True, False, Expression | Evaluate and identify possible solutions. |  |  |
| Add Unit 2 <br> Lesson 1bReview of 1 and 2 step equations <br> - Build in Rational numbers | A.REI. 3 | Inverse Operations, Solve | Solve equations |  |  |
| Unit 2 Lesson 2 <br> - Using Inverse Operations to Solve Equations | A.REI. 3 | Inverse Operations, Solve | Solve Equations |  |  |
| Unit 2 Lesson 3 <br> - Linear <br> Equation <br> Solving Review | A.CED.1, A.REI. 3 | Inverse Operations, Solve | Solve Equations |  |  |
| Unit 2 Lesson 4 - Justifying Steps in Solving an Equation | A.REI.1, A.REI. 3 | Properties of Equality | Identify Properties |  |  |
| Unit 2 Lesson 5 <br> - Modeling with <br> Linear <br> Equations | A.CED.1, A.REI. 3 | Translate, Solve | Set up and Solve Equations |  |  |


| (possible <br> systems? |  |  |  |  |  |
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| Unit 2 Lesson 6 <br> - Modeling with <br> Linear <br> Equations <br> Involving <br> Integers | A.CED.1, A.REI.3 | Integers, consecutive, even, <br> odd | Solve consecutive <br> integer word problems |  |  |
| Unit 2 Lesson 7 <br> - Solving <br> Equations with <br> Unspecified <br> Constants <br> (Literal <br> Equations) | A.CED.4, A.REI.3 | Inverse Operations, variable, <br> formula | Solve for specific <br> variable |  |  |
| Unit 2 Lesson 8 <br> - Inequalities | Prep for A.CED.1, <br> A.CED.3, A.REI.3 | Inequality, evaluate, less than, <br> greater than, less than or equal <br> to, greater than or equal to | Check solutions |  |  |


| Unit 3 |  | How do you represent a function algebraically, graphically, and numerically? How can you determine the average rate of change of a function over an interval? |  |  |  |
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| Supporting Questions: | NYS Standard | Conceptual Understandings: What students must know vocabulary | Content Specifications: What students must be able to do (verbs) | Suggested Sources and Protocols: | Assessments: (Formative and Summative) |
| Unit 3 Lesson 1 <br> - Sets of Numbers | SKIP? | Number Families | Identify number families |  |  |
| Unit 3 Lesson 2 <br> - Interval <br> Notation | A.REI. 3 | Open, closed, included, interval notation | Graph inequality based upon notation |  |  |
| Unit 3 Lesson 3 - Introduction to Functions | F.IF. 1 | Input, Output, domain, range, function rule, mapping, evaluate | Identify domain and range. Evaluate function. Interpret function |  |  |
| Unit 3 Lesson 4 <br> - Function <br> Notation | F.IF.1, F.IF. 2 | Input, output, function rule, function notation | Evaluate functions |  |  |
| Unit 3 Lesson 5 - Key Features of Functions | F.IF.2, F.IF. 4 | Maximum, minimum, increasing, decreasing, turning point, function notation, intercepts, zeros, $y$-intercept | Identify characteristics of a function/graph |  |  |
| Unit 3 Lesson 6 <br> - Working with Functions in Table Form | F.IF.2, F.IF. 4 | Evaluate, intercept, zeros | Identify characteristics from a graph |  |  |


| Unit 3 Lesson 7 <br> - Average Rate <br> of Change | N.Q.1, F.IF.1, F.IF.2, <br> F.IF.6 | Average Rate of Change, <br> input, output | Calculate average rate of <br> change |  |  |
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| Unit 3 Lesson 8 <br> - Average Rate <br> of Change and <br> Motion <br> (Enhancement - <br> speed) | N.Q.1, F.IF.1, F.IF.2, <br> F.IF.6 | Speed | Calculate Speed |  |  |
| Unit 3 Lesson 9 <br> - More Work <br> with Domain <br> and Range | F.IF.1, F.IF.2, F.IF.6 | Domin and Range | Continue to work with <br> domain and range |  | Unit Test |


| Unit 4 | Essential Question: What is a linear fun |  | how is it repre | ed algebraically | raphically? |
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| Supporting Questions: | NYS Standard | Conceptual Understandings: What students must know vocabulary | Content Specifications: What students must be able to do (verbs) | Suggested Sources and Protocols: | Assessments: (Formative and Summative) |
| Unit 4 Lesson 1 - Introduction to Linear Functions | F.IF.7.A, F.LE. 2 | Linear functions, straight line, slope, $y$-intercept | Compare $f(x)$ to $y$, identify a point on the line and justify why. |  |  |
| Unit 4 Lesson 1b Standard to slope-intercept form | A.CED.4, A.REI. 3 | Inverse operations | Standard to slopeintercept form |  |  |
| Unit 4 Lesson 2 - More Work Graphing Linear Functions (Lines) | F.IF.7.A, F.LE.1.A | Linear functions, slope, y intercept, parameters | Identify slope and $y$ intercept from formula. Evaluate rate of change from two points (slope). Solve for y . |  |  |
| Unit 4 Lesson 3 - Writing the Equation of a Line | A.CED.3, F.LE. 2 | Slope-intercept form, rate, points, y -intercept | Write equation from: two points graph word problem |  |  |
| Unit 4 Lesson 4 <br> - Working with Linear <br> Functions in Table Form | F.IF. 4 | Slope-intercept form, rate, points, y -intercept | Write equation and compare rate of change: two points graph word problem table |  |  |
| Unit 4 Lesson 5 <br> - Modeling with <br> Linear <br> Functions | N.Q.2, A.CED.2, F.IF.5, <br> F.IF.7.A, F.BF.1.A, <br> F.LE.1.B, F.LE.2, F.LE. 5 | Linear function, model, slopeintercept form, starting value | Create a linear equation from different scenarios |  |  |


| Unit 4 Lesson 6 <br> - More <br> Modeling with <br> Linear <br> Functions | N.Q.2, A.SSE.1.A, <br> A.CED.2, F.IF.6, <br> F.BF.1.A, F.LE.1.B, <br> F.LE.2, F.LE.5 | Linear function, model, slope- <br> intercept form, starting value | Create a linear equation <br> from different scenarios <br> Interpret parameters <br> from equation/word <br> problem |  |  |
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| Unit 4 Lesson 7 <br> - Equations of <br> Horizontal and <br> Vertical Lines | Prep for A.CED.3, <br> F.IF.7 | Horizontal (HOY) and <br> Vertical (VUX) Lines | Graph and write <br> horizontal and vertical <br> lines |  |  |
| Unit 4 Lesson 8 <br> - Piecewise <br> Linear <br> Functions | A.CED.3, F.IF.6, <br> F.IF.7.B | Piecewise linear function, <br> domain, continuous, <br> discontinuous | Graph Piecewise linear <br> functions. |  |  |
| Unit 4 Lesson 9 <br> - Step Functions | F.IF.7.B | Piecewise linear function, <br> domain, continuous, <br> discontinuous | Graph step function |  |  |
| Unit 4 Lesson <br> 10 - Absolute <br> Value Functions | F.IF.4 | Absolut Value, piecewise <br> linear function, magnitude, <br> slope, domain and range | Create table and graph, <br> state turning point, <br> increasing and <br> decreasing |  |  |
| Unit 4 Lesson <br> 11 - The Truth <br> About Graphs | A.REI.10 | Solution, system of equation | Does a point satisfy an <br> equation/system of <br> equation. |  |  |
| Unit 4 Lesson <br> 12 - Linear <br> Inequalities with <br> Two Variables | A.REI.12 | Inequalities, solution set, <br> included, not included | Graph linear inequalities |  |  |


| Unit 4 Lesson <br> $13-$ <br> Introduction to <br> Sequences | F.IF.3, F.BF.1.A | Arithmetic, domain, sequence, <br> input, subscript, explicit <br> formula, rules | Identifying and use <br> arithmetic sequences |  |  |
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| Unit 4 Lesson <br> $14-$ Arithmetic <br> Sequences | F.IF.3, F.BF.1.A, | Arithmetic, domain, sequence, <br> input, subscript, explicit <br> formula, rules, common <br> difference, nth term | Build and use arithmetic <br> sequences |  |  |


| Unit 5 |  | Essential Question: equation? | inear equations, and how | ees it differ fr | gle linear |
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| Supporting Questions: | NYS Standard | Conceptual Understandings: What students must know vocabulary | Content Specifications: What students must be able to do (verbs) | Suggested Sources and Protocols: | Assessments: (Formative and Summative) |
| Unit 5 Lesson 1 <br> - Solving <br> Systems <br> Graphically | $\begin{aligned} & \text { A.CED.2, A.REI.6, } \\ & \text { A.REI. } 10 \end{aligned}$ | System of equations, solution, graph, no solution, infinite solutions, one solution, intersection. | Graph and identify points of intersection |  |  |
| Unit 5 Lesson 2 <br> - Solving <br> Systems by <br> Substitution | A.REI. 6 | System of equations, solution, graph, no solution, infinite solutions, one solution. | Solve system substitution |  |  |
| Unit 5 Lesson 3 <br> - Properties of Systems and Their Solutions | A.REI.5, A.REI. 6 |  |  |  |  |
| Unit 5 Lesson 4 <br> - The <br> Elimination <br> Method | A.REI. 6 | System of equations, solution, graph, no solution, infinite solutions, one solution, opposite coefficients | Solve system using elimination |  |  |
| Unit 5 Lesson 5 - Modeling with Systems of Equations | A.CED.3, A.REI. 6 | Unit price, rate, model, systems of equation | Set up and solve systems of equation word problems Justify solutions |  |  |
| Unit 5 Lesson 6 <br> - Solving <br> Equations Graphically | A.REI. 11 | $F(x)=G(x)$ | Solve systems graphically. Graphically solving linear equations. |  |  |


| (algebra on both <br> sides, calculator <br> hack) |  |  |  |  |  |
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| Unit 5 Lesson 7 <br> - Systems of <br> Inequalities | A.REI.12 | System of equations, solution, <br> graph, solution set, double <br> shaded region, dashed line, <br> solid line, included, not <br> included | Graph and identify points <br> in solution set |  |  |
| Unit 5 Lesson 8 <br> - Modeling with <br> Systems of <br> Inequalities | A.CED.3, A.REI.12 | Viable solutions, constraints | Set up and find a viable <br> solution to the system of <br> linear inequalities | Unit Test |  |


| Unit 6 | Essential Question: What are exponen |  | ion: What are exponential functions, and how do they differ from linear functions? |  |  |
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| Supporting Questions: | NYS Standard | Conceptual Understandings: What students must know vocabulary | Content Specifications: What students must be able to do (verbs) | Suggested Sources and Protocols: | Assessments: (Formative and Summative) |
| Unit 6 Lesson 1 - Exponential Increase and Decrease | A.CED.3, F.IF.3, F.BF.1.A, F.LE. 2 | Product, exponents, increasing, decreasing, common ratio, nth number, explicit | Find a common ratio, find next nth terms |  |  |
| Unit 6 Lesson 2 <br> - Geometric Sequences | A.CED.3, F.IF.3, F.BF.1.A, F.LE. 2 | Product, exponents, increasing, decreasing, common ratio, nth number, explicit, initial value | Find a common ratio, find next nth terms, difference vs ratio, state starting value |  |  |
| Unit 6 Lesson 3 <br> - Equivalent Exponential Expressions | A.SSE.3.C | Properties of exponents, equivalent expressions, combine like terms, power to power rule, product rule | Identify power to power rule and product rule with coefficients |  |  |
| Unit 6 Lesson 4 <br> - Simplifying <br> Fractions <br> Involving <br> Exponents | A.SSE.3.C | Division and properties of exponents, | Simplify using exponents |  |  |
| Unit 6 Lesson 5 <br> - Zero and <br> Negative <br> Exponents | A.SSE.3.C | Zero exponent rule, negative exponent rule, numerator, denominator, | Expand and cancel exponents using exponent rules, simplify exponents |  |  |
| Unit 6 Lesson 6 - More Work with Exponent Properties | A.SSE.3.C, F.IF. 8 | Numerator, denominator, exponential | Using previous info and making exponent answer into a positive |  |  |


| Unit 6 Lesson 7 <br> - Introduction to <br> Exponential <br> Functions | F.IF.6, F.LE.1.C | Exponential function, <br> increasing, decreasing, <br> growth/ decay factor | Identify when increasing <br> or decreasing from <br> graph, equation, or table <br> Evaluate points from <br> exponential graph |  |  |
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| Unit 6 Lesson 8 <br> - Percent <br> Review | Prep for A.CED.1, <br> F.LE.1.C, F.LE.2, <br> F.LE.5 | Percent | Finding percent of |  |  |
| Unit 6 Lesson 9 <br> - Percent <br> Increase and <br> Decrease | F.LE.2, F.LE.3, F.LE.5 | Percent, increased by, <br> decreased by | Finding an amount based <br> on certain percentage |  |  |
| Unit 6 Lesson <br> 10 - <br> Exponential <br> Models Based <br> on Percent <br> Growth | N.Q.2, A.SSE.1.A, <br> A.CED.2, F.IF.6, <br> F.LE.1.A, F.LE.1.C, <br> F.LE.2, F.LE.5 | Percent rate, percent <br> growth/decay | Calculating a new value <br> based upon given growth <br> or decay |  |  |
| Unit 6 Lesson <br> $11-$ | A.CED.1, F.IF.7.A | Y intercept, initial value, <br> growth factor, decay factor <br> Constructing <br> Exponential <br> Functions |  | Constructing exponential <br> functions |  |
| Unit 6 Lesson <br> $12-$ Linear <br> Versus <br> Exponential <br> Functions | F.IF.9, F.LE.1.A | Linear, exponential, constant <br> rate of change, common ratio | Identify linear vs <br> exponential, write an <br> subsequent equation <br> from a table or pair of <br> points |  |  |


| Unit 7 |  | Essential Question: What are polynomials? How are they different from other types of algebraic expressions and what structure allows us to manipulate them to form equivalency? |  |  |  |
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| Supporting Questions: | NYS Standard | Conceptual Understandings: What students must know vocabulary | Content Specifications: What students must be able to do (verbs) | Suggested Sources and Protocols: | Assessments: (Formative and Summative) |
| Unit 7 Lesson 1 - Introduction to Polynomials | A.APR. 1 | Polynomial, constant, exponent, coefficient, standard form, equivalent expression, degree, quadratic, cubic, quartic, leading coefficient | Writing in standard form Identifying what a polynomial is as well each of its parts |  |  |
| Unit 7 Lesson 2 <br> - Adding and <br> Subtracting <br> Polynomials | A.APR. 1 | Polynomial, constant, exponent, coefficient, standard form, equivalent expression, degree, quadratic, cubic, quartic, leading coefficient | Combining like terms(+ and -) |  |  |
| Unit 7 Lesson 3 - Multiplying Polynomials | A.APR. 1 | Polynomial, monomials, distributive, conjugate pairs, standard form | Multiplying polynomials |  |  |
| Unit 7 Lesson 4 <br> - More Work <br> Multiplying <br> Polynomials | A.APR. 1 | Polynomial, monomials, distributive, conjugate pairs, standard form | Multiplying polynomials |  |  |
| Unit 7 Lesson 5 <br> - Factoring <br> Polynomials | $\begin{aligned} & \text { A.SSE.1.A, A.SSE.1.B, } \\ & \text { A.SSE. } 2 \end{aligned}$ | GCF, distributive property, factor by grouping | Factoring polynomial expressions through identifying the GCF |  |  |


| Unit 7 Lesson 6 <br> - Conjugate <br> Binomials | A.SSE.2 | Perfect squares, factor, <br> difference of perfect squares | Factoring polynomial <br> expressions through <br> conjugate pairs |  |  |
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| Unit 7 Lesson 7 <br> - Factoring <br> Trinomials | A.SSE.2 | Factor, sum, product, <br> equivalent, trinomial | Factoring trinomial <br> expressions (a= 1) |  |  |
| Unit 7 Lesson 8 <br> - Complete <br> Factoring | A.SSE.2 | Factor completely | Use previous methods to <br> factor a polynomial more <br> than once(completely) |  |  |
| Unit 7 Lesson 9 <br> - Recognizing <br> Structure to <br> Factor | A.SSE.2 | GCF, Difference of perfect <br> squares, trinomial, quadratic <br> binomial factoring | Identify if something can <br> NOT be factored <br> Identify what <br> type(structure) of <br> factoring is used(GCF, <br> PS, TRI) |  |  |
| Unit 7 Lesson <br> 10 - Factoring <br> Challenging <br> Trinomials <br> (Extension) | A.SSE.2 | GCF, Difference of perfect <br> squares, trinomial, quadratic <br> binomial factoring | Factoring a polynomial <br> when a is $>1$ |  | Unit Test |


| Unit 8 | Essential functions? | What is a quadratic function, and how does it differ from linear and other types of |  |  |  |
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| Supporting Questions: | NYS Standard | Conceptual Understandings: What students must know vocabulary | Content Specifications: What students must be able to do (verbs) | Suggested Sources and Protocols: | Assessments: (Formative and Summative) |
| Unit 8 Lesson 1 Introduction to Quadratic Functions | A.CED.3, F.IF.4, F.IF.7.A | Standard form of a quadratic, leading coefficient, range, parabola, zeroes, vertex, axis of symmetry, increasing, decreasing | Given an equation use the graph to identify key characteristics State if a function is a quadratic Identify standard form |  |  |
| Unit 8 Lesson 2 The Leading Coefficient of a Quadratic | A.SSE.3.B, F.IF.8.A, F.BF. 3 | Leading coefficient, max, min, turning point, opening upward/downward | Identify max/min within an interval |  |  |
| Unit 8 Lesson 3 The Symmetry of Quadratic Functions | $\begin{aligned} & \hline \text { F.IF.4, F.IF.7.B, } \\ & \text { F.IF.8.A, } \end{aligned}$ | Axis of symmetry, turning point, zeroes | Finding the axis of symmetry given the formula |  |  |
| Unit 8 Lesson 4 Solving Quadratic Equations Using Inverse Operations | A.SSE.3.A, A.APR.3, A.REI.4.B | Inverse operations, square root | Solving Quadratic Equations Using Inverse Operations |  |  |
| Unit 8 Lesson 5 Solving Quadratics by Completing the Square | A.SSE.1.B, A.REI.4.A | Equivalent, completing the square | Solving Quadratics by Completing the Square |  |  |
| Unit 8 Lesson 6 - <br> Area and <br> Completing the <br> Square <br> (Review/extension) | A.SSE.1.B, A.REI.4.A | Equivalent, completing the square | Solving Quadratics by Completing the Square |  |  |


| Unit 8 Lesson 7 - <br> More Work <br> Solving Quadratics <br> by Completing the <br> Square | A.SSE.1.B, A.REI.4.A | Equivalent, completing the <br> square | Solving Quadratics by <br> Completing the Square |  |  |
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| Unit 8 Lesson 8- <br> The Zero Product <br> Law | A.REI.4.B | Zero Product Law, equations, <br> solutions | Solve Quadratics by <br> factoring using Zero <br> Product Law |  |  |
| Unit 8 Lesson 9 - <br> More Work <br> Factoring to Solve <br> Quadratics | A.REI.4.B | Zero Product Law, equations, <br> solutions | Solve Quadratics by <br> factoring using Zero <br> Product Law |  |  |
| Unit 8 Lesson 10 - <br> Graphs of Cubic <br> Polynomial <br> Functions | A.APR.3 | Cubic, zeros, | Graphs of Cubic <br> Polynomial Functions. <br> Identify zeros. |  |  |
| Unit 8 Lesson 11 - <br> Solving Linear- <br> Quadratic Systems | A.SSE.1.B, A.REI.4.B, <br> A.REI.7.A, | Systems, substitution, lines, <br> parabolas, none, one, two <br> solutions | Solving Linear- <br> Quadratic Systems and <br> identifying solutions <br> from graphs or <br> equations |  |  |
| Unit 8 Lesson 12 - <br> Quadratic Word <br> Problems | A.SSE.3.A, A.CED.1 <br> A.REI.7.A | Not viable, viable | Solving Linear- <br> Quadratic word <br> problems and <br> identifying solutions <br> from graphs or <br> equations |  |  |


| Unit 9 |  | Essential Question: What is the difference between rational and irrational numbers? What are the different ways we can solve a quadratic equation? |  |  |  |
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| Supporting Questions: | NYS Standard | Conceptual Understandings: What students must know vocabulary | Content Specifications: What students must be able to do (verbs) | Suggested Sources and Protocols: | Assessments: (Formative and Summative) |
| Unit 9 Lesson 1 <br> - Integers and Rational Numbers | N.RN. 3 | Whole numbers, rational, integers, | Identify number groups |  |  |
| Unit 9 Lesson 2 <br> - Square Roots | N.RN.3.B | Squaring, cubing, roots | Simplest Radical form, Operations with radicals |  |  |
| $\begin{aligned} & \hline \text { Unit } 9 \text { Lesson } 3 \\ & \text { - Irrational } \\ & \text { Numbers } \end{aligned}$ | N.RN. 3 | Irrational numbers, rational, terminating, non-repeating, | Identify rational vs irrational numbers |  |  |
| Unit 9 Lesson 4 -Square Root Arithmetic | N.RN.3.A | Rationalize Denominator | Add, subtract, multiply square roots |  |  |
| Unit 9 Lesson 5 <br> - Quadratic <br> Equations with Irrational Solutions | A.SSE.1.B, A.REI.4.B | Factoring, completing the square, inverse operations | Solving Quadratics |  |  |


| Unit 9 Lesson 6 <br> - The Quadratic <br> Formula | A.REI.4.A, A.REI.4.B | Quadratic Formula, roots, <br> zeros, simplest radical form | Solve using the quadratic <br> formula |  |  |
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| Unit 9 Lesson 7 <br> - Final Work <br> with Quadratic <br> Equations | A.SSE.3.AA.REI.4.A, <br> A.REI.4.B | Quadratic Formula, roots, <br> zeros, simplest radical form, <br> no real solutions, discriminant | Solve all quadratic <br> formula | Unit Test |  |


| Unit 10 | Essential Question: |  | on? How do transforma | s affect the | a function? |
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| Supporting Questions: | NYS Standard | Conceptual Understandings: What students must know vocabulary | Content Specifications: What students must be able to do (verbs) | Suggested Sources and Protocols: | Assessments: (Formative and Summative) |
| Unit 10 Lesson 1 - Parent Functions | F.IF.7.A | Linear, quadratic, exponential, absolute value, parent functions | Identify what a parent function is. |  |  |
| Unit 10 Lesson 2 - Vertical Shifting of Functions | F.BF.3.A | Transformation, vertical shift | Identify how $f(x)+k$ is shifted as well as to perform it. |  |  |
| Unit 10 Lesson 3 - Horizontal Shifting of Functions | F.BF.3.A | Transformation, horizontal shift | Identify how $\mathrm{f}(\mathrm{x}+\mathrm{k})$ is shifted as well as to perform it. |  |  |
| Unit 10 Lesson 4 - Combined Shifting of Functions | F.BF.3.A | Transformation, vertical and horizontal shift | Identify how $\mathrm{f}(\mathrm{x}+\mathrm{c})+\mathrm{k}$ is shifted as well as to perform it. |  |  |
| Unit 10 Lesson <br> 5 - Vertical <br> Stretching and <br> Compressing of Functions <br> K f(x) NOT <br> $\mathrm{f}(\mathrm{kx})$ | F.BF.3.A | Transformation, vertical stretch and compress | Identify how $\mathrm{kf}(\mathrm{x})$ is transformed as well as to perform it. |  |  |
| Unit 10 Lesson 6 - Reflecting Functions Across the x Axis | F.BF.3.A | Transformation, reflection | Compare $f(x)$ vs -f(x) and graph. |  |  |


| Unit 10 Lesson | A.SSE.1.B, A.REI.4.A | Vertex Form | Identify vertex form <br> v- The Vertex |  | *Extension start with <br> Folynomial and complete <br> Fquare to put in vertex <br> form. |
| :--- | :--- | :--- | :--- | :--- | :--- |



| Unit 11 Lesson <br> 7 - Linear <br> Regression on <br> the Calculator | S.ID.6.A, S.ID.6.C, <br> S.ID.7, S.ID.9 | Linear regression, line of best <br> fit, scatter plot, correlation, <br> parameter | Use data to create a line <br> of best fit. |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Unit 11 Lesson <br> 8 - The Strength <br> of Correlation | S.ID.6.A, S.ID.6.C, <br> S.ID.8 | Correlation coefficient, weak, <br> strong, linear fit | Assess the degree to <br> which the regression fits <br> the data. |  |  |
| Unit 11 Lesson <br> 9 - Categorical <br> Data | S.ID.5 | Two-way tables, relative <br> frequency, percent, fraction, <br> part, total | Calculate relative <br> frequency. |  |  |
| Unit 11 Lesson <br> 10 - <br> Understanding <br> Associations in <br> Categorical Data | S.ID.5 | Two-way tables, conditional <br> relative frequency, percent, <br> fraction, part, total | Calculate conditional <br> relative frequency. |  | Unit Test |

