Winslow Township School District

Mathematics Curriculum – Algebra I

Unit 2

Overview	Standards for Mathematical Content		Unit Focus	Standards for Mathematical Practice
Unit 2 **Modeling with Linear Functions, Linear Systems, & Exponential Functions**	• A.REI.C.6 • A.CED.A.3 • A.REI.C.5 • A.REI.D.12 • F.IF.A.1 • F.IF.A.2 • F.LE.A.1 • F.LE.A.2 • F.IF.A.3	• F.BF.A.1 • A.SSE.A.1 • A.SSE.B.3 • F.IF.B.4 • F.LE.B.5 • F.IF.B.5 • F.IF.B.6 • F.IF.C.9 • F.IF.C.7	• Solve linear systems of equations • Create equations that describe numbers or relationships • Interpret the structure of expressions • Represent and solve equations and inequalities graphically • Construct & compare linear & exponential models • Interpret expressions for functions in terms of the situation • Build a function that models a relationship between two quantities • Understand the concept of a function and use function notation • Interpret functions that arise in applications in terms of the context • Analyze functions using different representations	MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.
Unit 2: Suggested Open Educational Resources	A.REI.C.6 Cash Box A.REI.C.6 Cash Box A.CED.A.3 Dimes and Quarters A.REI.C.5 Solving Two Equations in Two Unknowns A.REI.D.12 Fishing Adventures 3 F.IF.A.1 The Parking Lot F.LE.A.1 Finding Linear and Exponential Models F.LE.A.2 Interesting Interest Rates F.IF.A.2 Yam in the Oven	A.SSE.A.1 Kitchen Floor Tiles A.CED.A.1 Planes and wheat A-CED.A.1 Paying the rent A.REI.A.1 Zero Product Property 1 A.CED.A.2 Clea on an Escalator S.ID.B.6,S.ID.C.7-9 Coffee and Crime F.BF.A.1a Skeleton Tower A.SSE.A.1 Mixing Candies	F.IF.B.4 Warming and Cooling F.IF.B.4, F.IF.B.5 Average Cost F.LE.B.5 US Population 1982-1988 F.IF.B.6 Temperature Change F.IF.C.7b Bank Account Balance	

Major Supporting Additional (Identified by PARCC Model Content Frameworks).

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Curriculum Unit 2	Standards		Pacing	
			Days	Unit Days
Unit 2 **Modeling with Linear Functions, Linear Systems, & Exponential Functions**	• F.IF.A.1 • F.IF.A.2 • F.IF.A.3 • F.IF.B.5 • F.IF.C.9	Explain the definition of a function, including the relationship between the domain and range. Use function notation, evaluate functions and interpret statements in context.	12	45
	• A.REI.C.6 • A.CED.A.3 • A.REI.C.5 • A.REI.D.12	Solve multistep contextual problems by identifying variables, writing equations, and solving systems of linear equations in two variables algebraically and graphically. Graph linear inequalities and systems of linear inequalities in two variables and explain that the solution to the system.	12	
	• A.CED.A.3 • F.BF.A.1 • A.SSE.A.1 • F.IF.B.4 • F.LE.B.5 • F.IF.B.6 • F.IF.C.7 • F.LE.A.2	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. Write a function that describes a relationship between two quantities. Interpret expressions that represent a quantity in terms of its context For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Interpret the parameters in a linear or exponential function in terms of a context. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Construct linear and exponential functions - including arithmetic and geometric sequences - given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). *[Algebra 1 limitation: exponential expressions with integer exponents]	11	
	• A.SSE.B.3	Use properties of exponents to produce equivalent forms of exponential expressions in one variable.	5	
	Assessment, Re-teach and Extension		5	

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Unit 2 Algebra I		
Content Standards	**Suggested Standards for Mathematical Practice**	**Critical Knowledge & Skills**
• A.REI.C.6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. • A.CED.A.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods*. • A.REI.C.5. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.	MP.1 Make sense of problems and persevere in solving them. MP 2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics.	Concept(s): • Systems of equations can be solved exactly (algebraically) and approximately (graphically). Students are able to: • identify and define variables representing essential features for the model. • model real world situations by creating a system of linear equations. • solve systems of linear equations using the elimination or substitution method. • solve systems of linear equations by graphing. • interpret the solution(s) in context. Learning Goal 1: Solve multistep contextual problems by identifying variables, writing equations, and solving systems of linear equations in two variables algebraically and graphically.
• A.REI.D.12. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. • A.CED.A.3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods*.	MP.1 Make sense of problems and persevere in solving them. MP 2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision.	Concept(s): No new concept(s) introduced Students are able to: • model real world situations by creating a system of linear inequalities given a context. • interpret the solution(s) in context. Learning Goal 2: Graph linear inequalities and systems of linear inequalities in two variables and explain that the solution to the system.
• F.IF.A.1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the	MP 2 Reason abstractly and quantitatively. MP.6 Attend to precision.	Concept(s): • F(x) is an element in the range and x is an element in the domain. Students are able to: • use the definition of a function to determine whether a relationship is a function. • use function notation once a relation is determined to be a function.

input x. The graph of f is the graph of the equation y = f(x). • F.IF.A.2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	MP.7 Look for and make use of structure.	• evaluate functions for given inputs in the domain. • explain statements involving function notation in the context of the problem. Learning Goal 3: Explain the definition of a function, including the relationship between the domain and range. Use function notation, evaluate functions and interpret statements in context.
• F.LE.A.1. Distinguish between situations that can be modeled with linear functions and with exponential functions. F.LE.A.1a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. F.LE.A.1b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. F.LE.A.1c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.	MP.3 Construct viable arguments and critique the reasoning of others. MP.6 Attend to precision.	Concept(s): • Linear functions grow by equal differences over equal intervals. • Exponential functions grow by equal factors over equal intervals. Students are able to: • identify and describe situations in which one quantity changes at a constant rate. • identify and describe situations in which a quantity grows or decays by a constant percent. • show that linear functions grow by equal differences over equal intervals. • show that exponential functions grow by equal factors over equal intervals. Learning Goal 4: Distinguish between and explain situations modeled with linear functions and with exponential functions.
• F.LE.A.2. Construct linear and exponential functions - including arithmetic and geometric sequences - given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). *[Algebra 1 limitation: exponential expressions with integer exponents] • F.IF.A.3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by f(0) = f(1) = 1, f(n+1) = f(n) + f(n-1) for n ≥ 1.*	MP 2 Reason abstractly and quantitatively. MP 4. Model with mathematics MP.1 Make sense of problems and persevere in solving them. MP.5 Use appropriate tools strategically. MP.6 Attend to precision.	Concept(s): • Sequences are functions, sometimes defined and represented recursively. • Sequences are functions whose domain is a subset of integers. Students are able to: • create arithmetic and geometric sequences from verbal descriptions. • create arithmetic sequences from linear functions. • create geometric sequences from exponential functions. • identify recursively defined sequences as functions. • create linear and exponential functions given – a graph; – a description of a relationship; – a table of values.

	MP.7 Look for and make use of structure.	Learning Goal 5: Write linear and exponential functions given a graph, table of values, or written description; construct arithmetic and geometric sequences.
• F.BF.A.1. Write a function that describes a relationship between two quantities. 1a. Determine an explicit expression, a recursive process, or steps for calculation from a context. • A.SSE.A.1. Interpret expressions that represent a quantity in terms of its context A.SSE.A.1a: Interpret parts of an expression, such as terms, factors, and coefficients. A.SSE.A.1b: Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P.* *[Algebra 1 limitation: exponential expressions with integer exponents]	MP 2 Reason abstractly and quantitatively. MP.4 Model with mathematics	Concept(s): No new concept(s) introduced Students are able to: • given a context, write an explicit expressions, a recursive process or steps for calculation for linear and exponential relationships. • interpret parts of linear and exponential functions in context. Learning Goal 6: Write explicit expressions, recursive processes and steps for calculation from a context that describes a linear or exponential relationship between two quantities.
• A.SSE.B.3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. A.SSE.B.3c. Use the properties of exponents to transform expressions for exponential functions. *For example the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.* *[Algebra 1: limit to exponential expressions with integer exponents]	MP.1 Make sense of problems and persevere in solving them. MP 2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.7 Look for and make use of structure	Concept(s): No new concept(s) introduced Students are able to: • use the properties of exponents to simplify or expand exponential expressions, recognizing these are equivalent forms. Learning Goal 7: Use properties of exponents to produce equivalent forms of exponential expressions in one variable.

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• F.IF.B.4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity*. *[Focus on exponential functions] • F.LE.B.5. Interpret the parameters in a linear or exponential function in terms of a context. • F.IF.B.5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function*	MP 2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.6 Attend to precision.	Concept(s): No new concept(s) introduced Students are able to: • given a verbal description of a relationship, sketch linear and exponential functions. • identify intercepts and intervals where the function is positive/negative. • interpret parameters in context. • determine the *practical* domain of a function. Learning Goal 8: Sketch graphs of linear and exponential functions expressed symbolically or from a verbal description. Show key features and interpret parameters in context.
• F.IF.C.9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum*. *[Limit to linear and exponential] • F.IF.B.6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.8 Look for and express regularity in repeated reasoning.	Concept(s): • Rate of change of non-linear functions varies. *Students are able to:* • compare key features of two linear functions represented in different ways. • compare key features of two exponential functions represented in different ways. • calculate the rate of change from a table of values or from a function presented symbolically. • estimate the rate of change from a graph. Learning Goal 9: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). Learning Goal 10: Calculate and interpret the average rate of change of a function presented symbolically or as a table; estimate the rate of change from a graph.

• F.IF.C.7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. F.IF.C.7a. Graph linear and quadratic functions and show intercepts, maxima, and minima. F.IF.C.7b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	MP.1 Make sense of problems and persevere in solving them. MP.5 Use appropriate tools strategically. MP.6 Attend to precision.	Concept(s): • Piecewise-defined functions may contain discontinuities. • Absolute value functions are piecewise functions. Students are able to: • graph linear, square root, cube root, and piecewise-defined functions. • graph more complicated cases of functions using technology. • identify and describe key features of the graphs of square root, cube root, and piecewise-defined functions . Learning Goal 11: Graph linear, square root, cube root, and piecewise-defined functions (including step and absolute value functions) expressed symbolically. Graph by hand in simple cases and using technology in more complex cases, showing key features of the graph.

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School/District Formative Assessment Plan	**School/District Summative Assessment Plan**
Pre-Assessment, Quizzes Exit Tickets Daily Monitoring Linkit!	Unit Benchmark Linkit! Diagnostics

Focus Mathematical Concepts

Prerequisite skills:

- Students apply their understanding of the properties of exponents.
- Students apply and extend their knowledge of rational numbers to exponents and to find the values of numerical values that include those numbers.
- Students apply their knowledge about the meaning of the representation of radicals with rational exponents.
- Students will understand that if the two sides of one equation are equal, and the two sides of another equation are equal, then the sum (or difference) of these is equal.
- Students will extend their knowledge of learning the relationship between the algebraic representation and its graph.
- Students will use their prior knowledge of creating tables of values for function to find a solutions.
- Students will extend their prior knowledge of graphing two equations and be able to interpret the intersections of the graph as the solution to the original equation

Common Misconceptions:

- A.SSE.A.1

Extending beyond simplifying an expression, this cluster addresses interpretation of the components in an algebraic expression. A student should recognize that in the expression $2x + 1$, "2" is the coefficient, "2" and "x" are factors, and "1" is a constant, as well as "$2x$" and "1" being *terms* of the binomial expression**.** Development and proper use of mathematical language is an important building block for future content. Using real-world context examples, the nature of algebraic expressions can be explored**.**

Have students create their own expressions that meet specific criteria (e.g., number of terms factorable, difference of two squares, etc.) and verbalize how they can be written and rewritten in different forms. Additionally, pair/group students to share their expressions and rewrite one another's expressions.

Hands-on materials, such as algebra tiles, can be used to establish a visual understanding of algebraic expressions and the meaning of terms, factors and coefficients. Technology may be useful to help a student recognize that two different expressions represent the same relationship. For example, since $(x – y)(x + y)$ can be rewritten as $x^2 – y^2$, they can put both expressions into a graphing calculator (or spreadsheet) and have it generate two tables (or two columns of one table), displaying the same output values for each expression.

Factoring by grouping is another example of how students might analyze the structure of an expression.

To factor $3x(x – 5) + 2(x – 5)$, students should recognize that the "$x – 5$" is common to both expressions being added, so it simplifies to $(3x + 2)(x – 5)$**.** Students should become comfortable with rewriting expressions in a variety of ways until a structure emerges.

- A.SSE.B.3

Some students may believe that factoring and completing the square are isolated techniques within a unit of quadratic equations. Teachers should help students to see the value of these skills in the context of solving higher degree equations and examining different families of functions.

Students may think that the minimum (the vertex) of the graph of $y = (x + 5)^2$ is shifted to the right of the minimum (the vertex) of the graph $y = x^2$ due to the addition sign. Students should explore examples both analytically and graphically to overcome this misconception.

Some students may believe that the minimum of the graph of a quadratic function always occur at the *y*-intercept.

- A.REI.C.5
- A.REI.C.6

Most mistakes that students make are careless rather than conceptual. Teachers should encourage students to learn a certain format for solving systems of equations and check the answers by substituting into all equations in the system. Some students believe that matrices are independent of other areas of mathematics.

- A.REI.D.12

Students may believe that the graph of a function is simply a line or curve "connecting the dots," without recognizing that the graph represents all solutions to the equation.

Students may also believe that graphing linear and other functions is an isolated skill, not realizing that multiple graphs can be drawn to solve equations involving those functions.

Additionally, students may believe that two-variable inequalities have no application in the real world. Teachers can consider business related problems (e.g., linear programming applications) to engage students in discussions of how the inequalities are derived and how the feasible set includes all the points that satisfy the conditions stated in the inequalities.

- A.CED.A.3

Students may believe that equations of linear, quadratic and other functions are abstract and exist only "in a math book," without seeing the usefulness of these functions as modeling real-world phenomena.
Additionally, they believe that the labels and scales on a graph are not important and can be assumed by a reader, and that it is always necessary to use the entire graph of a function when solving a problem that uses that function as its model.
Students may interchange slope and *y*-intercept when creating equations. For example, a taxi cab costs $4 for a dropped flag and charges $2 per mile. Students may fail to see that $2 is a rate of change and is slope while the $4 is the starting cost and incorrectly write the equation as $y = 4x + 2$ instead of $y = 2x + 4$.
Given a graph of a line, students use the x-intercept for b instead of the y-intercept.
Given a graph, students incorrectly compute slope as run over rise rather than rise over run. For example, they will compute slope with the change in *x* over the change in *y*.

Students do not know when to include the "or equal to" bar when translating the graph of an inequality.
Students do not correctly identify whether a situation should be represented by a linear, quadratic, or exponential function.

Students often do not understand what the variables represent. For example, if the height *h* in feet of a piece of lava *t* seconds after it is ejected from a volcano is given by $h(t) = -16t^2 + 64t + 936$ and the student is asked to find the time it takes for the piece of lava to hit the ground, the student will have difficulties understanding that $h = 0$ at the ground and that they need to solve for *t*.

- F.IF.A.1
- F.IF.A.2
- F.IF.A.3

Students may believe that all relationships having an input and an output are functions, and therefore, misuse the function terminology.

Students may also believe that the notation *f(x)* means to multiply some value *f* times another value *x*. The notation alone can be confusing and needs careful development. For example, *f*(2) means the output value of the function *f* when the input value is 2.

- F.IF.B.4
- F.IF.B.5
- F.IF.B.6

Students may believe that it is reasonable to input any *x*-value into a function, so they will need to examine multiple situations in which there are various limitations to the domains.

Students may also believe that the slope of a linear function is merely a number used to sketch the graph of the line. In reality, slopes have real-world meaning, and the idea of a rate of change is fundamental to understanding major concepts from geometry to calculus.

- F.IF.C.7
- F.IF.C.9

Students may believe that each family of functions (e.g., quadratic, square root, etc.) is independent of the others, so they may not recognize commonalities among all functions and their graphs.

Students may also believe that skills such as factoring a trinomial or completing the square are isolated within a unit on polynomials, and that they will come to understand the usefulness of these skills in the context of examining characteristics of functions.

Additionally, student may believe that the process of rewriting equations into various forms is simply an algebra symbol manipulation exercise, rather than serving a purpose of allowing different features of the function to be exhibited.

- F.BF.A.1

Students may believe that the best (or only) way to generalize a table of data is by using a recursive formula.
Students naturally tend to look "down" a table to find the pattern but need to realize that finding the 100th term requires knowing the 99th term unless an explicit formula is developed.
Students may also believe that arithmetic and geometric sequences are the same. Students need experiences with both types of sequences to be able to recognize the difference and more readily develop formulas to describe them.

- F.LE.A.1
- F.LE.A.2

Students may believe that all functions have a first common difference and need to explore to realize that, for example, a quadratic function will have equal second common differences in a table.

Students may also believe that the end behavior of all functions depends on the situation and not the fact that exponential function values will eventually get larger than those of any other polynomial functions.

- F.LE.B.5

Students may believe that changing the slope of a linear function from "2" to "3" makes the graph steeper without realizing that there is a real-world context and reason for examining the slopes of lines. Similarly, an exponential function can appear to be abstract until applying it to a real-world situation.

Fluency Recommendations:
Algebra I students become fluent in solving characteristic problems involving the analytic geometry of lines, such as writing down the equation of a line given a point and a slope. Such fluency can support them in solving less routine mathematical problems involving linearity, as well as in modeling linear phenomena (including modeling using systems of linear inequalities in two variables).

A-APR.A.1 Fluency in adding, subtracting, and multiplying polynomials supports students throughout their work in algebra, as well as in their symbolic work with functions. Manipulation can be more mindful when it is fluent.
A-SSE.A.1b Fluency in transforming expressions and chunking (seeing parts of an expression as a single object) is essential in factoring, completing the square, and other mindful algebraic calculations.

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District/School Tasks	District/School Primary and Supplementary Resources and Technology Integration
PARCC Released Items **http://www.parcc-assessment.org/released-items** **NJDOE Digital Item Library** **https://nj.digitalitemlibrary.com/home** **NJSLA Mathematics Evidence Statements** **https://docs.google.com/spreadsheets/d/18M5r1jk4P729fTpAlWAzrw1gE6tken233I-Yk0U712M/edit#gid=554025491** **LinkIt! Form A, B, & C**	**Textbook** **HS Flip Book:** http://community.ksde.org/Default.aspx?tabid=5646 **IXL** https://www.ixl.com/ **Khan Academy** https://www.khanacademy.org/ **North Carolina Dept of Ed. Wikispaces:** http://maccss.ncdpi.wikispaces.net/High+School **PARCC Resources:** http://www.parcc-assessment.org/assessments/test-design/mathematics/math-test-specifications-documents **101 Math Discourse Questions:** http://www.casamples.com/downloads/100MathDiscourseQuestions_Printable.pdf **Asking Effective Questions** http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_AskingEffectiveQuestions.pdf **Diversity, Equity & Inclusion Educational Resources** https://www.nj.gov/education/standards/dei/

Instructional Best Practices and Exemplars	
1. Identifying similarities and differences 2. Summarizing and note taking 3. Reinforcing effort and providing recognition 4. Homework and practice 5. Nonlinguistic representations	6. Cooperative learning 7. Setting objectives and providing feedback 8. Generating and testing hypotheses 9. Cues, questions, and advance organizers 10. Manage response rates

Vocabulary		
Arithmetic Sequence Asymptote Boundary Coefficients Domain Exponential	Explicit Function Geometric Sequence In-equalities Linear	Range Rate of change Rational Recursively Symmetries

9.1 Personal Financial Literacy, 9.2 Career Awareness, Exploration, Preparation and Training & 9.4 Life Literacies and Key Skill
9.1.12.CDM.6: Compute and assess the accumulating effect of interest paid over time when using a variety of sources of credit. (e.g., student loans, credit cards, auto loans, mortgages, etc.). 9.1.12.CDM.7: Calculate a mortgage payment based on type of loan, down payment, credit score, and loan interest rate. 9.1.12.CDM.8: Compare and compute interest and compound interest and develop an amortization table using business tools. 9.1.12.CP.3: Summarize factors that affect a positive credit rating, including on-time payments, debt versus available credit, length of open credit, and how often you apply for credit. 9.1.12.CP.6: Explain the effect of debt on a person's net worth. 9.1.12.CP.9: Analyze the information contained in a credit report, how scores are calculated and used, and explain the importance of disputing inaccurate entries. 9.1.12.PB.1: Explain the difference between saving and investing. 9.1.12.PB.5: Analyze how changes in taxes, inflation, and personal circumstances can affect a personal budget. 9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a). 9.4.12.CT.2: Explain the potential benefits of collaborating to enhance critical thinking and problem solving (e.g., 1.3E.12profCR3.a). 9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience (e.g., S-ID.B.6b, HS-LS2-4). 9.4.12.TL.2: Generate data using formula-based calculations in a spreadsheet and draw conclusions about the data. 9.4.12.TL.3: Analyze the effectiveness of the process and quality of collaborative environments. The implementation of the 21st Century skills and standards for students of the Winslow Township District is infused in an interdisciplinary format in a variety of curriculum areas that include, English language Arts, Mathematics, School Guidance, Social Studies, Technology, Visual and Performing Arts, Science, Physical Education and Health, and World Language. Additional opportunities to address 9.1, 9.2 & 9.4: **Philadelphia Mint** https://www.usmint.gov/learn/kids/resources/educational-standards **Different ways to teach Financial Literacy.** https://www.makeuseof.com/tag/10-interactive-financial-websites-teach-kids-money-management-skills/

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Suggested Modifications for Special Education/504	
Students with special needs: The students' needs will be addressed on an individual and grade level using a variety of modalities. Accommodations will be made for those students who need extra time to complete assignments. Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders. Physical expectations and modifications, alternative assessments, and scaffolding strategies will be used to support this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered.	
☐ Provide the opportunity to re-take tests	☐ Individual Intervention/Remediation
☐Modify activities/assignments/projects/assessments	☐ Additional Support Materials
☐ Breakdown activities/assignments/projects/assessments into manageable units	☐ Guided Notes
☐Additional time to complete activities/assignments/projects/assessments	☐ Graphic Organizers
☐ Provide an option for alternative activities/assignments/projects/assessments	☐ Adjust Pacing of Content
☐ Modify Content	☐ Increase one on one time
☐ Modify Amount	☐ Peer Support
☐ Small Group Intervention/Remediation	☐ Other Modifications for Special Education:
Suggested Modifications for At-Risk Students	
Formative and summative data will be used to monitor student success. At first signs of failure, student work will be reviewed to determine support. This may include parent consultation, basic skills review and differentiation strategies. With considerations to UDL, time may be a factor in overcoming developmental considerations	
☐ Provide the opportunity to re-take tests	☐ Modify Content
☐ Increase one on one time	☐ Modify Amount
☐ Oral prompts can be given	☐ Adjust Pacing of Content
☐ Using visual demonstrations, illustrations, and models	☐ Small Group Intervention/Remediation
☐ Give directions/instructions verbally and in simple written format	☐ Individual Intervention/Remediation
☐ Peer Support	☐ Additional Support Materials
☐ Modify activities/assignments/projects/assessments	☐ Guided Notes
☐ Additional time to complete activities/assignments/projects/assessments	☐ Graphic Organizers
☐ Provide an option for alternative activities/assignments/projects/assessments	☐ Other Modifications for Students At-Risk:

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Unit 2

Suggested for English Language Learners	Suggested Modifications for Gifted Students
All WIDA Can Do Descriptors can be found at this link: https://wida.wisc.edu/teach/can-do/descriptors ☐ Grades 9-12 WIDA Can Do Descriptors: ☐ Listening ☐ Speaking ☐ Reading ☐ Writing ☐ Oral Language Students will be provided with accommodations and modifications that may include: • Relate to and identify commonalities in mathematics studies in student's home country • Assist with organization • Use of computer • Emphasize/highlight key concepts • Teacher Modeling • Peer Modeling • Label Classroom Materials - Word Walls	Students excelling in mastery of standards will be challenged with complex, high level challenges related to the topic. • Raise levels of intellectual demands • Require higher order thinking, communication, and leadership skills • Differentiate content, process, or product according to student's readiness, interests, and/or learning styles • Provide higher level texts • Expand use of open-ended, abstract questions • Critical and creative thinking activities that provide an emphasis on research and in-depth study • Enrichment Activities/Project-Based Learning/ Independent Study Additional Strategies may be located at the links: ❖ Gifted Programming Standards ❖ Webb's Depth of Knowledge Levels and/or Revised Bloom's Taxonomy ❖ REVISED Bloom's Taxonomy Action Verbs
Suggested Activities	
☐ Do Now/Warm-Up ☐ Whole Group ☐ Small Groups ☐ Guided Practice ☐ Independent Practice	☐ Centers ☐ Intervention/Remediation ☐ Projects ☐Academic Games ☐ Other Suggested Activities:

Winslow Township School District

Mathematics Curriculum – Algebra I

Unit 2

Interdisciplinary Connections
Big Ideas Real-Life STEM Videos and Performance Tasks **Interdisciplinary Connections: ELA** **NJSLSA.R1**. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. **NJSLSA.W2.** Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content **NJSLSA.L1**. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking **SL.9-10.4:** Present information, findings and supporting evidence clearly, concisely and logically. The content, organization, development and style are appropriate to task, purpose and audience. **NJSLSA.L6:** Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.
Integration of Computer Science and Design Thinking NJSLS 8
8.1.12.AP.1: Design algorithms to solve computational problems using a combination of original and existing algorithms. 8.1.12.AP.2: Create generalized computational solutions using collections instead of repeatedly using simple variables. 8.1.12.AP.8: Evaluate and refine computational artifacts to make them more usable and accessible. 8.1.12.DA.1: Create interactive data visualizations using software tools to help others better understand real world phenomena, including climate change. 8.1.12.DA.5: Create data visualizations from large data sets to summarize, communicate, and support different interpretations of real-world phenomena. 8.1.12.DA.6: Create and refine computational models to better represent the relationships among different elements of data collected from a phenomenon or process. 8.2.12.ETW.2: Synthesize and analyze data collected to monitor the effects of a technological product or system on the environment. 8.2.12.ETW.3: Identify a complex, global environmental or climate change issue, develop a systemic plan of investigation, and propose an innovative sustainable solution. 8.2.12.EC.3: Synthesize data, analyze trends, and draw conclusions regarding the effect of a technology on the individual, culture, society, and environment and share this information with the appropriate audience.