

## Rumson-Fair Haven Regional High School Curriculum

**Course:** *Algebra II*

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### **Section I: Course Description**

*Algebra II* emphasizes facility with algebraic expressions and equations, especially linear and quadratic forms, powers and roots, and functions based on these concepts. Students explore polynomials, logs, exponential functions, and series and sequences. In addition, problem-solving strategies for both NJSLA and the SAT/ACT are incorporated throughout the year for review and preparation. This *Algebra II* course meets and exceeds the national standards for Algebra II and is taught with traditional math applications. To deepen their understanding, students will make introductory use of graphing calculators throughout the course.

### **Section II: NJSL: New Jersey Student Learning Standards/Learning Objectives**

1. **2023 New Jersey Student Learning Standards – Mathematics:**

- “A New Jersey education in Mathematics builds quantitatively and analytically literate citizens prepared to meet the demands of college and career, and to engage productively in an information-driven society; ...A high-quality mathematics education fosters a population that...leverages data in decision-making and as a lens for discussing, analyzing, and responding to practical questions, persists to make sense of and model problems arising in everyday life, society, and the workplace, thinks critically and strategically to assess quantitative relationships and to solutions to complex problems, employs precise reasoning and constructs viable arguments to deduce conclusions, recognize false statements and assess peers’ reasoning, interprets, evaluates and critiques the mathematics embedded in social, scientific and commercial systems, as well as the claims made in the private and public sectors, communicates precisely when conveying, representing, and justifying both qualitative and quantitative perspectives.”

2. **2023 New Jersey Student Learning Standards English Language Arts:**

- A New Jersey education in English Language Arts builds readers, writers, and communicators prepared to meet the demands of college and career and to engage as productive American citizens with global responsibilities. ...Students will develop the necessary skills in reading, writing, speaking, and listening that are the foundations for creative and purposeful expression in language read rich, challenging texts that build their knowledge of the world, grow their confidence and identities as readers, and develop critical thinking skills and vocabulary necessary for long-term success[; e]ngage in regular, meaningful, writing authentic tasks, exploring valued topics, writing for impact and expression, and sharing their work with others (including authentic audiences) leverage complex texts and digital media to develop comprehension, active listening, and discussion skills ground daily writing and discussion in evidence, fostering an ability to read critically, build arguments, cite evidence, and communicate ideas to contribute meaningfully as productive citizens evaluate the reliability, credibility, and perspective of authors and speakers across all forms of media express ideas and knowledge through a variety of modalities and media, and serve as effective communicators who purposefully read, write, and speak across multiple disciplines [and l]earn to persist in reading complex texts, establishing lifelong habits to read voluntarily for pleasure, for further education, for information on public policy, and for advancement in the workplace.

3. **Standard 8.1 (Computer Science) and 8.2 (Design Thinking) of the 2020 NJSL:**

- “The ‘Intent and Spirit of the Computer Science and Design Thinking Standards’ is to focus on deep understanding of concepts that enable students to think critically and systematically about leveraging technology to solve local and global issues. Authentic learning experiences that enable students to apply content knowledge, integrate concepts across disciplines, develop computational thinking skills, acquire and incorporate varied perspectives, and communicate with diverse audiences about the use and effects of computing prepares New Jersey students for college and careers.”

4. **Standard 9.4 (Life Literacies and Key Skills) of the 2020 NJSL:**

- “This standard outlines key literacies and technical skills such as critical thinking, global and cultural awareness, and technology literacy\* that are critical for students to develop to live and work in an interconnected global economy.”
- **\*Climate Change:** The state of New Jersey has mandated instruction in, “Climate Change across all content areas, leveraging the passion students have shown for this critical issue and providing them opportunities to develop a deep understanding of the science behind the changes and to explore the solutions our world desperately needs.”

5. [\\*Amistad Law: N.J.S.A. 18A 52:164-88:](#)
  - The inclusion of lessons and resources/texts dealing with the African slave trade, slavery in America, the vestiges of slavery in this country and the contributions of African-Americans to our society will be implemented in English and Social Studies courses in accordance with state law: “Every board of education shall incorporate the information regarding the contributions of African-Americans to our country in an appropriate place in the curriculum of elementary and secondary school students.”
6. [\\*Holocaust Law: N.J.S.A. 18A 35-28:](#)
  - The inclusion of lessons and resources/texts that enable pupils to identify and analyze applicable theories concerning human nature and behavior; to understand that genocide is a consequence of prejudice and discrimination; and to understand that issues of moral dilemma and conscience have a profound impact on life will be implemented in English and Social Studies courses in accordance with state law: “Every board of education shall include instruction on the Holocaust and genocides in an appropriate place in the curriculum of all elementary and secondary school pupils. The instruction shall further emphasize the personal responsibility that each citizen bears to fight racism and hatred whenever and wherever it happens.”
7. [\\*LGBT and Disabilities Law: N.J.S.A. 18A:35-4.35:](#)
  - A transformative approach to the inclusion of lessons and resources/texts on the contributions and issues concerning the LGBTQ+ population and people with disabilities will be implemented across all core subjects in accordance with state law: “A board of education shall include instruction on the political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum of middle school and high school students as part of the district’s implementation of the New Jersey Student Learning Standards (N.J.S.A.18A:35-4.36). A board of education shall have policies and procedures in place pertaining to the selection of instructional materials to implement the requirements of N.J.S.A. 18A:35-4.35.”
8. [\\*Asian American and Pacific Islanders Legislation: N.J.S.A 4021/A6100:](#)
  - The inclusion of lessons and resources/texts on the history and contributions of Asian Americans and Pacific Islanders will enable New Jersey’s schools to provide a curriculum that reflects the diversity of our state. In accordance with state law: “A board of education shall include instruction on the history and contributions of Asian Americans and Pacific Islanders in an appropriate place in the curriculum of students in grades kindergarten through as part of the school district’s implementation of the New Jersey Student Learning Standards in Social Studies.”
9. Acquisition/development/refinement of the higher-order critical thinking skills aligned with the *Revised Bloom’s Taxonomy of Cognitive Objectives*

### **Section III: Curriculum Modifications**

The *Algebra II* Curriculum is subject to case-by-case modifications to support/advance the needs of all students, including special education students, English language learners, gifted students, and those at risk of school failure. These modifications are based on Individualized Learning Programs (IEPs), recommendations made by the district’s English Language Learners (ELL) coordinator, feedback from members of the Intervention & Referral Services Team (*I&RS*) for at-risk students, and 504 Plans.

Coursework and assessments will be modified on an individual basis for students when necessary. Modifications may include but are not limited to those outlined on the [Modifications/Accommodations for Mathematics Courses](#) chart.

### **Section IV: Preparation for Standardized Testing**

Instruction in *Algebra II* is aligned with the requirements of state and national standardized assessments, including the *NJGPA*, *NJSLA*, the *ACT*, the *PSAT*, and the *SAT*.

### **Section V: Curriculum Pacing Guide**

Curriculum Pacing Guide	
<b>Course Title:</b> <i>Algebra II</i>	<b>Grade Level:</b> 10-11
Unit I: Linear Function Review	Weeks 1-5

<b>Unit II: Functions and their Graphs</b>	Weeks 6-14
<b>Unit III: Quadratic Functions</b>	Weeks 15-21
<b>Unit IV: Polynomial Functions</b>	Weeks 22-29
<b>Unit V: Exponential and Logarithmic Functions</b>	Weeks 30-37
<b>Unit VI: Sequences and Series</b>	Weeks 38-40

### **Section VI: Technology Skills**

Students in *Algebra II* are required to complete the technology skills components of the curriculum:

- Kuta
- Edulastic
- Desmos
- Google Sheets/Slides/Docs

### **Section VII: Primary Texts and Year-Long Instructional Resources**

The following texts and instructional resources are employed in *Algebra II*:

- Common Sense Education ([www.common sense.org](http://www.common sense.org))
- Edulastic
- Desmos

### **Section VIII: Grading Formula and Assessment Modes**

Marking period grades in *Algebra II* are determined via a percentage weighting model. The specific grading categories and weightings of each will be determined before the start of each academic year and will be published in the posted/distributed course syllabi.

Assessments in *Algebra II* vary greatly in format, scope/content/skills assessed, and alternative assessments, differentiation in assessments and choice will be incorporated as appropriate. Preliminary assessments of each format will be used as benchmarks and summative assessments will be created/revised collaboratively each year and planned by members of the *Algebra II* instructional team to inform future learning and to measure student growth.

### **Section IX: Unit Templates**

The following unit templates have been established for the *Algebra II* curriculum by the *Algebra II* instructional team:

<b>Unit I: Linear Function Review</b>
<b>Unit Summary</b>
In this unit, students will review linear functions and be able to execute the following skills: identify, graph, and write linear relationships between variables, solve literal equations, write, solve, and graph linear equations and inequalities, create a scatter plot to model real-world data and find an equation for the line of regression to make predictions or estimates, solve systems of equations and inequalities by graphing, substitution and elimination, and solve linear programming problems.
<b>Standards/Core Ideas/Performance Expectations</b>
The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in <i>Algebra II</i> : <ul style="list-style-type: none"> <li>● 2023 New Jersey Student Learning Standards: Mathematics <ul style="list-style-type: none"> <li>○ MP.1-8</li> <li>○ A.CED.A.1 &amp; 3</li> </ul> </li> </ul>

<ul style="list-style-type: none"> <li>○ A.REI.A.1, B.3, C.5-6 &amp; D.10-12</li> <li>● <i>2023 New Jersey Student Learning Standards English Language Arts</i> <ul style="list-style-type: none"> <li>○ RL.CR.9–10.1, RI.MF.9–10.6, W.AW.9–10.1.A,B &amp; E, SL.PE.9–10.1, SL.II.9–10.2, SL.PI.9–10.4</li> </ul> </li> <li>● <i>2020 New Jersey Student Learning Standards: Computer Science and Design Thinking</i> <ul style="list-style-type: none"> <li>○ 8.1.12.DA.1</li> </ul> </li> <li>● <i>2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies, and Key Skills</i> <ul style="list-style-type: none"> <li>○ 9.4.12.CI.1, 9.4.12.CT.2</li> </ul> </li> </ul>		
<b>Unit Essential Questions</b>	<b>Unit Enduring Understandings</b>	
<ul style="list-style-type: none"> <li>● What are the important characteristics of a linear function?</li> <li>● What does the solution of a linear inequality represent?</li> <li>● What is a line of best fit used for?</li> <li>● What are the methods used for solving a system of linear equations?</li> </ul>	<ul style="list-style-type: none"> <li>● Linear functions have a constant rate of change, called a slope, that determines the direction and steepness of the line. A point on a line represents an (x,y) coordinate pair that satisfies the equation.</li> <li>● The shaded solution region includes the set of points that satisfy the inequality.</li> <li>● A line of best fit can be used to make predictions about data.</li> <li>● Graphing, substitution, and elimination are the methods for solving systems of linear equations.</li> </ul>	
<b>Evidence of Learning</b>		
<b>Formative &amp; Alternative Assessments:</b> <ul style="list-style-type: none"> <li>● Classwork</li> <li>● Homework</li> <li>● Edulastic activity</li> <li>● Linear regression activity</li> <li>● Linear programming presentations</li> <li>● Linear Equations Quiz</li> <li>● Inequality Quiz</li> <li>● Systems of Equations Quiz</li> <li>● Individual student check-ins with teacher</li> </ul>	<b>Benchmark &amp; Summative Assessments:</b> <ul style="list-style-type: none"> <li>● Equations Benchmark</li> </ul>	<b>Resources Needed:</b> <ul style="list-style-type: none"> <li>● Textbook</li> <li>● Desmos</li> <li>● Kuta Software</li> <li>● Various teacher made PowerPoints and WSs</li> <li>● Edulastic</li> </ul>

<b>Unit II: Functions and Their Graphs</b>	
<b>Unit Summary</b>	
<p>In this unit, students will study basic function concepts including functions as relations, operations with functions, compositions of functions, and inverses of functions. The unit concludes with an overview of basic transformations of the graphs of functions.</p>	
<b>Standards/Core Ideas/Performance Expectations</b>	
<p>The state standards outlined below, and established by New Jersey Department of Education, will guide instruction throughout this unit in <i>Algebra II</i>:</p> <ul style="list-style-type: none"> <li>● <i>2023 New Jersey Student Learning Standards: Mathematics</i> <ul style="list-style-type: none"> <li>○ MP.1-8</li> <li>○ A.REI.D.10, F.IF.A.1-2, C.7a-b &amp; 8, F.BF.A.1 &amp; B.3-4</li> </ul> </li> <li>● <i>2023 New Jersey Student Learning Standards English Language Arts</i> <ul style="list-style-type: none"> <li>○ RL.CR.9–10.1, RI.MF.9–10.6, W.AW.9–10.1.A,B &amp; E, SL.PE.9–10.1, SL.II.9–10.2, SL.PI.9–10.4</li> </ul> </li> <li>● <i>2020 New Jersey Student Learning Standards: Computer Science and Design Thinking</i> <ul style="list-style-type: none"> <li>○ 8.1.12.DA.1</li> </ul> </li> <li>● <i>2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills</i> <ul style="list-style-type: none"> <li>○ 9.4.12.CI.1, 9.4.12.CT.2</li> </ul> </li> </ul>	
<b>Unit Essential Questions</b>	<b>Unit Enduring Understandings</b>
<ul style="list-style-type: none"> <li>● What operations can we perform on functions?</li> <li>● What restricts the domain of a function?</li> <li>● What information is needed to graph absolute value, radical, and quadratic functions?</li> </ul>	<ul style="list-style-type: none"> <li>● We can add, subtract, multiply, and divide functions, as well as compose functions and find their inverses.</li> <li>● The input that creates undefined outputs must be restricted from the domain.</li> <li>● Using transformations, graphs can be created by using translations to find the vertex and reflections, stretched, and compressions to find an additional point.</li> </ul>
<b>Evidence of Learning</b>	

<b>Formative &amp; Alternative Assessments:</b> <ul style="list-style-type: none"> <li>● Classwork</li> <li>● Homework</li> <li>● Domain and range activity</li> <li>● Transformations Edulastic</li> <li>● Functions Operations Quiz</li> <li>● Transformations Quiz</li> <li>● Individual student check-ins with teacher</li> </ul>	<b>Benchmark &amp; Summative Assessments:</b> <ul style="list-style-type: none"> <li>● Functions Test</li> </ul>	<b>Resources Needed:</b> <ul style="list-style-type: none"> <li>● Textbook</li> <li>● Desmos</li> <li>● Kuta Software</li> <li>● Various teacher made PowerPoints and WSs</li> <li>● Edulastic</li> <li>● <a href="#">Common Sense Lesson- “Curated Lives”</a></li> </ul>
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### Unit III: Quadratic Functions

#### Unit Summary

Students will find solutions to quadratic equations using various methods with real and imaginary solutions. Complex numbers and their operations are introduced. Students will understand the relationship between the discriminant, the number of real solutions, and the graph of the quadratic. Students will graph quadratics in vertex and standard form. Students will use their knowledge of quadratics to solve real-world examples.

#### Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Algebra II*:

- *2023 New Jersey Student Learning Standards: Mathematics*
  - MP.1-8
  - N.CN.A.1-3 & C.7-9, A.SSE.B.3a-b, A.REI.B.4 & D.10, F.BF.B.3
- *2023 New Jersey Student Learning Standards English Language Arts*
  - RL.CR.9–10.1, RI.MF.9–10.6, W.AW.9–10.1.A,B & E, SL.PE.9–10.1, SL.II.9–10.2, SL.PI.9–10.4
- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.1
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies, and Key Skills*
  - 9.4.12.CI.1, 9.4.12.CT.2

<b>Unit Essential Questions</b>	<b>Unit Enduring Understandings</b>
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| <ul style="list-style-type: none"> <li>● How can we solve a quadratic equation?</li> <li>● What happens when our answer results in the square root of a negative number?</li> <li>● What does the number of real solutions reveal about the graph of the quadratic function?</li> </ul> | <ul style="list-style-type: none"> <li>● Quadratic equations can be solved using either factoring, completing the square, square root method, or quadratic formula.</li> <li>● The resulting answer is imaginary, where the square root of -1 is <math>i</math>.</li> <li>● The number of real solutions indicates the number of x-intercepts the parabola will have.</li> </ul> |
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#### Evidence of Learning

<b>Formative &amp; Alternative Assessments:</b> <ul style="list-style-type: none"> <li>● Classwork</li> <li>● Homework</li> <li>● Complex numbers Edulastic activity</li> <li>● Desmos-Quadratics Polygraph activity</li> <li>● Solving Quadratic Equations Quiz</li> <li>● Graphing Quadratic Functions Quiz</li> <li>● Individual student check-ins with teacher</li> </ul>	<b>Benchmark &amp; Summative Assessments:</b> <ul style="list-style-type: none"> <li>● Unit III Test</li> </ul>	<b>Resources Needed:</b> <ul style="list-style-type: none"> <li>● Textbook</li> <li>● Desmos</li> <li>● Kuta Software</li> <li>● Various teacher made PowerPoints and WSs</li> <li>● Edulastic</li> </ul>
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### Unit IV: Polynomial Functions

#### Unit Summary

Students will be introduced to polynomials, perform operations, factor polynomials, solve polynomial equations, identify the zeros of polynomial functions, graph polynomials and identify key characteristics, and write equations of polynomial functions.

#### Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in *Algebra II*:

- *2023 New Jersey Student Learning Standards: Mathematics*
  - MP.1-8
  - N.CN.A.1-2, A.SSE.1a, A.APR.A.1, B.2-3 & C.4, A.CED.A.2, A.REI.D.10, F.IF.B.4, F.IF.C.7c
- *2023 New Jersey Student Learning Standards English Language Arts*
  - RL.CR.9–10.1, RI.MF.9–10.6, W.AW.9–10.1.A,B & E, SL.PE.9–10.1, SL.II.9–10.2, SL.PI.9–10.4
- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.1
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies, and Key Skills*
  - 9.4.12.CI.1, 9.4.12.CT.2

Unit Essential Questions	Unit Enduring Understandings
<ul style="list-style-type: none"> <li>● What operations can we perform with polynomials?</li> <li>● How can you solve a polynomial equation?</li> <li>● What are the important features on the graph of a polynomial function?</li> </ul>	<ul style="list-style-type: none"> <li>● We can add, subtract, multiply, and divide polynomials. We can also classify them by degree and number of terms.</li> <li>● Polynomial equations can be solved using factoring, rational root theorem with synthetic division, and/or quadratic formula.</li> <li>● Polynomials have important features such as x-intercepts, y-intercepts, and maxima/minima.</li> </ul>

Evidence of Learning		
<b>Formative &amp; Alternative Assessments:</b> <ul style="list-style-type: none"> <li>● Classwork</li> <li>● Homework</li> <li>● Polynomial classifying activity</li> <li>● Factoring polynomials Edulastic</li> <li>● Graphing Polynomials Cooperative</li> <li>● Polynomial Classifying and Operations Quiz</li> <li>● Polynomial Division Quiz</li> <li>● Solving Polynomials Quiz</li> <li>● Individual student check-ins with teacher</li> </ul>	<b>Benchmark &amp; Summative Assessments:</b> <ul style="list-style-type: none"> <li>● Polynomial Test</li> </ul>	<b>Resources Needed:</b> <ul style="list-style-type: none"> <li>● Textbook</li> <li>● Desmos</li> <li>● Kuta Software</li> <li>● Various teacher made PowerPoints and WSs</li> <li>● Edulastic</li> </ul>

Unit V: Exponential and Logarithmic Functions	
<b>Unit Summary</b>	
<p>In this unit, the student will discover the properties of logarithmic and exponential functions, simplify expressions, and solve equations. Students will graph exponential and logarithmic functions, identify their domain and range, and be able to recognize the functions as inverses.</p>	
<b>Standards/Core Ideas/Performance Expectations</b>	
<p>The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in <i>Algebra II</i>:</p> <ul style="list-style-type: none"> <li>● <i>2023 New Jersey Student Learning Standards: Mathematics</i> <ul style="list-style-type: none"> <li>○ MP.1-8</li> <li>○ A.SSE.B.3c, F.IF.B.4-5 &amp; C.7e, F.BF.A.1c &amp; B.3-4a</li> </ul> </li> <li>● <i>2023 New Jersey Student Learning Standards English Language Arts</i> <ul style="list-style-type: none"> <li>○ RL.CR.9–10.1, RI.MF.9–10.6, W.AW.9–10.1.A,B &amp; E, SL.PE.9–10.1, SL.II.9–10.2, SL.PI.9–10.4</li> </ul> </li> <li>● <i>2020 New Jersey Student Learning Standards: Computer Science and Design Thinking</i> <ul style="list-style-type: none"> <li>○ 8.1.12.DA.1</li> </ul> </li> <li>● <i>2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills</i> <ul style="list-style-type: none"> <li>○ 9.4.12.CI.1, 9.4.12.CT.2</li> </ul> </li> </ul>	
Unit Essential Questions	Unit Enduring Understandings
<ul style="list-style-type: none"> <li>● What is the relationship between a logarithmic and exponential function?</li> <li>● Which properties of logarithmic and exponential functions do we need to know/use?</li> </ul>	<ul style="list-style-type: none"> <li>● Logarithmic and exponential functions are inverses of one another. Their graphs are a reflection over the line <math>y=x</math>.</li> <li>● We need to be able to recall/use the product, quotient, power and equality properties of logarithmic and exponential functions in order to simplify expressions and solve equations.</li> </ul>

<ul style="list-style-type: none"> <li>What are the important characteristics/features of a logarithmic or exponential graph?</li> </ul>	<ul style="list-style-type: none"> <li>Logarithmic and exponential graphs have an asymptote, restricting the domain (logarithmic) or range (exponential). The graphs do not have a constant slope and are either strictly increasing or strictly decreasing.</li> </ul>
Evidence of Learning	
<b>Formative &amp; Alternative Assessments:</b> <ul style="list-style-type: none"> <li>Classwork</li> <li>Homework</li> <li>Exponent Properties activity</li> <li>Graphing Exponentials Investigation</li> <li>Exponents and Solving Exponential Equations Quiz</li> <li>Graphing Exponential Functions Quiz</li> <li>Properties of Logs Quiz</li> <li>Solving Log and Exponential Equations Quiz</li> <li>Graphing Logs Quiz</li> <li>Individual student check-ins with teacher</li> </ul>	<b>Benchmark &amp; Summative Assessments:</b> <ul style="list-style-type: none"> <li>Unit V Test</li> </ul>
<b>Resources Needed:</b> <ul style="list-style-type: none"> <li>Textbook</li> <li>Desmos</li> <li>Kuta Software</li> <li>Various teacher made PowerPoints and WSs</li> <li>Edulastic</li> </ul>	

Unit VI: Sequences and Series	
Unit Summary	
<p>In this unit, the students will learn about different number patterns, including arithmetic and geometric sequences and series. They will be able to find a given term in a sequence as well as find partial and infinite sums. Students will explore real-world data that follows these specific patterns.</p>	
Standards/Core Ideas/Performance Expectations	
<p>The state standards outlined below, and established by the New Jersey Department of Education, will guide instruction throughout this unit in <i>Algebra II</i>:</p> <ul style="list-style-type: none"> <li>2023 New Jersey Student Learning Standards: Mathematics <ul style="list-style-type: none"> <li>MP.1-8</li> <li>F.BF.A.2, F.IF.A.3, A.SSE.B.4</li> </ul> </li> <li>2023 New Jersey Student Learning Standards English Language Arts <ul style="list-style-type: none"> <li>RL.CR.9–10.1, RI.MF.9–10.6, W.AW.9–10.1.A,B &amp; E, SL.PE.9–10.1, SL.II.9–10.2, SL.PI.9–10.4</li> </ul> </li> <li>2020 New Jersey Student Learning Standards: Computer Science and Design Thinking <ul style="list-style-type: none"> <li>8.1.12.DA.1</li> </ul> </li> <li>2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills <ul style="list-style-type: none"> <li>9.4.12.CI.1, 9.4.12.CT.2</li> </ul> </li> </ul>	
Unit Essential Questions	Unit Enduring Understandings
<ul style="list-style-type: none"> <li>What constitutes an arithmetic sequence?</li> <li>What constitutes a geometric sequence?</li> <li>How can a series have an infinite sum?</li> </ul>	<ul style="list-style-type: none"> <li>Arithmetic sequences have common differences.</li> <li>Geometric sequences have common ratios.</li> <li>Series can converge and diverge. A series is said to be convergent if the sum of its terms approaches a finite value as the number of terms increases. A series is divergent if the sum of its terms grows without bounds as more terms are added.</li> </ul>
Evidence of Learning	
<b>Formative &amp; Alternative Assessments:</b> <ul style="list-style-type: none"> <li>Classwork</li> <li>Homework</li> <li>Intro to Sequences Activity</li> <li>Geometric Sequences and Series Edulastic</li> <li>Arithmetic Sequences and Series Quiz</li> <li>Arithmetic and Geometric Sequences and Series Quiz</li> </ul>	<b>Benchmark &amp; Summative Assessments:</b> <ul style="list-style-type: none"> <li>Unit VI Wrap-Up Summative</li> </ul>
<b>Resources Needed:</b> <ul style="list-style-type: none"> <li>Textbook</li> <li>Desmos</li> <li>Kuta Software</li> <li>Various teacher made PowerPoints and WSs</li> <li>Edulastic</li> </ul>	

• Individual student check-ins with teacher		
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**Section X: Unit Reflection**

The *Algebra II* instructional team must confer upon the completion of each instructional unit in the *Algebra II* curriculum and rate the degrees to which the instructional units meet performance criteria established by the New Jersey Department of Education using the Unit Reflection Form. Completed unit reflection forms must be submitted to the Department Supervisor for approval upon completion of curriculum implementation with a complementing list of suggested modifications to the *Algebra II* curriculum.

<b>Unit Reflection Form: <i>Algebra II</i></b>			
<b>Lesson Activities:</b>	<b>Strongly</b>	<b>Moderately</b>	<b>Weakly</b>
Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills;			
Are challenging and require higher-order thinking and problem-solving skills;			
Allow for student choice;			
Provide scaffolding for acquiring targeted knowledge/skills;			
Integrate modern, global perspectives, especially those regarding diversity, genocide, global issues, and historical ones regarding racial relations;			
Integrate 21 <sup>st</sup> century skills;			
Provide opportunities for interdisciplinary connection and transfer of knowledge and skills;			
Are varied to address different student learning styles and preferences;			
Are differentiated based on student needs;			
Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process;			
Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives;			
Provide opportunities for student reflection and self-assessment;			
Provide data to inform and adjust instruction to better meet the varying needs of learners.			

**Appendix**  
***Writing Instruction and the RFH Community***

Writing instruction should happen across the RFH Community. Writing across the curriculum is a philosophy that advances the belief that writing is a method of learning. Since all departments are committed to helping students learn, writing must be used as a methodology to advance student learning.

Each academic discipline has its own unique conventions, formats and structures. It is the responsibility of each department to agree upon domain-specific writing praxes, model them for students, and require them to utilize them on a consistent basis. Students must understand that acceptable writing in one domain may not be acceptable writing in another area. The development of domain-specific writing skills supports the overall development of the student writer because all writing is grounded in the writing situation: audience, context, purpose, subject, and writer. Representatives from the academic disciplines must share their domain-specific writing praxes with each other, identify intersections, and determine how to address perceived gaps that limit student learning.

Students must experience writing situations that help them learn how to think creatively and critically and communicate effectively in the academic disciplines. Writing instruction, regardless of the academic discipline, must always reinforce

student understanding of the writing situation. When students experience writing situations, they must study examples of domain-specific writing in order to understand how writers communicate in discipline-related contexts. This does not mean information embedded in textbooks. Domain-specific writing is writing that is used to inform and influence readers as it draws them into an established circle of discourse. Students must use these non-fiction texts to develop the close reading skills that will shape their own writing. Focused engagement with domain-specific writing should not be limited to basic reading comprehension and topical understanding. It must also include the analysis of the writing situation that is represented in the text: audience, context, purpose, subject, and writer. The close reading of well-written texts—regardless of the domain—will show students the importance of writing mechanics, diction, and syntax. The development of close reading skills will also help the students grow in terms of their ability to construct and advance independent and original claims that are well-supported by evidence. Domain-specific writing is grounded in positioning of claims and the effective use of evidence.

The final written product is important; nevertheless, the learning that results in this production must not be devalued. The writing process is not limited to the basic steps of planning, drafting, revising, and editing/proofreading. It is a complex sequence of critical and creative thinking and writing that leads to the production of a text that provides evidence of learning and understanding. Students must ultimately develop the ability to self-assess the effectiveness of their writing as a representation of the writing situation. Without the use of models that evidence learning and understanding, students will not develop the ability to self-assess their own work—the true outcome of the writing process.

### **What types of writing situations should RFH students engage in?**

RFH students should engage in writing situations across the curriculum that require them to:

- write to improve mechanical proficiency, diction usage, and syntactical sophistication
- write to narrate, describe, and reflect
- write to summarize and report
- write to classify and define
- write to explain how process leads to an outcome
- write to compare, contrast and evaluate
- write to speculate on cause and effect
- write to propose solutions and solve problems
- write to analyze

These writing situations should be positioned in a coordinated, developmental sequence that extends across the academic disciplines.

Upon Completion of Grade 12, RFH students must be ready to transition to the following writing situations:

- write to analyze
- write to persuade (argument)

The core foci of first-year college writing courses are analysis and argument. These courses orient the students to the demands and expectations of writing for the academic culture of college. At colleges/universities with carefully coordinated writing programs, students must demonstrate proficiency in analysis and argument before they transition to upper level courses that require them to engage in the following writing situation:

- write to investigate (research)