Winslow Township School District

Mathematics Curriculum – Algebra III/Trigonometry

Unit 1

Overview	Standards for Mathematical Content		Unit Focus	Standards for Mathematical Practice
Unit 1 **Logic, Reasoning, & Number Sense**	• A.CED.A.1 • A.CED.A.2 • F.IF.B.4 • A.SSE.A.1	• A.SSE.B.3 • N.Q.A.1 • N.Q.A.2 • N.Q.A.3	• Understand and use inductive/deductive reasoning to solve problems. • Use estimation techniques to determine an approximate answer to a question. • Understand and use a general problem-solving procedure. • Understand methods to indicate a set and fundamental set concepts. • Determine and recognize subsets and proper subsets, and the number of each in a given set. • Construct a Venn diagram and determine information based on two and three sets. These will be used to solve application problems. • Understand infinite and countable sets. • Identify statements and logical connectives. Understand quantifiers and identify negations of statements containing quantifiers. • Work with truth tables. • Understand and use a variety of systems of numeration. • Understand and perform operations in bases other than base 10.	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 1: Suggested Open Educational Resources	A.CED.A.1 Introduction to Polynomials: College Fund A.CED.A.2 Clea on an Escalator A.SSE.A.1 The Bank Account A.SSE.B.3 The Profit of a Company		F.IF.B.4 Influenza Epidemic N.Q.A.1 Runners' World N.Q.A.2 Giving Raises N.Q.A.3 Calories in a Sports Drink	

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Curriculum Unit 1	Standards		Pacing	
			Days	Unit Days
Unit 1 **Modeling with Linear Equations and Inequalities**	• A.REI.B.3 • A.REI.A.1 • A.CED.A.4 • A.SSE.A.1 • A.CED.A.1 • S.ID.B.6 • S.ID.C.7 • S.ID.C.8 • S.ID.C.9	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R. Interpret expressions that represent a quantity in terms of its context. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear functions and quadratic functions, and simple rational and exponential functions. Represent data on a scatter plot, describe how the variables are related and use technology to fit a function to data. Interpret the slope, intercept, and correlation coefficient of a data set of a linear model; distinguish between correlation and causation.	17	45
	• N.Q.A.1 • N.Q.A.2 • N.Q.A.3	Solve multi-step problems, using units to guide the solution, interpreting units consistently in formulas and choosing an appropriate level of accuracy on measurement quantities. Develop descriptive models by defining appropriate quantities.	5	
	• A.CED.A.2 • A.REI.D.10 • A.REI.B.3	Create equations in two or more variables to represent relationships between quantities; Graph equations on coordinate axes with labels and scales. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	13	
	• A.REI.D.11	Explain why the solutions of the equation f(x) = g(x) are the x-coordinates of the points where the graphs of the linear equations y=f(x) and y=g(x) intersect. ** function notation is not introduced here Find approximate solutions of f(x) = g(x), where f(x) and g(x) are linear functions, by making a table of values, using technology to graph and finding successive approximations.	5	
		Assessment, Re-teach and Extension	5	

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<tr><th colspan="6">Unit 1 Algebra III/Trigonometry</th></tr>
<tr><th colspan="3">School/District Formative Assessment Plan</th><th colspan="3">School/District Summative Assessment Plan</th></tr>
<tr><td colspan="3">Pre-Assessment, Quizzes
Exit Tickets
Daily Monitoring</td><td colspan="3">Unit Benchmark
SAT Testing
ACT Testing</td></tr>
<tr><th colspan="3">District/School Tasks</th><th colspan="3">District/School Primary and Supplementary Resources and Technology Integration</th></tr>
<tr><td colspan="3">NJDOE Digital Item Library
https://nj.digitalitemlibrary.com/home
NJSLA Mathematics Evidence Statements
https://docs.google.com/spreadsheets/d/18M5r1jk4P729fTpAlWAzrw1gE6tken233I-Yk0U712M/edit#gid=554025491</td><td colspan="3">Textbook
Khan Academy
https://www.khanacademy.org/
NJSLA Resources:
https://nj.mypearsonsupport.com/practice-tests/math/
Diversity, Equity & Inclusion Educational Resources
https://www.nj.gov/education/standards/dei/</td></tr>
<tr><th colspan="6">Instructional Best Practices and Exemplars</th></tr>
<tr><td colspan="3">1. Identifying similarities and differences
2. Summarizing and note taking
3. Reinforcing effort and providing recognition
4. Homework and practice
5. Nonlinguistic representations</td><td colspan="3">6. Cooperative learning
7. Setting objectives and providing feedback
8. Generating and testing hypotheses
9. Cues, questions, and advance organizers
10. Manage response rate</td></tr>
<tr><th colspan="6">Vocabulary</th></tr>
<tr><td>Natural numbers/counting numbers
Ellipsis
Inductive reasoning/induction
Scientific method
Hypothesis
Conjecture
Counterexample
Deductive reason/deduction
Estimation
Set
Elements/members</td><td>Braces
Roster form
Set-builder notation
Finite
Infinite
One-to-one correspondence
Empty/null set
Universal set
Subset
Proper subset
Number of distinct subsets
Well defined</td><td>Complement
Intersection
Union
Difference of two sets
Cartesian product
De Morgan’s Laws
Infinite set
Countable
Aleph-null
Cardinal number
Symbolic logic
Connectives
Exclusive/inclusive or</td><td>Statement
Simple
Compound
Negation
Quantifiers
Conjunction
Disjunction
Neither-nor
Conditional
Antecedent
Consequent
Biconditional
Self-contradiction
Description</td><td>Tautology
Implication
Equivalent
Converse
Inverse
Contrapositive
Valid
Invalid/fallacy
Symbolic argument
Premises
Conclusion
Law od detachment
Law of contraposition
Disjoint</td><td>Disjunctive syllogism
Euler diagram
Series circuit
Parallel circuit
Equivalent circuits
Number
Numeral
System of numeration
Place-value
Positional-value
Base
Digits
Number of distinct proper subsets</td></tr>
</table>

9.1 Personal Financial Literacy, 9.2 Career Awareness, Exploration, Preparation and Training & 9.4 Life Literacies and Key Skills
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.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1). 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.DC.6: Select information to post online that positively impacts personal image and future college and career opportunities. 9.4.12.IML.7: Develop an argument to support a claim regarding a current workplace or societal/ethical issue such as climate change (e.g., NJSLSA.W1, 7.1.AL.PRSNT.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/
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 ☐Modify activities/assignments/projects/assessments ☐ Breakdown activities/assignments/projects/assessments into manageable units ☐Additional time to complete activities/assignments/projects/assessments ☐ Provide an option for alternative activities/assignments/projects/assessments ☐ Modify Content ☐ Modify Amount ☐ Small Group Intervention/Remediation ☐ Individual Intervention/Remediation ☐ Additional Support Materials ☐ Guided Notes ☐ Graphic Organizers ☐ Adjust Pacing of Content ☐ Increase one on one time ☐ Peer Support ☐ Other Modifications for Special Education:

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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:

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

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Suggested Activities	
☐ Do Now/Warm-Up	☐ Centers
☐ Whole Group	☐ Intervention/Remediation
☐ Small Groups	☐ Projects
☐ Guided Practice	☐Academic Games
☐ Independent Practice	☐ Other Suggested Activities:

Interdisciplinary Connections

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.5: Decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, and/or objects.
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.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.