

Pascack Valley Regional High School District

**Pascack Hills High School, Montvale, New Jersey
Pascack Valley High School, Hillsdale, New Jersey**

Course Name: Precalculus

Born On: August, 2016
Previous Revision: August, 2020
Current Revision: August, 2023
Board Approval: 8/28/23

COURSE DESCRIPTION: Precalculus

Precalculus is a full year, five-credit course in pre-college mathematics. Students integrate concepts and skills acquired in prior algebra and geometry courses in a study of functions. Additional topics include conic sections, analytic trigonometry, polar coordinates, sequences and series, vectors, matrices, counting theory, and probability. Students also begin the study of calculus through an introduction to limit theory. A student who satisfactorily completes the requirements of this course is prepared for a course in *Calculus*, either CP or AB level.

All mathematics courses in the Pascack Valley Regional High School District are designed to address multiple learning styles and needs, and accommodations and modifications are made for students with disabilities, multilingual students, students at risk of failure, gifted and talented students, and students with 504 plans. *Precalculus* builds on concepts learned and skills developed in *Algebra II w/ Trigonometry* and *Geometry*, while also spiraling in those concepts and skills to reinforce and strengthen students' algebraic foundation. Additionally, *Precalculus* anticipates higher-level mathematics that will be learned in *Calculus* and beyond, and enrichment opportunities are provided to challenge students and engage them in rich, interesting mathematics. Students are encouraged to analyze data using tools and models to make valid and reliable claims (9.4.12.IML.3), and various technologies are integrated throughout the curriculum, including scientific calculators, graphing calculators, specialized software, and various Internet programs and subscriptions. These tools enrich the curriculum by giving students' access to additional mathematical representations, and they also help to differentiate by providing students with additional options to engage with mathematical tasks.

The Pascack Valley Regional High School Mathematics Department integrates 21st century life and career skills across its courses, with the dual goal of informing students about careers and fields of study that use mathematics (9.3.ST.5, 9.3.ST-ET.5 and 9.3.ST-SM.2), and helping students improve the quantitative, mathematical, and statistical reasoning skills they will need to be effective producers and consumers of quantitative information in their everyday lives (9.2.12.CAP.2). Mathematics courses address the *New Jersey Student Learning Standards for Career Readiness, Life Literacies and Key Skills*, with a particular emphasis on demonstrating the ability to reflect, analyze and use creative skills and ideas (9.4.12.CI.1), investigating new challenges and opportunities for personal growth, advancement and transition (9.4.12.CI.3), identifying problem-solving strategies used in the development of an innovative product or practice (9.4.12.CT.1), and explaining the potential benefits of collaborating to enhance critical thinking and problem solving (9.4.12.CT.2). Mathematics courses also address the *New Jersey Student Learning Standards for English Language Arts Companion Standards*, with a particular focus on following complex multistep procedures (RST.9-10.3/RST.11-12.3), determining the meaning of symbols, key terms, and other domain-specific words and phrases (RST.9-10.4/RST.11-12.3), and translating quantitative or technical information expressed in words into visual forms and translating information expressed visually or mathematically into words (RST.9-10.7). Similarly, the mathematics department seeks to support students by providing them with opportunities to use quantitative, statistical, and mathematical reasoning in interdisciplinary contexts, in contexts that are meaningful to students, and in contexts that attend to the contributions and perspectives of historically marginalized groups. Specifically, mathematics courses will look to incorporate, when appropriate, contributions and experiences of people from the LGBTQ+ community and individuals with disabilities, and references to issues of social and cultural relevance, including climate change.

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Content/Topic:	Key Learning Items/Concepts and Pacing Guide	Observable Proficiencies and Skills:	NJSLS	Formative, Summative, Benchmark, and Alternative Assessments	Core Instructional and Supplemental Materials/ Modifications and Accommodations
<p>Unit 1 – Trigonometric Functions</p> <p>Time: 15-17 weeks (<i>see column 2 for a more detailed breakdown</i>)</p>	<p>Key learning items/concepts:</p> <p>THE UNIT CIRCLE (TUC)</p> <ul style="list-style-type: none"> - TUC-2 Linear & Angular Speed (PWL 4.1 and AM 7-2) (3 days) - Arc Length and Sectors of Circles - TUC-3 Evaluating Trigonometric Functions of Any Angle (PWL 4.2, 4.4, and AM 7-3 – 7-5) (3 days) - Angles in standard position, degrees and radians, value of the six trig functions for any angle - TUC-4 The Unit Circle (PWL 4.2, 4.4, and AM 7-3 – 7-5) (3 days) - TUC-5 Graphs of Trigonometric Functions (PWL 4.5 - 4.6 and AM 7-3 – 7-4) (3 days) - TUC-6 The Inverse Trigonometric Functions (PWL 4.7 and AM 7-6) (3 days) <p>TRIANGLE TRIGONOMETRY (TT)</p> <ul style="list-style-type: none"> - TT-1 Right Triangle Trigonometry (PWL 4.3 and 4.8 and AM 9-1) (3 days) - TT-2 The Area of an Oblique Triangle (PWL 6.1 and AM 9-2) (3 days) - The area formula given 2 sides and the included angle. - Area of a segment and sector. 	<ul style="list-style-type: none"> - Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline and amplitude. - Produce an invertible function from a non-invertible function by restricting the domain. - Use special triangles to determine geometrically the values of sine, cosine and tangent for exact values - Understand that restricting a trigonometric function to a domain on which it is always increasing or always decreasing allows its inverse to be constructed. - Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context. - Prove the Pythagorean identity and use it to find sin, 	<p>NJSLS Content Standards</p> <ul style="list-style-type: none"> F-IF 7E F-BF 4D F-TF 3 F-TF 6-9 G-SRT 8-11 <p>NJSLS SMP</p> <ul style="list-style-type: none"> MP1. Make sense of problems and persevere in solving them MP2. Construct viable arguments and critique the reasoning of others MP3. Reason abstractly and quantitatively MP4. Model with mathematics 	<p>Students will be assessed regularly throughout this course, with a focus on both conceptual understanding and procedural fluency.</p> <p>Assessment tools may include the following:</p> <ul style="list-style-type: none"> - quizzes (F) - tests (S) - performance tasks (F/S) - projects (S) - homework (F) - discussions (F) - journals (F) - Form A, B, or C benchmark (B) - alternative assessments 	<p>Selection of primary sources</p> <p><i>Suggestion(s):</i></p> <p>Texts: <i>Precalculus with Limits</i>, Larson, Hostetler, Edwards; Houghton Mifflin Company, 2008 (on grade level); <i>Advanced Mathematics</i>, Brown; Houghton Mifflin Company, 1994 (on grade level); Larson, Hostetler, Edward, Heath <i>Calculus, 7th</i> edition, 2002 (advanced); <i>Deltamath</i> (remediation, on grade level, and advanced)</p> <p>Additional Resources:</p> <ul style="list-style-type: none"> - <i>Exploring Calculus with The Geometer’s Sketchpad, version 4</i>, Clements, Rantozzi and Stekettee - <i>Exploring Conics with The Geometers’ Sketchpad</i>, Scher and Daniel - <i>Conquering the New SAT Math</i>, Postman and Postman - <i>Grapher</i> - <i>Geometer’s Sketchpad</i> - <i>Calculus-in-Motion</i> <p>Calculators:</p> <p>The TI-83, TI-83+, or TI-84 graphing calculators (Texas Instruments).</p>

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	<ul style="list-style-type: none"> - TT-3 The Law of Sines (PWL 6.1 AND AM 9-3) (3 days) - TT-4 The Law of Cosines (PWL 6.2 AND AM 9-4) (3 days) - TT-5 Applications of Law of Sines and Cosines (3 days) - navigation, triangles and area of quadrilaterals <p>TRIGONOMETRIC GRAPHS, IDENTITIES & EQUATIONS (TGIE)</p> <ul style="list-style-type: none"> - TGIE-1 Graphs of Trigonometric Functions (Sine, Cosine and Tangent) (PWL 4.5-4.6 and AM 8.2 – 8.3) (3 days) - Graphs including horizontal and vertical shifts in radians and degrees. - Models and applications involving sine and cosine graphs. - TGIE-2 Writing Equations of Trigonometric Functions (PWL 4.5-4.6 and AM 8.2 – 8.3) (3 days) - TGIE-3 Simplifying and Verifying Trigonometric Identities (PWL 5.1 – 5.2 AND AM 8-4) (3 days) - TGIE-4 Simple Trigonometric Equations (PWL 5.3 & AM 8.1, 8.5) (3 days) - TGIE-5 More Difficult Trigonometric Equations (PWL 5.3 & AM 8.5) (3 days) - TGIE-6 Applications of Trigonometric Equations (AM 8.1) (3 days) - Angle of inclination and the angle between two lines. <p>TRIGONOMETRIC ADDITION</p>	<p>cos, or tan given sin, cos, or tan and the quadrant of the angle.</p> <ul style="list-style-type: none"> - Prove the addition and subtraction formulas for sine, cosine and tangent and use them to solve problems. - Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. - Derive the formula $A = \frac{1}{2} ab \sin C$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side. - Prove the Law of Sines and the Law of Cosines and use them to solve problems. - Understand and apply the Law of Sines and the Law of Cosines to find the unknown measurements in right and non-right triangles (e.g. surveying problems, resultant forces.) - Identify a function by its graph. - Simplify and verify trig identities. - Solve simple trigonometric equations algebraically with a specified domain. - Find multiple solutions to a 	<p>MP5. Attend to precision MP6. Use appropriate tools strategically MP7. Look for and make use of structure MP8. Look for and express regularity in repeated reasoning</p> <p>NJSLS for ELA Companion Standards RST.9-10.3 RST.9-10.4 RST.9-10.7 RST.11-12.3 RST.11-12.4</p> <p>NJSLS-CLKS - 21st Century Life and Careers 9.4.12.CI.1 9.4.12.CI.3 9.4.12.CT.1 9.4.12.CT.2</p> <p>- Technology</p>	<p>(A) - Take home exams and investigations (F) - Bio Rhythm Project (S) - Weather Project (S) - The Unit Circle Activity (F)</p>	<p>Modifications and Accommodations: Students with special needs: Teachers and support staff will attend to all modifications and accommodations listed in students’ IEPs and 504s. Teachers will incorporate manipulatives, extra time, alternative assessments, scaffolding, spiraling, technology, and flexible grouping to support student learning. Multilingual students: Teachers and support staff will work to support multilingual students in their first language and in English, providing materials and/or resources to support students’ understanding. Students will be given additional time, as appropriate, and translation tools will be utilized as needed. Students at risk of school failure: Formative and summative data will be used to monitor student success, and students at risk of failure will receive additional supports and services, which may include parent consultation, extra help, and differentiation strategies, including small group instruction, group work, scaffolding, and spiraling. Gifted and Talented Students: Students who excel in their mastery of course standards will be further challenged with more complex tasks, extensions of concepts and skills, and extended problem solving and critical thinking opportunities.</p>
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	<p>FORMULAS (TAF) - TAF-1 Sum and Difference Formulas (PWL 5-4 and AM 10.1 – 10.2) (3 days) - TAF-2 Double Angle Formulas (PWL 5.5 and AM 10.3) (3 days) - TAF-3 Trigonometric Equations with Double Angles (PWL 5.4-5.5 and AM 10-4) (3 days)</p> <p>POLAR COORDINATES (PC) - PC-1 Polar Coordinates (PWL 9.6, 9.7, 6.5) (3 days) - Converting polar coordinates and equations to Cartesian and vice-versa. - PC-2 Graphing Polar (PWL 9.7 and AM 11-1) (3 days) - Graphing points and equations using polar coordinates.</p> <p>Content-specific modifications and accommodations - technology and multiple representations will be utilized to support conceptual understanding - differentiated problem sets can be used to support and challenge students</p> <p>Interdisciplinary/additional connections - various graphs may be explored, including those with contexts that draw on the experiences of diverse people and contexts that relate to climate change - surveying and navigation problems may be explored</p>	<p>trig equation, via multiple quadrants and replication because of a contraction of the function: $f(cx)$, where c is a constant.</p>	<p>9.4.12.IML.3</p> <p>- Career Education 9.2.12.CAP.2 9.3.ST.5 9.3.ST-ET.5 9.3.ST-SM.2</p> <p>NJSLS – CSDT 8.1.12.DA.1 8.1.12.DA.5 8.1.12.DA.6 8.1.12.AP.1 8.2.12.ETW.2</p>		

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<p>Unit 2 – Functions</p> <p>Time: 5-7 weeks (<i>see column 2 for a more detailed breakdown</i>)</p>	<p>Key learning items/concepts:</p> <p>Functions</p> <ul style="list-style-type: none"> - Function Operations $(f + g)(x)$: Rule, Domain, Range (PWL 1.5 and AM 4.2) (2 days) - Function Composition $f(g(x))$: Rule, Domain, Range (PWL 1.5) (2 days) - Function Inverse: Domain restrictions to make invertible, rule, domain and range (PWL 1-6 and AM 4-5) (2 days) - Polynomial Inequalities: Graph polynomials and state where greater than or equal to 0, etc. (AM 3-2 and 3-3) (2 days) - Graphing rational functions, solving rational inequalities. (PWL 2.6, 2.7) (2 days) <p>Exponents and Logarithms</p> <ul style="list-style-type: none"> - Simplifying exponential expressions (2 days) - Simplifying logarithmic expressions (AM 5-5) (2 days) - Properties of Logarithms (PWL 3.3 and AM 5-6) (2 days) - Expanding and Condensing logarithmic expressions (2 days) 	<ul style="list-style-type: none"> - Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline and amplitude. - Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. - Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents. - Find inverse functions. - Verify by composition that one functions is the inverse by another. - Read values of an inverse function from a graph or a table given that the function has an inverse. - Produce an invertible function from a non-invertible function by restricting the domain. - Solve polynomial 	<p>NJSLS Content Standards</p> <p>F-IF 7d, 7e F-BF 4-5</p> <p>NJSLS SMP</p> <p>MP1. Make sense of problems and persevere in solving them MP2. Construct viable arguments and critique the reasoning of others MP3. Reason abstractly and quantitatively MP4. Model with mathematics MP5. Attend to precision MP6. Use appropriate tools strategically MP7. Look for and make use of structure MP8. Look for and express regularity in repeated reasoning</p> <p>NJSLS for ELA Companion Standards RST.9-10.3</p>	<p>Students will be assessed regularly throughout this course, with a focus on both conceptual understanding and procedural fluency. Assessment tools may include the following:</p> <ul style="list-style-type: none"> - quizzes (F) - tests (S) - performance tasks (F/S) - projects (S) - homework (F) - discussions (F) - journals (F) - Form A, B, or C benchmark (B) - alternative assessments (A) 	<p>Selection of primary sources <i>Suggestion(s):</i> Texts: <i>Precalculus with Limits</i>, Larson, Hostetler, Edwards; Houghton Mifflin Company, 2008 (on grade level); <i>Advanced Mathematics</i>, Brown; Houghton Mifflin Company, 1994 (on grade level); Larson, Hostetler, Edward, Heath <i>Calculus, 7th</i> edition, 2002 (advanced); <i>Deltamath</i> (remediation, on grade level, and advanced)</p> <p>Additional Resources:</p> <ul style="list-style-type: none"> - <i>Exploring Calculus with The Geometer's Sketchpad, version 4</i>, Clements, Rantozzi and Stekettee - <i>Exploring Conics with The Geometers' Sketchpad</i>, Scher and Daniel - <i>Conquering the New SAT Math</i>, Postman and Postman - <i>Grapher</i> - <i>Geometer's Sketchpad</i> - <i>Calculus-in-Motion</i> <p>Calculators: The TI-83, TI-83+, or TI-84 graphing calculators (Texas Instruments).</p> <p>Modifications and Accommodations:</p>

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	<ul style="list-style-type: none"> - Solving logarithmic equations (PWL 3.4) (2 days) - Graphing logarithmic functions. (PWL 3.2) (2 days) - Applications of logarithms (PWL 3.2, 3.3, 3.4) (2 days) - Financial applications, growth and decay applications, half-life applications (2 days) <p>Content-specific modifications and accommodations</p> <ul style="list-style-type: none"> - use multiple representations to support conceptual understanding - use technology to enhance student engagement <p>Interdisciplinary/additional connections</p> <ul style="list-style-type: none"> - explore exponential and logarithmic applications in the Richter scale, ph scale, compounded interest and climate change - explore population growth for different groups around the world and in the United States 	<p>inequalities with polynomial and rational functions.</p> <ul style="list-style-type: none"> - Perform function operations, including composition, and describe the resulting domain and range. - Describe and use exponential and logarithmic functions. 	<p>RST.9-10.4 RST.9-10.7 RST.11-12.3 RST.11-12.4</p> <p>NJSLS-CLKS - 21st Century Life and Careers 9.4.12.CI.1 9.4.12.CI.3 9.4.12.CT.1 9.4.12.CT.2</p> <p>- Technology 9.4.12.IML.3</p> <p>- Career Education 9.2.12.CAP.2 9.3.ST.5 9.3.ST-ET.5 9.3.ST-SM.2</p> <p>NJSLS – CSDT 8.1.12.DA.1 8.1.12.DA.5 8.1.12.DA.6 8.1.12.AP.1 8.2.12.ETW.2</p>	<ul style="list-style-type: none"> - Take home exams and investigations (F) - Exponential exploration (F) 	<p>Students with special needs: Teachers and support staff will attend to all modifications and accommodations listed in students’ IEPs and 504s. Teachers will incorporate manipulatives, extra time, alternative assessments, scaffolding, spiraling, technology, and flexible grouping to support student learning.</p> <p>Multilingual students: Teachers and support staff will work to support multilingual students in their first language and in English, providing materials and/or resources to support students’ understanding. Students will be given additional time, as appropriate, and translation tools will be utilized as needed.</p> <p>Students at risk of school failure: Formative and summative data will be used to monitor student success, and students at risk of failure will receive additional supports and services, which may include parent consultation, extra help, and differentiation strategies, including small group instruction, group work, scaffolding, and spiraling.</p> <p>Gifted and Talented Students: Students who excel in their mastery of course standards will be further challenged with more complex tasks, extensions of concepts and skills, and extended problem solving and critical thinking opportunities.</p>

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<p>Unit 3 – Sequences and Series</p> <p>Time: 5-7 weeks (<i>see column 2 for a more detailed breakdown</i>)</p>	<p>Key learning items/concepts:</p> <p>S&S-1 Sequences - Neither, Geometric and Arithmetic Sequences, Recursive and Explicit Definitions, (PWL 8.1-8.3 and AM 13.1 – 13.2) (1 week)</p> <p>S&S-2 Finite Geometric and Arithmetic Series (AM 13.3 and PWL 8.2 – 8.3) (1 week)</p> <p>S&S-3 Limits of Infinite Sequences (AM 13-4 and PWL 11-4) (1 week)</p> <p>S&S-4 Infinite Geometric Series (AM 13-5 and PWL 8-3) (1 week)</p> <p>S&S-5 Sigma Notation (AM 13-6 and PWL 8.1 – 8.3) (1 week)</p> <p>Content-specific modifications and accommodations</p> <ul style="list-style-type: none"> - use multiple representations and technology to support conceptual understanding - use Microsoft Excel and its ability to calculate recursively to check explicit understanding <p>Interdisciplinary/additional connections</p> <ul style="list-style-type: none"> - consider applications of geometric series in science or nature - explore population growth for different groups around the world and in the United States 	<p>- <i>Derive the formula for the sum of a finite geometric series (when the common ratio is not 1) and use the formula to solve problems.</i></p> <p>- <i>Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.</i></p> <p>- <i>Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two</i></p>	<p>NJSLS Content Standards</p> <p>A-SSE 4</p> <p>F-IF 3</p> <p>F-BF 2</p> <p>NJSLS SMP</p> <p>MP1. Make sense of problems and persevere in solving them</p> <p>MP2. Construct viable arguments and critique the reasoning of others</p> <p>MP3. Reason abstractly and quantitatively</p> <p>MP4. Model with mathematics</p> <p>MP5. Attend to precision</p> <p>MP6. Use appropriate tools strategically</p> <p>MP7. Look for and make use of structure</p> <p>MP8. Look for and express regularity in repeated reasoning</p>	<p>Students will be assessed regularly throughout this course, with a focus on both conceptual understanding and procedural fluency. Assessment tools may include the following:</p> <ul style="list-style-type: none"> - quizzes (F) - tests (S) - performance tasks (F/S) - projects (S) - homework (F) - discussions (F) - journals (F) - Form A, B, or C benchmark (B) - alternative assessments 	<p>Selection of primary sources</p> <p><i>Suggestion(s):</i></p> <p>Texts: <i>Precalculus with Limits</i>, Larson, Hostetler, Edwards; Houghton Mifflin Company, 2008 (on grade level); <i>Advanced Mathematics</i>, Brown; Houghton Mifflin Company, 1994 (on grade level); Larson, Hostetler, Edward, Heath <i>Calculus</i>, 7th edition, 2002 (advanced); <i>Deltamath</i> (remediation, on grade level, and advanced)</p> <p>Additional Resources:</p> <ul style="list-style-type: none"> - <i>Exploring Calculus with The Geometer’s Sketchpad, version 4</i>, Clements, Rantozzi and Stekete - <i>Exploring Conics with The Geometers’ Sketchpad</i>, Scher and Daniel - <i>Conquering the New SAT Math</i>, Postman and Postman - <i>Grapher</i> - <i>Geometer’s Sketchpad</i> - <i>Calculus-in-Motion</i> <p>Calculators:</p> <p>The TI-83, TI-83+, or TI-84 graphing calculators (Texas Instruments).</p>

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		<p><i>forms.</i> - Determine the limit of an infinite sequence or determine that no limit exists. - Represent series using sigma notation. - Express a given series using sigma notation and evaluate using established properties and formulas.</p>	<p>NJSLS for ELA Companion Standards RST.9-10.3 RST.9-10.4 RST.9-10.7 RST.11-12.3 RST.11-12.4</p> <p>NJSLS-CLKS - 21st Century Life and Careers 9.4.12.CI.1 9.4.12.CI.3 9.4.12.CT.1 9.4.12.CT.2</p> <p>- Technology 9.4.12.IML.3</p> <p>- Career Education 9.2.12.CAP.2 9.3.ST.5 9.3.ST-ET.5 9.3.ST-SM.2</p> <p>NJSLS – CSDT 8.1.12.DA.1 8.1.12.DA.5 8.1.12.DA.6 8.1.12.AP.1 8.2.12.ETW.2</p>	<p>(A) - Take home exams and investigations (F) - arithmetic series exploration (F)</p>	<p>Modifications and Accommodations: Students with special needs: Teachers and support staff will attend to all modifications and accommodations listed in students’ IEPs and 504s. Teachers will incorporate manipulatives, extra time, alternative assessments, scaffolding, spiraling, technology, and flexible grouping to support student learning. Multilingual students: Teachers and support staff will work to support multilingual students in their first language and in English, providing materials and/or resources to support students’ understanding. Students will be given additional time, as appropriate, and translation tools will be utilized as needed. Students at risk of school failure: Formative and summative data will be used to monitor student success, and students at risk of failure will receive additional supports and services, which may include parent consultation, extra help, and differentiation strategies, including small group instruction, group work, scaffolding, and spiraling. Gifted and Talented Students: Students who excel in their mastery of course standards will be further challenged with more complex tasks, extensions of concepts and skills, and extended problem solving and critical thinking opportunities.</p>

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Content/Topic:	Key Learning Items/Concepts and Pacing Guide	Observable Proficiencies and Skills:	NJSLs	Formative, Summative, Benchmark, and Alternative Assessments	Core Instructional and Supplemental Materials/ Modifications and Accommodations
<p>Unit 4 – Statistics</p> <p>Time: 5-7 weeks (<i>see column 2 for a more detailed breakdown</i>)</p>	<p>Key learning items/concepts:</p> <ol style="list-style-type: none"> 1. Surveys, experiments, observational studies; compare two treatments; margin of error (1 week) 2. Estimate population percentages and areas under the normal curve (2 weeks) 3. Estimate population mean or proportion (2 weeks) <p>Content-specific modifications and accommodations</p> <ul style="list-style-type: none"> - use multiple representations and technology to support conceptual understanding - allow calculator use to focus attention on conceptual understanding <p>Interdisciplinary/additional connections</p> <ul style="list-style-type: none"> - draw on contexts with applications from other fields - draw on contexts with climate change applications - draw on contexts from diverse populations 	<p><i>Understand and evaluate random processes underlying statistical experiments.</i></p> <p><i>Make inferences and justify conclusions from sample surveys, experiments, and observational studies.</i></p> <p><i>Summarize, represent, and interpret data on a single count or measurement variable.</i></p>	<p>NJSLs Content Standards</p> <p>S-IC 1-6 S-ID 4</p> <p>NJSLs SMP</p> <p>MP1. Make sense of problems and persevere in solving them MP2. Construct viable arguments and critique the reasoning of others MP3. Reason abstractly and quantitatively MP4. Model with mathematics MP5. Attend to precision MP6. Use appropriate tools strategically MP7. Look for and make use of structure MP8. Look for and express regularity in repeated reasoning</p> <p>NJSLs for ELA Companion Standards</p>	<p>Students will be assessed regularly throughout this course, with a focus on both conceptual understanding and procedural fluency. Assessment tools may include the following:</p> <ul style="list-style-type: none"> - quizzes (F) - tests (S) - performance tasks (F/S) - projects (S) - homework (F) - discussions (F) - journals (F) - Form A, B, or C benchmark (B) - alternative assessments 	<p>Selection of primary sources <i>Suggestion(s):</i> Texts: <i>Precalculus with Limits</i>, Larson, Hostetler, Edwards; Houghton Mifflin Company, 2008 (on grade level); <i>Advanced Mathematics</i>, Brown; Houghton Mifflin Company, 1994 (on grade level); Larson, Hostetler, Edward, Heath <i>Calculus</i>, 7th edition, 2002 (advanced); <i>Deltamath</i> (remediation, on grade level, and advanced)</p> <p>Additional Resources:</p> <ul style="list-style-type: none"> - <i>Exploring Calculus with The Geometer’s Sketchpad, version 4</i>, Clements, Rantozzi and Steketee - <i>Exploring Conics with The Geometers’ Sketchpad</i>, Scher and Daniel - <i>Conquering the New SAT Math</i>, Postman and Postman - <i>Grapher</i> - <i>Geometer’s Sketchpad</i> - <i>Calculus-in-Motion</i> <p>Calculators: The TI-83, TI-83+, or TI-84 graphing calculators (Texas Instruments).</p>

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			<p>RST.9-10.3 RST.9-10.4 RST.9-10.7 RST.11-12.3 RST.11-12.4</p> <p>NJSLS-CLKS - 21st Century Life and Careers 9.4.12.CI.1 9.4.12.CI.3 9.4.12.CT.1 9.4.12.CT.2</p> <p>- Technology 9.4.12.IML.3 9.4.12.TL.2 9.4.12.IML.4 9.4.12.IML.9 9.4.12.IML.10</p> <p>- Career Education 9.2.12.CAP.2 9.3.ST.5 9.3.ST-ET.5 9.3.ST-SM.2</p> <p>NJSLS – CSDT 8.1.12.DA.1 8.1.12.DA.5 8.1.12.DA.6 8.1.12.AP.1 8.2.12.ETW.2</p>	<p>(A) - Take home exams and investigations (F)</p>	<p>Modifications and Accommodations: Students with special needs: Teachers and support staff will attend to all modifications and accommodations listed in students’ IEPs and 504s. Teachers will incorporate manipulatives, extra time, alternative assessments, scaffolding, spiraling, technology, and flexible grouping to support student learning. Multilingual students: Teachers and support staff will work to support multilingual students in their first language and in English, providing materials and/or resources to support students’ understanding. Students will be given additional time, as appropriate, and translation tools will be utilized as needed. Students at risk of school failure: Formative and summative data will be used to monitor student success, and students at risk of failure will receive additional supports and services, which may include parent consultation, extra help, and differentiation strategies, including small group instruction, group work, scaffolding, and spiraling. Gifted and Talented Students: Students who excel in their mastery of course standards will be further challenged with more complex tasks, extensions of concepts and skills, and extended problem solving and critical thinking opportunities.</p>