Rewritten: August, 2020

SAT PREP SYLLABUS

MATHEMATICS

2020-2021 Academic School Year

Semester Course

Chapter 1: Inside the SAT, Chapter 2: Prerequisite Skills and Calculator Use, Chapter 3: The Method for SAT Math Questions, Chapter 16: SAT Math: Timing and Section Management Strategies

- The above chapters should be summarized in the first week and used as supplemental material to implement test taking strategies in other chapters where appropriate.

NOTE: For each unit, test taking strategies should be taught along with mathematical skills where appropriate

Chapter 4: Linear Equations and Graphs

- Isolate a variable: *NJSLS-A-SSE.A.1a, NJSLS-A-SSE.A.1b, NJSLS-A-CED.A.4, NJSLS-A-REI.B.3*
- Translate word problems into equations: *NJSLS-A-SSE.A.1a, NJSLS-A-CED.A.1, NJSLS-A-CED.A.2, NJSLS-A-CED.A.3, NJSLS-F-LE.A.1b*
- Calculate the slope of a line, given two points: *NJSLS-F-IF.B.6*
- Write the equation of a line in slope-intercept form: *NJSLS-A-CED.A.2, NJSLS-F-BF.A.1a, NJSLS-F-LE.A.2*
- Describe the slope as positive, negative, zero, or undefined: *NJSLS-F-IF.B.6*
- Describe the slopes of parallel and perpendicular lines: *NJSLS-F-IF.B.6, NJSLS-A-CED.A.2*

Chapter 10: Functions

- Apply function notation: *NJSLS-F-IF.A.1, NJSLS-F-IF.A.2*
- Define the domain and range of a function: *NJSLS-F-IF.A.1, NJSLS-F-IF.B.5*
- Evaluate the output of a function for a given input: *NJSLS-F-IF.A.1, NJSLS-F-IF.A.2*
- Interpret the graph of a function: *NJSLS-F-IF.B.4, NJSLS-F-IF.B.5, NJSLS-F-IF.B.6*
- Write a function to describe a rule or data set: *NJSLA-F-BF.A.1, NJSLA-F-BF-A.2*

Chapter 7: Ratios, Proportions, and Percent

- Set up and solve a proportion for a missing value: *NJSLS-7-RP.A.1, NJSLS-7-RP.A.2.c, NJSLS-7-RP.A.3*
- Use ratios to perform unit conversions: *NJSLS-7-RP.A.1, NJSLS-7-RP.A.2.c, NJSLS-7-P.A.3, NJSLS-6-RP.A.3.d*
- Calculate percent and percent change: *NJSLS-7-RP.A.1, NJSLS-7-RP.A.2.c, NJSLS-7-RP.A.3, NJSLS-6-RP.A.c*

Chapter 13: Geometry

- Identify similar triangles and apply their properties: *NJSLS-G-SRT.B.5, NJSLS-G-MG.A.1*
- Apply the Pythagorean theorem: *NJSLS-G-SRT.C.8, NJSLS-G-MG.A.1*
- Solve a 45-45-90 and 30-60-90 right triangle: *NJSLS-G-SRT.C.8, NJSLS-G-MG.A.1*
- Interpret and manipulate the equation of a circle: *NJSLS-G-GPE.A.1*
- Calculate the length of an arc or area of a sector defined by a central angle: *NJSLS-G-C.A.5*
- Calculate the volume and surface area of common solids: *NJSLS-G-GMD.A.3, NJSLS-G-GMS.A.1, NJSLS-G-MG.A.3*

Chapter 12: Quadratics

- Solve a quadratic equation by factoring: *NJSLS-A-SSE.B.3.a, NJSLS-A-REI.B.4.b*
- Solve a quadratic equation by completing the square: *NJSLS-A-SSE.B.3.b, NJSLS-A-REI.B.4.b*
- Solve a quadratic equation using the quadratic formula: *NJSLS-A-REI.B.4.b*
- Compare the properties of a quadratic function and its graph: *NJSLS-F-IF.C.8.A, NJSLS-F-IF.C.7.A*
- Solve a system of one quadratic function and one linear function: *NJSLS-A-REI.C.7*

Chapter 8: Tables, Statistics, and Probability

- Draw inferences about data presented in a variety of graphical formats: *NJSLS-S-ID.A.1, NJSLS-S-ID.A.3, NJSLS-S-ID.B.6b, NJSLS-S-IC.A.2,*
- Find an unknown value given the average: *NJSLS-6-SP.B.5.c, NJSLS-7-SP.A.2*
- Calculate mean, median, mode, and range: *NJSLS-6-SP.B.5.c*

- Describe standard deviation and margin of error: *NJSLS-S-ID-A.2, NJSLS-S-IC.B.4*
- Determine whether a survey is biased or unbiased: *NJSLS-S-IC.A.1, NJSLS-S-IC.A.2, NJSLS-S-IC.B.3*
- Draw inferences about surveys and data samples: *NJSLS-S-IC.A.1, NJSLS-S-IC.A.2, NJSLS-S-IC.B.3,*
- Create probabilities based on data sets: *NJSLS-7.SP.A.2, NJSLS-7.SP.C.5, NJSLS-7.SP.C.6, NJSLS-S-MD.B.6*

Chapter 5: Systems of Linear Equations

- Solve a system of linear equations by substitution: *NJSLS-A-CED.A.2, NJSLS-A-REI.C.6*
- Solve a system of linear equations by combinations: *NJSLS-A-CED.A.2, NJSLS-A-REI.C.6*
- Determine the possible number of solutions for a system of equations (if any): *NJSLS-A-CED.A.2, NJSLS-A-CED.A.3, NJSLS-A-REI-C.6*

Chapter 6: Inequalities

- Solve an inequality: *NJSLS-A-REI.B.3, NJSLS-A-CED.A.1*
- Identify the graph of an inequality or a system of inequalities: *NJSLS-A-CED.A.2, NJSLS-A-CED.A.3, NJSLS-A-REI.D.12*
- Solve for the point of intersection of the boundary lines of a system of inequalities: *NJSLS-A-CED.A.2, NJSLS-A-REI.C.6*
- Solve algebraically a system of one inequality with two variables and another inequality with one variable: *NJSLS-A-CED.A.2 NJSLS-A-CED.A.3 NJSLS-A-REI.C.6*
- Identify one or more inequalities that match a real-life situation: *NJSLS-A-CED.A.2, NJSLS-A-CED.A.3*

Chapter 11: Exponents, Radicals, Polynomials, and Rational Expressions

- Apply exponent rules: *NJSLS-N-RN.A.2*
- Apply radical rules: *NJSLS-A-REI.A.2*
- Add, subtract, multiply, divide, and factor polynomials: *NJSLS-A-APR.A.1, NJSLS-A-SSE.B.3*
- Define root, solution, zero, and x-intercept and identify them on the graph of a nonlinear function: *NJSLS-F-IF.B.4, NJSLS-A-SSE.B.3, NJSLS-A-APR.B.3*
- Determine whether growth or decay described in a question is linear or exponential: *NJSLA-F-LE.A.1*

- Apply the linear and exponential equations to answer growth and decay questions: *NJSLA-F-LE.A.1*
- Simplify rational expressions: *NJSLS-A-APR.D.7*
- Isolate a variable in a rational equation: *NJSLS-A-APR.D.6*

Chapter 9: Scatterplots

- Determine the average rate of change: *NJSLS-F-IF.B.6, NJSLS-S-ID.C.7*
- Write an equation for a line of best fit: *NJSLS-A-CED.A.2, NJSLS-F-BF.A.1a, NJSLS-F-E.A.2, NJSLS-S-ID.A.1, NJSLS-S-ID.B.6.a, NJSLS-S-ID.B.6.b, NJSLS-S-ID.B.6.c*
- Extrapolate values from a line of best fit: *NJSLS-S-ID.B.6.a*
- Determine whether a linear, quadratic, or exponential model describes the data presented in a scatterplot: *NJSLS-S-ID-B.6.a, NJSLS-F-LE.A.1.b, NJSLS-F.LE.A.1.c, NJSLS-F.LE.A.3*

Chapter 14: Trigonometry

- Solve a right triangle using trigonometry: *NJSLS-G-SRT.C.8, NJSLS-G-MG.A.1*
- Describe the relationship between the sine and cosine of complementary angles: *NJSLS-G-SRT.C.8, NJSLS-G-SRT.C.7*

Chapter 15: Imaginary Numbers

- Perform arithmetic operations on imaginary and complex numbers: *NJSLS-N-CN.A.1, NJSLS-N-CN.A.2, NJSLS-N-CN.A.3*

Resources

Text Book: Kaplan, SAT Prep Plus 2021

Supplemental Materials: Khan Academy: https://www.khanacademy.org/test-prep/sat/new-sat-tips-planning#about-the-sat-math-test

College Board: https://collegereadiness.collegeboard.org/sat/practice

Kaplan: https://www.kaptest.com/booksonline?utm_source=kaplan-books&utm_medium=offline&utm_term=&utm_content=book-insert&utm_campaign=all-ktp-books

Assessment Information: Course is pass/fail. Students are giving a daily grade based on participation, student must have an 85% participation grade to pass the course.

Black Horse Pike Regional School District

Where inspiring excellence is our standard and student achievement is the result

SAT Math

Updated: Summer 2020

UPDATED: Summer 2020

New Jersey Student Learning Standards

Syllabus and Timeline (by Month or by Marking Period)

Unit: 1 – Linear Equations and Graphs

OVERVIEW (WHY)	Essential Questions	1. How can you isolate a variable? 2. How can you translate word problems into equations? 3. How can you calculate the slope of a line given two points? 4. How can you write the equation of a line in slope-intercept form? 5. How can you discern whether the slope of a line is positive, negative, zero, or undefined based on its graph? 6. How can you describe the slopes of parallel and perpendicular lines?
	Enduring Understandings	Students will be able to: • Isolate a variable in an equation • Translate word problems into equations • Calculate the slope of a line given two points • Write the equation of a line in slope-intercept form • Describe the slope of a line as positive, negative, zero, or undefined • Describe the slopes of parallel and perpendicular lines

TARGETS/GOALS/OUTCOMES (WHAT)	Behavioral objectives	Objective	NJSL Standards
		1. Isolate a variable [*Standard*] – Interpret parts of an expression, such as terms, factors, and coefficients [*Standard*] –Interpret complicated expressions by viewing one or more of their parts as a single entity [*Standard*] –Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations [*Standard*] –Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters	NJSLS-A-SSE.A.1a, NJSLS-A-SSE.A.1b, NJSLS-A-CED.A.4, NJSLS-A-REI.B.3
		2. Translate word problems into equations [*Standard*] – Interpret parts of an expression, such as terms, factors, and coefficients [*Standard*] –Create equations and inequalities in one variable and use them to solve problems [*Standard*] –Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales [*Standard*] –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. [*Standard*] –Recognize situations in which one quantity changes at a constant rate per unit interval relative to another	NJSLS-A-SSE.A.1a, NJSLS-A-CED.A.1, NJSLS-A-CED.A.2, NJSLS-A-CED.A.3, NJSLS-F-LE.A.1b
		3. Calculate the slope of a line given two points [*Standard*] –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	NJSLS-F-IF.B.6

		4. Write the equation of a line in slope-intercept form [*Standard*] - Create equations in two or more variables to represent relationships between quantities; graph equation on coordinate axes with labels and scales [*Standard*] –Determine an explicit expression, a recursive process, or steps for calculation from a context [*Standard*] –Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (including reading these from a table)	NJSLS-A-CED.A.2, NJSLS-F-BF.A.1a, NJSLS-F-LE.A.2
		5. Describe the slope of a line as positive, negative, zero, or undefined [*Standard*] - 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.	NJSLS-F-IF.B.6
		6. Describe the slopes of parallel and perpendicular lines [*Standard*] –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 [*Standard*] –Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales	NJSLS-F-IF.B.6, NJSLS-A-CED.A.2
	Interdisciplinary Connections	Real world examples: Uniform circular motion (p.38), Newton's law of universal gravitation (p.38), Sales Commission (p. 38), Scoring a Track and Field event (p. 39), Cost of a light bulb (p. 39)	

INSTRUCTIONAL STRATEGIES (HOW)	Activities	Pre-Assessment on Kaplan p. 38-39 Kahn Academy SAT Prep "Heart of Algebra" https://www.khanacademy.org/test-prep/sat/sat-

		math-practice/new-sat-heart-of-algebra/v/sat-math-h6-easier Explanations and Drills in Kaplan p. 42-59 Kaplan online resources at www.kaptest.com/moreonline
	Text	Kaplan SAT Prep Plus 2021
	Accommodations and Modifications	https://www.bhprsd.org/domain/261

EVIDENCE OF LEARNING	Formative Assessments	Pre-Assessment, "How Much Have you Learned" Kaplan p. 55-57, "Reflect" Kaplan p. 58
	Summative Assessments	n/a
	Performance Assessments	Pre-Assessment, "Reflect" Kaplan p. 58.

Unit: 2 – Systems of Linear Equations

OVERVIEW (WHY)	Essential Questions	1. How can you solve systems of linear equations by substitution?
		2. How can you solve systems of linear equations by combination?
		3. How can you determine the number of possible solutions for a systems of linear equations (if any)?
	Enduring Understandings	Students will be able to: • Solve a system of linear equations by substitution • Solve a system of linear equations by combinations • Determine the number of possible solutions for a system of linear equations

TARGETS/GOALS/OUTCOMES (WHAT)	Behavioral objectives	Objective	NJSL Standards
		1. Solve a system of linear equations by substitution [*Standard*] - Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales [*Standard*] –Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables	NJSLS-A-CED.A.2, NJSLS-A-REI.C.6
		2. Solve a system of linear equations by combinations [*Standard*] –Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales [*Standard*] –Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables	NJSLS-A-CED.A.2, NJSLS-A-REI.C.6

		3. Determine the possible number of solutions for a system of equations (if any) [*Standard*] –Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales [*Standard*] –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 [*Standard*] –Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	NJSLS-A-CED.A.2, NJSLS-A-CED.A.3, NJSLS-A-REI-C.6
	Interdisciplinary Connections	Real world examples: Calculating college fees (p. 80), Cost of a sofa and chair (p. 80), Store revenue (p. 81), Cost of beads (p. 81)	

INSTRUCTIONAL STRATEGIES (HOW)	Activities	Pre-Assessment on Kaplan p. 68 Kahn Academy SAT Prep "Heart of Algebra" https://www.khanacademy.org/test-prep/sat/sat-math-practice/new-sat-heart-of-algebra/v/sat-math-h6-easier Explanations and Drills in Kaplan p. 71 – 84 Kaplan online resources at www.kaptest.com/moreonline
	Text	Kaplan SAT Prep Plus 2021
	Accommodations and Modifications	https://www.bhprsd.org/domain/261

EVIDENCE OF LEARNING	Formative Assessments	Pre-Assessment, "How Much Have You Learned?" Kaplan p. 80-81, "Reflect" Kaplan p. 82
	Summative Assessments	n/a
	Performance Assessments	Pre-Assessment, "How Much Have You Learned?" Kaplan p. 80-81, "Reflect" Kaplan p. 82

Unit: 3 – Inequalities

OVERVIEW (WHY)	Essential Questions	1. How can you solve an inequality for a range of values?
		2. How can you identify the graph of an inequality or a system of inequalities?
		3. How can you solve for the point of intersection of the boundary lines of a system of inequalities?
		4. How can you solve algebraically a system of one inequality with two variables and another inequality with one variable?
		5. How can you identify one or more inequalities that match a real-life situation?
	Enduring Understandings	Students will be able to: • Solve an inequality for a range of values • Identify the graph of an inequality or a system of inequalities • Solve for the point of intersection of the boundary lines of a system of inequalities • Solve algebraically a system of one inequality with two variables and another inequality with one variable • Identify one or more inequalities that match a real-life situation

TARGETS/GOALS/OUTCOMES (WHAT)	Behavioral objectives	Objective	NJSL Standards
		1. Solve an inequality [*Standard*] –Solve linear equations and inequalities in one variable, including equations with coefficients represented by variables [*Standard*] –Create equations and inequalities in one variable and use them to solve problems	NJSLS-A-REI.B.3, NJSLS-A-CED.A.1
		2. Identify the graph of an inequality or system of inequalities [*Standard*] –Create equations in two or more variables to represent relationships between quantities; graph equations son coordinate axes	NJSLS-A-CED.A.2, NJSLS-A-CED.A.3, NJSLS-A-REI.D.12

		with labels and scales [*Standard*] –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 [*Standard*] –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	
		3. Solve for the point of intersection of the boundary lines of a system of inequalities [*Standard*] - Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales [*Standard*] –Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables	NJSLS-A-CED.A.2, NJSLS-A-REI.C.6
		4. Solve algebraically a system of one inequality with two variables and another inequality with one variable [*Standard*] –Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales [*Standard*] –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 [*Standard*] –Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables	NJSLS-A-CED.A.2 NJSLS-A-CED.A.3 NJSLS-A-REI.C.6

		5. Identify one or more inequalities that match a real-life situation [*Standard*] –Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales [*Standard*] –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	NJSLS-A-CED.A.2, NJSLS-A-CED.A.3
	Interdisciplinary Connections	Real world examples: Cost of snacks (p. 110), Maximize packing a shipping container (p. 110), Achieving sales goals (p. 111) , Cost of school supplies (p. 112)	

INSTRUCTIONAL STRATEGIES (HOW)	Activities	Pre-Assessment on Kaplan p. 94-95 Kahn Academy SAT Prep "Heart of Algebra" https://www.khanacademy.org/test-prep/sat/sat-math-practice/new-sat-heart-of-algebra/v/sat-math-h6-easier Explanations and Drills in Kaplan p. 98-109 Kaplan online resources at www.kaptest.com/moreonline
	Text	Kaplan SAT Prep Plus 2021
	Accommodations and Modifications	https://www.bhprsd.org/domain/261

EVIDENCE OF LEARNING	Formative Assessments	Pre-Assessment, "How Much Have You Learned?" Kaplan p. 110-112, "Reflect" Kaplan p. 113
	Summative Assessments	n/a
	Performance Assessments	Pre-Assessment, "How Much Have You Learned?" Kaplan p. 110-112, "Reflect" Kaplan p. 113

Unit: 4 – Ratios, Proportions, Percents

OVERVIEW (WHY)	Essential Questions	1. How can you set up and solve a proportion for a missing value?
		2. How can you use ratios to perform unit conversions?
		3. How can you calculate percents and percent change?
	Enduring Understandings	Students will be able to: • Set up and solve a proportion for a missing value • Use ratios to perform unit conversions • Calculate percents can percent change

TARGETS/GOALS/OUTCOMES (WHAT)	Behavioral objectives	Objective	NJSL Standards
		1. Set up and solve a proportion for a missing value [*Standard*] –Compute unit rates associated with ratios of fractions, including ratios of length, areas, and other quantities measured in like or different units [*Standard*] –Represent proportional relationships by equations [*Standard*] –Use proportional relationships to solve multistep ratio and percent problems	NJSLS-7-RP.A.1, NJSLS-7-RP.A.2.c, NJSLS-7-RP.A.3
		2. Use ratios to perform unit conversions [*Standard*] –Compute unit rates associated with ratios of fractions, including ratios of length, areas, and other quantities measured in like or different units [*Standard*] –Represent proportional relationships by equations [*Standard*] –Use proportional relationships to solve multistep ratio and percent problems	NJSLS-7-RP.A.1, NJSLS-7-RP.A.2.c, NJSLS-7-RP.A.3, NJSLS-6-RP.A.3.d

		[*Standard*] –Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities	
		3. Calculate percent and percent change [*Standard*] –Compute unit rates associated with ratios of fractions, including ratios of length, areas, and other quantities measured in like or different units [*Standard*] –Represent proportional relationships by equations [*Standard*] –Use proportional relationships to solve multistep ratio and percent problems [*Standard*] –Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities	NJSLS-7-RP.A.1, NJSLS-7-RP.A.2.c, NJSLS-7-RP.A.3, NJSLS-6-RP.A.c
	Interdisciplinary Connections	Real world examples: Cost of undergraduate education (p. 142), Gardening (p. 142), Calculating a company's profit (p. 142), Converting miles per hour to feet per second (p. 142), Tracking population changes (p. 143), Calculating candy in a jar (p. 143), Converting metric units (p. 143)	

INSTRUCTIONAL STRATEGIES (HOW)	Activities	Pre-Assessment in Kaplan p. 124 - 125 Kahn Academy SAT Prep "Problem Solving and Data Analysis" https://www.khanacademy.org/test-prep/sat/sat-math-practice/new-sat-problem-solving-data-analysis/v/sat-math-q1-easier Explanations and Drills in Kaplan p. 128 – 141 Kaplan online resources at www.kaptest.com/moreonline
	Text	Kaplan SAT Prep Plus 2021
	Accommodations and Modifications	https://www.bhprsd.org/domain/261

EVIDENCE OF LEARNING	Formative Assessments	Pre-Assessment, "How Much Have You Learned?" Kaplan p. 142 - 143, "Reflect" Kaplan p. 144
	Summative Assessments	n/a
	Performance Assessments	Pre-Assessment, "How Much Have You Learned?" Kaplan p. 142 - 143, "Reflect" Kaplan p. 144

Unit: 5 – Tables, Statistics, and Probability

OVERVIEW (WHY)	Essential Questions	1. How can you draw inferences about data presented in a variety of graphical formats?
		2. How can you find an unknown value given the average?
		3. How can you calculate mean, median, mode, and range?
		4. How can you describe standard deviation and margin of error?
		5. How can you determine whether a survey is valid or biased?
		6. How can you draw inferences about surveys and data samples?
		7. How can you create probabilities based on data sets?
	Enduring Understandings	Students will be able to: • Draw inferences about data presented in a variety of graphical formats • Find an unknown value given the average • Calculate mean, median, mode, and range • Describe standard deviation and margin of error • Determine whether a survey is valid or biased • Draw inferences about surveys and data samples • Create probabilities based on data sets

TARGETS/GOALS/OUTCOMES (WHAT)	Behavioral objectives	Objective	NJSL Standards
		1. Draw inferences about data presented in a variety of graphical formats [*Standard*] –Represent data with plots on the real number line (dot plots, histograms, and box plots) [*Standard*] –Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data	NJSLS-S-ID.A.1, NJSLS-S-ID.A.3, NJSLS-S-ID.B.6b, NJSLS-S-IC.A.2,

		points (outliers) [*Standard*] –Informally assess the fit of a function by plotting and analyzing residuals [*Standard*] –Decide if a specified model is consistent with results form a given data-generating process, e.g., using simulation	
		2. Find an unknown value given the average [*Standard*] –Summarize numerical data sets in relation to their context, such as by giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered [*Standard*] –Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions	NJSLS-6-SP.B.5.c, NJSLS-7-SP.A.2
		3. Calculate Mean, Median, Mode, and Range [*Standard*] –Summarize numerical data sets in relation to their context, such as by giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered	NJSLS-6-SP.B.5.c
		4. Describe standard deviation and margin of error [*Standard*] –Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and	NJSLS-S-ID-A.2, NJSLS-S-IC.B.4

		spread (interquartile range, standard deviation) of two or more different data sets [*Standard*] –Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling	
		5. Determine whether a survey is valid or biased [*Standard*] –Represent data with plots on the real number line (dot plots, histograms, and box plots) [*Standard*] –Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets [*Standard*] –Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each	NJSLS-S-IC.A.1, NJSLS-S-IC.A.2, NJSLS-S-IC.B.3
		6. Draw inferences about surveys and data samples [*Standard*] –Represent data with plots on the real number line (dot plots, histograms, and box plots) [*Standard*] –Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets [*Standard*] –Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each	NJSLS-S-IC.A.1, NJSLS-S-IC.A.2, NJSLS-S-IC.B.3,
		7. Create probabilities based on data sets [*Standard*] –Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate	NJSLS-7.SP.A.2, NJSLS-7.SP.C.5, NJSLS-7.SP.C.6, NJSLS-S-MD.B.6

		multiple sample sets (or simulated samples) of the same size to gauge the variation in estimates or predictions [*Standard*] –Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around ½ indicates an event that is neither likely nor unlikely, and a probability near 1 represents a likely event [*Standard*] –Approximate the probability of an event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability [*Standard*] –Evaluate and compare strategies on the basis of expected values	
	Interdisciplinary Connections	Real world examples: Analyzing results of a survey (p. 180), Visitors in museum (p. 180-181), Sales in a boutique (p. 181), Gym membership (p. 182), Animal population trends (p. 182), Fertilizer effectiveness (p. 183), Market research (p. 183)	

INSTRUCTIONAL STRATEGIES (HOW)	Activities	Pre-Assessment in Kaplan p. 156-157 Kahn Academy SAT Prep "Problem Solving and Data Analysis" https://www.khanacademy.org/test-prep/sat/sat-math-practice/new-sat-problem-solving-data-analysis/v/sat-math-q1-easier Explanations and Drills in Kaplan p. 160 – 179 Kaplan online resources at www.kaptest.com/moreonline
	Text	Kaplan SAT Prep Plus 2021
	Accommodations and Modifications	https://www.bhprsd.org/domain/261

EVIDENCE OF LEARNING	Formative Assessments	Pre-Assessment, "How Much Have You Learned?" Kaplan p. 180-183, "Reflect" Kaplan p. 184
	Summative Assessments	n/a
	Performance Assessments	Pre-Assessment, "How Much Have You Learned?" Kaplan p. 180-183, "Reflect" Kaplan p. 184

Unit: 6 - Scatterplots

OVERVIEW (WHY)	Essential Questions	1. How can you determine the average rate of change?
		2. How can you write an equation for a line of best fit?
		3. How can you extrapolate values from the line of best fit?
		4. How can you determine whether a linear, a quadratic, or an exponential model describes the data presented in a scatterplot?
	Enduring Understandings	Students will be able to: • Determine the average rate of change • Write an equation for a line of best fit • Extrapolate values from the line of best fit • Determine whether a linear, a quadratic, or an exponential model describes the data presented in a scatterplot

TARGETS/GOALS/OUTCOMES (WHAT)	Behavioral objectives	Objective	NJSL Standards
		1. Determine the average rate of change [*Standard*] –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. [*Standard*] –Interpret the slope (rate of change and the intercept (constant term) of a linear model in the context of the data	NJSLS-F-IF.B.6, NJSLS-S-ID.C.7
		2. Write an equation for a line of best fit [*Standard*] –Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales [*Standard*] –Determine an explicit	NJSLS-A-CED.A.2, NJSLS-F-BF.A.1a, NJSLS-F-LE.A.2, NJSLS-S-ID.A.1, NJSLS-S-ID.B.6.a, NJSLS-S-ID.B.6.b, NJSLS-S-ID.B.6.c

		expression, a recursive process or steps for calculation from context [*Standard*] –Construct linear and exponential function, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs include reading these from a table) [*Standard*] –Represent data with plots on the real number line (dot plots, histograms, and box plots) Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models [*Standard*] –Informally sasses the fit of a function by plotting and analyzing residuals [*Standard*] –Fit a linear function for a scatter plot that suggests a linear association	
		3. Extrapolate values from the line of best fit [*Standard*] –Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.	NJSLS-S-ID.B.6.a
		4. Determine whether a linear, a quadratic, or an exponential model describes the data presented in a scatterplot [*Standard*] –Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. [*Standard*] –Recognize situations in which one quantity changes at a constant rate per unit interval relative	NJSLS-S-ID-B.6.a, NJSLS-F-LE.A.1.b, NJSLS-F.LE.A.1.c, NJSLS-F.LE.A.3

		to another [*Standard*] –Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. [*Standard*] –Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function	
	Interdisciplinary Connections	Real world examples: Tracking employee sick days (p. 208), Interpreting animal population trends (p. 208), Modeling gas prices (p. 209), Modeling study time and grades (p. 209), Predicting time to clear roads after a storm (p. 210), Comparing number of visitors in a shopping plaza (p. 211)	

INSTRUCTIONAL STRATEGIES (HOW)	Activities	Pre-Assessment in Kaplan p. 194 - 195 Kahn Academy SAT Prep "Problem Solving and Data Analysis" https://www.khanacademy.org/test-prep/sat/sat-math-practice/new-sat-problem-solving-data-analysis/v/sat-math-q1-easier Explanations and Drills in Kaplan p. 198 – 207 Kaplan online resources at www.kaptest.com/moreonline
	Text	Kaplan SAT Prep Plus 2021
	Accommodations and Modifications	https://www.bhprsd.org/domain/261

EVIDENCE OF LEARNING	Formative Assessments	Pre-Assessment, "How Much Have You Learned?" Kaplan p. 208 - 211, "Reflect" Kaplan p. 212
	Summative Assessments	n/a
	Performance Assessments	Pre-Assessment, "How Much Have You Learned?" Kaplan p. 208 - 211, "Reflect" Kaplan p. 212

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New Jersey Student Learning Standards

Syllabus and Timeline (by Month or by Marking Period)

Unit: Functions

OVERVIEW (WHY)	Essential Questions	1. How do you apply function notation? 2. How do you define domain and range of a function? 3. How do you evaluate the output of a function given the input? 4. How do you interpret the graph of a function? 5. How do you write a function to describe a rule or data set?
	Enduring Understandings	Students will be able to: • Apply function notation • Define the domain and range of a function • Evaluate the output of a function for a given input • Interpret the graph of a function • Write a function to describe a rule or data set

TARGETS/GOALS/OUTCOMES (WHAT)	Behavioral objectives	Objective	NJSL Standards
		1. Apply function notation. *[Standard] 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*	*NJSLS-F-IF.A.1, NJSLS-F-IF.A.2*

		function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x). *[Standard] Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.*	
		2. Define the domain and range of a function. *[Standard] 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 input x. The graph of f is the graph of the equation y = f(x).* *[Standard] 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.*	*NJSLS-F-IF.A.1, NJSLS-F-IF.B.5*

		3. Evaluate the output of a function for a given input. *[Standard] 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 input x. The graph of f is the graph of the equation y = f(x).* *[Standard] Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.*	*NJSLS-F-IF.A.1, NJSLS-F-IF.A.2*
		4. Interpret the graph of a function *[Standard] 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.* *[Standard] 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.* *[Standard] 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.*	*NJSLS-F-IF.B.4, NJSLS-F-IF.B.5, NJSLS-F-IF.B.6*

		5. Write a function to describe a rule or data set *[Standard] Write a function that describes a relationship between two quantities.* *[Standard]* Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	*NJSLA-F-BF.A.1, NJSLA-F-BF-A.2*
	Interdisciplinary Connections	Real World Examples: Carpet Installation (p.232), Profit (p.237), Cell Phone Service (p.237), Biology (p.237)	

INSTRUCTIONAL STRATEGIES (HOW)	Activities	Kaplan Pre assessment: p. 222-223 Khan Academy SAT Prep: Passport to Advanced Math https://www.khanacademy.org/test-prep/sat/new-sat-tips-planning/about-the-sat-math-test/a/the-sat-math-test-passport-to-advanced-math Kaplan Explanations and Drills: p. 227-246 Kaplan Online: https://www.kaptest.com/booksonline?utm_source=kaplan-books&utm_medium=offline&utm_term=&utm_content=book-insert&utm_campaign=all-ktp-books
	Text	Kaplan: SAT Prep Plus 2021
	Accommodations and Modifications	https://www.bhprsd.org/domain/261

EVIDENCE OF LEARNING	Formative Assessments	Kaplan: Pre-assessment, drills, and reflect in text; online practice that accompanies text
	Summative Assessments	n/a
	Performance Assessments	Kaplan: Pre-assessment, drills, and reflect in text; online practice that accompanies text

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Unit: Exponents, Radicals, Polynomials, and Rational Expressions

OVERVIEW (WHY)	Essential Questions	1. How do you apply exponent rules?
		2. How do you apply radical rules?
		3. How do you add, subtract, multiply, divide, and factor polynomials?
		4. How do you interpret the graph of a nonlinear function?
		5. How do determine whether growth or decay is being described?
		6. How do you apply the linear and exponential equations?
		7. How do you simplify rational expression?
		8. How do you isolate a variable in a rational expression?
	Enduring Understandings	Students will be able to: • Apply exponent rules • Apply radical rules • Add, subtract, multiply, divide, and factor polynomials • Define root, solution, zero, and x-intercept and identify them on the graph of a nonlinear function • Determine whether growth or decay described in a question is linear or exponential • Apply the linear and exponential equations to answer growth and decay questions • Simplify rational expressions • Isolate a variable in a rational equation

TARGETS/GOALS/OUTCOMES (WHAT)	Behavioral objectives	Objective	NJSL Standards
		1. Apply exponent rules *[Standard]* Rewrite expressions involving radicals and rational exponents using the properties of exponents.	*NJSLS-N-RN.A.2*
		2. Apply radical rules *[Standard]* Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.	*NJSLS-A-REI.A.2*
		3. Add, subtract, multiply, divide, and factor polynomials *[Standard]* Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. *[Standard]* Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	*NJSLS-A-APR.A.1, NJSLS-A-SSE.B.3*
		4. Define root, solution, zero, and x-intercept and identify them on the graph of a nonlinear function *[Standard] 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.* *[Standard] Choose and produce an equivalent form of an expression to reveal*	*NJSLS-F-IF.B.4, NJSLS-A-SSE.B.3, NJSLS-A-APR.B.3*

		and explain properties of the quantity represented by the expression. *[Standard] Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.*	
		5. Determine whether growth or decay described in a question is linear or exponential *[Standard] Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.*	*NJSLA-F-LE.A.1*
		6. Apply the linear and exponential equations to answer growth and decay questions *[Standard] Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.*	*NJSLA-F-LE.A.1*

		7. Simplify rational expressions *[Standard] Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.*	*NJSLS-A-APR.D.7*
		8. Isolate a variable in a rational expression *[Standard] Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system.*	*NJSLS-A-APR.D.6*
	Interdisciplinary Connections	Real World Examples: Physics (p.248), Growth Charts (p.249),Blood Cells (p.255), Trajectory (p.269), Membership (p.272), Carbon Dating (p.272), Banking (p.273)	

INSTRUCTIONAL STRATEGIES (HOW)	Activities	Kaplan Pre assessment: p. 248-249 Khan Academy SAT Prep: Passport to Advanced Math https://www.khanacademy.org/test-prep/sat/new-sat-tips-planning/about-the-sat-math-test/a/the-sat-math-test-passport-to-advanced-math Kaplan Explanations and Drills: p. 255-294 Kaplan Online: https://www.kaptest.com/booksonline?utm_source=kaplan-books&utm_medium=offline&utm_term=&utm_content=book-insert&utm_campaign=all-ktp-books
	Text	Kaplan: SAT Prep Plus 2021
	Accommodations and Modifications	https://www.bhprsd.org/domain/261

EVIDENCE OF LEARNING	Formative Assessments	Kaplan: Pre-assessment, drills, and reflect in text; online practice that accompanies text
	Summative Assessments	n/a
	Performance Assessments	Kaplan: Pre-assessment, drills, and reflect in text; online practice that accompanies text

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Unit: Quadratics

OVERVIEW (WHY)	Essential Questions	1. How do you solve a quadratic equation by factoring?	
		2. How do you solve a quadratic equation be completing the square?	
		3. How do you solve a quadratic equation using the quadratic formula?	
		4. How do you compare the properties of a quadratic function to its graph?	
		5. How do you solve a system of one quadratic and one linear function?	
	Enduring Understandings	Students will be able to: • Solve a quadratic equation by factoring • Solve a quadratic equation by completing the square • Solve a quadratic equation using the quadratic formula • Compare the properties of a quadratic function and its graph • Solve a system of one quadratic function and one linear function	
TARGETS/GOALS/OUTCOMES (WHAT)	Behavioral objectives	Objective	NJSL Standards
		1. Solve a quadratic equation by factoring *[Standard] Factor a quadratic expression to reveal the zeros of the function it defines.*	*NJSLS-A-SSE.B.3.a, NJSLS-A-REI.B.4.b*

		[Standard] Solve quadratic equations by inspection (e.g., for x2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b.	
		2. Solve a quadratic equation by completing the square *[Standard] Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.* *[Standard] Solve quadratic equations by inspection (e.g., for x2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b.*	*NJSLS-A-SSE.B.3.b, NJSLS-A-REI.B.4.b*
		3. Solve a quadratic equation using the quadratic formula *[Standard] Solve quadratic equations by inspection (e.g., for x2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b.*	*NJSLS-A-REI.B.4.b*

		4. Compare the properties of a quadratic function and its graph *[Standard] Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context* *[Standard] Graph linear and quadratic functions and show intercepts, maxima, and minima.*	*NJSLS-F-IF.C.8.A, NJSLS-F-IF.C.7.A*
		5. Solve a system of one quadratic and one linear function *[Standard] Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.*	*NJSLS-A-REI.C.7*
	Interdisciplinary Connections	Real World Examples: Rocket Height (p.315), Catapults (p.321),	

INSTRUCTIONAL STRATEGIES (HOW)	Activities	Kaplan Pre assessment: p. 296-297 Khan Academy SAT Prep: Passport to Advanced Math https://www.khanacademy.org/test-prep/sat/new-sat-tips-planning/about-the-sat-math-test/a/the-sat-math-test-passport-to-advanced-math Kaplan Explanations and Drills: p. 302-336 Kaplan Online: https://www.kaptest.com/booksonline?utm_source=kaplan-books&utm_medium=offline&utm_term=&utm_content=book-insert&utm_campaign=all-ktp-books
	Text	Kaplan: SAT Prep Plus 2021

	Accommodations and Modifications	https://www.bhprsd.org/domain/261

EVIDENCE OF LEARNING	Formative Assessments	Kaplan: Pre-assessment, drills, and reflect in text; online practice that accompanies text
	Summative Assessments	n/a
	Performance Assessments	Kaplan: Pre-assessment, drills, and reflect in text; online practice that accompanies text

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Unit: Geometry

OVERVIEW (WHY)	Essential Questions	1. How do you identify and apply the properties of similar triangles?
		2. How do you calculate the length of one side of a right triangle given the other two sides?
		3. How do you find the sides of a 45-45-90 and 30-60-90 right triangle?
		4. How do you interpret and manipulate the equation of a circle?
		5. How do you calculate arc length and sector area?
		6. How do you find volume and surface area of common solids?
	Enduring Understandings	Students will be able to: • Identify similar triangles and apply their properties • Apply the Pythagorean theorem • Solve a 45-45-90 and 30-60-90 right triangle • Interpret and manipulate the equation of a circle • Calculate the length of an arc or area of a sector defined by a central angle • Calculate the volume and surface area of common solids

TARGETS/GOALS/OUTCOMES (WHAT)	Behavioral objectives	Objective	NJSL Standards
		1. Identify similar triangles and apply their properties *[Standard] Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.* *[Standard] Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*	*NJSLS-G-SRT.B.5, NJSLS-G-MG.A.1*
		2. Apply the Pythagorean theorem *[Standard] Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.* *[Standard] Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*	*NJSLS-G-SRT.C.8, NJSLS-G-MG.A.1*
		3. Solve a 45-45-90 and 30-60-90 right triangle *[Standard] Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.* *[Standard] Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*	*NJSLS-G-SRT.C.8, NJSLS-G-MG.A.1*
		4. Interpret and manipulate the equation of a circle *[Standard] Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation*	*NJSLS-G-GPE.A.1*

		5. Calculate the length of an arc or area of a sector defined by a central angle *[Standard] Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.*	*NJSLS-G-C.A.5*
		6. Calculate the volume and surface area of common solids *[Standard] Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.* *[Standard] Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone.* *[Standard] Apply geometric methods to solve design problems*	*NJSLS-G-GMD.A.3, NJSLS-G-GMS.A.1, NJSLS-G-MG.A.3*
	Interdisciplinary Connections	Real World Examples: Yogurt Production (p.341), Driving (p.351), Camping (p. 351), Amusement Ride (p.355), Painting (p.355), Theater (p.355), Aquariums (p.368), Candles (p.369), Making Juice (p.372), Pizza (p.373), Radar (p.374), Counters (p.374), Interior Design (p.375), Dining Room Table (p.375), Kites (p.375)	

INSTRUCTIONAL STRATEGIES (HOW)	Activities	Kaplan Pre assessment: p. 340-343 Khan Academy SAT Prep: Additional Topics in Math https://www.khanacademy.org/test-prep/sat/new-sat-tips-planning/about-the-sat-math-test/a/the-sat-math-test-additional-topics-in-math Kaplan Explanations and Drills: p. 347-390 Kaplan Online: https://www.kaptest.com/booksonline?utm_source=kaplan-books&utm_medium=offline&utm_term=&utm_content=book-insert&utm_campaign=all-ktp-books

	Text	Kaplan: SAT Prep Plus 2021
	Accommodations and Modifications	https://www.bhprsd.org/domain/261

EVIDENCE OF LEARNING	Formative Assessments	Kaplan: Pre-assessment, drills, and reflect in text; online practice that accompanies text
	Summative Assessments	n/a
	Performance Assessments	Kaplan: Pre-assessment, drills, and reflect in text; online practice that accompanies text

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Unit: Trigonometry

OVERVIEW (WHY)	Essential Questions	1. How do you use trigonometry to calculate the sides and angles in a right triangle?	
		2. What is the relationship between the sine and cosine of complementary angles?	
	Enduring Understandings	Students will be able to: • Solve a right triangle using trigonometry • Describe the relationship between the sine and cosine of complementary angles	
TARGETS/GOALS/OUTCOMES (WHAT)	Behavioral objectives	Objective	NJSL Standards
		1. Solve right triangles using trigonometry *[Standard] Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.* *[Standard] Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*	*NJSLS-G-SRT.C.8, NJSLS-G-MG.A.1*

		2. Describe the relationship between the sine and cosine of complementary angles *[Standard] Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.* *[Standard] Explain and use the relationship between the sine and cosine of complementary angles*	*NJSLS-G-SRT.C.8, NJSLS-G-SRT.C.7*

	Interdisciplinary Connections	Real World Examples: Feeding Trough (p.397)	

INSTRUCTIONAL STRATEGIES (HOW)	Activities	Kaplan Pre assessment: p. 392-394 Khan Academy SAT Prep: Additional Topics in Math https://www.khanacademy.org/test-prep/sat/new-sat-tips-planning/about-the-sat-math-test/a/the-sat-math-test-additional-topics-in-math Kaplan Explanations and Drills: p. 397-405 Kaplan Online: https://www.kaptest.com/booksonline?utm_source=kaplan-books&utm_medium=offline&utm_term=&utm_content=book-insert&utm_campaign=all-ktp-books
	Text	Kaplan: SAT Prep Plus 2021
	Accommodations and Modifications	https://www.bhprsd.org/domain/261

EVIDENCE OF LEARNING	Formative Assessments	Kaplan: Pre-assessment, drills, and reflect in text; online practice that accompanies text
	Summative Assessments	n/a
	Performance Assessments	Kaplan: Pre-assessment, drills, and reflect in text; online practice that accompanies text

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Syllabus and Timeline (by Month or by Marking Period)

Unit: Imaginary Numbers

OVERVIEW (WHY)	Essential Questions	1. How do you perform arithmetic operations on imaginary and complex numbers?	
	Enduring Understandings	Students will be able to: • Perform arithmetic operations on imaginary and complex numbers	
TARGETS/GOALS/OUTCOMES (WHAT)	Behavioral objectives	Objective	NJSL Standards
		1. Perform arithmetic operations on imaginary and complex numbers *[Standard] Know there is a complex number i such that i 2 = –1, and every complex number has the form a + bi with a and b real.* *[Standard] Use the relation i 2 = –1 and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.* *[Standard] Find the conjugate of a complex number; use conjugates to find moduli and quotients of complex numbers.*	*NJSLS-N-CN.A.1, NJSLS-N-CN.A.2, NJSLS-N-CN.A.3*
	Interdisciplinary Connections	The test taking skills used can be applied across all subject areas.	

INSTRUCTIONAL STRATEGIES (HOW)	Activities	Kaplan Pre assessment: p. 408-410 Khan Academy SAT Prep: Additional Topics in Math https://www.khanacademy.org/test-prep/sat/new-sat-tips-planning/about-the-sat-math-test/a/the-sat-math-test-additional-topics-in-math Kaplan Explanations and Drills: p. 413-415 Kaplan Online: https://www.kaptest.com/booksonline?utm_source=kaplan-books&utm_medium=offline&utm_term=&utm_content=book-insert&utm_campaign=all-ktp-books
	Text	Kaplan: SAT Prep Plus 2021
	Accommodations and Modifications	https://www.bhprsd.org/domain/261

EVIDENCE OF LEARNING	Formative Assessments	Kaplan: Pre-assessment, drills, and reflect in text; online practice that accompanies text
	Summative Assessments	n/a
	Performance Assessments	Kaplan: Pre-assessment, drills, and reflect in text; online practice that accompanies text