

Secaucus  
Board of  
Education

College Exam Prep (Math)

Course Code: 3159

*Mathematics Department*



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*Born on January 2017*

*Aligned to the NJSL Standards (2016)*

*Adopted by the Secaucus Board of Education on: January 19, 2017*

### **District Equity Statement**

The Board of Education directs that all students enrolled in the schools of this district shall be afforded equal educational opportunities in strict accordance with the law. No students shall be denied access to or benefit from any educational program or activity or from a co-curricular or athletic activity on the basis of the student's race, color, creed, religion, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, gender identity or expression, socioeconomic status, or disability. The Board directs the Superintendent to allocate faculty, administrators, support staff members, curriculum materials, and instructional equipment supplies among and between the schools and classes of this district in a manner that ensures equivalency of educational opportunity throughout this district. The school district's curricula in the following areas will eliminate discrimination, promote mutual acceptance and respect among students, and enable students to interact effectively with others, regardless of race, color, creed, religion, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, gender identity or expression, socioeconomic status, or disability:

1. School climate/learning environment
2. Courses of study, including Physical Education
3. Instructional materials and strategies
4. Library materials
5. Software and audio-visual materials
6. Guidance and counseling
7. Extra-curricular programs and activities
8. Testing and other assessments.

Excerpt from Secaucus Board of Education, Policy 5750, Edited September 2016.

### **Course Description**

The purpose of this course is to prepare college-oriented students for the SAT, to reduce test anxiety and to build effective test-taking strategies. This class will be taught by a Math teacher to expose students to both aspects of the test. Skills and concepts will be reviewed as students become familiar with the test's format. Furthermore, students will be instructed in effective strategies for approaching each type of question. Active student participation and completion of assignment are necessary for successful preparation for the SAT and to master class proficiencies.

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### **Potential Course Modifications (ELLs, Special Education, Gifted and Talented)**

The course instructor will determine, with the assistance of guidance counselors, teacher assistant/aides, and/or special education teachers, what modifications will be made for his/her students. Such examples of modifications can include, but not be limited to:

- Extended time as needed
- Modification of tests and quizzes
- Preferential seating
- Alternative/Formative assessment (projects)
- Effective teacher questioning (ranging from simple recall to higher order critical thinking questions)
- Supplemental materials
- Cooperative learning
- Teacher tutoring
- Peer tutoring
- Differentiated Instruction

<b>Unit 1:</b>	Introduction	
<b>Timing:</b>	1 Week	
<b>Standards:</b>	<i>NJSLS for Mathematics:</i> NQ.A.1, NQ.A.2, N Q.A.3	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>• What is the SAT?</li> <li>• How can I perform at my highest personal best on this exam?</li> <li>• What is a realistic goal for me and how can I achieve and even surpass that goal?</li> <li>• How will taking a diagnostic test provide me with valuable information?</li> <li>• When is it best to guess on questions and when do I leave them blank?</li> <li>• What does the SAT measure?</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Familiarize themselves with the mathematics sections of the SAT</li> <li>• Become familiar with the unique structure of the SAT</li> <li>• Complete a diagnostic test that will provide a baseline score on which to build.</li> <li>• Complete a diagnostic test that will provide a baseline score on which to build</li> <li>• Have a clearer understanding of their personal strengths and weaknesses</li> <li>• Know when to guess on questions and when to leave them blank.</li> <li>• Know how to use process of elimination to delete answers that do not make sense.</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive Whiteboard Presentations <ul style="list-style-type: none"> <li>○ Visual Representations of Concepts</li> <li>○ Modeling of Examples</li> </ul> </li> <li>• Cooperative Group Work</li> <li>• Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> <li>• Partner collaboration or individual work (depending on the topic and assignment.)</li> <li>• Full Length Practice Tests</li> </ul>

<b>Assessments:</b>	<b>Materials:</b>	<b>Resources:</b>
<ul style="list-style-type: none"><li>● Do Nows</li><li>● Student Participation</li><li>● Oral Questioning</li><li>● Exit Cards</li><li>● ActivExpression Device Results</li><li>● Homework Assignments</li><li>● Classwork</li><li>● Diagnostic Tests</li></ul>	<ul style="list-style-type: none"><li>● Interactive Whiteboard</li><li>● Document Camera</li><li>● ActivExpression Devices</li><li>● Whiteboards</li><li>● Dry Erase Markers</li><li>● Erasers</li><li>● TI-84+ Calculators</li><li>● TI-84+ SmartView Software</li></ul>	<ul style="list-style-type: none"><li>● CollegeBoard.org website</li><li>● Text – <i>The Official SAT Study Guide</i> published by the CollegeBoard</li><li>● Text – AMSCO’s Preparing for the SAT Mathematics- Richard Andres &amp; Joyce Bernstein</li></ul>

<b>Unit 2:</b>	Mathematics Specific Test-taking Strategies	
<b>Timing:</b>	1 Week	
<b>Standards:</b>	<i>NJSLS for Mathematics:</i> NQ.A.1, NQ.A.2	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>• What is the Grid-in/multiple choice mathematics section of the SAT?</li> <li>• How can I best navigate this section of the exam?</li> <li>• What strategies will be effective to use on this section?</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Develop and practice the following test-taking strategies: <ul style="list-style-type: none"> <li>o a. Substitution</li> <li>o b. Back-Solving</li> <li>o c. Educated Guessing</li> <li>o d. Using a calculator to check work</li> </ul> </li> <li>• Know how to utilize Grid-in/multiple choice mathematics section</li> <li>• Determine whether an answer makes sense</li> <li>• Review multiple choice problems and explore various test-taking strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive Whiteboard Presentations <ul style="list-style-type: none"> <li>o Visual Representations of Concepts</li> <li>o Modeling of Examples</li> </ul> </li> <li>• Cooperative Group Work</li> <li>• Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> <li>• Partner collaboration or individual work (depending on the topic and assignment.)</li> <li>• Full Length Practice Tests</li> </ul>
<b>Assessments:</b>	<b>Materials:</b>	<b>Resources:</b>
<ul style="list-style-type: none"> <li>• Do Nows</li> <li>• Student Participation</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive Whiteboard</li> <li>• Document Camera</li> <li>• ActivExpression Devices</li> </ul>	<ul style="list-style-type: none"> <li>• CollegeBoard.org website</li> <li>• Text – <i>The Official SAT Study Guide</i></li> </ul>

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<ul style="list-style-type: none"><li>• Oral Questioning</li><li>• Exit Cards</li><li>• ActivExpression Device Results</li><li>• Homework Assignments</li><li>• Classwork</li><li>• Diagnostic Tests</li></ul>	<ul style="list-style-type: none"><li>• Whiteboards</li><li>• Dry Erase Markers</li><li>• Erasers</li><li>• TI-84+ Calculators</li><li>• TI-84+ SmartView Software</li></ul>	<p>published by the CollegeBoard</p> <ul style="list-style-type: none"><li>• Text – AMSCO’s Preparing for the SAT Mathematics- Richard Andres &amp; Joyce Bernstein</li></ul>
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<b>Unit 3:</b>	Number and Operations Review	
<b>Timing:</b>	2 Weeks	
<b>Standards:</b>	<i>NJSLS for Mathematics:</i> NQ.A.1-3, S.ID.A.1, S.ID.B.5	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>• When should I or shouldn't I use a calculator to perform numerical operations?</li> <li>• How do I solve problems involving ratios, proportions, and percent?</li> <li>• How do I analyze and interpret data using graphs, scatterplots, and matrices</li> <li>• How do I know if an answer makes sense?</li> <li>• Which strategies and techniques will be helpful to me on this section?</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Perform numerical operations.</li> <li>• Solve problems involving ratios, proportions, and percent.</li> <li>• Analyze and interpret data using graphs, scatterplots, and matrices.</li> <li>• Determine whether an answer makes sense</li> <li>• Learn strategies and techniques that will enable them to perform optimally on this section of the exam</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive Whiteboard Presentations <ul style="list-style-type: none"> <li>○ Visual Representations of Concepts</li> <li>○ Modeling of Examples</li> </ul> </li> <li>• Cooperative Group Work</li> <li>• Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> <li>• Partner collaboration or individual work (depending on the topic and assignment.)</li> <li>• Full Length Practice Tests</li> </ul>
<b>Assessments:</b>	<b>Materials:</b>	<b>Resources:</b>
<ul style="list-style-type: none"> <li>• Do Nows</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive Whiteboard</li> <li>• Document Camera</li> </ul>	<ul style="list-style-type: none"> <li>• CollegeBoard.org website</li> </ul>

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<ul style="list-style-type: none"><li>● Student Participation</li><li>● Oral Questioning</li><li>● Exit Cards</li><li>● ActivExpression Device Results</li><li>● Homework Assignments</li><li>● Classwork</li><li>● Diagnostic Tests</li></ul>	<ul style="list-style-type: none"><li>● ActivExpression Devices</li><li>● Whiteboards</li><li>● Dry Erase Markers</li><li>● Erasers</li><li>● TI-84+ Calculators</li><li>● TI-84+ SmartView Software</li></ul>	<ul style="list-style-type: none"><li>● Text – <i>The Official SAT Study Guide</i> published by the CollegeBoard</li><li>● Text – AMSCO's Preparing for the SAT Mathematics- Richard Andres &amp; Joyce Bernstein</li></ul>
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<b>Unit 4:</b>	Algebra and Functions Review	
<b>Timing:</b>	2 Weeks	
<b>Standards:</b>	<i>NJSLS for Mathematics:</i> A.APR.A.1, A.APR.B.2, A.APR.B.3, A.REI.A.1, A.REI.A.2, A.REI.B.3, A.REI.B.4, A.REI.B.4.B, A.REI.C.5, A.REI.D.11	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>• How do I solve simultaneous equations?</li> <li>• How do I solve and graph linear equations/inequalities?</li> <li>• How do solve radical, rational, and quadratic equations?</li> <li>• How can using coordinate geometry help me to model problems?</li> <li>• How can using Venn diagrams and set theory help me to solve problems on the SAT?</li> <li>• Which test-taking strategies can I use on questions of the above topics learned in this unit?</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Solve simultaneous equations</li> <li>• Solve and graph linear equations/inequalities</li> <li>• Solve radical, rational, and quadratic equations</li> <li>• Use coordinate geometry to model problems</li> <li>• Use Venn Diagrams and set theory to help them solve problems on the SAT.</li> <li>• Students can decide which test-taking strategies they can employ on the above topics learned in this unit.</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive Whiteboard Presentations <ul style="list-style-type: none"> <li>○ Visual Representations of Concepts</li> <li>○ Modeling of Examples</li> </ul> </li> <li>• Cooperative Group Work</li> <li>• Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> <li>• Partner collaboration or individual work (depending on the topic and assignment.)</li> <li>• Full Length Practice Tests</li> </ul>

Assessments:	Materials:	Resources:
<ul style="list-style-type: none"><li>● Do Nows</li><li>● Student Participation</li><li>● Oral Questioning</li><li>● Exit Cards</li><li>● ActivExpression Device Results</li><li>● Homework Assignments</li><li>● Classwork</li><li>● Diagnostic Tests</li></ul>	<ul style="list-style-type: none"><li>● Interactive Whiteboard</li><li>● Document Camera</li><li>● ActivExpression Devices</li><li>● Whiteboards</li><li>● Dry Erase Markers</li><li>● Erasers</li><li>● TI-84+ Calculators</li><li>● TI-84+ SmartView Software</li></ul>	<ul style="list-style-type: none"><li>● CollegeBoard.org website</li><li>● Text – <i>The Official SAT Study Guide</i> published by the CollegeBoard</li><li>● Text – AMSCO’s Preparing for the SAT Mathematics- Richard Andres &amp; Joyce Bernstein</li></ul>

<b>Unit 5:</b>	Geometry and Measurement Review	
<b>Timing:</b>	2 Weeks	
<b>Standards:</b>	<i>NJSLS for Mathematics:</i> G GPE. B.4 –B.7, G.MG.A.3, G.GMD. A.1, G.GMD.A.3, G.GMD.B.4, G.SRT.C.6-C.8, G.C.B.5, G.C.A.2, G.C.A.3	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>• How do I solve problems using special triangles?</li> <li>• How do I interpret diagrams and combination figures to solve problems?</li> <li>• How do I understand and use geometric notation?</li> <li>• How can evaluating geometric probabilities help me to solve problems?</li> <li>• How can I use properties of tangent lines to solve problems?</li> <li>• Which test-taking strategies can I use on questions of the above topics learned in this unit?</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Examine diagrams for helpful clues.</li> <li>• Draw diagrams to fit the facts of a problem if a diagram has not been given.</li> <li>• Draw additional lines or circles, when necessary.</li> <li>• Use formulas and relationships wherever necessary.</li> <li>• Understand and use geometric notation</li> <li>• Evaluate geometric probabilities</li> <li>• Use properties of tangent lines</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive Whiteboard Presentations <ul style="list-style-type: none"> <li>○ Visual Representations of Concepts</li> <li>○ Modeling of Examples</li> </ul> </li> <li>• Cooperative Group Work</li> <li>• Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> <li>• Partner collaboration or individual work (depending on the topic and assignment.)</li> <li>• Full Length Practice Tests</li> </ul>

Assessments:	Materials:	Resources:
<ul style="list-style-type: none"><li>● Do Nows</li><li>● Student Participation</li><li>● Oral Questioning</li><li>● Exit Cards</li><li>● ActivExpression Device Results</li><li>● Homework Assignments</li><li>● Classwork</li><li>● Diagnostic Tests</li></ul>	<ul style="list-style-type: none"><li>● Interactive Whiteboard</li><li>● Document Camera</li><li>● ActivExpression Devices</li><li>● Whiteboards</li><li>● Dry Erase Markers</li><li>● Erasers</li><li>● TI-84+ Calculators</li><li>● TI-84+ SmartView Software</li></ul>	<ul style="list-style-type: none"><li>● CollegeBoard.org website</li><li>● Text – <i>The Official SAT Study Guide</i> published by the CollegeBoard</li><li>● Text – AMSCO’s Preparing for the SAT Mathematics- Richard Andres &amp; Joyce Bernstein</li></ul>

<b>Unit 6:</b>	Algebra 2 Topics (Data Analysis, Statistics, & Probability) Review	
<b>Timing:</b>	2 Weeks	
<b>Standards:</b>	<i>NJSLS for Mathematics:</i> S.ID.A.1-A.4, S.ID.B.5-B.6, S.ID.B.6.B, S.ID.C.7, S.ID.A.1, S.CP.A.1-9	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>• How do I evaluate negative and rational exponents?</li> <li>• How do I use direct and inverse variation to solve problems?</li> <li>• How can I use functions as models and evaluate functions?</li> <li>• How can I solve problems involving data analysis, statistics and probability?</li> <li>• How do I solve problems involving trigonometry?</li> <li>• How do I graph functions and their transformations?</li> <li>• How can I best apply all the learned rules, strategies, techniques, and tips designed to help me do my personal best on the</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Determine the probability that an event will or not occur by counting the number of events and applying the Counting Principle.</li> <li>• Find the slope of best fit in scatter plots and determine positive , negative, or NO correlation between two separate quantities.</li> <li>• Be able to read graphs or charts so that student can compare quantities, recognize trends, and perform calculations on data.</li> <li>• Use special symbols to understand and follow a rule. Apply the rule to numbers.</li> <li>• Solve problems involving absolute value</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive Whiteboard Presentations <ul style="list-style-type: none"> <li>○ Visual Representations of Concepts</li> <li>○ Modeling of Examples</li> </ul> </li> <li>• Cooperative Group Work</li> <li>• Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> <li>• Partner collaboration or individual work (depending on the topic and assignment.)</li> <li>• Full Length Practice Tests</li> </ul>

<p>SAT?</p> <ul style="list-style-type: none"> <li>• How will test familiarity help to increase my score on the SAT?</li> <li>• What are my areas of strength and weakness?</li> <li>• How can several of these strategies, etc. help my academic performance in all my courses and in my personal growth?</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate negative and rational exponents</li> <li>• Use direct and inverse variation</li> <li>• Understand functions as models and evaluate functions</li> <li>• Solve problems involving data analysis, statistics and probability</li> <li>• Solve problems involving trigonometry</li> <li>• Graph functions and their transformations.</li> </ul>	
<b>Assessments:</b>	<b>Materials:</b>	<b>Resources:</b>
<ul style="list-style-type: none"> <li>• Do Nows</li> <li>• Student Participation</li> <li>• Oral Questioning</li> <li>• Exit Cards</li> <li>• ActivExpression Device Results</li> <li>• Homework Assignments</li> <li>• Classwork</li> <li>• Diagnostic Tests</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive Whiteboard</li> <li>• Document Camera</li> <li>• ActivExpression Devices</li> <li>• Whiteboards</li> <li>• Dry Erase Markers</li> <li>• Erasers</li> <li>• TI-84+ Calculators</li> <li>• TI-84+ SmartView Software</li> </ul>	<ul style="list-style-type: none"> <li>• CollegeBoard.org website</li> <li>• Text – <i>The Official SAT Study Guide</i> published by the CollegeBoard</li> <li>• Text – AMSCO’s <i>Preparing for the SAT Mathematics-</i> Richard Andres &amp; Joyce Bernstein</li> </ul>