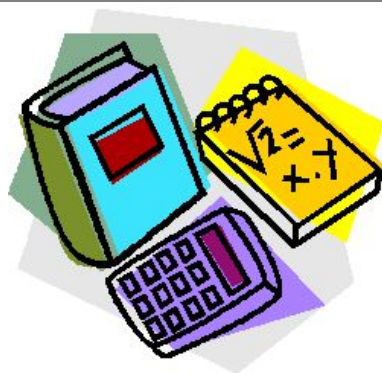


Secaucus  
Board of  
Education

Introduction To College  
Algebra

Course Codes: 3420

*Mathematics Department*



*Born on January 2017*

*Aligned to the NJSL for Mathematics (2016), Technology (2014),  
& 21st Century Life and Careers (2014)*

*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**

This course will further develop the fundamental algebra skills and problem-solving techniques that serve as the core for most college math courses. An emphasis will be placed on applications of topics learned in prior mathematics courses as well as topics in statistics and discrete mathematics. Students will also gain practice in developing and analyzing mathematical models of real-world problems. Learners will be familiarized with fundamental mathematical concepts such as inequalities, polynomials, linear and quadratic equations, logarithmic and exponential functions, systems of equations and inequalities, matrices and determinants and trigonometry. Additional topics may include conic sections, sequences and series, combinatorics, probability and mathematical induction.

### **Primary Interdisciplinary Connections**

Science

Finance

Economics

Business

Entrepreneurial Literacy

**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>	Equations and Inequalities	
<b>Timing:</b>	4 weeks	
<b>Standards:</b>	<p><u>NJSLS for Mathematics:</u> A.CED.1-4, N.CN.1-3, A.CED.2-4, A.REI.1-4, Standards for MP 1-8</p> <p><u>NJSLS for Technology:</u> 8.1.12.A.3, 8.1.12.A.4, 8.1.12.C.1</p> <p><u>NJSLS 21st Century Life and Careers:</u> CRP1, CRP2, CRP4, CRP8, CRP11, CRP12</p>	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>How do we distinguish between the different types of equations and inequalities?</li> <li>How can real-life situations be modeled by linear, quadratic, polynomial, radical, and absolute value equations and inequalities?</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>Sketch the graph of an equation</li> <li>Solve linear, quadratic, polynomial, radical, and absolute value equations</li> <li>Perform operations with complex numbers</li> <li>Solve linear inequalities, polynomial inequalities, rational inequalities, and inequalities solving 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 Investigations and Hands-on Activities</li> <li>Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> <li>Partner collaboration or</li> </ul>

		individual work (depending on the topic and assignment.) <ul style="list-style-type: none"> <li>● Solving Real World Problems</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>● Projects</li> <li>● Unit Quizzes</li> <li>● Unit Test</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>● Colored Pencils</li> <li>● Activity Sheets</li> <li>● Graph Paper</li> <li>● TI-84+ Graphing Calculator</li> <li>● TI-84 Smartview Software</li> </ul>	<ul style="list-style-type: none"> <li>● Teacher Created Interactive Whiteboard Presentations</li> <li>● <a href="#">Texas Instruments Activity Central</a> Website</li> <li>● <a href="#">Illuminations</a> Website</li> <li>● <a href="#">Mathematics Assessment Project</a> Website</li> <li>● IXL <a href="#">Algebra II Practice</a> Website</li> <li>● Department Created Assessments</li> </ul>

<b>Unit 2:</b>	Functions and Their Graphs	
<b>Timing:</b>	4 weeks	
<b>Standards:</b>	<p><u>NJSLS for Mathematics:</u> F.BF.3-4, F.IF.4-9, Standards for MP 1-8</p> <p><u>NJSLS for Technology:</u> 8.1.12.A.3, 8.1.12.A.4, 8.1.12.C.1</p> <p><u>NJSLS 21st Century Life and Careers:</u> CRP1, CRP2, CRP4, CRP8, CRP11, CRP12</p>	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>• How can knowing and being able to interpret the properties of functions help us predict and interpret data?</li> <li>• What are some different kinds of functions and what sorts of real world situations can they model?</li> <li>• Why is the idea of "inverse" so important in mathematics?</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Find and use the slopes of lines to write and graph linear equations in two variables</li> <li>• Evaluate functions and find their domains</li> <li>• Analyze graphs of functions</li> <li>• Identify and graph rigid and nonrigid transformations</li> <li>• Find arithmetic combinations and composition of functions</li> <li>• Find inverse functions graphically and algebraically</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 Investigations and Hands-on Activities</li> <li>• Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> <li>• Partner collaboration or</li> </ul>

		individual work (depending on the topic and assignment.) <ul style="list-style-type: none"> <li>● Solving Real World Problems</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>● Projects</li> <li>● Unit Quizzes</li> <li>● Unit Test</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>● Colored Pencils</li> <li>● Activity Sheets</li> <li>● Graph Paper</li> <li>● TI-84+ Graphing Calculator</li> <li>● TI-84 Smartview Software</li> </ul>	<ul style="list-style-type: none"> <li>● <a href="#">Teacher Created Interactive Whiteboard Presentations</a></li> <li>● <a href="#">Texas Instruments Activity Central</a> Website</li> <li>● <a href="#">Illuminations</a> Website</li> <li>● <a href="#">Mathematics Assessment Project</a> Website</li> <li>● IXL <a href="#">Algebra II Practice</a> Website</li> <li>● Department Created Assessments</li> </ul>



<b>Unit 3:</b>	Polynomial Functions	
<b>Timing:</b>	4 weeks	
<b>Standards:</b>	<p><u>NJSLS for Mathematics:</u> A.APR.1-4, F.IF.7-9, Standards for MP 1-8</p> <p><u>NJSLS for Technology:</u> 8.1.12.A.3, 8.1.12.A.4, 8.1.12.C.1</p> <p><u>NJSLS 21st Century Life and Careers:</u> CRP1, CRP2, CRP4, CRP8, CRP11, CRP12</p>	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>How do you classify a polynomial function by degree and number of terms?</li> <li>How do you determine the end behavior of a polynomial using the Leading Coefficient Test?</li> <li>How can you use the factored form of a polynomial to make a rough sketch of its graph?</li> <li>How does the Fundamental Theorem of Algebra combined with multiplicity enable you write</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>Sketch and analyze graphs of functions</li> <li>Sketch and analyze graphs of polynomial functions</li> <li>Use long division and synthetic division to divide polynomials by other polynomials</li> <li>Determine the number of rational and real zeros of polynomial functions, and find the zeros</li> <li>Write mathematical models for direct, inverse and joint variation</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 Investigations and Hands-on Activities</li> <li>Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> <li>Partner collaboration or</li> </ul>

<p>the factored form of a polynomial given its graph?</p> <ul style="list-style-type: none"> <li>• How do you write the equation of a polynomial given its zeros?</li> <li>• How do you perform operations with polynomials?</li> </ul>		<p>individual work (depending on the topic and assignment.)</p> <ul style="list-style-type: none"> <li>• Solving Real World Problems</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>• Projects</li> <li>• Unit Quizzes</li> <li>• Unit Test</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>• Colored Pencils</li> <li>• Activity Sheets</li> <li>• Graph Paper</li> <li>• TI-84+ Graphing Calculator</li> <li>• TI-84 Smartview Software</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Teacher Created Interactive Whiteboard Presentations</a></li> <li>• <a href="#">Texas Instruments Activity Central Website</a></li> <li>• <a href="#">Illuminations Website</a></li> <li>• <a href="#">Mathematics Assessment Project Website</a></li> <li>• IXL <a href="#">Algebra II Practice Website</a></li> <li>• Department Created Assessments</li> </ul>

<b>Unit 4:</b>	Rational Functions and Conics	
<b>Timing:</b>	3 Weeks	
<b>Standards:</b>	<p><u><i>NJSLS for Mathematics:</i></u> F.IF.7-9, G.GMD.1, G.GMD.3, Standards for MP 1-8</p> <p><u><i>NJSLS for Technology:</i></u> 8.1.12.A.3, 8.1.12.A.4, 8.1.12.C.1</p> <p><u><i>NJSLS 21st Century Life and Careers:</i></u> CRP1, CRP2, CRP4, CRP8, CRP11, CRP12</p>	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>• How do you determine when a rational function has holes?</li> <li>• How do you determine the vertical asymptotes of a rational function algebraically?</li> <li>• How do you find the zeros and y-intercept of a rational function algebraically?</li> <li>• How do you determine if a rational function has a horizontal or oblique asymptote and where it is located?</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Determine the domains of rational functions and find asymptotes of rational functions</li> <li>• Sketch the graphs of rational functions</li> <li>• Recognize and find partial fraction decompositions of rational expressions</li> <li>• Recognize, graph and write equations of circles, ellipses, parabolas, and hyperbolas (centered at the origin and shifted horizontally and vertically)</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 Investigations and Hands-on Activities</li> <li>• Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> </ul>

<ul style="list-style-type: none"> <li>• How do you accurately sketch the graph of a rational function without using technology?</li> <li>• How is each conic section related to a cone?</li> <li>• How are conic sections used to model real world situations?</li> </ul>		<ul style="list-style-type: none"> <li>• Partner collaboration or individual work (depending on the topic and assignment.)</li> <li>• Solving Real World Problems</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>• Projects</li> <li>• Unit Quizzes</li> <li>• Unit Test</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>• Colored Pencils</li> <li>• Activity Sheets</li> <li>• Graph Paper</li> <li>• TI-84+ Graphing Calculator</li> <li>• TI-84 Smartview Software</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Created Interactive Whiteboard Presentations</li> <li>• <a href="#">Texas Instruments Activity Central</a> Website</li> <li>• <a href="#">Illuminations</a> Website</li> <li>• <a href="#">Mathematics Assessment Project</a> Website</li> <li>• IXL <a href="#">Algebra II Practice</a> Website</li> <li>• Department Created Assessments</li> </ul>

<b>Unit 5:</b>	Exponential and Logarithmic Functions	
<b>Timing:</b>	3 Weeks	
<b>Standards:</b>	<p><u>NJSLS for Mathematics:</u> F.LE.1-5, F.IF.7-9, F.BF.5, Standards for MP 1-8</p> <p><u>NJSLS for Technology:</u> 8.1.12.A.3, 8.1.12.A.4, 8.1.12.C.1</p> <p><u>NJSLS 21st Century Life and Careers:</u> CRP1, CRP2, CRP4, CRP8, CRP11, CRP12</p>	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>• How do you evaluate exponential functions for given values?</li> <li>• How do you use transformations to sketch graphs of exponential and logarithmic functions?</li> <li>• How do you solve exponential and logarithmic equations?</li> <li>• How do you use exponential models so solve realworld problems?</li> <li>• How do you change bases in logarithmic expressions?</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Recognize and evaluate exponential and logarithmic functions</li> <li>• Graph exponential and logarithmic functions</li> <li>• Use the change-of-base formulas to rewrite and evaluate logarithmic expressions</li> <li>• Use properties of logarithms to evaluate, rewrite, expand or condense logarithmic equations</li> <li>• Solve exponential and logarithmic equations</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 Investigations and Hands-on Activities</li> <li>• Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> <li>• Partner collaboration or</li> </ul>

<ul style="list-style-type: none"> <li>• How do you use properties of logarithms to evaluate or rewrite expressions?</li> </ul>	<ul style="list-style-type: none"> <li>• Use exponential growth/decay models to solve real-life problems</li> </ul>	<p>individual work (depending on the topic and assignment.)</p> <ul style="list-style-type: none"> <li>• Solving Real World Problems</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>• Projects</li> <li>• Unit Quizzes</li> <li>• Unit Test</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>• Colored Pencils</li> <li>• Activity Sheets</li> <li>• Graph Paper</li> <li>• TI-84+ Graphing Calculator</li> <li>• TI-84 Smartview Software</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher Created Interactive Whiteboard Presentations</li> <li>• <a href="#">Texas Instruments Activity Central</a> Website</li> <li>• <a href="#">Illuminations</a> Website</li> <li>• <a href="#">Mathematics Assessment Project</a> Website</li> <li>• IXL <a href="#">Algebra II Practice</a> Website</li> <li>• Department Created Assessments</li> </ul>

<b>Unit 6:</b>	Trigonometry	
<b>Timing:</b>	7 Weeks	
<b>Standards:</b>	<p><u>NJSLS for Mathematics:</u> F.TF.1-9, G.SRT.6-11, Standards for MP 1-8</p> <p><u>NJSLS for Technology:</u> 8.1.12.A.3, 8.1.12.A.4, 8.1.12.C.1</p> <p><u>NJSLS 21st Century Life and Careers:</u> CRP1, CRP2, CRP4, CRP8, CRP11, CRP12</p>	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>• What is radian measure?</li> <li>• How can you check that you are using your conversion factor between degrees and radians correctly?</li> <li>• How do you evaluate trigonometric functions for given values, periods, and intervals?</li> <li>• How trigonometric functions relate to the unit circle?</li> <li>• How do we model “real world” scenarios to trigonometric functions?</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Describe an angle and convert between degree and radian measures</li> <li>• Evaluate trigonometric functions of any angle</li> <li>• Use fundamental trigonometric identities</li> <li>• Sketch the graphs of trigonometric functions and translations of graphs of sine and cosine functions</li> <li>• Evaluate the inverse trigonometric functions</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 Investigations and Hands-on Activities</li> <li>• Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> <li>• Partner collaboration or</li> </ul>

		<p>individual work (depending on the topic and assignment.)</p> <ul style="list-style-type: none"> <li>● Solving Real World Problems</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>● Projects</li> <li>● Unit Quizzes</li> <li>● Unit Test</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>● Colored Pencils</li> <li>● Activity Sheets</li> <li>● Graph Paper</li> <li>● TI-84+ Graphing Calculator</li> <li>● TI-84 Smartview Software</li> </ul>	<ul style="list-style-type: none"> <li>● Teacher Created Interactive Whiteboard Presentations</li> <li>● <a href="#">Texas Instruments Activity Central</a> Website</li> <li>● <a href="#">Illuminations</a> Website</li> <li>● <a href="#">Mathematics Assessment Project</a> Website</li> <li>● IXL <a href="#">Algebra II Practice</a> Website</li> <li>● Department Created Assessments</li> </ul>



<b>Unit 7:</b>	Systems of Equations and Inequalities	
<b>Timing:</b>	3 Weeks	
<b>Standards:</b>	<p><u>NJSLS for Mathematics:</u> A.CED.3, Standards for MP 1-8</p> <p><u>NJSLS for Technology:</u> 8.1.12.A.3, 8.1.12.A.4, 8.1.12.C.1</p> <p><u>NJSLS 21st Century Life and Careers:</u> CRP1, CRP2, CRP4, CRP8, CRP11, CRP12</p>	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>• How can real world situations be modeled by systems?</li> <li>• How can solutions be found to a system?</li> <li>• What does the number of solutions (none, one or infinite) of a system of linear equations represent?</li> <li>• What are the advantages and disadvantages of solving a system of linear equations graphically versus algebraically?</li> <li>• How can systems of</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Solve systems of equations by substitution, elimination, and graphing</li> <li>• Recognize linear systems in row-echelon form and to use back-substitution to solve the systems</li> <li>• Sketch the graphs of inequalities in two variables and solve systems of inequalities</li> <li>• Use systems of linear equations and inequalities to solve real-life problems</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 Investigations and Hands-on Activities</li> <li>• Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> <li>• Partner collaboration or</li> </ul>

<p>equations be used to represent situations and solve problems?</p>		<p>individual work (depending on the topic and assignment.)</p> <ul style="list-style-type: none"> <li>● Solving Real World Problems</li> </ul>
<p><b>Assessments:</b></p>	<p><b>Materials:</b></p>	<p><b>Resources:</b></p>
<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>● Projects</li> <li>● Unit Quizzes</li> <li>● Unit Test</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>● Colored Pencils</li> <li>● Activity Sheets</li> <li>● Graph Paper</li> <li>● TI-84+ Graphing Calculator</li> <li>● TI-84 Smartview Software</li> </ul>	<ul style="list-style-type: none"> <li>● Teacher Created Interactive Whiteboard Presentations</li> <li>● <a href="#">Texas Instruments Activity Central</a> Website</li> <li>● <a href="#">Illuminations</a> Website</li> <li>● <a href="#">Mathematics Assessment Project</a> Website</li> <li>● IXL <a href="#">Algebra II Practice</a> Website</li> <li>● Department Created Assessments</li> </ul>

<b>Unit 8:</b>	Matrices and Determinants	
<b>Timing:</b>	3 Weeks	
<b>Standards:</b>	<p><u>NJSLS for Mathematics:</u> N.VM.6, N.VM.7, N.VM.8, N.VM.9, N.VM.10, N.VM.11, N.VM.12, Standards for MP 1-8</p> <p><u>NJSLS for Technology:</u> 8.1.12.A.3, 8.1.12.A.4, 8.1.12.C.1</p> <p><u>NJSLS 21st Century Life and Careers:</u> CRP1, CRP2, CRP4, CRP8, CRP11, CRP12</p>	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>• How can we represent data in matrix form?</li> <li>• How do the commutative, associative, and distributive properties apply to matrices?</li> <li>• How can matrices be useful in modeling real-life information?</li> <li>• How can matrices be used to represent and solve linear systems?</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Use matrices to solve systems of linear equations</li> <li>• Add and subtract matrices, multiply matrices by scalars, and multiply two matrices</li> <li>• Find the inverses of matrices and use inverse matrices to solve systems of linear equations</li> <li>• Use matrices to solve real-life problems</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 Investigations and Hands-on Activities</li> <li>• Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> </ul>

		<ul style="list-style-type: none"> <li>● Partner collaboration or individual work (depending on the topic and assignment.)</li> <li>● Solving Real World Problems</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>● Projects</li> <li>● Unit Quizzes</li> <li>● Unit Test</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>● Colored Pencils</li> <li>● Activity Sheets</li> <li>● Graph Paper</li> <li>● TI-84+ Graphing Calculator</li> <li>● TI-84 Smartview Software</li> </ul>	<ul style="list-style-type: none"> <li>● Teacher Created Interactive Whiteboard Presentations</li> <li>● <a href="#">Texas Instruments Activity Central</a> Website</li> <li>● <a href="#">Illuminations</a> Website</li> <li>● <a href="#">Mathematics Assessment Project</a> Website</li> <li>● IXL <a href="#">Algebra II Practice</a> Website</li> <li>● Department Created Assessments</li> </ul>

<b>Unit 9:</b>	Sequences, Series and Probability	
<b>Timing:</b>	7 Weeks	
<b>Standards:</b>	<p><u>NJSLS for Mathematics:</u> A.SSE.4 , F.BF.1, S.ID.5, S.CP.1, S.CP.2., S.CP.3, S.CP.5, S.CP.6, S.CP.7, S.CP.8, S.CP.9 Standards for MP 1-8</p> <p><u>NJSLS for Technology:</u> 8.1.12.A.3, 8.1.12.A.4, 8.1.12.C.1</p> <p><u>NJSLS 21st Century Life and Careers:</u> CRP1, CRP2, CRP4, CRP8, CRP11, CRP12</p>	
<b>Essential Questions:</b>	<b>Objectives:</b>	<b>Activities, Investigation, and Student Experiences:</b>
<ul style="list-style-type: none"> <li>How do you derive and apply an explicit formula, or general rule, to a given real world situation to find the <math>n</math>th term of an arithmetic or geometric sequence?</li> <li>How can predictions and conclusions be drawn from a probability simulation and how do the results compare to the theoretical probabilities?</li> <li>How do you know when to use combinations or permutations?</li> </ul>	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>Use a sequence, factorial, and summation notation to write the terms and sum of a sequence</li> <li>Recognize, write and manipulate arithmetic sequences and geometric sequences</li> <li>Use mathematical induction to prove a statement involving positive integer <math>n</math></li> <li>Solve counting problems using the Fundamental Counting Principle, permutations and combinations</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 Investigations and Hands-on Activities</li> <li>Graphing Calculator Demonstrations and Using the Graphing Calculator to Solve Problems</li> </ul>

	<ul style="list-style-type: none"> <li>Find the probabilities of events and their complements</li> </ul>	<ul style="list-style-type: none"> <li>Partner collaboration or individual work (depending on the topic and assignment.)</li> <li>Solving Real World Problems</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>Projects</li> <li>Unit Quizzes</li> <li>Unit Test</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>Colored Pencils</li> <li>Activity Sheets</li> <li>Graph Paper</li> <li>TI-84+ Graphing Calculator</li> <li>TI-84 Smartview Software</li> </ul>	<ul style="list-style-type: none"> <li>Teacher Created Interactive Whiteboard Presentations</li> <li><a href="#">Texas Instruments Activity Central</a> Website</li> <li><a href="#">Illuminations</a> Website</li> <li><a href="#">Mathematics Assessment Project</a> Website</li> <li>IXL <a href="#">Algebra II Practice</a> Website</li> <li>Department Created Assessments</li> </ul>