

**HILLSBOROUGH TOWNSHIP SCHOOL DISTRICT**

**MATHEMATICS CURRICULUM**

**Applications of Math**

**July, 2020**

## **Course Overview**

### **Applications of Math**

Applications of Math is designed so that diverse learners acquire a solid foundation in the skills and concepts of intermediate algebra in a way that shows how algebra can model and solve authentic real-world problems. This standard level course follows Algebra 2 and is taken by seniors. This course is structured on the New Jersey Student Learning Standards. This course prepares students to take an Accuplacer exam to qualify for community college math courses to obtain credit

Topics covered include number sense, algebraic expressions, solving equations and inequalities of linear and quadratic functions and their graphs, probability and statistics, absolute value functions and graphs, systems of equations, matrices, polynomial and radical functions, exponential functions, rational functions, sequences and series, periodic functions, data analysis, discrete math and, if time permits, conic sections.

A variety of tools and strategies will be incorporated into the curriculum to enhance the learning of every child. Technology tools include graphing calculators, computer work, and web-based sites.

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<b>Unit Title:</b> Unit 1 Real Numbers and Algebraic Reasoning	<b>Timeframe/Pacing:</b> 15 days
<b>Essential Questions</b> <ul style="list-style-type: none"><li>• How do mathematical ideas interconnect and build on one another to produce a coherent whole?</li></ul>	
<b>Enduring Understandings</b> <ul style="list-style-type: none"><li>• You must know properties of numbers to be able to use them in more complex problems</li></ul>	
<b>Standards Taught and Assessed</b> <ul style="list-style-type: none"><li>• A-SSE.B.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.</li><li>• A.SSE.1 - Interpret expressions that represent a quantity in terms of its context.*</li></ul>	
<b>Highlighted Interdisciplinary Connections</b> <b>ELA</b> <ul style="list-style-type: none"><li>• <b>RST.11.12.2</b> - Determine the central ideas, themes or conclusions of a text; summarize complex concepts, processes of information presented in a text by paraphrasing them in simpler but still accurate terms.</li><li>• <b>RST.11.12.7</b> Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.</li><li>• <b>ST.11-12.4</b> - Determine the meaning of symbols, key terms, and other domain specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics</li><li>• <b>ST.11-12.7</b> - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</li></ul>	
<b>Highlighted Career Ready Practices and 21st Century Themes and Skill</b> <ul style="list-style-type: none"><li>• 9.3.ST-SM.4 - Apply critical thinking skills to review information, explain statistical analysis, and to translate, interpret and summarize research and statistical data.</li></ul>	
<b>Social Emotional Learning Competencies</b> <ul style="list-style-type: none"><li>• <b>CHPE. 2.1.12.EH.1:</b> Recognize one's personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li></ul>	

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<b>Pre-Assessment</b> <ul style="list-style-type: none"> <li>• A-SSE.B.3</li> <li>• A.SSE.1</li> </ul>		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> <ul style="list-style-type: none"> <li>• Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>		
<b>Student Learning Objectives: We are learning to/that...</b>	<b>Student Strategies (Mathematical Practices)</b>	<b>Formative Assessment</b>	<b>Activities and Resources</b>	<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b>
A.SSE.1 - Interpret expressions that represent a quantity in terms of its context.*	SMP 4 Model with mathematics.	Evaluate the following expressions given the values for x,y,z x=1 y=3 z=6 y(3(x-2)+z)	Guided Notes, Group work, find mistake worksheet	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
A-SSE.B.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	SMP 4 Model with mathematics.  SMP 7 Look for and make use of structure.	Translate "3 less than the quotient of five and a number and evaluate when the number is -7" Use Order of Operations to simplify: $10^2 - 100/5^2$ $x^2 - 3$ Simplify: $5(3y-7) - 7y+2$	Guided Notes, Group work, find mistake worksheet	
<b>Benchmark Assessment</b> Not applicable		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b>		
<b>Summative Assessment(s)</b> <ul style="list-style-type: none"> <li>• Operations of Real Numbers Assessment</li> <li>• Algebraic Expressions and Sets Assessment</li> <li>• Properties of Real Numbers and Algebraic Expressions Assessments</li> <li>• Performance Task Unit 1</li> </ul>		Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's		

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<b>Unit Title:</b> Unit 2 Equations, Inequalities, and Problem Solving	<b>Timeframe/Pacing:</b> 16 days
<b>Essential Questions</b> <ul style="list-style-type: none"> <li>● How can you use mathematics to represent information?</li> <li>● How can you use a formula for one measurement to write a formula for a different measurement?</li> <li>● How can you use equations and inequalities to solve real-life problems?</li> </ul>	
<b>Enduring Understandings</b> <ul style="list-style-type: none"> <li>● Algebra techniques can be used to set up equations, translate words into symbols, and translate problems into equations.</li> </ul>	
<b>Standards Taught and Assessed</b> <ul style="list-style-type: none"> <li>● <b>A.CED.A.1</b> - Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</li> <li>● <b>A.CED.A.4:</b> Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law <math>V = IR</math> to highlight resistance <math>R</math></li> <li>● <b>A-REI.A.1</b> - Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.</li> <li>● <b>A.REI.B.3</b> - Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</li> </ul>	
<b>Highlighted Interdisciplinary Connections</b> <ul style="list-style-type: none"> <li>● <b>(ELA) RST.11-12.4</b> - Determine the meaning of symbols, key terms, and other domain specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics</li> <li>● <b>ST.11-12.7</b> - Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</li> </ul>	
<b>Highlighted Career Ready Practices and 21st Century Themes and Skill</b> <ul style="list-style-type: none"> <li>● <b>9.1.12.D.1</b> - Calculate short and long-term returns on various investments (e.g., stocks, bonds, mutual funds, IRAs, deferred pension plans, and so on).</li> <li>● <b>9.3.12.AG-BIZ.2</b> - Use record keeping to accomplish AFNR business objectives, manage budgets and comply with laws and regulations.</li> </ul>	
<b>Social Emotional Learning Competencies</b> <ul style="list-style-type: none"> <li>● <b>CHPE. 2.1.12.EH.1:</b> Recognize one's personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li> </ul>	

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<b>Pre-Assessment</b> <ul style="list-style-type: none"> <li>● A.CED.A.1</li> <li>● A-REI.A.1</li> <li>● A-REI.B.3</li> </ul>		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>		
Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
<b>A.CED.A.1</b> - Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	SMP1 Make sense of problems and persevere in solving them.  MP4 Model with mathematics.	You are choosing between two health clubs. Club A offers a membership for a fee of \$40 plus a monthly fee of \$25. Club B offers a membership for \$15 plus a monthly fee of \$30. After how many months will the cost be the same? What will be the cost? If you only want to join for 3 months, which is the better choice for you?	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
<b>A.CED.A.4:</b> Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law $V = IR$ to highlight resistance $R$	SMP7 Look for and make use of structure.	Solve the equation for $C$ $F = (9/5)C$	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's

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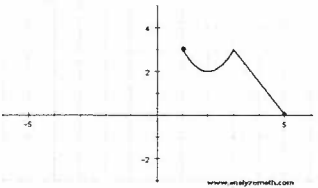
<p><b>A-REI.A.1</b> - Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.</p>	<p>SMP1 Make sense of problems and persevere in solving them.</p> <p>SMP2 Reason abstractly and quantitatively</p>	<p>Solve the equation below and justify your steps  <math>(7w/4)+5=(3w/10)+1</math></p>	<p>Guided Notes, Group work, find mistake worksheet, group discussion</p>	<p>Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</p>
<p><b>A-REI.B.3</b> - Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.</p>	<p>SMP1 Make sense of problems and persevere in solving them.</p>	<p>Solve each equation/inequality            1) <math>8x+14=5x+44</math>            2) <math>3(y-4)+y=2(6+2y)</math>            3) <math>3(2x-7)-4x &gt; -(x+6)</math></p>	<p>Guided Notes, Group work, find mistake worksheet, group discussion</p>	<p>Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</p>
<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Quarterly 1</li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>			
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● Linear Equations Assessment</li> <li>● Formulas and Problem Solving Assessment</li> <li>● Linear Inequalities Assessment</li> <li>● Word Problems Performance Task</li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>			

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<b>Unit Title:</b> Unit 3 Graphs and Functions	<b>Timeframe/Pacing:</b> 21 days
<b>Essential Questions</b>	
<ul style="list-style-type: none"> <li>● How can you use a linear function to model and analyze a real life situation and interpret the solution?</li> <li>● How can I represent the same data in different ways and how does this change my interpretation?</li> </ul>	
<b>Enduring Understandings</b>	
<ul style="list-style-type: none"> <li>● Patterns and relationships can be represented graphically, numerically, symbolically or verbally.</li> <li>● Algebraic representations can be used to generalize patterns and relationships</li> </ul>	
<b>Standards Taught and Assessed</b>	
<ul style="list-style-type: none"> <li>● <b>F-IF.A.1</b> - 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 <math>f</math> is a function and <math>x</math> is an element of its domain, then <math>f(x)</math> denotes the output of <math>f</math> corresponding to the input <math>x</math>. The graph of <math>f</math> is the graph of the equation <math>y = f(x)</math>.</li> <li>● <b>F-IF.C.7</b> - Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*</li> <li>● <b>A-CED.A.2</b> - Create equations in two ... variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</li> </ul>	
<b>Highlighted Interdisciplinary Connections</b>	
<ul style="list-style-type: none"> <li>● <b>ST.11-12.9</b> - Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible</li> <li>● <b>RST.11-12.7</b> - Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.</li> <li>● <b>RST.11-12.4</b> - Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.</li> </ul>	
<b>Highlighted Career Ready Practices and 21st Century Themes and Skill</b>	
<ul style="list-style-type: none"> <li>● <b>CRP4</b> - Communicate clearly and effectively and with reason.</li> <li>● <b>CRP8</b> - Utilize critical thinking to make sense of problems and persevere in solving them.</li> </ul>	
<b>Social Emotional Learning Competencies</b>	
<ul style="list-style-type: none"> <li>● <b>CHPE. 2.1.12.EH.1:</b> Recognize one's personal traits, strengths, and limitations and identify how to develop skills to support a healthy</li> </ul>	



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lifestyle.				
<b>Pre-Assessment</b> <ul style="list-style-type: none"> <li>● F-IF.A.1</li> <li>● F-IF.C.7</li> <li>● A-CED.A.2</li> </ul>		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>		
<b>Student Learning Objectives: We are learning to/that...</b>	<b>Student Strategies (Mathematical Practices)</b>	<b>Formative Assessment</b>	<b>Activities and Resources</b>	<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b>
<b>F-IF.C.7</b> - Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*	SMP4 Model with mathematics.	Graph the following linear functions $2x+y=6$ $y=-2x+5$	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
<b>F-IF.A.1</b> - 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 $y = f(x)$ .	SMP7 Look for and make use of structure.	Find the domain and range of a function represented by the graph. 	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's

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<p><b>A-CED.A.2</b> - Create equations in two ... variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.</p>	<p>SMP1 Make sense of problems and persevere in solving them.</p> <p>SMP4 Model with mathematics.</p>	<p>You invested \$11,000 in stocks and bonds paying 5% and 8% annual interest respectively. If the total interest earned was \$730, how much money was invested at each percent?</p>	<p>Guided Notes, Group work, find mistake worksheet, group discussion</p>	<p>Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</p>
<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Benchmark</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>		
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● Graphing Functions Assessment</li> <li>● Graphing and Interpreting Linear Functions Assessment</li> <li>● Word Problem Performance Task</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>		

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<b>Unit Title:</b> Unit 4 Systems of Equations	<b>Timeframe/Pacing:</b> 15 days
<b>Essential Questions</b> <ul style="list-style-type: none"> <li>● How do you determine the best method to use?</li> <li>● What does the solution mean?</li> </ul>	
<b>Enduring Understandings</b> <ul style="list-style-type: none"> <li>● Solving systems of equations is an essential algebra skill. Strategies of solving are used with all kinds of equations</li> <li>● Systems of equations and/or inequalities are used to model and solve real world problems involving two or more variables.</li> </ul>	
<b>Standards Taught and Assessed</b> <ul style="list-style-type: none"> <li>● <b>A-REI.C.6</b> - Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.</li> <li>● <b>A-CED.A.3</b>-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. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods</li> <li>● <b>A-REI.C.5</b> - Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.</li> </ul>	
<b>Highlighted Interdisciplinary Connections</b> <ul style="list-style-type: none"> <li>● ST.11-12.8 - Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.</li> </ul>	
<b>Highlighted Career Ready Practices and 21st Century Themes and Skill</b> <ul style="list-style-type: none"> <li>● 9.1.12.A.6 - Summarize the financial risks and benefits of entrepreneurship as a career choice.</li> <li>● 9.1.12.D.11 - Assess the role of revenue-generating assets as mechanisms for accruing and managing wealth.</li> <li>● CRP4 - Communicate clearly and effectively and with reason.</li> <li>● CRP8 - Utilize critical thinking to make sense of problems and persevere in solving them.</li> </ul>	
<b>Social Emotional Learning Competencies</b> <ul style="list-style-type: none"> <li>● <b>CHPE. 2.1.12.EH.1:</b> Recognize one's personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li> </ul>	

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<b>Pre-Assessment</b> <ul style="list-style-type: none"> <li>● A-REI.C.6</li> <li>● A-CED.A.3</li> <li>● A-REI.C.5</li> </ul>		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>		
<b>Student Learning Objectives:</b> <b>We are learning to/that...</b>	<b>Student Strategies</b> <b>(Mathematical Practices)</b>	<b>Formative Assessment</b>	<b>Activities and Resources</b>	<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b>
<b>A-REI.C.6</b> - Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.	SMP1 Make sense of problems and persevere in solving them.	Graph each system to determine its solutions. Explain why a system may have no solution or infinite solutions: a) $3x - 2y = 6$ $x - 4y = -8$ b) $2x + 3y = 6$ $4x = -6y + 12$ c) $3x - y = 4$ $6x - 2y = 4$	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
<b>A-CED.A.3</b> -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. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods	SMP2 Reason abstractly and quantitatively.  SMP4 Model with mathematics.	Food and clothing are shipped to victims of a hurricane. Each carton of food will feed 12 people, while each carton of clothing can help 5 people. Each 20-cubic-foot box of food weighs 50 pounds, and each 10-cubic-foot box of clothing weighs 10 pounds. The commercial carriers transporting the boxes are bound by the constraints:	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's

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		<p>The total weight per carrier cannot exceed 19,000 pounds.  The total volume must be less than 8000 cubic feet.  How many boxes of food and clothing can be sent to maximize the relief effort?</p>		
<p><b>A-REI.C.5</b> - Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.</p>	<p>MP3 Construct viable arguments and critique the reasoning of others.</p> <p>MP8 Look for and express regularity in repeated reasoning.</p>	<p>Choose the best way to solve each system and solve:</p> $2x - 3y = 8$ $x = 2y - 5$ $6x - y = -5$ $4x - 2y = 6$	<p>Guided Notes, Group work, find mistake worksheet, group discussion</p>	<p>Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</p>
<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>Quarterly 2</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <p>Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</p>		
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>System of Linear Equations Two Variable Assessment</li> <li>System of Linear Equations Three Variables Assessment</li> <li>System of Linear Inequalities Assessment</li> <li>Word Problem Performance Task</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <p>Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</p>		

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<b>Unit Title:</b> Unit 5 Exponents, Polynomials, and Polynomial Functions	<b>Timeframe/Pacing:</b> 36 days
<b>Essential Questions</b> <ul style="list-style-type: none"><li>● How can you write general rules involving properties of exponents?</li><li>● How can you add and subtract polynomials?</li><li>● How can you multiply two polynomials?</li><li>● What are the patterns in the special products <math>(a + b)(a - b)</math>, <math>(a + b)^2</math>, and <math>(a - b)^2</math>?</li><li>● How can you solve a polynomial equation?</li></ul>	
<b>Enduring Understandings</b> <ul style="list-style-type: none"><li>● There are simple rules for multiplying and dividing exponential expressions</li><li>● Factors are a subset of a product and with the distributive allow options in solving polynomials</li><li>● Solving polynomials involves the reversal of operations, the distributive property and rules of exponents.</li></ul>	
<b>Standards Taught and Assessed</b> <ul style="list-style-type: none"><li>● <b>N-RN.A.2</b> - Rewrite expressions involving radicals and rational exponents using the properties of exponents.</li><li>● <b>A-APR.A.1</b> 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.</li><li>● <b>A-REI.B.4</b> - Solve quadratic equations in one variable.</li><li>● <b>A-REI.B.4b</b> Solve quadratic equations by inspection (e.g., for <math>x^2 = 49</math>), 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 <math>a \pm bi</math> for real numbers <math>a</math> and <math>b</math>.</li><li>● <b>A-SSE.A.2</b> - Use the structure of an expression to identify ways to rewrite it. For example, see <math>x^4 - y^4</math> as <math>(x^2)^2 - (y^2)^2</math>, thus recognizing it as a difference of squares that can be factored as <math>(x^2 - y^2)(x^2 + y^2)</math>.</li><li>● <b>A-SSE.B.3</b> - Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.*; <b>A-SSE.B.3a</b> Factor a quadratic expression to reveal the zeros of the function it defines</li></ul>	
<b>Highlighted Interdisciplinary Connections</b> <ul style="list-style-type: none"><li>● <b>ST.11-12.5</b> - Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.</li><li>● <b>CRP4</b> - Communicate clearly and effectively and with reason.</li><li>● <b>CRP8</b> - Utilize critical thinking to make sense of problems and persevere in solving them.</li></ul>	

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<b>Highlighted Career Ready Practices and 21st Century Themes and Skill</b>				
<ul style="list-style-type: none"> <li>● <b>9.1.12.B.1</b> - Prioritize financial decisions by systematically considering alternatives and possible consequences.</li> </ul>				
<b>Social Emotional Learning Competencies</b>				
<ul style="list-style-type: none"> <li>● <b>CHPE. 2.1.12.EH.1:</b> Recognize one’s personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li> </ul>				
<b>Pre-Assessment</b>		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b>		
<ul style="list-style-type: none"> <li>● N-RN.A.2</li> <li>● A-APR.A.1</li> <li>● A-REI.B.4</li> <li>● A-REI.B.4b</li> <li>● A-SSE.A.2</li> <li>● A-SSE.B.3</li> </ul>		<ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student’s IEP’s and 504’s</li> </ul>		
<b>Student Learning Objectives: We are learning to/that...</b>	<b>Student Strategies (Mathematical Practices)</b>	<b>Formative Assessment</b>	<b>Activities and Resources</b>	<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b>
N-RN.A.2 - Rewrite expressions involving radicals and rational exponents using the properties of exponents.	SMP 1 Make sense of problems and persevere in solving them.	Rewrite and Simplify: $(-27)^{1/3}$ $\sqrt[8]{x^4}$	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student’s IEP’s and 504’s
A-APR.A.1 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	SMP 2 Reason abstractly and quantitatively  SMP 6 Attend to precision.	Add: $(-6x^3 + 5x^2 - 2x + 3) + (3x^3 - 4x - 7)$  Subtract :	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student’s IEP’s and 504’s

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multiply polynomials.	SMP 7 Look for and make use of structure.	$(4xy^2 - 2x^2y)$ from $(3x^2y + 8xy^2)$  Multiply: $(2x - 7)(3x + 11)$  Divide: $(3x^3 - 6x^2 + 12x) / (3x)$		
<b>A-REI.B.4</b> - Solve quadratic equations in one variable.	SMP 5 Use appropriate tools strategically.	Solve by factoring:  $4x^2 - 25 = 0$  $x^3 - 27 = 0$  $8x^3 + 1000 = 0$  $2x(x + 3) = -5x - 15$	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
<b>A-REI.B.4b</b> Solve quadratic equations by inspection (e.g., for $x^2 = 49$ ), 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 $a \pm bi$ for real numbers $a$ and $b$ .	SMP5 Use appropriate tools strategically.	Solve by factoring or square rooting: $4x^2 - 9 = 0$  $2x^3 - 8x = 0$	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
<b>A-SSE.A.2</b> - Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$	SMP 2 Reason abstractly and quantitatively	Factor Each Polynomial 1) $4x^2 - 25$ 2) $6x^2 - 15x - 9$	Guided Notes, Group work, find mistake worksheet, group	Extra time, calculators, provide copy of notes, challenge problems, other



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<p>as <math>(x^2)^2 - (y^2)^2</math>, thus recognizing it as a difference of squares that can be factored as <math>(x^2 - y^2)(x^2 + y^2)</math>.</p>	<p>SMP 4 Model with mathematics.</p>	<p>3)<math>x^3+64</math> 4)<math>2x^3-6x^2+7x</math></p>	<p>discussion</p>	<p>specific modifications and/or accommodations per student's IEP's and 504's</p>
<p><b>A-SSE.B.3</b> - Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.*; A-SSE.B.3a Factor a quadratic expression to reveal the zeros of the function it defines</p>	<p>SMP 2 Reason abstractly and quantitatively  SMP 4 Model with mathematics.</p>	<p>Factor the following expressions 1)<math>16y^3-2</math> 2)<math>x^2y-9y-3x^2+27</math></p>	<p>Guided Notes, Group work, find mistake worksheet, group discussion</p>	<p>Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</p>
<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Not applicable</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>		
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● Rules of Exponents Assessment</li> <li>● Polynomial Operations Assessment</li> <li>● Factoring Assessment</li> <li>● Word Problem Performance Task</li> </ul>				

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<b>Unit Title:</b> Unit 6 Rational Expressions	<b>Timeframe/Pacing:</b> 30 days
<b>Essential Questions</b> <ul style="list-style-type: none"><li>• How can you recognize when two quantities vary directly or inversely?</li><li>• How can you determine the excluded values in a product or quotient of two rational expressions?</li><li>• How can you determine the domain of the sum or difference of two rational expressions?</li><li>• How can you solve a rational equation?</li></ul>	
<b>Enduring Understandings</b> <ul style="list-style-type: none"><li>• The symbolic language of algebra is used to communicate and generalize the patterns in mathematics.</li><li>• Algebraic representation can be used to generalize patterns and relationships.</li><li>• Algebraic and numeric procedures are interconnected and build on one another to produce a coherent whole.</li><li>• Patterns and relationships can be represented graphically, numerically, symbolically or verbally.</li><li>• One representation may sometimes be more helpful than another; multiple representations give a fuller understanding of a problem.</li></ul>	
<b>Standards Taught and Assessed</b> <ul style="list-style-type: none"><li>• <b>A-CED.A.1</b> - Create equations ... in one variable and use them to solve problems.</li><li>• <b>A-CED.A.2</b> - Create equations in two or more variables to represent relationships between quantities.</li><li>• <b>A-CED.A.3</b> - Represent constraints by equations, and interpret solutions as viable or nonviable options in modeling context.</li><li>• <b>A-APR.D.6</b> - Rewrite simple rational expressions in different forms; write <math>a(x)/b(x)</math> in forms <math>q(x) + r(x)/b(x)</math>, where <math>a(x)</math>, <math>b(x)</math>, <math>q(x)</math> and <math>r(x)</math> are polynomials with the degree of <math>r(x)</math> less than the degree of <math>b(x)</math>, using long division</li><li>• <b>A-APR.D.7</b> - Understand that rational expressions form a system analogous to the rational numbers, closed under multiplications, and division by a nonzero rational expression; multiply, and divide rational expressions.</li></ul>	
<b>Highlighted Interdisciplinary Connections</b> <ul style="list-style-type: none"><li>• <b>RST.11-12.4</b> - Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.</li></ul>	
<b>Highlighted Career Ready Practices and 21st Century Themes and Skill</b> <ul style="list-style-type: none"><li>• <b>CRP6</b> - Demonstrate creativity and innovation.</li><li>• <b>CRP8</b> - Utilize critical thinking to make sense of problems and persevere in solving them.</li><li>• <b>9.3.ST-SM.2</b> - Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems.</li></ul>	

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<b>Social Emotional Learning Competencies</b> <ul style="list-style-type: none"> <li>● <b>CHPE. 2.1.12.EH.1:</b> Recognize one's personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li> </ul>				
<b>Pre-Assessment</b> <ul style="list-style-type: none"> <li>● A-CED.A.1</li> <li>● A-CED.A.2</li> <li>● A-CED.A.3</li> <li>● A-APR.D.6</li> <li>● A-APR.D.7</li> </ul>		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>		
<b>Student Learning Objectives:</b> <b>We are learning to/that...</b>	<b>Student Strategies</b> <b>(Mathematical Practices)</b>	<b>Formative Assessment</b>	<b>Activities and Resources</b>	<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b>
<b>A-CED.A.1</b> - Create equations ... in one variable and use them to solve problems.	SMP 7 Make sense and look for structure.	A black mamba snake can travel 88 feet in 3 seconds. At this rate, how long does it take to travel 300 feet?	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
<b>A-CED.A.2</b> - Create equations in two or more variables to represent relationships between quantities	SMP 8 Look for and express regularity in repeated reasoning.	A local dairy has three machines to fill half-gallon milk cartons. The machines can fill the daily quota in 5, 6, 7.5 hours respectively. Find how long it takes to fill the daily quote in all three machines	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
<b>A-CED.A.3</b> - Represent constraints by equations, and interpret solutions as viable or	SMP 7 Look for and make use of structure.	A wire is needed to support a tall vertical pole 15 feet tall. The cable will	Guided Notes, Group work, find mistake worksheet, group	Extra time, calculators, provide copy of notes, challenge problems, other

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nonviable options in modeling context.		be anchored to a stake 8 feet from the base of the pole. How much cable is needed?	discussion	specific modifications and/or accommodations per student's IEP's and 504's
<b>A-APR.D.6</b> - Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in forms $q(x) + r(x)/b(x)$ , 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 long division	SMP 7 Look for and make use of structure.  SMP 8 Look for and express regularity in repeated reasoning.	Simplify: $(x^2 - x - 12) / (16 - x^2)$  Multiply: $(x^2 - y^2) / (x^2 + xy)$ and $(x) / (4x - 4y)$  Divide: $(y^2 - 25)$ by $(y^2 + 10y + 25) / (y^2 + 4y - 5)$	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
<b>A-APR.D.7</b> - Understand that rational expressions form a system analogous to the rational numbers, closed under multiplication, and division by a nonzero rational expression; multiply, and divide rational expressions.	SMP 8 Look for and express regularity in repeated reasoning.	Find the LCD between $7/y^2 - 4$ and $15/y(y-2)$  Add: $(x - 2) / (x + 7)$ to $(x + 7) / (x - 2)$ Check when the value of $x = 3$  Subtract: $(2x)/(x - 4)$ from $64/(x^2 - 7x + 12)$ Verify when $x = 1$  Divide $(x^3 + 4x^2 - 5x + 5)$ by $(x + 3)$ using long and synthetic division.	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's

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<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>● Quarterly 3</li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>
<p><b>Summative Assessment(s)</b></p> <ul style="list-style-type: none"> <li>● Multiplication/Addition/Subtraction Assessment</li> <li>● Simplifying and Division Assessment</li> <li>● Solving Polynomial Equation Assessment</li> <li>● Word Problem Assessment</li> </ul>	<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>

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<b>Unit Title:</b> Unit 7 Rational Exponents, Radicals, and Complex Numbers	<b>Timeframe/Pacing:</b> 30 days
<b>Essential Questions</b> <ul style="list-style-type: none"> <li>● How can you write general rules involving properties of exponents?</li> <li>● How can you write and evaluate an nth root of a number?</li> </ul>	
<b>Enduring Understandings</b> <ul style="list-style-type: none"> <li>● There are simple rules for multiplying and dividing exponential expressions</li> <li>● Real world situations can be represented symbolically and graphically by exponential functions.</li> </ul>	
<b>Standards Taught and Assessed</b> <ul style="list-style-type: none"> <li>● N-RN.A.2 - Rewrite expressions involving radicals and rational exponents using the properties of exponents</li> <li>● A-REI.A.2 - Solve simple...radical equations in one variable, and give examples showing how extraneous solutions may arise.</li> <li>● N-CN.A.1 - Know there is a complex number <math>i</math> such that <math>i^2 = -1</math>, and every complex</li> <li>● N-RN.A.1 - Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define <math>5^{1/3}</math> to be the cube root of 5 because we want <math>(5^{1/3})^3 = 5^{(1/3 \cdot 3)}</math> to hold, so <math>(5^{1/3})^3</math> must equal 5.</li> </ul>	
<b>Highlighted Interdisciplinary Connections</b> <ul style="list-style-type: none"> <li>● RST.11-12.7 - Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.</li> </ul>	
<b>Highlighted Career Ready Practices and 21st Century Themes and Skill</b> <ul style="list-style-type: none"> <li>● 9.1.12.C.2 - Compare and compute interest and compound interest and develop an amortization table using business tools</li> </ul>	
<b>Social Emotional Learning Competencies</b> <ul style="list-style-type: none"> <li>● CHPE. 2.1.12.EH.1: Recognize one's personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li> </ul>	
<b>Pre-Assessment</b> <ul style="list-style-type: none"> <li>● N-RN.A.2</li> <li>● A-REI.A.2</li> <li>● N-CN.A.1</li> </ul>	<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>

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• N-RN.A.1				
Student Learning Objectives: We are learning to/that...	Student Strategies (Mathematical Practices)	Formative Assessment	Activities and Resources	Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)
N-RN.A.2 - Rewrite expressions involving radicals and rational exponents using the properties of exponents	SMP7 Look for and make use of structure.  SMP8 Look for and express regularity in repeated reasoning.	Combine like terms, simplify your answers:  $7\sqrt{2} + \sqrt{8}$  Explain why this is not a simplified expression:  $5\sqrt[3]{16} + \sqrt[3]{54}$	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
A-REI.A.2 - Solve simple...radical equations in one variable, and give examples showing how extraneous solutions may arise.	SMP1 Make sense of problems and persevere in solving them.  SMP2 Reason abstractly and quantitatively.	Solve and check your answer:  $\sqrt{3x-2} = 5$  $x = \sqrt{2x-2} + 1$  $\sqrt{6x+2} = \sqrt{5x+3}$	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
N-RN.A.1 - Explain how the definition of the	SMP7 Look for and make use of structure.	Rewrite and Simplify:	Guided Notes, Group work, find mistake	Extra time, calculators, provide copy of notes,

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<p>meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define <math>5^{1/3}</math> to be the cube root of 5 because we want <math>(5^{1/3})^3 = 5^{(1/3 \cdot 3)}</math> to hold, so <math>(5^{1/3})^3</math> must equal 5.</p>	<p>SMP 8 Look for and express regularity in repeated reasoning.</p>	<p><math>(-27)^{1/3}</math></p> <p><math>\sqrt[8]{x^4}</math></p>	<p>worksheet, group discussion</p>	<p>challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</p>
<p><b>N-CN.A.1</b> - Know there is a complex number <math>i</math> such that <math>i^2 = -1</math>, and every complex number has the form <math>a + bi</math> with <math>a</math> and <math>b</math> real.</p>	<p>SMP 8 Look for and express regularity in repeated reasoning.</p>	<p>Simplify each:</p> <p><math>i^2 =</math></p> <p><math>i^5 =</math></p> <p><math>(-i)^9 =</math></p>	<p>Guided Notes, Group work, find mistake worksheet, group discussion</p>	<p>Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</p>
<p><b>Benchmark Assessment</b></p> <ul style="list-style-type: none"> <li>Not applicable</li> </ul>		<p><b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b></p> <ul style="list-style-type: none"> <li>Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>		
<p><b>Summative Assessment(s)</b></p> <p>Radical Functions Assessment</p> <p>Radical Assessment</p> <p>Rationalizing the Denominator Assessment</p> <p>Word Problem Performance Task</p>				



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<b>Unit Title:</b> Unit 8 Quadratic Equations and Functions	<b>Timeframe/Pacing:</b> 17 days
<b>Essential Questions</b> <ul style="list-style-type: none"><li>• How can you determine the number of solutions of a quadratic equation of the form <math>ax^2 + c = 0</math>?</li><li>• How can you use “completing the square” to solve a quadratic equation?</li></ul>	
<b>Enduring Understandings</b> <ul style="list-style-type: none"><li>• You can solve a quadratic equation in standard form in more than one way. In general, you can find a formula that gives values of <math>x</math> in terms of <math>a</math>, <math>b</math>, and <math>c</math>.</li><li>• To find the zeros of a quadratic function, you must set the equation equal to zero.</li><li>• Completing a perfect square trinomial allows you to factor the completed trinomial as the square of a binomial.</li></ul>	
<b>Standards Taught and Assessed</b> <ul style="list-style-type: none"><li>• <b>A.CED.A.1</b> - Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.</li><li>• <b>A-REI.B.4</b> - Solve quadratic equations in one variable</li><li>• <b>A-REI.B.4b</b> Solve quadratic equations by inspection (e.g., for <math>x^2 = 49</math>), 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 <math>a \pm bi</math> for real numbers <math>a</math> and <math>b</math>.</li><li>• <b>A-SSE.B.3</b> - Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.*</li><li>• <b>A-SSE.B.3b</b> Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.</li></ul>	
<b>Highlighted Interdisciplinary Connections</b> <ul style="list-style-type: none"><li>• <b>ST.11-12.4</b> - Determine the meaning of symbols, key terms, and other domain specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics</li></ul>	
<b>Highlighted Career Ready Practices and 21st Century Themes and Skill</b> <ul style="list-style-type: none"><li>• <b>9.1.12.C.3</b> - Compute and assess the accumulating effect of interest paid over time when using a variety of sources of credit.</li></ul>	
<b>Social Emotional Learning Competencies</b> <ul style="list-style-type: none"><li>• <b>CHPE. 2.1.12.EH.1:</b> Recognize one’s personal traits, strengths, and limitations and identify how to develop skills to support a healthy lifestyle.</li></ul>	

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<b>Pre-Assessment</b> <ul style="list-style-type: none"> <li>● A.CED.A.1</li> <li>● A-REI.B.4</li> <li>● A-REI.B.4b</li> <li>● A-SSE.B.3</li> <li>● A-SSE.B.3b</li> </ul>		<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> <ul style="list-style-type: none"> <li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li> </ul>		
<b>Student Learning Objectives: We are learning to/that...</b>	<b>Student Strategies (Mathematical Practices)</b>	<b>Formative Assessment</b>	<b>Activities and Resources</b>	<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b>
<b>A.CED.A.1</b> - Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	SMP 1 Make sense of problems and persevere in solving them.  SMP 2 Reason abstractly and quantitatively.	Find two numbers whose product is as large as possible, given that their sum is 420.	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
<b>A-REI.B.4</b> - Solve quadratic equations in one variable	SMP 1 Make sense of problems and persevere in solving them.  SMP 2 Reason abstractly and quantitatively.	Solve the following quadratic formula with your choice of method 1) $x^2 - 6x - 7 = 0$ 2) $x^2 + 4x + 7 = 0$	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's
<b>A-REI.B.4b</b> Solve quadratic equations by inspection (e.g., for $x^2 = 49$ ), taking square roots,	SMP 2 Reason abstractly and quantitatively.	Solve by using the quadratic formula: $2x^2 + 5x - 3 = 0$	Guided Notes, Group work, find mistake worksheet, group discussion	Extra time, calculators, provide copy of notes, challenge problems, other specific modifications

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<p>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 <math>a \pm bi</math> for real numbers <math>a</math> and <math>b</math>.</p>	<p>SMP 5 Use appropriate tools strategically.</p>	<p>Solve by factoring:  <math>2x^2 + 5x - 3 = 0</math></p> <p>How do the two answers compare?</p>		<p>and/or accommodations per student's IEP's and 504's</p>
<p><b>A-SSE.B.3</b> - Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.*</p>	<p>SMP 7 Look for and make use of structure.</p> <p>SMP 8 Look for and express regularity in repeated reasoning.</p>	<p>Create a perfect square trinomial and factor using completing the square</p> <p>1)<math>x^2+8x</math>  2)<math>x^2-10x</math>  3)<math>x^2+5x</math></p>	<p>Guided Notes,Group work, find mistake worksheet, group discussion</p>	<p>Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</p>
<p><b>A-SSE.B.3b</b> Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines</p>	<p>SMP 1 Make sense of problems and persevere in solving them.</p> <p>SMP 2 Reason abstractly and quantitatively.</p> <p>SMP 7 Look for and make use of structure.</p> <p>SMP 8 Look for and express regularity in repeated reasoning.</p>	<p>Convert the following quadratic function to vertex form and identify the vertex</p> <p>1)<math>f(x)=x^2+6x+7</math>  2)<math>f(x)=x^2-8x+3</math></p>	<p>Guided Notes,Group work, find mistake worksheet, group discussion</p>	<p>Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</p>

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<b>Benchmark Assessment</b> <ul style="list-style-type: none"><li>● Quarterly 4</li></ul>	<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> <ul style="list-style-type: none"><li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li></ul>
<b>Summative Assessment(s)</b> <ul style="list-style-type: none"><li>● Completing the Square Assessment</li><li>● Quadratic Formula Assessment</li><li>● Solving With Your Choice of Method Performance Task</li></ul>	<b>Modifications/Accommodations (ELL, Special Education, Gifted, At-Risk of Failure, 504)</b> <ul style="list-style-type: none"><li>● Extra time, calculators, provide copy of notes, challenge problems, other specific modifications and/or accommodations per student's IEP's and 504's</li></ul>

## Bibliography

### **Supplemental Materials/Resources:**

Martin-Gay, E. (2017). *Intermediate Algebra*. Pearson: Boston.

### **Digital textbook materials:**

[www.mymathlabforschool.com](http://www.mymathlabforschool.com)