

Topic/Time Frame (days)	Chapter and Sections/Resources	Learning Targets	Vocabulary	CCSSM Standards
Arithmetic and Geometric Sequences		<ul style="list-style-type: none"> <li>• Recognize that sequences are functions, sometimes defined recursively and determine an explicit expression, a recursive process, or steps for calculation from a context.</li> <li>• Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.</li> <li>• Derive the formula for the sum of a finite geometric series, and use the formula to solve problems.</li> <li>• Construct arithmetic and geometric sequences given a graph, a description of a relationship, or two input-output pairs.</li> </ul>	<ul style="list-style-type: none"> <li>• Sequence</li> <li>• Series</li> <li>• Arithmetic</li> <li>• Geometric</li> <li>• Common Difference</li> <li>• Common Ratio</li> <li>• Explicit Formula</li> <li>• Recursive Formula</li> <li>• Sigma Notation</li> </ul>	A-SSE.B.4 F-IF.A.3 F-BF.A.1a F-BF.A.2 F-LE.A.2
Quadratic Relations and Equations		<ul style="list-style-type: none"> <li>• Graph quadratic equations and identify the effect on the graph of replacing <math>f(x)</math> by <math>f(x) + k</math>, <math>kf(x)</math>, <math>f(kx)</math>, and <math>f(x + k)</math> for specific values of <math>k</math> and use graphs to find the value of <math>k</math>.</li> <li>• Solve quadratic equations (by inspection, taking square roots, completing the square, the quadratic formula and factoring) and recognize when the quadratic formula gives complex solutions.</li> <li>• Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.</li> <li>• Perform arithmetic operations with complex numbers (by addition,</li> </ul>	<ul style="list-style-type: none"> <li>• Quadratic</li> <li>• Factor</li> <li>• Perfect Square</li> <li>• Parabola</li> <li>• Vertex</li> <li>• Axis of Symmetry</li> <li>• Radical</li> <li>• Quadratic Formula</li> <li>• Imaginary Number</li> <li>• Complex Number</li> </ul>	NQ-A.2 N-CN.A.1 N-CN.A.2 N-CN.C.7 A-REI.B.4b A-REI.C.7 F-BF.B.3

		subtraction, and multiplication).		
Polynomial Functions and Equations		<ul style="list-style-type: none"> <li>• Interpret key features of graphs and tables in terms of the quantities, graph functions expressed symbolically or given a verbal description of the relationship, and show key features of the graph.</li> <li>• Combine standard function types using arithmetic operations including polynomial identities, using them to describe numerical relationships.</li> </ul>	<ul style="list-style-type: none"> <li>• Polynomial</li> <li>• Degree</li> <li>• End Behavior</li> <li>• Synthetic substitution</li> <li>• Synthetic division</li> <li>• Leading Coefficient</li> </ul>	<p>F-IF.B.4  F-IF.C.7  F-BF.A.1b</p>

Topic/Time Frame (days)	Chapter and Sections/Resources	Learning Targets: Know/Understand, Do, Apply	Vocabulary	CCSSM Standards
Polynomial Functions and Equations (continued)		<ul style="list-style-type: none"> <li>• Factor polynomials completely by factoring out common monomials, grouping, quadratic form, difference of squares, sum/difference of cubes and using the factor and remainder theorems.</li> <li>• Understand the relationship between zeros and factors of polynomials including the remainder, factor, and rational zero theorems and be able to find the intersections of two polynomials.</li> </ul>	<ul style="list-style-type: none"> <li>• Quadratic form</li> <li>• Sum of cubes</li> <li>• Difference of cubes</li> <li>• Rational zeros</li> </ul>	<p>A-APR.B.2 A-APR.B.3 A-APR.C.4 A-REI.D.11 F-BF.B.3</p>
Rational Functions and Equations		<ul style="list-style-type: none"> <li>• Combine rational expressions using arithmetic operations.</li> <li>• Solve rational equations in one variable. Explain the significance of the solution in regards to the graph of rational equations.</li> <li>• Interpreting rational functions to determine key elements of graphing and creating and solving rational equations from application problems.</li> <li>• Solving rational functions for their inverses.</li> </ul>	<ul style="list-style-type: none"> <li>• Rational function</li> <li>• Horizontal asymptote</li> <li>• Vertical asymptote</li> <li>• Inverse function</li> <li>• Extraneous solution</li> <li>• Hyperbola</li> </ul>	<p>A-APR.D.6 A-REI.A.2 A-REI.D.11 A-CED.A.1 F-IF.B.4 F-IF.B.5 F-IF.B.6 F-BF.A.1b F-BF.B.4a</p>
Radical Functions and Equations		<ul style="list-style-type: none"> <li>• Rewrite expressions involving radicals and rational exponents using the properties of exponents and extend the properties of exponents to rational exponents.</li> <li>• Solve an equation of the form <math>f(x) = c</math> for a simple function <math>f</math> that has an inverse and write an expression for the inverse and rearrange formulas to highlight a quantity of interest.</li> <li>• Identify the effect on the graph of</li> </ul>	<ul style="list-style-type: none"> <li>• Radical function</li> <li>• Rational exponent</li> <li>• Radical notation</li> <li>• Rational exponent notation</li> </ul>	<p>NQ-A.2 A-REI.A.1 A-REI.A.2 F-BF.B.4 F-BF.B.3 N-RN.A.1 N-RN.A.2 A-CED.A.1 A-CED.A.2 A-CED.A.3 A-CED.A.4</p>

		<p>replacing <math>f(x)</math> by <math>f(x) + k</math>, <math>kf(x)</math>, <math>f(kx)</math>, and <math>f(x + k)</math> for specific values of <math>k</math> and find the value of <math>k</math> given the graphs.</p> <ul style="list-style-type: none"><li>• Understand solving radical equations as a process of reasoning.</li></ul>		<p>F-IF.B.4 F-IF.B.5 F-IF.B.6</p>
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