

# FAYETTE COUNTY PUBLIC SCHOOLS

## Algebra 2 - 2022-2023 1<sup>st</sup> Semester Long Range Plans

Day	Topic	Standards	Resources and Assessments
Unit 1: Linear Functions and Systems			
1	<b>Welcome Back to School</b> <ul style="list-style-type: none"> <li>Go over school rules and syllabus</li> <li>Get to know your classmates and teacher</li> </ul>		
2	<b>1.1 - Key Features of Functions</b> <ul style="list-style-type: none"> <li>Identify key features of a graph of a function including the intercepts, positive and negative intervals, and areas where the function is increasing or decreasing.</li> <li>Calculate and interpret the average rate of change of a function over a specified interval.</li> </ul>	HSF.IF.B.4; HSF.IF.B.6; HSF.IF.C.7	<a href="#">Meet your classmates</a> <a href="#">Bump: Key Features of Functions</a> <a href="#">Domain and range card sort</a> <a href="#">Average rate of change partner problems</a> <a href="#">Alg 2 - Key Features Sort.pdf</a> <a href="#">Option 2 a little fancier and easier to use.pdf</a> Envision Examples #1 - 5
3	<b>Continue Section 1.1</b>		
4	<b>1.2 - Transformations of Functions</b> <ul style="list-style-type: none"> <li>Graph a transformed function.</li> <li>Write an equation of a transformed function.</li> </ul>	HSF.IF.B.5; HSF.BF.B.3	<a href="#">Transformation Investigation</a> <a href="#">Transformation color match</a> <a href="#">Transformation Investigation TI-nSpire</a> Envision Examples # 1 - 6
5	<b>1.4 - Arithmetic Sequences and Series</b> <ul style="list-style-type: none"> <li>Identify the common difference in a arithmetic sequence.</li> <li>Write arithmetic sequences both recursively and with an explicit formula</li> <li>Construct arithmetic sequences, given a graph, a description of a relationship, or two input-output pairs.</li> </ul>	HSA.IF.A.3; <b>HSF.BF.A.1</b> ; HSF.BF.A.1.A; <b>HSF.BF.A.2</b> ; HSF.LE.A.2 Some teachers will teach 1-4 "now" as a part of Unit One along with the Advanced A2 sections. Other teachers will teach as a part of a Sequence and Series "mini-unit" after Topic 6.	<a href="#">Sequence Card Sort</a> <a href="#">Arithmetic Sequences and Series Dominoes</a> Envision Examples #1 – 6

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	<ul style="list-style-type: none"> <li>Find the sum of an arithmetic series and complete real world problems with series</li> </ul>		
6	Review Sections 1.1-1.4		
7	Test Sections 1.1-1.4		
8	<b>1.5 - Solving Equations and Inequalities by Graphing</b> <ul style="list-style-type: none"> <li>Use graphs, tables, and graphing technology to find or approximate solutions to equations and inequalities.</li> </ul>	HSA.CED.A.1; HSA.REI.D.11	<a href="#">FAL Equations and Identities</a> Envision Examples #1 – 5
9	<b>1.6 - Linear Systems</b> <ul style="list-style-type: none"> <li>use a variety of tools to solve systems of equations</li> </ul>	HSA.CED.A.3; HSA.REI.C.6  Solve systems in 2 variables. ALSO, supplement Simple Linear Programming in 2 variables as a part of Standard A.14	<a href="#">Systems scavenger hunt</a>  <a href="#">Desmos: Point Collector Lines</a>  Envision 1.6 Examples #1 – 5, 1.7 Example #5
10	<b>1.7 - Solving Linear Systems Using Matrices</b> <ul style="list-style-type: none"> <li>Solve real world systems problems</li> </ul>		
11	3 Act Task / Review Unit 1	HSA.CED.A.2; HSA.CED.A.3; HSA.REI.C.6	3 ACT Task: Current Events
12	Test Unit 1		
Unit 2: Quadratic Functions and Equations			
13	<b>2.1 - Vertex Form of a Quadratic Function</b> <ul style="list-style-type: none"> <li>Determine key features of a quadratic function</li> <li>Write an equation for a parabola given a graph</li> </ul>	HSA.CED.A.2; HSF.IF.B.4; HSF.BF.B.3	<a href="#">Quadratic Card Sort</a>  <a href="#">Quadratic EOC problem set</a>  Envision Examples # 1, 2, 3, 4, 5
14	<b>Continue 2.1</b>		<a href="#">Desmos Intro to Vertex Form</a>
15	<b>2.2 - Standard Form of a Quadratic Function</b> <ul style="list-style-type: none"> <li>Write and graph quadratic equations in standard form</li> <li>Interpret the graph of a quadratic function in a real world setting</li> </ul>	HSA.CED.A.2; HSF.IF.B.4; HSS.ID.B.6; HSS.ID.B.6  NOTE - general 03 students will omit Quadratic Regression examples 4 & 5.	<a href="#">desmos activities</a> <a href="#">Bump: Key Features of Functions</a>  <a href="#">graphs and characteristics of quadratic functions</a>  Envision Examples #1, 2, 3, 4, 5

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16	<b>2.3 - Factored Form of a Quadratic Equation</b> <ul style="list-style-type: none"> <li>Factor quadratic expressions</li> <li>Relate factors to zeros of a quadratic function</li> </ul>	HSA.SSE.A.2; HSA.SSE.B.3.A; HSA.APR.B.3	<a href="#">matching graphs to quadratic equations</a> Envision Examples # 1, 2, 3
17	<b>2.3 - Factored Form of a Quadratic Equation</b> <ul style="list-style-type: none"> <li>Solve quadratic equations by factoring</li> <li>Determine positive and negative intervals</li> </ul>	HSA.SSE.A.2; HSA.SSE.B.3.A; HSA.APR.B.3	3 ACT Task: Swift Kick  Envision Example #4 <b>Omit</b> example 5 and 6 due to time constraints
18	Review Sections 2.1-2.3		<ul style="list-style-type: none"> <li><a href="#">Representing Quadratic Functions Graphically</a> (after 2-3)</li> </ul>
19	Test Sections 2.1-2.3		<a href="#">Review: converting between forms</a>
20	<b>2.4 - Complex Numbers and Operations</b> <ul style="list-style-type: none"> <li>Write the square root of a negative number in terms of <math>i</math></li> <li>Perform operations with complex numbers</li> <li>Solve quadratic equations with complex solutions</li> </ul>	HSN.CN.A.1; HSN.CN.A.2; HSN.CN.A.3	<a href="#">IM: Computations with complex numbers</a>  <a href="#">Complex number battleship</a>  Complex number puzzle  Envision Examples #1, 2, 3, 4, 5, 6
21	<b>Continue Section 2.4</b>		
22	<b>2.5 - Completing the Square</b> <ul style="list-style-type: none"> <li>Solve quadratic equations by completing the square</li> <li>Write a quadratic equation in vertex form</li> </ul>	HSN.CN.C.7; HSA.REI.B.4; HSA.REI.B.4.A; HSA.REI.B.4.B  <b>Consideration:</b> <b>Keep it to <math>a=1</math>, save <math>a&gt;1</math> for precalc</b>	<a href="#">FAL – Representing Quadratic Functions Graphically</a>  <a href="#">Completing the square clue</a>  Envision Examples #1, 2, 3, 4, 5
23	<b>2.6 - The Quadratic Formula</b> <ul style="list-style-type: none"> <li>Solve quadratic equations using the quadratic formula</li> <li>Identify the number of real solutions</li> <li>Interpret the discriminant</li> </ul>	HSN.CN.C.7; HSA.REI.B.4; HSA.REI.B.4.A; HSA.REI.B.4.B	<a href="#">Quadratic Formula Turnover Cards</a>  Envision Examples #1, 2, 3, 4, 5  <ul style="list-style-type: none"> <li><a href="#">Solving Quadratic Equations</a> (after 2-6)</li> </ul>
24	<b>2.7 - Linear Quadratic Systems</b>	HSA.REI.C.7; <b>HSA.REI.D.11</b>	ABC Race

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	<ul style="list-style-type: none"> <li>Solve linear-quadratic systems</li> <li>Use a system to solve an equation</li> </ul>		Envision Examples #1, 2, 3, 4, 5
25	Review Unit 2		<a href="#">Leftover Review</a>
26	Test Unit 2 / Common Assessment (by Oct. 31 <sup>st</sup> )	<b>Possible FAL:</b> <ul style="list-style-type: none"> <li><a href="#">Representing Quadratic Functions Graphically</a> (after 2-3)</li> <li><a href="#">Solving Quadratic Equations</a> (after 2-6)</li> </ul>	
Unit 3 : Polynomial Functions			
27	<b>3.1 - Graphing Polynomial Functions</b> <ul style="list-style-type: none"> <li>Classify polynomials</li> <li>Determine end behavior of polynomials</li> <li>Graph a polynomial function</li> <li>Interpret a polynomial Model</li> </ul>	<b>HSF.IF.B.4; HSF.IF.B.6;</b> <b>HSF.IF.C.7.C</b>	Envision Examples #1, 2 <b>OMIT</b> examples 3-4 (due to time) Example 5 is good for real-life connections. <a href="#">Intro to polynomials cut and paste</a>
28	<b>3.2 - Adding, Subtracting and Multiplying Polynomials</b> <ul style="list-style-type: none"> <li>Add, subtract, multiply polynomial functions</li> <li>Write and compare polynomial functions</li> </ul>	HSA.APR.A.1; HSF.IF.C.9; HSF.BF.A.1.B	Envision Examples #1, 2 only <b>OMIT</b> examples 3-5
	<b>3.3 - Polynomial Identities</b>	<b>OMIT</b>  <b>(taught in precalc)</b>	If time? Could include only examples 2 and 3.
29	<b>3.4 - Dividing Polynomials (Long Division)</b> <ul style="list-style-type: none"> <li>Use long division to divide polynomials</li> </ul>	HSA.SSE.A.2; HSA.APR.B.2; HSA.APR.D.6	Envision Example # 1
30	<b>3.4 - Dividing Polynomials (Synthetic Division)</b> <ul style="list-style-type: none"> <li>Use synthetic division to divide a polynomial</li> <li>Use remainder theorem to evaluate polynomials</li> <li>Determine if <math>(x - a)</math> is a factor of a polynomial</li> </ul>	HSA.SSE.A.2; HSA.APR.B.2; HSA.APR.D.6	Envision Example #2, 3, 4, 5  <a href="#">Synthetic division colormatch</a>
31	<b>3.5 - Zeros of a Polynomial Function</b> <ul style="list-style-type: none"> <li>Use zeros to graph a polynomial function</li> <li>Use multiplicities to graph a polynomial function</li> <li>Find the real and complex zeros</li> <li>Interpret the zeros of a polynomial function</li> <li>Solve polynomial equations and inequalities</li> </ul>	HSA.SSE.A.2; HSA.APR.B.3; HSF.IF.C.7.C	Envision Examples #1, 2, 3, 4, 5  <a href="#">What are the zeros activity</a>

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[+]	<p><i>For Advanced Algebra 2 only:</i></p> <p><b>3.6 - Theorems about Roots and Polynomial Equations</b></p> <ul style="list-style-type: none"> <li>Identify possible rational roots</li> <li>Use the rational root theorem</li> </ul>	<p>OMIT</p> <p>The big idea here is that square root and imaginary roots come in pairs. Make it part of 3-5.</p>	If time, could teach Example 5.
[+]	<p><i>For Advanced Algebra 2 only:</i></p> <p><b>3.6 - Theorems about Roots and Polynomial Equations</b></p> <ul style="list-style-type: none"> <li>Find all irrational and complex roots</li> <li>Given roots, write the polynomial</li> </ul>	<p>OMIT</p> <p>The big idea here is that square root and imaginary roots come in pairs. Make it part of 3-5.</p>	
[+]	<p><i>For Advanced Algebra 2 only:</i></p> <p><b>3.7 - Transformations of Polynomial Functions</b></p> <ul style="list-style-type: none"> <li>Identify even and odd functions from their graphs and equations</li> <li>Graph transformations of cubic and quartic functions</li> </ul>	<p>OMIT</p>	If time, could teach Example 2.
32	Review Sections 3.1-3.5		<a href="#">Polynomial Mad Lib</a> <a href="#">Quadratic Adventure Review</a>
33	Review for final		
<b>OMIT Unit 9 - Conics</b>			
34	Finals (Common Assessment – by end of 1 <sup>st</sup> semester)		