## Algebra I Curriculum Map



## 2018 - 2019

### Algebra 1 Scope and Sequence 2018-2019

**Assessment Details:** 

Unit 1: Linear Equations and Inequalities Unit 2: Introduction to Functions Unit 3: Linear Functions Unit 4: Systems of Equations and Inequalities Unit 5: Exponents and Radicals Unit 5: Polynomials Unit 7: Quadratic Functions Unit 7: Quadratic Functions Unit 8: Exponential Functions Unit 9: Statistics Unit 10: After the EOC for Middle School Courses After the EOC for High School Courses

<u>Semester 1 Exam</u> Contains Units 1-4. <u>Answer Key</u>

# \*If you stick to the lower number for each units pacing, you could fit everything in before the EOC.

Okeechobee County Schools

Algebra I Math Curriculum Map

Content Area:	Mathematics	Course:	<u>Algebra 1</u>	Pacing:	20-24 days
Unit 1: Linear Ed	quations and Ine	equalities			
Assessment: Alg	ebra 1 Unit 1 20	018-2019 Dist	rict Assessment	Answer Key	¥
		Florida Math	Standards (MAFS)		
Standard (Stude	ent Friendly):	Standard:	Sta	andard:	
Variables and Expres HMH Lesson 1-1 Suggested: 1-2 days	ssions	<u>A-SSE.1.1</u>	Interpret expressions that represe A. Interpret parts of an expression coefficients. B. Interpret complicated expressi as a single entity. For example, ir factor not depending on P.	n, such as terms, ons by viewing or	factors, and ne or more of their parts
Simple Equations		<u>A-REI.1.1</u>	Explain each step in solving a sin equality of numbers asserted at th assumption that the original equa argument to justify a solution met	he previous step, ation has a solutio	starting from the
HMH Lessons 1-2, 1-3, 1-4, 1-5 Suggested: 3 days		<u>A-CED.1.1</u>	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational, absolute, and exponential functions. $\bigstar$		
		<u>A-REI.2.3</u>	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.		
Rates, Ratios, and Proportions * HMH Lessons 1-8, 1-9		<u>N-Q.1.1</u> *Supporting Standard	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.		
Suggested: 2 days		<u>A-REI.2.3</u>	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.		
Precision and Accura HMH Lesson 1-10 Suggested: 1 day	acy	<u>N-Q.1.3</u> *Supporting Standard	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. $\bigstar$		
Literal Equations HMH Lesson 1-6 Suggested: 2 days		<u>A-CED.1.4</u>		Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law IR to highlight resistance R. ★	
Linear Inequalities		<u>A-REI.2.3</u>	Solve linear equations and inequa equations with coefficients repres		able, including
HMH Lesson 2-1, 2-2, 2-3, 2-4, 2-5, 2-6 Suggested: 8 days		<u>A-CED.1.1</u>	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational, absolute, and exponential functions. ★		d quadratic functions,
Absolute Value Equa Inequalities HMH Lessons 1-7, 2-		<u>A-CED.1.1</u>	Create equations and inequalities in one variable and use the problems. Include equations arising from linear and quadratic and simple rational, absolute, and exponential functions.		d quadratic functions,
Suggested: 2 days Essential Questi	ons:		Knowledge: Students will		
	equation analogous	to a balance?	Translate between		algebraic

	1
<ul> <li>How can you check the reasonableness of your solution?</li> <li>How do inequalities relate to equations?</li> </ul>	<ul> <li>expressions.</li> <li>Evaluate algebraic expressions.</li> <li>Write, solve, and model one and two step equations in one variable.</li> <li>Apply the Distributive Property.</li> <li>Write and solve multi-step equations with variables on both side of the equation.</li> <li>Validate solutions to equations.</li> <li>Write and solve proportions.</li> <li>Apply proportions to real-world problems.</li> <li>Use proportions to solve problems involving geometric figures.</li> <li>Use proportions and similar figures to measure objects indirectly.</li> <li>Analyze and compare measurements for precision and accuracy.</li> <li>Choose an appropriate level of accuracy when reporting measurements.</li> <li>Solve an equation in two or more variables for one of the variables.</li> <li>Write, solve, and graph solutions to multi-step inequalities with variables on both side of the inequality symbol.</li> <li>Solve and graph compound inequalities in one variable.</li> <li>Validate solutions to inequalities.</li> <li>Interpret and solve absolute value problems.</li> </ul>
Essential Vocabulary: <u>Variable, Constant</u> , Numerical expression, <u>Algebraic explementation</u> , <u>Ratio</u> , Rate, <u>Scale</u> , Unit Rate, Conversion fact <u>Model</u> , Dimensional Analysis, <u>Similar</u> , Corresponding Si <u>Formula</u> , Literal Equation, <u>Inequality</u> , Solution of an in	or, <u>Proportion</u> , <u>Cross Products</u> , <u>Scale Drawing</u> , Scale des/ <u>Angles</u> , Indirect Measurement, Scale Factor,
Resources (with embedded links):	
<ul> <li>HMH book lessons 1-1, 1-2, 1-3, 1-4, 1-5, 1-8, 5</li> <li>Khan Academy:         <ul> <li>Introduction to Algebra</li> <li>One-Variable Linear Equations</li> <li>One-variable Linear Inequalities</li> </ul> </li> <li>Algebra Nation:         <ul> <li>Section 1: Topics 1,3, and 4</li> <li>Section 2: Topics 1-9</li> <li>iXL Lessons</li> </ul> </li> <li>CPALMS         <ul> <li>Formative Assessments for each Standown Interim Assessments</li> <li>Engage New York</li> </ul> </li> </ul>	1-9, 1-10, 1-6, 2-1, 2-2, 2-3, 2-4, 2-5, 2-6, 1-7, and 2-7. dard

Content Area:	Mathematics	Course:	<u>Algebra 1</u>	Pacing:	8-10 days
Unit 2: Introduc	tion to Functior	าร			
Assessment: Alg	ebra 1 Unit 2 20	018-2019 Dist	rict Assessment	Answer Key	L
		Florida Math	Standards (MAFS)		
Standard (Stude	ent Friendly):	Standard:	S	tandard:	
Graphing Relationsh HMH Lesson 3-1 Suggested: 1 day	nips	<u>F-IF.2.4</u>	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationshi Key features include: intercepts; intervals where the function is increasing decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.		uantities, and sketch otion of the relationship. e function is increasing,
Relations and Functions HMH Lesson 3-2 Suggested: 2 days		<u>F-IF.1.1</u>	(called the range) assigns to earlie element of the range. If f is a further f(x) denotes the output of	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 $y = f(x)$ .	
Writing Functions HMH Lesson 3-3 Suggested: 2 days		F-IF.1.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.		
		<u>F-BF.1.1</u>	<ul> <li>Write a function that describes a relationship between two quantities. ★</li> <li>a. Determine an explicit expression, a recursive process, or steps for calculation from a context.</li> <li>b. Combine standard function types using arithmetic operations. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential, and relate these functions to the model.</li> <li>c. Compose functions. For example, if T(y) is the temperature in the atmosphere as a function of height, and h(t) is the height of a weather balloon as a function of time, then T(h(t)) is the temperature at the location of the weather balloon as a function of time.</li> </ul>		
Graphing Functions HMH Lesson 3-4 <u>F-IF.2.5</u> Suggested: 3 days		<u>F-IF.2.5</u>	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function $h(n)$ gives the number of person-hours it takes to assemble engines in a factory, then the positive integers would be an appropriate domain for the function. $\bigstar$		
Essential Questi	ions:		Knowledge: Students will		
How can functions be used to describe real-world situations, model predictions, and solve problems?			<ul> <li>Graph a relation</li> <li>Identify function</li> <li>Find the domain functions. (Line)</li> <li>Identify independentify independent</li></ul>	ons. in and range of ear and Nonline endent and depe- tion in function ction for a given a given a limite	relations and ear) endent variables. notation and n input values.
Essential Vocab	Essential Vocabulary:				
	Continuous Graph, Discrete graph, Relation, Domain, Range, Function, Independent variable, Dependent variable, Function rule, Function notation				ependent.

- HMH book lessons 3-1, 3-2, 3-3, 3-4
- Khan Academy:
  - <u>Functions</u>
- Algebra Nation:
  - $\circ$  Section 3: Topics 1,2 and 6-9
  - Section 8: Topics 5 and 7
- iXL Lessons
- CPALMS
  - Formative Assessments for each Standard
  - Interim Assessments
- Engage New York

Content Area:	Mathematics	Course:	<u>Algebra 1</u>	Pacing:	14 to 18 days
Unit 3: Linear Functions					
Assessment: Alg	ebra 1 Unit 3 20	018-2019 Distr	ict Assessment	Answer Ker	Y
		Florida Math S	tandards (MAFS)		
Standard (Stude	ent Friendly):	Standard:	St	andard:	
Identifying Linear Fi HMH Lesson 4-1	unctions	<u>A-REI.4.10</u>	Understand that the graph of ar its solutions plotted in the coord could be a line).		
Suggested: 1 day					
Rate of Change HMH Lesson 4-3		<u>F-IF.2.6</u>	Calculate and interpret the aver (presented symbolically or as a the rate of change from a graph	table) over a spe	
Suggested: 1 days					
Direction Variation Slope-Intercept Form Point-Slope Form		<u>A-CED.1.2</u>		Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. $\bigstar$	
HMH Lessons 4-4, 4-5, 4-6, 4-7 Suggested: 8 days		<u>F-LE.2.5</u>	Interpret the parameters in a linear or exponential function in terms of a context. $\bigstar$		
Slopes of Parallel and Perpendicular Lines HMH Lessons 4-8, 4-9 Suggested: 2 days *Will <u>NOT</u> be on Mid or End of Qtr Assessment.		<u>G-GPE.2.5</u>	<ul> <li>Prove the slope criteria for parallel and perpendicular lines and use the to solve geometric problems (e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point).</li> <li>*Middle School needs to teach this because these students missed the pre-requisite in Pre-Algebra. Focus more on identifying if equations are parallel or perpendicular, not really writing equations. High School students should have some foundation and <i>could</i> skip.</li> <li>Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.</li> </ul>		ion of a line parallel or a given point). Decause these D Pre-Algebra. Dons are parallel equations.
Transforming Linear Functions (EXT Absolute Value Functions) HMH Lesson 4-10 Suggested: 2 days		<u>F-BF.2.3</u>			and negative); find the es and illustrate an hnology. Include
Essential Quest	ions:		Knowledge: Studen	nts will	
<ul> <li>Why is slope a foundational topic?</li> <li>What information does the equation of a line give you?</li> </ul>			<ul> <li>domain and ran</li> <li>Find slope by ut</li> <li>Identify, write,</li> <li>Identify and grasslope-intercept</li> <li>Compare and concerning based</li> <li>Express an equastandard form, point-slope).</li> </ul>	world situation age. sing the slope and graph di aph linear equ form. ontrast differ d on their cor ation in a var slope-interce	ons and give their e formula. irect variation. uations using ent forms of responding graph. iety of forms (e.g.

	<ul> <li>slope-intercept form, intercepts, etc.)</li> <li>Identify and graph parallel and perpendicular lines.</li> <li>Write equation to describe lines parallel or perpendicular to a given line.</li> <li>Describe how changing slope and y-intercept affect the graph of a linear function.</li> </ul>
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Linear function, <u>Linear equation</u>, <u>y-intercept</u>, x-intercept, Rate of change, Rise, Run, <u>Slope</u>, Direct variation, Constant of variation, Slope-Intercept form, Point-slope form, <u>Parallel lines</u>, <u>Perpendicular lines</u>, Family of functions, Parent function, <u>Transformation</u>, <u>Translation</u>, <u>Rotation</u>, <u>Reflection</u>

- HMH book lessons 4-1, 4-2, 4-3, 4-4, 4-5, 4-6, 4-7, 4-9, 4-10
  - Khan Academy Lessons:
    - <u>Functions</u>
    - Linear Equations and Functions Word Problems
  - Algebra Nation:
    - Section 4: Topics 2-4
- <u>iXL Lessons</u>
- CPALMS
  - Formative Assessments for each Standard
  - Interim Assessments
- Engage New York

Content Area:	Mathematics	Course:	<u>Algebra 1</u>	Pacing:	14 to 17 days
Unit 4: Systems	of Equations &	Inequalities			
Assessment: Alg	gebra 1 Unit 4 20	)18-2019 Distr	ict Assessment	Answer Ke	У
		Florida Math S	tandards (MAFS)		
Standard (Stude	ent Friendly):	Standard:		Standard:	
Solving Systems of by Graphing and Su		<u>A-REI.3.6</u>	Solve systems of linear equa graphs), focusing on pairs of		
Systems) HMH Lessons 5-1, 5 Suggested: 8 days		<u>A-CED.1.3</u>	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.		
Solving Systems of Linear Equations by Elimination HMH Lesson 5-3 Suggested: 2 or 3 days		<u>A-REI.3.5</u>	one equation by the sum of t	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.	
		<u>A-CED.1.3</u>	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.For example, represent inequalities describing nutritional and cost constraints on combinations of different foods. $\star$		
Solving Linear Inequalities Systems of Linear Inequalities HMH Lessons 5-5, 5-6 Suggested: 4 or 5 days		<u>A-REI.4.12</u>	Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.		
		<u>A-CED.1.3</u>	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.		
Essential Quest	ions:		Knowledge: Stude	ents will	
<ul> <li>What is the significance of a solutions to a system of equations?</li> <li>Can systems of equations model real-world situations?</li> </ul>		<ul> <li>multiple met elimination).</li> <li>Classify syste determine th</li> <li>Graph and so in two variab</li> </ul>	ms of linear eq e number of so lve linear syste les. tions and judge	substitution, and uations and	
Essential Vocab	ulary:				
System of linear equations, Solution of a system of linear equations, Consistent system, Inconsistent system, Independent system, Dependent system, Linear inequality, Solution of a linear inequality, System of linear inequalities, Solution of a system of linear inequalities					

- HMH book lessons 5-1, 5-2, 5-3, 5-4, 5-5, 5-6
- Khan Academy Lessons:
  - Systems of Linear Equations
    - <u>Two-Variable Linear Inequalities</u>
- Algebra Nation:
  - Section 4: Topics 5 10
- <u>iXL Lessons</u>
- CPALMS
  - Formative Assessments for each Standard
  - Interim Assessments
- Engage New York

Content Area:	Mathematics	Course:	<u>Algebra 1</u>	Pacing:	9 to 11 days
Unit 5: Exponen	ts and Radicals				
Assessment: Alg	ebra 1 Unit 5 20	018-2019 Distric	t Assessment	Answer Ke	У
	Florida Math Standards (MAFS)				
Standard (Stude	ent Friendly):	Standard:	S	itandard:	
Exponents & Radica HMH Lessons 6-1, 6- Suggested: 5 days		<u>N-RN.1.1</u>	Explain how the definition of follows from extending the p values, allowing for a notatio exponents. For example, we we want = to hold, so must e	roperties of intege on for radicals in te define to be the	er exponents to those erms of rational
Expressions	Rewrite Radical & Exponent Expressions IMH Lessons 6-1, 6-2 <u>N-RN.1.2</u>		Rewrite expressions involvin the properties of exponents.		tional exponents using
Suggested: 2 days       Sets, Elements, and Subsets       Extension 6-5(Page 431)       Suggested: 2 days		Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.			
Essential Questions: Kn			Knowledge: Stude	ents will	,
<ul> <li>How do radical expressions expand mathematical possibilities?</li> <li>What is the connection between exponents and radicals?</li> </ul>			<ul><li>of exponents</li><li>Simplify and</li><li>Solve radical</li></ul>	i (including ra re-write radi equations. and operatio	ng the properties Idical exponents). cal expressions. ns under which
Essential Vocab	ulary:				
Base, Index, Radical	, Radicand, Like/l	Jnlike Radicals, Set	, Element, Subset, Clos	sure	
Resources (with	embedded lin	ks):			
<ul> <li>The book doesn't completely cover this Unit. Make sure to pay close attention to what the standards state to cover them. Algebra Nation does a little better with this Unit.</li> <li>HMH book lessons 6-1, 6-2, Extension 6-5(Page 431)</li> <li>Khan Academy Lessons:         <ul> <li>Expressions with Rational Exponents and Radicals</li> <li>Rational and irrational number</li> </ul> </li> <li>Algebra Nation:         <ul> <li>Section 1: Topics 5-9</li> <li>iXL Lessons</li> <li>CPALMS                 <ul> <li>Formative Assessments for each Standard</li> <li>Interim Assessments</li> </ul> </li> </ul> </li> </ul>					

Content Area:	Mathematics	Course:	<u>Algebra 1</u>	Pacing:	16-20 days
Unit 6: Polynomials			1		
Assessment: Alg	ebra 1 Unit 6 20	018-2019 Distric	t Assessment	Answer Key	¥
		Florida Math Sta	ndards (MAFS)		
Standard (Stude	ent Friendly):	Standard:	S	tandard:	
		<u>A-APR.1.1</u>	Understand that polynomials namely, they are closed und and multiplication; add, subtr	er the operations of	of addition, subtraction,
Operations with Poly HMH Lessons 6-3, 6- Suggested: 8 days		<u>A-SSE.1.1</u>	Interpret expressions that re ★ A. Interpret parts of an expre coefficients. B. Interpret complicated expr parts as a single entity. For e P(1+r)^n and a factor not dep	ession, such as ter ressions by viewin example, interpret	ms, factors, and g one or more of their
		<u>A-SSE.1.1</u>	Interpret expressions that represent a quantity in terms of its content ★ A. Interpret parts of an expression, such as terms, factors, and coefficients. B. Interpret complicated expressions by viewing one or more of th parts as a single entity. For example, interpret as the product of P(1+r)^n and a factor not depending on P.		ms, factors, and g one or more of their
Factoring Polynomia Maximums, Minimun HMH Lessons 7-1, 7-	ns)	<u>A-SSE.1.2</u>	Use the structure of an expression to identify ways to rewrite it. For example, see x4- y4 as $(x^2)^2 - (y^2)^2$ , thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$ .		
7-6 Suggested: 8 to 10 days		<u>A-SSE.2.3</u>	<ul> <li>Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression ★</li> <li>a. Factor a quadratic expression to reveal the zeros of the function i defines.</li> <li>b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.</li> <li>c. Use the properties of exponents to transform expressions for exponential functions. For example the expression can be rewritten ≈ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.</li> </ul>		tted by the expression. zeros of the function it ion to reveal the lefines. n expressions for sion can be rewritten as
Essential Questi	ions:		Knowledge: Stude	ents will	
<ul> <li>Why do different approaches yield valid solutions?</li> </ul>		polynomial. Add and subt Multiple poly Find special p Write the pri Factor polyno Factor quadr Factor the di perfect-squa Choose an ap a polynomial	nomial expres products of bi me factorizat omials by usin atic trinomial fference of tw re trinomials. opropriate me	ial expressions. ssions. nomials. ion of numbers g GCF. s. vo squares and thod for factoring	

Monomial, Degree of a monomial, Polynomial, Degree of a polynomial, Standard form of a polynomial, Leading coefficient, Quadratic, Cubic, <u>Binomial</u>, <u>Trinomial</u>, <u>Perfect-square trinomial</u>, <u>Difference of two squares</u>, <u>Prime factorization</u>, <u>Greatest common factor (GCF)</u>

- HMH book lessons 6-3, 6-4, 6-5, 6-6, 7-1, 7-2, 7-3, 7-4, 7-5, 7-6
- Khan Academy Lessons:
  - Introduction to Polynomials
  - Polynomials Factorization
- Algebra Nation:
  - Section 1: Topic 2
  - Section 3: Topics 3-5
  - Section 5: Topics 2-5
- <u>iXL Lessons</u>
- CPALMS
  - Formative Assessments for each Standard
  - Interim Assessments
- Engage New York

Content Area:	Mathematics	Course:	<u>Algebra 1</u>	Pacing:	13-20 days
Unit 7: Quadrati	Unit 7: Quadratic Functions				
Assessment: Alg	ebra 1 Unit 7 20	018-2019 Distric	t Assessment	Answer Key	¥
		Florida Math Sta	ndards (MAFS)		
Standard (Stude	ent Friendly):	Standard:		Standard:	
Identifying, Graphing, and Characteristics of Quadratic Functions HMH Lessons 8-1, 8-2, 8-3, 8-4 Suggested: 5 to 6 days		<u>F-IF.3.7</u>	<ul> <li>Graph functions expressed symbolically and show key features of th graph, by hand in simple cases and using technology for more complicated cases. ★</li> <li>A. Graph linear and quadratic functions and show intercepts, maxim and minima.</li> <li>B. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.</li> <li>C. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.</li> <li>D. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.</li> <li>E. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude, and using phase shift.</li> </ul>		nology for more now intercepts, maxima, e-defined functions, nctions. so when suitable behavior. nd asymptotes when ing end behavior. s, showing intercepts
		<u>F-IF.3.8</u>	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. b. Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = , y = , y = , y = ,$ and classify them as representing exponential growth or decay.		
Solving Quadratic Ec Graphing HMH Lesson 8-5 Suggested: 1 day	HMH Lesson 8-5		Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$ ; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ interact, polynomial, rational, absolute value, exponential, and logarithmic functions.		e solutions of the nately, e.g., using s of values, or find ere f(x) and/or g(x) are
Solving Quadratic Equations in One Variable HMH Lessons 8-6, 8-7, 8-8, 8-9 Suggested: 6 or 7 days		<u>A-REI.2.4</u>	Solve quadratic equations in one variable. A. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form 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. Recogni when the quadratic formula gives complex solutions and write them a $\pm$ bi for real numbers a and b.		form $(x - p)^2 = q$ that formula from this form. g., for $x^2 = 49$ ), taking ratic formula and the equation. Recognize
Polynomial Functions and Equations HMH Lesson 8-Extension pg. 600 Suggested: 1 day		<u>A-APR.2.3</u>	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.		
Essential Questions:			Knowledge: Stud	dents will	
<ul> <li>How can we determine the shape and tendency of a function using standard form?</li> <li>How are the real solutions of a quadratic equation related to the graph of the related quadratic function?</li> </ul>			<ul><li>whether the</li><li>Graph a qua</li></ul>		

	<ul> <li>Graph quadratic functions in standard form.</li> <li>Transform quadratic functions.</li> <li>Find the axis of symmetry and the vertex of a parabola.</li> <li>Solve quadratic functions by graphing, use the quadratic formula, completing the square, finding zeros, and square roots.</li> <li>Determine the number of solutions using the discriminant of a quadratic function.</li> <li>Solve systems of equations in two variables in which one equation is linear and the other is quadratic.</li> </ul>
Essential Vocabulary:	Assessments:
Quadratic function, <u>Parabola</u> , Vertex, Minimum, Maximum, Axis of a function, <u>Axis of symmetry</u> , Quadratic equation, Completing the square, Quadratic Formula, Discriminant, Nonlinear system of equations	<ul> <li>Engage New York</li> <li>CPALMS         <ul> <li>Formative Assessments for each Standard</li> <li>Interim Assessments</li> </ul> </li> <li>PARCC Practice Test 2014</li> <li>PARCC Practice Test 2017         <ul> <li>Answer Key</li> </ul> </li> </ul>
Resources (with embedded links):	
<ul> <li>HMH book lessons 8-1, 8-2, 8-3, 8-4, 8-5, 8-6, 8-7</li> <li>Khan Academy Lessons:         <ul> <li>Quadratic Equations and Functions</li> </ul> </li> <li>Algebra Nation:             <ul></ul></li></ul>	

Content Area:	Mathematics	Course:	<u>Algebra 1</u>	Pacing:	10-12 days
Unit 8: Exponent	tial Functions		L		
Assessment: Alg	ebra 1 Unit 8 20	018-2019 Distric	t Assessment	Answer Key	Ľ
		Florida Math Star	ndards (MAFS)		
Standard (Stude	ent Friendly):	Standard:	S	tandard:	
Geometric Sequence HMH Lesson 9-1 Suggested: 2 days	28	<u>F-IF.1.3</u>	Recognize that sequences a recursively, whose domain is the Fibonacci sequence is de = $f(n) + f(n-1)$ for $n \ge 1$ .	s a subset of the ir	tegers. For example,
Exponential Functions HMH Lesson 9-2 Suggested: 2 days		<u>F-IF.3.7</u>	<ul> <li>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>A. Graph linear and quadratic functions and show intercepts, maxima and minima.</li> <li>B. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.</li> <li>C. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.</li> <li>D. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.</li> <li>X E. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude, and using phase shift.</li> </ul>		nology for more now intercepts, maxima, e-defined functions, notions. us when suitable behavior. nd asymptotes when nig end behavior. ons, showing intercepts
		<u>F-IF.3.8</u>	Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. b. Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = , y = , y = , and$ classify them as representing exponential growth or decay.		
Exponential Growth HMH Lesson 9-3	and Decay	<u>F-LE.1.2</u>	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). ★		
Suggested: 2 days		<u>F-LE.2.5</u>	Interpret the parameters in a a context. ★	linear or exponer	tial function in terms of
Linear, Quadratic, and Exponential Models HMH Lesson 9-4 Suggested: 2 days		<u>F-LE.1.1</u>	<ul> <li>Distinguish between situations that can be modeled with line functions and with exponential functions. ★</li> <li>A. Prove that linear functions grow by equal differences over intervals, and that exponential functions grow by equal facto equal intervals.</li> <li>B. Recognize situations in which one quantity changes at a crate per unit interval relative to another.</li> <li>C. Recognize situations in which a quantity grows or decays constant percent rate per unit interval relative to another.</li> </ul>		fferences over equal by equal factors over changes at a constant bws or decays by a
Compare Functions HMH Lesson 9-5		<u>F-IF.3.9</u>	Compare properties of two fu way (algebraically, graphical descriptions). For example, g and an algebraic expression maximum.	lly, numerically in t given a graph of o	ables, or by verbal ne quadratic function
Suggested: 2 days		<u>F-LE.1.3</u>	Observe using graphs and ta exponentially eventually exc quadratically, or (more gener	eeds a quantity in	creasing linearly,

Essential Questions:	Knowledge: Students will		
<ul> <li>What are the applications of exponential numbers?</li> </ul>	<ul> <li>Recognize and extend geometric sequences.</li> <li>Find the nth term of a geometric sequence.</li> <li>Evaluate exponential functions.</li> <li>Identify and graph exponential functions.</li> <li>Solve problems involving exponential growth and decay.</li> <li>Compare linear, quadratic, and exponential models.</li> <li>Given a set of data, decide which type of function models the data and write an equation to describe the function.</li> <li>Compare functions in different representations.</li> <li>Estimate and compare rates of change.</li> </ul>		

Geometric Sequence, Common ratio, Exponential function, Exponential growth, Compound interest, Exponential decay, half-life, Average rate of change

- HMH book lessons 9-1, 9-2, 9-3, 9-4, 9-5 •
- Khan Academy Lessons: •
- Sequences
   Introductions to Exponential Functions
  - Algebra Nation:

    - Section 7: Topics 1-6
       Section 8: Topics 1-2
- iXL Lessons
- CPALMS
  - Formative Assessments for each Standard
  - Interim Assessments
- Engage New York

Content Area:	Mathematics	Course:	<u>Algebra 1</u>	Pacing:	14-18 days	
Unit 9: Statistics						
Assessment: Algebra 1 Unit 9 2018-2019 District Assessment Answer Key						
		Florida Math Star	ndards (MAFS)			
Standard (Student Friendly):		Standard:	Standard:			
Dot Plots, Histograms, and Box Plots HMH Lessons 10-1, 10-2, Extension 10-3		<u>S-ID.1.1</u>	Represent data with plots on the real number line (dot plots, histograms, and box plots). ★			
Suggested: 2 days	Suggested: 2 days					
Data Distributions HMH Lesson Extension 10-3 Suggested: 4 days		<u>S-ID.1.2</u>	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. $\bigstar$			
		<u>S-ID.1.3</u>	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). ★			
Misleading Graphs and Statistics HMH Lesson 10-4		<u>S.ID.2.6</u>	Evaluate reports based on data. ★			
Suggested: 1 day						
Two-Way Frequency Tables HMH Lesson 10-2 Suggested: 3 days		S.ID.2.5	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies.) Recognize possible associations and trends in the data.			
Scatter Plots, Trend Lines, and Line of Best Fit HMH Lesson 3-5 Suggested: 2 days		<u>S-ID.2.6</u>	<ul> <li>Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. ★</li> <li>A. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, and exponential models.</li> <li>B. Informally assess the fit of a function by plotting and analyzing residuals.</li> <li>C. Fit a linear function for a scatter plot that suggests a linear association.</li> </ul>			
		<u>S-ID.3.7</u>	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. $\star$			
		<u>S-ID.3.8</u>	Compute (using technology a linear fit. ★	r) and interpret the o	correlation coefficient of	
		<u>S-ID.3.9</u>	Distinguish between correla	tion and causation.	*	
Arithmetic Sequences HMH Lesson 3-6 Suggested: 2 days		<u>F-IF.1.3</u>	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. For example, the Fibonacci sequence is defined recursively by $f(0) = f(1) = 1$ , $f(n+1) = f(n) + f(n-1)$ for $n \ge 1$ .			

Essential Questions:	Knowledge: Students will		
<ul> <li>How can collecting and analyzing data help you make decisions or predictions?</li> <li>How can you make and interpret different representations of data?</li> </ul>	<ul> <li>Represent data using a dot plot, a histogram, or a box plot.</li> <li>Identify similarities and differences in shape, center, and spread when given two or more data sets.</li> <li>Predict the effect that an outlier will have on the shape, center, and spread of a data set.</li> <li>Interpret similarities and differences in shape, center, and spread when given two or more data sets within the real-world context given.</li> <li>Use their understanding or normal distribution and the empirical rule to answer questions about data sets.</li> <li>Create or complete a two-way frequency table to summarize categorical data.</li> <li>Determine if associations/trends are appropriate for the data.</li> <li>Interpret data displayed in a two-way frequency table.</li> <li>Calculator joint, marginal, and conditional relative frequencies.</li> <li>Represent data on a scatter plot.</li> <li>Create a residual plot and determine whether a functions is an appropriate fit for the data.</li> <li>Determine the fit of a function by analyzing the correlation coefficient.</li> <li>Recognize and extend an arithmetic sequence.</li> </ul>		

Bivariate, Box-and-whisker plot, Frequency, Histogram, Interquartile Range IQR, Measure of central tendency, outlier, population quartile, Range of a set of data, Arithmetic sequence, common difference

- The textbook doesn't do a great job for this Unit, Algebra Nation does a much better job. •
- HMH book lessons 10-1, 10-2, Extension 10-3, 10-4, 3-5, 3-6 •
- Khan Academy Lessons: •
  - <u>Sequences</u>
- Algebra Nation:
  - Section 4: Topic 1
  - Section 8: Topic 3-4

  - Section 9: Topics 1-9
    Section 10: Topics 1-7
- iXL Lessons
- CPALMS
  - Formative Assessments for each Standard
  - Interim Assessments
- Engage New York •

#### After the EOC for **Middle School Courses**

Content Area:	Mathematics	Course:	<u>Algebra 1</u>	Pacing:			
Unit 10: After th	Unit 10: After the EOC/Geometry Pre-reqs						
Assessment: <u>Alg</u>	Assessment: Algebra 1 Unit 10 MS 2018-2019 District Assessment Answer Key						
		Florida Math Sta	ndards (MAFS)				
Standard (Student Friendly):		Standard:	Standard:				
Pythagorean Theorem & its Converse		<u>8.G.2.6</u>	Explain a proof of the Pythagorean Theorem and its converse.				
Application of the Pythagorean Theorem		<u>8.G.2.7</u>	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.				
		<u>8.G.2.8</u>	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.				
Angle Relationships in Parallel Lines Angle Relationships in Triangles		<u>8.G.1.5</u>	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.				
Volume		<u>8.G.3.9</u>	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.				
Essential Questi	ons:		Knowledge: Stude	ents will			
<ul> <li>What is the relationship among the lengths of the sides of a right triangle?</li> <li>How do you explain a proof of the Pythagorean Theorem and its converse?</li> <li>How can the formulas for the volume of cones, cylinders, and spheres be used in real-world and mathematical problems?</li> <li>How are parallel lines and transversals used to determine angle relationships?</li> </ul>		<ul> <li>Use the Pythagorean Theorem to determine if the given triangle is a right triangle.</li> <li>Explain a proof of the Pythagorean Theorem and its Converse.</li> <li>Apply the Pythagorean Theorem to find an unknown side length of a right triangle.</li> <li>Draw a diagram and use the Pythagorean Theorem to solve real world problems involving right triangles.</li> <li>Draw a diagram to find right triangles in a three-dimensional figure and use the Pythagorean Theorem to calculate various dimensions.</li> <li>Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in two and three dimensions.</li> <li>Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.</li> </ul>					

Pythagorean Theorem, Converse of the Pythagorean Theorem, Right Triangle, Leg, Hypotenuse, Parallel Lines, Transversal, Alternate Interior Angles, Alternate Exterior Angles, Same-Side Interior Angles, Same-Side Exterior Angles, Congruent Angles, Supplementary Angles, Triangle Sum Theorem, Exterior Angle Sum Theorem

- Pre-Algebra Test Item Specs
- Khan Academy Lessons:
- <u>Geometry</u>
- iXL Lessons
- CPALMS
  - Formative Assessments for each Standard
  - Interim Assessments
- Engage New York

#### After the EOC for **High School Courses**

Content Area:	Mathematics	Course:	<u>Algebra 1</u>	Pacing:		
Unit 10: After the EOC/Geometry Pre-reqs						
Assessment: PERT Florida Math Standards (MAFS)						
						Standard (Student Friendly):
Operations with Radicals		<u>N-RN.1.1</u>	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 to be the cube root of 5 because we want = to hold, so must equal 5.			
		<u>N-RN.1.2</u>	Rewrite expressions involving radicals and rational exponents using the properties of exponents.			
Equations with Variables on Both Sides		<u>A-REI.1.1</u>	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.			
		<u>A-CED.1.1</u>	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational, absolute, and exponential functions.			
		<u>A-REI.2.3</u>	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.			
Essential Question	ons:		Knowledge: Stud	ents will		
<ul> <li>What rules must be followed with performing operations with radicals?</li> <li>What differs between solving an equation with a variable on one side and solving an equation with variables on both sides?</li> </ul>		<ul> <li>Simplify and evaluate using the properties of exponents (including radical exponents).</li> <li>Simplify and re-write radical expressions.</li> <li>Solve radical equations.</li> <li>Rationalize the denominator when performing operations with radicals.</li> <li>Solve equations involving operations with radicals</li> <li>Solve equations with variables on both sides will accuracy and fluency, including those using the distributive property</li> <li>Validate solutions to equations.</li> </ul>				
Essential Vocabu	ılary:					
			tionalize the denominat ation, <u>Solution of an Ec</u>		Constant,	
Resources (with	embedded lin	ks):				
		ts for each Standar	ď			

Engage New York