SPS Algebra 1 Scope and Sequence Year at a Glance

Algebra 1 Course Overview:
The fundamental purpose of this course is to formalize and extend the mathematics that students learned in the middle grades. Because it is built on the middle grades standards, this is a more ambitious version of Algebra I than has generally been offered. The critical areas deepen and extend understanding of linear and exponential relationships by contrasting them with each other and by applying linear models to data that exhibit a linear trend, and students engage in methods for analyzing, solving, and using quadratic functions. The Mathematical Practice Standards apply throughout each course and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. **Critical Area 1**: By the end of eighth grade, students have learned to solve linear equations in one variable and have applied graphical and algebraic methods to analyze and solve systems of linear equations in two variables. Now, students analyze and explain the process of solving an equation. Students develop fluency writing, interpreting, and translating between various forms of linear equations and inequalities, and using them to solve problems. They master the solution of linear equations and apply related solution techniques and the laws of exponents to the creation and solution of simple exponential equations. **Critical Area 2**: In earlier grades, students define, evaluate, and compare functions, and use them to model relationships between quantities. Students will learn function notation and develop the concepts of domain and range. They explore many examples of functions, including sequences; they interpret functions given graphically, numerically, symbolically, and verbally, translate between representations, and understand the limitations of various representations. Students build on and informally extend their understanding of integer exponents to consider exponential functions. They compare and contrast linear and exponential functions, distinguishing between additive and multiplicative change. Students explore systems of equations and inequalities, and they find and interpret their solutions. They interpret arithmetic sequences as linear functions and geometric sequences as exponential functions. **Critical Area 3**: This critical area builds upon prior students' prior experiences with data, providing students with more formal means of assessing how a model fits data. Students use regression techniques to describe approximately linear relationships between quantities. They use graphical representations and knowledge of the context to make judgments about the appropriateness of linear models. With linear models, they look at residuals to analyze the goodness of fit. **Critical Area 4**: This critical area builds on knowledge from critical area 2, where they extended the laws of exponents to rational exponents. Students apply this new understanding of number and strengthen their ability to see structure in and create quadratic and exponential expressions. They create and solve equations, inequalities, and systems of equations involving quadratic expressions. **Critical Area 5**: Students consider quadratic functions, comparing the key characteristics of quadratic functions to those of linear and exponential functions. They select from among these functions to model phenomena. Students learn to anticipate the graph of a quadratic function by interpreting various forms of quadratic expressions. In particular, they identify the real solutions of a quadratic equation as the zeros of a related quadratic function. Students expand their experience with functions to include more specialized functions—absolute value, step, and those that are piecewise-defined.

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	Unit of Study	Length of Unit	Time Frame
Semester 1	Unit 1: Algebraic Properties	10 days	Quarter 1
	Unit 2: Intro to Functions	15 days	Quarter 1
	Unit 3: Linear Functions	20 days	Quarter 1 - Quarter 2
	Unit 4: Exponents & Exponential Functions	35 days	Quarter 2
Semester 2	Unit 5: Quadratic Functions	35 days	Quarter 3
	Unit 6: Systems	15 days	Quarter 3 - Quarter 4
	Unit 7: Inequalities	12 days	Quarter 4
	Unit 8: Statistics	17 days	Quarter 4
	Total days	159 days	

Note: Within each unit, the standards are listed in the order in which they appear in the Common Core State Standards. This does not indicate a teaching order. The unit plan should sequence the learning of the standards to be most advantageous to student learning.

*Modeling Standards: Modeling is best interpreted not as a collection of isolated topics rather in relation to other standards. Modeling standards are indicated by the star symbol(*).

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Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
Algebraic Properties	Functions	Linear Functions	Exponents & Exponential Functions	Quadratic Functions	Systems	Inequalities	Statistics
10 days	15 days	20 days	35 days	35 days	15 days	12 days	17 days
N-Q.1 *	F-IF.1	N-Q.1 *	N-RN.1	N-RN.3	N-Q.1 *	A-CED.1 *	N-Q.1 *
N-Q.2 *	F-IF.2	N-Q.2 *	N-RN.2	N-Q.1 *	N-Q.2 *	A-CED.3 *	N-Q.2 *
A-SSE.2	F-IF.3	N-Q.3 *	N-RN.3	N-Q.2 *	N-Q.3 *	A-REI.3	N-Q.3 *
A-CED.4 *	F-IF.4 *	A-SSE.1a *	N-Q.1 *	N-Q.3 *	A-SSE.2	A-REI.12	S-ID.1 *
A-REI.1	F-IF.5 *	A-SSE.1b *	N-Q.2 *	A-SSE.1a *	A-CED.3 *		S-ID.2 *
A-REI.3	F-BF.2 *	A-SSE.2	N-Q.3 *	A-SSE.1b *	A-REI.3	SMP 2	S-ID.3 *
		A-CED.1 *	A-SSE.1a *	A-SSE.2	A-REI.5	SMP 3	S-ID.5 *
SMP 1		A-CED.2 *	A-SSE.1b *	A-SSE.3a *	A-REI.6	SMP 4	S-ID.6a *
SMP 2	SMP 2	A-CED.3 *	A-SSE.2	A-SSE.3b *	A-REI.7	SMP 6	S-ID.6c *
SMP 3	SMP 4	A-REI.3	A-SSE.3c *	A-APR.1	A-REI.11 *		S-ID.7 *
	SMP 7	A-REI.10	A-CED.1 *	A-CED.1 *			S-ID.9 *
	SMP 8	F-IF.2	A-CED.2 *	A-CED.2 *	SMP 2		
		F-IF.4 *	A-REI.10	A-REI.4a	SMP 3		SMP 2
		F-IF.5 *	F-IF.2	A-REI.4b	SMP 4		SMP 3
		F-IF.6 *	F-IF.3	A-REI.10	SMP 7		SMP 4
		F-IF.7a *	F-IF.4 *	F-IF.2			SMP 6
		F-IF.9	F-IF.5 *	F-IF.4 *			
		F-BF.1a *	F-IF.6 *	F-IF.5 *			
		F-BF.2 *	F-IF.7e *	F-IF.6 *			

Units 3, 4, and 5 are continued onto the next page.

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			Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
					Linear Functions	**Exponents & Exponential Functions**	**Quadratic Functions**			
Content Standards and Math Practices					F-BF.3	F-IF.8b	F-IF.7a			
					F-BF.4a	F-IF.9	F-IF.8a			
					F-LE.1b *	F-BF.1a *	F-IF.9			
					F-LE.2 *	F-BF.1b*	F-BF.3			
					F-LE.5 *	F-BF.2 *	F-LE.3 *			
					S-ID.6c	F-BF.3				
					S-ID.7	F-LE.1a *	SMP 1			
						F-LE.1c *	SMP 2			
					SMP 2	F-LE.2 *	SMP 4			
					SMP 4	F-LE.3 *	SMP 7			
					SMP 7	F-LE.5 *	SMP 8			
					SMP 8					
						SMP 1				
						SMP 2				
						SMP 4				
						SMP 5				
						SMP 8				

🟩 Major Standards

🟦 Additional Standards

🟨 Supporting Standards

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