SPS Algebra 1 Scope and Sequence - Year at a Glance

Algebra 1 Course Overview:

Students begin the course with one-variable statistics, building on ideas from middle school. Starting with data collection and analysis sets a tone for the course of understanding quantities in context. It also allows students to access grade-level mathematics that isn't as dependent on prior skills as some other topics. Gathering and displaying data, measuring data distribution, and interpreting statistical results encourages students to collaborate, communicate, and explore new tools and routines.

From there, students move on to expand their understanding of linear equations, inequalities, and systems of linear equations and inequalities. They use these representations to model relationships and constraints but also reason with them abstractly. Students write, rearrange, evaluate, and solve equations and inequalities, explaining and validating their reasoning with increased precision. They then take these insights to a unit on two-variable statistics, where they extend their prior knowledge of scatter plots and lines of best fit. Students use residuals and correlation coefficients to assess linear models, interpret quantitative data, and distinguish correlation and causality. They also determine associations in categorical data, by using two-way tables and relative frequencies.

Next, students study functions, continuing the work begun in grade 8. Over the next few units, they deepen their understanding of functions and deepen their ability to represent, interpret, and communicate about them—using function notation, domain and range, average rate of change, and features of graphs. They also see categories of functions, starting with linear functions (including their inverses) and piecewise-defined functions (including absolute value functions), followed by exponential and quadratic functions. For each function type, students begin their investigation with real-world and mathematical contexts, look closely at the structural attributes of the function, and analyze how these attributes are expressed in different representations.

The course ends with a close look at quadratic equations. Students extend their ability to use equations to model relationships and solve problems. They develop their capacity to write, transform, graph, and solve equations—by reasoning, rearranging equations into useful forms, and applying the quadratic formula. In solving quadratic equations students encounter rational and irrational solutions, providing an opportunity to deepen their understanding of the real number system.

Within the classroom activities, students have opportunities to engage in aspects of mathematical modeling. Additionally, modeling prompts are provided for use throughout the course. Modeling prompts offer opportunities for students to engage in the full modeling cycle. These can be implemented in a variety of ways.

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	Unit of Study	Length of Unit	Time Frame
Semester 1	Unit 0: Community and Routines	5 days	Quarter 1
	Unit 1: One-variable Statistics	13 days	Quarter 1
	Unit 2: Linear Equations, Inequalities, and Systems	29 days	Quarter 1 – Quarter 2
	Unit 3: Two-variable Statistics	11 days	Quarter 2
	Unit 4: Functions	21 days	Quarter 2
		79 days in S1	
Semester 2	Unit 5: Introduction to Exponential Functions	23 days	Quarter 3
	Unit 6: Introduction to Quadratic Functions	19 days	Quarter 3 - Quarter 4
	Unit 7: Quadratic Equations	27 days	Quarter 4
		69 days in S2	
Total days		**148 days**	

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	Unit 0	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
	Community and Routines	One-variable Statistics	Linear Equations, Inequalities, and Systems	Two-variable Statistics	Functions	Introduction to Exponential Functions	Introduction to Quadratics Functions	Quadratic Equations
	5 days	13 days	29 days	11 days	21 days	23 days	19 days	27 days
	Building community	S-ID.A.1	N-Q.A.2	N-Q.A.3	A-CED.A.4	N-Q.A.1	A-SSE.A.1	N-RN.B.3
		S-ID.A.2	A-SSE.A.1	S-ID.B.5	A-REI.A.1	N-Q.A.3	A-SSE.A.2	A-SSE.B.3a,3b
	Establish classroom norms	S-ID.A.3	A-CED.A.1	S-ID.B.6	A-REI.D.11	A-SSE.A.1a,b,c	A-SSE.B.3	A-CED.A.1
			A-CED.A.2	S-ID.B.6a,b,c	F-IF.A.1	A-CED.A.2	F-IF.A.2	A-REI.A.1
			A-CED.A.3	S-ID.C.7	F-IF.A.2	A-CED.A.4	F-IF.B.4	A-REI.B.3
	Practice math discourse		A-CED.A.4	S-ID.C.8	F-IF.B.4	F-IF.A.2	F-IF.B.5	A-REI.B.4a,4b
			A-REI.A.1	S-ID.C.9	F-IF.B.5	F-IF.B.4	F-IF.C.7a,7c	A-REI.C.7
			A-REI.B.3		F-IF.B.6	F-IF.B.5	F-IF.C.8	A-REI.D.10
			A-REI.C.5		F-IF.C.7	F-IF.B.6	F-IF.C.9	F-IF.A.2
			A-REI.C.6		F-IF.C.7b	F-IF.C.7, 7e	F-BF.A.1a	F-IF.B.4
			A-REI.D.10		F-BF.A.1a	F-IF.C.8, 8b	F-BF.B.3	F-IF.B.5
			A-REI.D.12		F-BF.B.3	F-BF.A.1a	F-LE.A.2	F-IF.C.7a
					F-BF.B.4a	F-LE.A.1a,1b,1c	F-LE.A.3	F-IF.C.8a
					F-BF.B.6	F-LE.A.2		F-IF.C.9
					S-ID.B.6a	F-LE.A.3		
					S-ID.B.6c	F-LE.B.5		
						S-ID.B.6a		

Content Standards

Major Standards   Supporting Standards   Additional Standards