

SPS Algebra 1 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 – 18 days	Quarter 1
	Unit 2: Linear Equations and Systems	16 – 21 days	Quarter 1
	Unit 3: Two-variable Statistics	11 – 12 days	Quarter 2
	Unit 4: Linear Inequalities and Systems	11 days	Quarter 2
	Unit 5: Functions (start)	11 days	Quarter 2
		67 – 78 days in S1	
	Unit 5: Functions (continued)	10 days	Quarter 2
	Unit 6: Introduction to Exponential Functions	22 – 24 days	Quarter 3
	Unit 7: Introduction to Quadratic Functions	17 – 20 days	Quarter 3 - Quarter 4
	Unit 8: Quadratic Equations	26 – 27 days	Quarter 4
		75 - 81 days in S2	
	Total days	142 - 159 days	

The days allotted per unit is given as a range if the optional lessons are incorporated.

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	Unit 0	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
	Community and Routines	One-variable Statistics	Linear Equations, and Systems	Two-variable Statistics	Linear Inequalities and Systems	Functions	Introduction to Exponential Functions	Introduction to Quadratics Functions	Quadratic Equations
	5 days	13-18 days	16-21 days	11-12 days	11 days	21 days	22-24 days	17-20 days	26-27 days
Content Standards	Building community	S-ID.A.1	N-Q.A.2	N-Q.A.3	N-Q.A.2	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-CED.A.1	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.2	S-ID.B.6	A-CED.A.3	A-REI.D.11	A-SSE.A.1a,b,c	A-SSE.B.3	A-CED.A.1
			A-CED.A.3	S-ID.B.6a,b,c	A-REI.B.3	F-IF.A.1	A-CED.A.2	F-IF.A.2	A-REI.A.1
			A-CED.A.4	S-ID.C.7	A-REI.D.10	F-IF.A.2	A-CED.A.4	F-IF.B.4	A-REI.B.3
	Practice math discourse		A-REI.A.1	S-ID.C.8	A-REI.D.12	F-IF.B.4	F-IF.A.2	F-IF.B.5	A-REI.B.4a,4b
			A-REI.B.3	S-ID.C.9		F-IF.B.5	F-IF.B.4	F-IF.C.7a,7c	A-REI.C.7
			A-REI.C.5			F-IF.B.6	F-IF.B.5	F-IF.C.8	A-REI.D.10
			A-REI.C.6			F-IF.C.7	F-IF.B.6	F-IF.C.9	F-IF.A.2
			A-REI.D.10			F-IF.C.7b	F-IF.C.7, 7e	F-BF.A.1a	F-IF.B.4
			A-REI.D.12			F-BF.A.1a	F-IF.C.8, 8b	F-BF.B.3	F-IF.B.5
			F-IF.C.7a			F-BF.B.3	F-BF.A.1a	F-LE.A.2	F-IF.C.7a
			F-BF.A.1b			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		

Major Standards

Supporting Standards

Additional Standards