Algebraic Reasoning Scope and Sequence 2025-2026

TEKS Distribution among units

Process Standards

	AR.1A	AR.1B	AR.1C	AR.1D	AR.1E	AR.1F	AR.1G
Unit 1	X	X	X	X	X	X	X
Unit 2	X	X	X	X	X	X	X
Unit 3	X	X	X	X	X	X	X
Unit 4	X	X	X	X	X	X	X
Unit 5	X	X	X	X	X	X	X
Unit 6	X	X	X	X	X	X	X
Unit 7	X	X	X	X	X	X	X
Unit 8	X	X	X	X	X	X	X

Content Standards

	AR.2A	AR.2B	AR.2C	AR.2D	**AR.3A**	**AR.3B**	AR.3C	**AR.3D**	AR.3E	AR.3F	**AR.4A**	AR.4B	AR.4C	**AR.4D**	AR.5A	AR.5B	AR.5C	AR.5D	**AR.5E**	AR.6A	**AR.6B**	AR.6C	AR.7A	AR.7B	**AR.7C**	AR.7D	AR.7E
Unit 1	X	X	X	X																							
Unit 2					X																		X				
Unit 3						X	X																X	X			
Unit 4								X	X	X																	
Unit 5											X	X	X	X													
Unit 6															X	X	X	X	X								
Unit 7																				X	X	X					
Unit 8																							X	X	X	X	X

Algebraic Reasoning
Scope and Sequence 2025-2026

Mathematical Process Standards: The student uses mathematical process to acquire and demonstrate mathematical understanding. The student is expected to:

AR.1A Apply mathematics to problems arising in everyday life, society, and the workplace
AR.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution
AR.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems
AR.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate
AR.1E Create and use representations to organize, record, and communicate mathematical ideas
AR.1F Analyze mathematical relationships to connect and communicate mathematical ideas
AR.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication

Grading Period 1

Unit 1: Patterns and Functions
Estimated Date Range: 8/12/25 – 9/10/25 (21 total school days)
Instructional & Re-engagement Days in Unit: 21 days

Assessments

STATE/NATIONAL ASSESSMENT(S)	DISTRICT ASSESSMENT(S)	COMMON FORMATIVE ASSESSMENTS (CFAs) *(administered within designated concept)*
N/A	N/A	N/A

Concepts within the Unit	TEKS
Establishing a Positive Mathematics Community Suggested Days: 3	Process Standards: AR.1A Apply mathematics to problems arising in everyday life, society, and the workplace AR .1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution AR .1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems AR .1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate

	AR .1E Create and use representations to organize, record, and communicate mathematical ideas AR .1F Analyze mathematical relationships to connect and communicate mathematical ideas AR.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication
Concept #1: Sequences Suggested Days: 2	Important Standards AR.2A Determine the patterns that identify the relationship between a function and its common ratio or related finite differences as appropriate, including linear, ~~quadratic, cubic~~ and exponential functions
Concept #2: Patterns and Linear Functions Suggested Days: 3	**Priority Standards** **AR.2D Determine a function that models real-world data and mathematical contexts using finite differences such as the age of a tree and its circumference, figurative numbers, average velocity and average acceleration** Important Standards AR.2A determine the patterns that identify the relationship between a function and its ~~common ratio or~~ related finite differences as appropriate, including linear, ~~quadratic, cubic and exponential~~ functions AR.2B classify a function as linear, ~~quadratic, cubic and exponential~~ when a function is represented tabularly using finite differences ~~or common ratios~~ as appropriate AR.2C determine the function that models a given table of related values using finite difference and its restricted domain and range
Concept #3: Patterns and Exponential Functions Suggested Days: 3	**Priority Standards** **AR.2D Determine a function that models real-world data and mathematical contexts using finite differences such as the age of a tree and its circumference, figurative numbers, average velocity and average acceleration** Important Standards AR.2A determine the patterns that identify the relationship between a function and its common ratio or related finite differences as appropriate, including linear, ~~quadratic, cubic~~ and exponential functions AR.2B classify a function as linear, ~~quadratic, cubic~~ and exponential when a function is represented tabularly using finite differences or common ratios as appropriate
Concept #4: Patterns and Quadratic Functions Suggested Days: 3	**Priority Standards** **AR.2D Determine a function that models real-world data and mathematical contexts using finite differences such as the age of a tree and its circumference, figurative numbers, average velocity and average acceleration** Important Standards

	AR.2A determine the patterns that identify the relationship between a function and its common ratio or related finite differences as appropriate, including linear, ~~quadratic, cubic~~ and exponential functions AR.2B classify a function as linear, ~~quadratic, cubic~~ and exponential when a function is represented tabularly using finite differences or common ratios as appropriate AR.2C determine the function that models a given table of related values using finite difference and its restricted domain and range
Concept #5: Patterns and Cubic Functions Suggested Days: 3	**Priority Standards** **AR.2D Determine a function that models real-world data and mathematical contexts using finite differences such as the age of a tree and its circumference, figurative numbers, average velocity and average acceleration** Important Standards AR.2A determine the patterns that identify the relationship between a function and its common ratio or related finite differences as appropriate, including linear, ~~quadratic, cubic~~ and exponential functions AR.2B classify a function as linear, ~~quadratic, cubic~~ and exponential when a function is represented tabularly using finite differences or common ratios as appropriate AR.2C determine the function that models a given table of related values using finite difference and its restricted domain and range

Unit 2: Analyzing Functions Estimated Date Range: Sept. 11 – Oct. 10 (21 total school days) Instructional & Re-engagement Days in Unit: 20 days		
Assessments		
STATE/NATIONAL ASSESSMENT(S) PSAT (10/2) 1 day	**DISTRICT ASSESSMENT(S)** N/A	**COMMON FORMATIVE ASSESSMENTS (CFAs)** *(administered within designated concept)* N/A

Concepts within the Unit	**TEKS**
Concept #1: Transformations of Functions Suggested Days: 9	Important Standards AR.3A Compare and contrast the key attributes, including domain, range, maxima, minima, and intercepts of a set of functions such as a set comprised of a linear, a quadratic, and an exponential functions or a set comprised of an absolute value, a quadratic, and a square root function tabularly, graphically, and symbolically. Important Standards AR.7A represent domain and range of a function using interval notation, inequalities and set (builder) notation.

Concept #2: Compare Key Features of Sets of Functions Suggested Days: 8	**Priority Standards** **AR.3A Compare and contrast the key attributes, including domain, range, maxima, minima, and intercepts of a set of functions such as a set comprised of a linear, a quadratic, and an exponential functions or a set comprised of an absolute value, a quadratic, and a square root function tabularly, graphically, and symbolically.** Important Standards AR.7A represent domain and range of a function using interval notation, inequalities and set (builder) notation.

Grading Period 2

Unit 3: Inverses of Functions

Estimated Date Range: Oct. 21 – Nov. 12 (17 total school days)
Instructional & Re-engagement Days in Unit: 17 days

Assessments

STATE/NATIONAL ASSESSMENT(S)	DISTRICT ASSESSMENT(S)	COMMON FORMATIVE ASSESSMENTS (CFAs) *(administered within designated concept)*
N/A	N/A	N/A

Concepts within the Unit	Concepts within the Unit
Concept #1: Inverses of Linear and Absolute Value Functions Suggested Days: 2	**Priority Standards** **AR.3B Compare and contrast the key attributes of a function and its inverse when it exists, including domain, range, maxima, minima, and intercepts, tabularly, graphically, and symbolically.** Important Standards AR.3C verify that two functions are inverses of each other tabularly and graphically such as situations involving compound interest and interest rate, velocity and braking distance, and Fahrenheit-Celsius conversions. AR.7A represent domain and range of a function using interval notation, inequalities and set (builder) notation. AR.7B compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions.
Concept #2: Inverses of Quadratic and Square Root Functions Suggested Days: 3	**Priority Standards** **AR.3B Compare and contrast the key attributes of a function and its inverse when it exists, including domain, range, maxima, minima, and intercepts, tabularly, graphically, and symbolically.** Important Standards

	AR.3C verify that two functions are inverses of each other tabularly and graphically such as situations involving compound interest and interest rate, velocity and braking distance, and Fahrenheit-Celsius conversions. AR.7A represent domain and range of a function using interval notation, inequalities and set (builder) notation. AR.7B compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions.
Concept #3: Inverses of Rational Functions Suggested Days: 3	**Priority Standards** **AR.3B Compare and contrast the key attributes of a function and its inverse when it exists, including domain, range, maxima, minima, and intercepts, tabularly, graphically, and symbolically.** Important Standards AR.3C verify that two functions are inverses of each other tabularly and graphically such as situations involving compound interest and interest rate, velocity and braking distance, and Fahrenheit-Celsius conversions. AR.7A represent domain and range of a function using interval notation, inequalities and set (builder) notation. AR.7B compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions.
Concept #4: Inverses of Cubic and Cube Root Functions Suggested Days: 3	**Priority Standards** **AR.3B Compare and contrast the key attributes of a function and its inverse when it exists, including domain, range, maxima, minima, and intercepts, tabularly, graphically, and symbolically.** Important Standards AR.3C verify that two functions are inverses of each other tabularly and graphically such as situations involving compound interest and interest rate, velocity and braking distance, and Fahrenheit-Celsius conversions. AR.7A represent domain and range of a function using interval notation, inequalities and set (builder) notation. AR.7B compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions.
Concept #5: Inverses of Exponential and Logarithmic Functions Suggested Days: 3	**Priority Standards** **AR.3B Compare and contrast the key attributes of a function and its inverse when it exists, including domain, range, maxima, minima, and intercepts, tabularly, graphically, and symbolically.** Important Standards AR.3C verify that two functions are inverses of each other tabularly and graphically such as situations involving compound interest and interest rate, velocity and braking distance, and Fahrenheit-Celsius conversions. AR.7A represent domain and range of a function using interval notation, inequalities and set (builder) notation. AR.7B compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions.

Unit 4: Operations of Functions Estimated Date Range: Nov. 13 – Dec. 19 (22 total school days) Instructional & Re-engagement Days in Unit: 18 days			
Assessments			
STATE/NATIONAL ASSESSMENT(S) N/A	**DISTRICT ASSESSMENT(S)** N/A	**COMMON FORMATIVE ASSESSMENTS (CFAs)** *(administered within designated concept)* N/A	**Semester Exams** (4 days) Testing Window (12/16 – 12/19)

Concepts within the Unit	**TEKS**
Concept #1: Constructing and Deconstructing Functions Suggested Days: 8	**Priority Standards** **AR.3D represent a resulting function tabularly, graphically, and symbolically when functions are combined or separated using arithmetic operations such as combining a 20% discount and a 6% sales tax on a sale to determine h(x), the total sale, f(x) = 0.8x, g(x) = 0.06(0.8x), and h(x) = f(x) + g(x).** Important Standards AR.3F compare and contrast a function and possible functions that can be used to build it tabularly, graphically, and symbolically such as a quadratic function that results from multiplying two linear functions.
Concept #2: Composing and Decomposing Functions Suggested Days:6	Important Standards AR.3E model a situation using function notation when the output of one function is the input of a second function such as determining a function h(x) = g(f(x)) = 1.06(0.8x) for the final purchase price, h(x) of an item with price x dollars representing a 20% discount, f(x) = 0.8x followed by a 6% sales tax, g(x) = 1.06x.

Grading Period 3

Unit 5: Polynomial Functions Estimated Date Range: Jan. 8 – Feb. 6 (21 total school days) Instructional & Re-engagement Days in Unit: 21 days		
Assessments		
STATE/NATIONAL ASSESSMENT(S)	**DISTRICT ASSESSMENT(S)**	**COMMON FORMATIVE ASSESSMENTS (CFAs)**

N/A	N/A	*(administered within designated concept)* N/A

Concepts within the Unit	TEKS
Concept #1: Operations of Linear Functions Suggested Days: 3	Important Standards AR.4B compare and contrast the results when adding two linear functions and multiplying two linear functions that are represented tabularly, graphically, and symbolically
Concept #2: Applications of Operations of Polynomial Functions Suggested Days: 5	**Priority Standards** **AR.4A connect tabular representations to symbolic representations when adding, subtracting, and multiplying polynomial functions arising from mathematical and real-world situations such as applications involving surface area and volume;** Important Standards AR.4B compare and contrast the results when adding two linear functions and multiplying two linear functions that are represented tabularly, graphically, and symbolically
Concept #3: Division of polynomial functions Suggested Days: 4	Important Standards AR.4C determine the quotient of a polynomial function of degree three and of degree four when divided by a polynomial function of degree one and of degree two when represented tabularly and symbolically
Concept #4: Factors of Polynomial Functions Suggested Days: 6	**Priority Standards** **AR.4D determine the linear factors of a polynomial function of degree two and of degree three when represented symbolically and tabularly and graphically where appropriate.** Important Standards AR.4C determine the quotient of a polynomial function of degree three and of degree four when divided by a polynomial function of degree one and of degree two when represented tabularly and symbolically

Unit 6: Matrices

Estimated Date Range: Feb. 9 – Mar. 13 (22 school days)

Instructional & Re-engagement Days in Unit: 21 days

Assessments

STATE/NATIONAL ASSESSMENT(S)	DISTRICT ASSESSMENT(S)	COMMON FORMATIVE ASSESSMENTS (CFAs)
K-12 TELPAS WINDOW (2/17 – 3/27) SAT (3/4) 1 day	N/A	*(administered within designated concept)* N/A

Concepts within the Unit	TEKS
Concept #1: Adding and Subtracting Matrices	Important Standards AR.5A add and subtract matrices

Suggested Days: 4	
Concept #2: Multiplying Matrices Suggested Days: 6	Important Standards AR.5B multiply matrices; AR.5C multiply matrices by a scalar
Concept #3: Systems of Equations Suggested Days: 8	**Priority Standards** **AR.5E represent and solve systems of three linear equations arising from mathematical and real-world situations using matrices and technology.** Important Standards AR.5B multiply matrices AR.5C multiply matrices by a scalar AR.5D represent and solve systems of two linear equations arising from mathematical and real-world situations using matrices

Grading Period 4

Unit 7: Solutions of Equations

Estimated Date Range: Mar. 23 – April 22 (22 school days)

Instructional & Re-engagement Days in Unit: 22 days

Assessments

STATE/NATIONAL ASSESSMENT(S)	DISTRICT ASSESSMENT(S)	COMMON FORMATIVE ASSESSMENTS (CFAs)
K-12 TELPAS WINDOW (2/17 – 3/27)	N/A	*(administered within designated concept)* N/A

Concepts within the Unit	TEKS
Concept #1: Estimating Solutions to Equations Suggested Days: 4	Important Standards AR.6A estimate a reasonable input value that results in a given output value for a given function, including quadratic, rational, and exponential functions
Concept #2: Solving Linear and Quadratic Equations Suggested Days: 7	**Priority Standards** **AR.6B solve equations arising from questions asked about functions that model real-world applications, including linear and quadratic functions, tabularly, graphically, and symbolically** Important Standards AR.6A estimate a reasonable input value that results in a given output value for a given function, including quadratic, rational, and exponential functions
Concept #3: Estimating Solutions to Exponential, Logarithmic, Square Root, and Cubic Functions Suggested Days: 7	Important Standards AR.6B solve equations arising from questions asked about functions that model real-world applications, including linear and quadratic functions, tabularly, graphically, and symbolically AR.6A estimate a reasonable input value that results in a given output value for a given function, including quadratic, rational, and exponential functions AR.6C approximate solutions to equations arising from questions asked about exponential, logarithmic, square root, and cubic functions that model real-world applications tabularly and graphically.

Unit 8: Data Modeling
Estimated Date Range: April 23 – May 28 (25 school days)
Instructional & Re-engagement Days in Unit: 21 days

Assessments

STATE/NATIONAL ASSESSMENT(S)	DISTRICT ASSESSMENT(S)	COMMON FORMATIVE ASSESSMENTS (CFAs) *(administered within designated concept)*	Semester Exams
N/A	N/A	N/A	(4 days) Testing Window (5/22 – 5/28)

Concepts within the Unit	TEKS

Concept #1: Examining Domain and Range of Real-World Data Suggested Days: 3	<u>Important Standards</u> AR.7A represent domain and range of a function using interval notation, inequalities, and set (builder) notation AR.7B compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions
Concept #2: Determining Function Models from Data Suggested Days: 6	<u>Important Standards</u> AR.7A represent domain and range of a function using interval notation, inequalities, and set (builder) notation AR.7B compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions AR.7D determine an appropriate function model, including linear, quadratic, and exponential functions, for a set of data arising from real-world situations using finite differences and average rates of change AR.7E determine if a given linear function is a reasonable model for a set of data arising from a real-world situation
Concept #3: Predicting using Models Suggested Days: 6	**<u>Priority Standards</u>** **AR.7C determine the accuracy of a prediction from a function that models a set of data compared to the actual data using comparisons between average rates of change and finite differences such as gathering data from an emptying tank and comparing the average rate of change of the volume or the second differences in the volume to key attributes of the given function.** <u>Important Standards</u> AR.7A represent domain and range of a function using interval notation, inequalities, and set (builder) notation AR.7B compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions AR.7D determine an appropriate function model, including linear, quadratic, and exponential functions, for a set of data arising from real-world situations using finite differences and average rates of change AR.7E determine if a given linear function is a reasonable model for a set of data arising from a real-world situation