

Standard 2: Algebra Benchmark 3: Functions

Organizer	Indicator lead in phrase/wording	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade	Sixth Grade	Seventh Grade	Eighth Grade	Ninth and Tenth Grade
Points	locates or plots...	K.1...whole numbers from 0 through 20 on a number line	K.1...whole numbers from 0 through 100 on segments of a number line								
	uses, plots, locates, and/or demonstrates...				K.4...a function table to identify and plot ordered pairs in the first quadrant of a coordinate plane	K.4...a function table to identify, plot, and label the ordered pairs in the first quadrant of a coordinate plane	▲K.4 & K.5...a function table to identify, plot, and label whole number ordered pairs in the first quadrant of a coordinate plane and points for integers on a horizontal number line and vertical number line	K.4...a given function table to identify, plot, and label the ordered pairs using the four quadrants of a coordinate plane	K.3...mathematical relationships using ordered pairs in all four quadrants of a coordinate plane		
Relations and Functions	states, recognizes, examines, evaluates, and/or analyzes...		K.2&K.3...mathematical relationships between whole numbers from 0 through 50 using various methods including mental math, paper and pencil, concrete objects and in a horizontal or vertical function table	K.1...mathematical relationships between whole numbers from 0 through 100 using various methods including mental math, paper and pencil, and concrete objects	K.1...mathematical relationships between whole numbers from 0 through 200 using various methods including mental math, paper and pencil, concrete objects, and appropriate technology	K.1...mathematical relationships between whole numbers from 0 through 1,000 using various methods including mental math, paper and pencil, concrete materials, and appropriate technology	K.1...mathematical relationships between whole numbers from 0 through 10,000 using various methods including mental math, paper and pencil, concrete objects, and appropriate technology	K.1...linear relationships using various methods including mental math, paper and pencil, concrete objects, and graphing utilities or appropriate technology	K.1...constant and linear relationships using various methods including mental math, paper and pencil, concrete objects, and graphing utilities or appropriate technology	K.1...constant, linear, and nonlinear relationships using various methods including mental math, paper and pencil, concrete objects, and graphing utilities or appropriate technology	K.1...functions using various methods including mental math, paper and pencil, concrete objects, and graphing utilities or other appropriate technology
	represents, describes, and/or translates...	A.1... mathematical relationships for whole numbers from 0 through 10 using concrete objects, pictures, and oral descriptions	A.1... mathematical relationships for whole numbers from 0 through 50 using concrete objects, pictures, oral descriptions, and symbols	A.1... mathematical relationships between whole numbers from 0 through 100 using concrete objects, pictures, oral descriptions, and symbols	A.1... mathematical relationships between whole numbers from 0 through 100 using concrete objects, pictures, written descriptions, symbols, equations, tables, and graphs	▲A.1... mathematical relationships between whole numbers from 0 through 1,000 using concrete objects, pictures, written descriptions, symbols, equations, tables, and graphs	A.1... mathematical relationships between whole numbers from 0 through 5,000 using written and oral descriptions, tables, graphs, symbolic notation, and between verbal, numerical, and graphical representations including the use of concrete objects	A.1...a variety of mathematical relationships using written and oral descriptions of the rule, tables, graphs, and when possible, symbolic notation	A.1...a variety of constant and linear relationships using written or oral descriptions of the rule, tables, graphs, and when possible, symbolic notation	A.1...a variety of constant and nonlinear relationships using written or oral descriptions of the rule, tables, graphs, and when possible, symbolic notation	A.1...between the numerical, graphical, and symbolic representations of functions

Standard 2: Algebra Benchmark 3: Functions

Algebra I	Geometry	Algebra II	Trigonometry	Statistics	Calculus	Applied Math I	Applied Math II
			K.3...mathematical relationships using ordered pairs in all four quadrants of a coordinate and polar plane		81, 82, 92-94		
K.1...functions using various methods including mental math, paper and pencil, concrete objects, and graphing utilities or other appropriate technology	K.1...functions using various methods including mental math, paper and pencil, concrete objects, and graphing utilities or other appropriate technology	K.1...functions using various methods including mental math, paper and pencil, concrete objects, and graphing utilities or other appropriate technology	K.1...trigonometric functions using various methods including mental math, paper and pencil, concrete objects, and graphing utilities or other appropriate technology		23, 24, 26, 36, 42, 43, 45, 47, 51, 54, 57, 60-62, 64, 65, 67, 69-71, 76, 79, 80, 83, 91, 96-103, 105-107	K.1...mathematical relationships between rational numbers using various methods including mental math, paper and pencil, concrete objects, and appropriate technology	K.1...mathematical relationships between rational numbers using various methods including mental math, paper and pencil, concrete objects, and appropriate technology
A.1...between the numerical, graphical, and symbolic representations of functions	A.1...between the numerical, graphical, and symbolic representations of functions	A.1...between the numerical, graphical, and symbolic representations of functions	A.1...between the numerical, graphical, and symbolic representations of trigonometric functions		30, 31, 39, 48, 75, 78, 88, 89		

Standard 2: Algebra Benchmark 3: Functions

Organizer	Indicator lead in phrase/wording	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade	Sixth Grade	Seventh Grade	Eighth Grade	Ninth and Tenth Grade
Relations and Functions	finds, knows, describes, and/or matches...			K.2...the values and determines the rule that involve addition or subtraction of whole numbers from 0 through 100 using a horizontal or vertical function table	K.2...the values and determines the rule with one operation of whole numbers from 0 through 200 using a horizontal or vertical function table	▲K.2...the values, determines the rule, and states the rule using symbolic notation with one operation of whole numbers from 0 through 200 using a horizontal or vertical function table	K.2...the values, determines the rule, and states the rule using symbolic notation with one operation of whole numbers from 0 through 10,000 using a vertical or horizontal function table	K.2...the values and determines the rule with one operation using a function table	K.2...the values and determines the rule through two operations using a function table	K.2...the difference between constant, linear, and nonlinear relationships	K.2...equations and graphs of constant and linear functions and quadratic functions
	generalizes or describes...			K.3...numerical patterns using whole numbers from 0 through 100 with one operation by stating the rule using words	▲K.3...numerical patterns using whole numbers from 0 through 200 with one operation by stating the rule using words	K.3...numerical patterns using whole numbers from 0 through 200 with one operation by stating the rule using words	K.3 & K.6... numerical patterns using whole numbers from 0 through 5,000 up to two operations by stating the rule using words and whole number relationships using letters and symbols	K.3...numerical patterns up to two operations by stating the rule using words			
	recognizes, finds, states, extends, interprets, describes, and/or analyzes...		A.2...numerical patterns through 50 using a hundred chart	A.2...the rule, states the rule, and extends numerical patterns with whole numbers from 0 through 100	A.2...the rule, states the rule using words, and extends numerical patterns with whole numbers from 0 through 100	A.2...the rule, states the rule, and extends numerical patterns using real-world applications using whole numbers from 0 through 200	A.2...the rule for numerical patterns using real-world problems with whole numbers from 0 through 5,000	A.2...the mathematical relationships of numerical, tabular, and graphical representations	A.2...the mathematical relationships of numerical, tabular, and graphical representations	A.2... the mathematical relationships of numerical, tabular, and graphical representations	▲A.2...the meaning of the x- and y- intercepts, slope, and/or points on and off the line on a graph in the context of a real-world situation
	describes, gives, explains, and/ or determines...								K.4...examples of mathematical relationships that remain constant (slope and intercept)	K.3...the concepts of slope and x- and y-intercepts of a line	K.4...x- and y- intercepts and maximum and minimum values of the portion of the graph that is shown on a coordinate plane

Standard 2: Algebra Benchmark 3: Functions

Algebra I	Geometry	Algebra II	Trigonometry
K.2...equations and graphs of constant and linear functions and quadratic functions	K.2...equations and graphs of constant and linear functions and quadratic functions	K.2...equations and graphs of constant, linear functions, quadratic functions, exponential functions, logarithmic functions, absolute value functions, polynomial functions, radical functions, and	K.2...equations and graphs of trigonometric functions and their translations

Statistics	Calculus	Applied Math I	Applied Math II
	32-41, 44, 46, 49, 50, 52, 59, 60, 63, 66, 71-73, 77, 95, 104, 108		

▲A.2...the meaning of the x- and y- intercepts, slope, and/or points on and off the line on a graph in the context of a real-world situation	▲A.2...the meaning of the x- and y- intercepts, slope, and/or points on and off the line on a graph in the context of a real-world situation	▲A.2...the meaning of the x- and y- intercepts, slope, and/or points on and off the line on a graph in the context of a real-world situation	▲A.2...the meaning of the x- and y- intercepts, slope, and/or points on and off the line on a graph in the context of a real-world situation
K.4...x- and y- intercepts and maximum and minimum values of the portion of the graph that is shown on a coordinate plane	K.4...x- and y- intercepts and maximum and minimum values of the portion of the graph that is shown on a coordinate plane	K.4...x- and y- intercepts and maximum and minimum values of the portion of the graph that is shown on a coordinate plane	K.4...x- and y- intercepts and maximum and minimum values of the portion of the graph that is shown on a coordinate plane

21, 41, 58, 90

Standard 2: Algebra Benchmark 3: Functions

Organizer	Indicator lead in phrase/wording	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade	Sixth Grade	Seventh Grade	Eighth Grade	Ninth and Tenth Grade
Relations and Functions	recognizes, identifies, plots, and/or determines...									K.4 & K.5...the graphs of constant and linear functions and ordered pairs using a variety of scales for the x- and y-axis	K.3...whether a graph, list of ordered pairs, table of values, or rule represents a function
	translates...						A.3...between verbal, numerical, and graphical representations including the use of concrete objects to describe mathematical relationships			▲ A.3...between the numerical, tabular, graphical, and symbolic representations of linear relationships with integer coefficients and constants	
	identifies...										K.5...domain and range of a relationships given the graph or table and linear, constant, and quadratic functions given the equation
	recognizes...										▲ K.6...how changes in the constant and/or slope within a linear function changes the appearance of a graph
	uses...										K.7...function notation
	evaluates...										K.8...functions given a specific domain
	describes and/or identifies...										K.9...independent and dependent variables

Standard 2: Algebra Benchmark 3: Functions

Algebra I	Geometry	Algebra II	Trigonometry	Statistics	Calculus	Applied Math I	Applied Math II
K.3...whether a graph, list of ordered pairs, table of values, or rule represents a function		K.3...whether a graph, list of ordered pairs, table of values, or rule represents a function					

K.5...domain and range of a relationships given the graph or table and linear, constant, and quadratic functions given the equation		K.5...domain and range of a linear, constant, quadratic functions, polynomial, radical, rational, and absolute value functions.	K.5...domain and range of trigonometric functions.	25, 27, 28
▲K.6...how changes in the constant and/or slope within a linear function changes the appearance of a graph	▲K.6...how changes in the constant and/or slope within a linear function changes the appearance of a graph	▲K.6...how numeric changes in linear, quadratic, absolute value, exponential, logarithmic, rational, and radical functions	▲K.6...how numeric changes in a trigonometric function changes the appearance of a graph	85
K.7...function notation	K.7...function notation	K.7...function notation	K.7...function notation	22, 84, 86, 87
K.8...functions given a specific domain	K.8...functions given a specific domain	K.8...functions given a specific domain	K.8...functions given a specific domain	
K.9...independent and dependent variables		K.9...independent and dependent variables	K.9...independent and dependent variables	

Standard 2: Algebra Benchmark 3: Functions

Organizer	Indicator lead in phrase/wording	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade	Sixth Grade	Seventh Grade	Eighth Grade	Ninth and Tenth Grade
Relations and Functions	analyzes...										A.3...the effects of parameter changes, changes in the constants and/or slope within a linear function, and changes in the constants and/or coefficients within a quadratic function affect the appearance of a graph

Standard 2: Algebra Benchmark 3: Functions

Algebra I	Geometry	Algebra II	Trigonometry	Statistics	Calculus	Applied Math I	Applied Math II
A.3...the effects of parameter changes, changes in the constants and/or slope within a linear function, and changes in the constants and/or coefficients within a quadratic function affect the appearance of a graph	A.3...the effects of parameter changes, changes in the constants and/or slope within a linear function affect the appearance of a graph	▲A.3...the numeric changes in linear, quadratic, absolute value, exponential, logarithmic, rational, and radical functions and how they affect the appearance of a graph	▲A.3...the numeric changes in a trigonometric function how they change the appearance of a graph				