Subject	**Chapter 111. Mathematics**
Course Title	**§111.48. Algebraic Reasoning, Beginning with School Year 2015 - 2016**

(a) General requirements. Students shall be awarded one credit for successful completion of this course. Prerequisite: Algebra I.

(b) Introduction

(1) The desire to achieve educational excellence is the driving force behind the Texas essential knowledge and skills for mathematics, guided by the college and career readiness standards. By embedding statistics, probability, and finance, while focusing on fluency and solid understanding, Texas will lead the way in mathematics education and prepare all Texas students for the challenges they will face in the 21st century.

(2) The process standards describe ways in which students are expected to engage in the content. The placement of the process standards at the beginning of the knowledge and skills listed for each grade and course is intentional. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use mathematics efficiently and effectively in daily life. The process standards are integrated at every grade level and course. When possible, students will apply mathematics to problems arising in everyday life, society, and the workplace. Students will 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. Students will select appropriate tools such as real objects, manipulatives, paper and pencil, and technology and techniques such as mental math, estimation, and number sense to solve problems. Students will effectively communicate mathematical ideas, reasoning, and their implications using multiple representations such as symbols, diagrams, graphs, and language. Students will use mathematical relationships to generate solutions and make connections and predictions. Students will analyze mathematical relationships to connect and communicate mathematical ideas. Students will display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

(3) In Algebraic Reasoning, students will build on the knowledge and skills for mathematics in Kindergarten-Grade 8 and Algebra I, continue with the development of mathematical reasoning related to algebraic understandings and processes, and deepen a foundation for studies in subsequent mathematics courses. Students will broaden their knowledge of functions and relationships, including linear, quadratic, square root, rational, cubic, cube root, exponential, absolute value, and logarithmic functions. Students will study these functions through analysis and application that includes explorations of patterns and structure, number and algebraic methods, and modeling from data using tools that build to workforce and college readiness such as probes, measurement tools, and software tools, including spreadsheets.

(4) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills		
TEKS (Knowledge and Skills)	**Student Expectation**	**Breakout**
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(A) apply mathematics to problems arising in everyday life, society, and the workplace	(i) apply mathematics to problems arising in everyday life
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(A) apply mathematics to problems arising in everyday life, society, and the workplace	(ii) apply mathematics to problems arising in society
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(A) apply mathematics to problems arising in everyday life, society, and the workplace	(iii) apply mathematics to problems arising in the workplace
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(B) 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	(i) 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

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(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(B) 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	(ii) use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the reasonableness of the solution
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(C) 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	(i) select tools, including real objects as appropriate, to solve problems
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(C) 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	(ii) select tools, including manipulatives as appropriate, to solve problems
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(C) 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	(iii) select tools, including paper and pencil as appropriate, to solve problems
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(C) 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	(iv) select tools, including technology as appropriate, to solve problems

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(C) 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	(v) select techniques, including mental math as appropriate, to solve problems
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(C) 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	(vi) select techniques including estimation as appropriate, to solve problems
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(C) 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	(vii) select techniques, including number sense as appropriate, to solve problems
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(i) communicate mathematical ideas using multiple representations, including symbols as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(ii) communicate mathematical ideas using multiple representations, including diagrams as appropriate

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(iii) communicate mathematical ideas using multiple representations, including graphs as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(iv) communicate mathematical ideas using multiple representations, including language as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(v) communicate mathematical reasoning using multiple representations, including symbols as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(vi) communicate mathematical reasoning using multiple representations, including diagrams as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(vii) communicate mathematical reasoning using multiple representations, including graphs as appropriate

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(viii) communicate mathematical reasoning using multiple representations, including language as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(ix) communicate [mathematical ideas'] implications using multiple representations, including symbols as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(x) communicate [mathematical ideas'] implications using multiple representations, including diagrams as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(xi) communicate [mathematical ideas'] implications using multiple representations, including graphs as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(xii) communicate [mathematical ideas'] implications using multiple representations, including language as appropriate

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(xiii) communicate [mathematical reasoning's] implications using multiple representations, including symbols as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(xiv) communicate [mathematical reasoning's] implications using multiple representations, including diagrams as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(xv) communicate [mathematical reasoning's] implications using multiple representations, including graphs as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate	(xvi) communicate [mathematical reasoning's] implications using multiple representations, including language as appropriate
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(E) create and use representations to organize, record, and communicate mathematical ideas	(i) create representations to organize mathematical ideas

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(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(E) create and use representations to organize, record, and communicate mathematical ideas	(ii) create representations to record mathematical ideas
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(E) create and use representations to organize, record, and communicate mathematical ideas	(iii) create representations to communicate mathematical ideas
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(E) create and use representations to organize, record, and communicate mathematical ideas	(iv) use representations to organize mathematical ideas
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(E) create and use representations to organize, record, and communicate mathematical ideas	(v) use representations to record mathematical ideas
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(E) create and use representations to organize, record, and communicate mathematical ideas	(vi) use representations to communicate mathematical ideas

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(F) analyze mathematical relationships to connect and communicate mathematical ideas	(i) analyze mathematical relationships to connect mathematical ideas
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(F) analyze mathematical relationships to connect and communicate mathematical ideas	(ii) analyze mathematical relationships to communicate mathematical ideas
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(G) display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication	(i) display mathematical ideas using precise mathematical language in written or oral communication
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(G) display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication	(ii) display mathematical arguments using precise mathematical language in written or oral communication
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(G) display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication	(iii) explain mathematical ideas using precise mathematical language in written or oral communication

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(G) display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication	(iv) explain mathematical arguments using precise mathematical language in written or oral communication
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(G) display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication	(v) justify mathematical ideas using precise mathematical language in written or oral communication
(1) Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:	(G) display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication	(vi) justify mathematical arguments using precise mathematical language in written or oral communication
(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(A) 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	(i) determine the patterns that identify the relationship between a function and its common ratio or related finite differences, including linear functions
(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(A) 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	(ii) determine the patterns that identify the relationship between a function and its common ratio or related finite differences, including quadratic functions

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(A) 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	(iii) determine the patterns that identify the relationship between a function and its common ratio or related finite differences, including cubic functions
(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(A) 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	(iv) determine the patterns that identify the relationship between a function and its common ratio or related finite differences, including exponential functions
(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(B) classify a function as linear, quadratic, cubic, and exponential when a function is represented tabularly using finite differences or common ratios as appropriate	(i) classify a function as linear when a function is represented tabularly using finite differences
(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(B) classify a function as linear, quadratic, cubic, and exponential when a function is represented tabularly using finite differences or common ratios as appropriate	(ii) classify a function as quadratic when a function is represented tabularly using finite differences
(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(B) classify a function as linear, quadratic, cubic, and exponential when a function is represented tabularly using finite differences or common ratios as appropriate	(iii) classify a function as cubic when a function is represented tabularly using finite differences

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(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(B) classify a function as linear, quadratic, cubic, and exponential when a function is represented tabularly using finite differences or common ratios as appropriate	(iv) classify a function as exponential when a function is represented tabularly using common ratios
(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(C) determine the function that models a given table of related values using finite differences and its restricted domain and range	(i) determine the function that models a given table of related values using finite differences
(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(C) determine the function that models a given table of related values using finite differences and its restricted domain and range	(ii) determine [a function's] restricted domain
(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(C) determine the function that models a given table of related values using finite differences and its restricted domain and range	(iii) determine [a function's] restricted range
(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(D) 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	(i) determine a function that models real-world data using finite differences

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(2) Patterns and structure. The student applies mathematical processes to connect finite differences or common ratios to attributes of functions. The student is expected to:	(D) 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	(ii) determine a function that models mathematical contexts using finite differences
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(i) compare and contrast the key attributes, including domain, of a set of functions, tabularly
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(ii) compare and contrast the key attributes, including domain, of a set of functions, graphically

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(iii) compare and contrast the key attributes, including domain, of a set of functions, symbolically
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(iv) compare and contrast the key attributes, including range, of a set of functions, tabularly

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(v) compare and contrast the key attributes, including range, of a set of functions, graphically
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(vi) compare and contrast the key attributes, including range, of a set of functions, symbolically

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(vii) compare and contrast the key attributes, including maxima, of a set of functions, tabularly
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(viii) compare and contrast the key attributes, including maxima, of a set of functions, graphically

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(ix) compare and contrast the key attributes, including maxima, of a set of functions, symbolically
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(x) compare and contrast the key attributes, including minima, of a set of functions, tabularly

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(xi) compare and contrast the key attributes, including minima, of a set of functions, graphically
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(xii) compare and contrast the key attributes, including minima, of a set of functions, symbolically

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(xiii) compare and contrast the key attributes, including intercepts, of a set of functions, tabularly
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(xiv) compare and contrast the key attributes, including intercepts, of a set of functions, graphically

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(A) 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 function or a set comprised of an absolute value, a quadratic, and a square root function, tabularly, graphically, and symbolically	(xv) compare and contrast the key attributes, including intercepts, of a set of functions, symbolically
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(i) compare and contrast the key attributes of a function and its inverse when it exists, including domain, tabularly

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(ii) compare and contrast the key attributes of a function and its inverse when it exists, including domain, graphically
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(iii) compare and contrast the key attributes of a function and its inverse when it exists, including domain, symbolically

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(iv) compare and contrast the key attributes of a function and its inverse when it exists, including range, tabularly
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(v) compare and contrast the key attributes of a function and its inverse when it exists, including range, graphically

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(vi) compare and contrast the key attributes of a function and its inverse when it exists, including range symbolically
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(vii) compare and contrast the key attributes of a function and its inverse when it exists, including maxima, tabularly

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(viii) compare and contrast the key attributes of a function and its inverse when it exists, including maxima, graphically
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(ix) compare and contrast the key attributes of a function and its inverse when it exists, including maxima, symbolically

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(x) compare and contrast the key attributes of a function and its inverse when it exists, including minima, tabularly
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(xi) compare and contrast the key attributes of a function and its inverse when it exists, including minima, graphically

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(xii) compare and contrast the key attributes of a function and its inverse when it exists, including minima, symbolically
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(xiii) compare and contrast the key attributes of a function and its inverse when it exists, including intercepts, tabularly

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(xiv) compare and contrast the key attributes of a function and its inverse when it exists, including intercepts, graphically
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(B) 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	(xv) compare and contrast the key attributes of a function and its inverse when it exists, including intercepts, symbolically

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(C) 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	(i) verify that two functions are inverses of each other tabularly
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(C) 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	(ii) verify that two functions are inverses of each other graphically

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(D) 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* $h(x) = f(x) + g(x)$	(i) represent a resulting function tabularly when functions, are combined or separated using arithmetic operations
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(D) 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* $h(x) = f(x) + g(x)$	(ii) represent a resulting function graphically when functions, are combined or separated using arithmetic operations

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(D) 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* $h(x) = f(x) + g(x)$	(iii) represent a resulting function symbolically when functions, are combined or separated using arithmetic operations
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(E) 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, $g(x) = 1.06x$	(i) Model a situation using function notation when the output of one function is the input of a second function

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(F) 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	(i) compare and contrast a function and possible functions that can be used to build it tabularly
(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(F) 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	(ii) compare and contrast a function and possible functions that can be used to build it graphically

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(3) Patterns and structure. The student applies mathematical processes to understand the connections among representations of functions and combinations of functions including the constant function, $f(x) = x$, $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = {}^1/_x$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = \lvert x \rvert$, *and* $f(x) = \log_b(x)$ where b is 10 or e; functions and their inverses; and key attributes of these functions. The student is expected to:	(F) 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	(iii) compare and contrast a function and possible functions that can be used to build it symbolically
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(A) 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	(i) connect tabular representations to symbolic representations when adding polynomial functions arising from mathematical situations
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(A) 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	(ii) connect tabular representations to symbolic representations when adding polynomial functions arising from real-world situations
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(A) 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	(iii) connect tabular representations to symbolic representations when subtracting polynomial functions arising from mathematical situations

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(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(A) 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	(iv) connect tabular representations to symbolic representations when subtracting polynomial functions arising from real-world situations
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(A) 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	(v) connect tabular representations to symbolic representations when multiplying polynomial functions arising from mathematical situations
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(A) 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	(vi) connect tabular representations to symbolic representations when multiplying polynomial functions arising from real-world situations
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(B) compare and contrast the results when adding two linear functions and multiplying two linear functions that are represented tabularly, graphically, and symbolically	(i) compare and contrast the results when adding two linear functions that are represented tabularly

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(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(B) compare and contrast the results when adding two linear functions and multiplying two linear functions that are represented tabularly, graphically, and symbolically	(ii) compare and contrast the results when adding two linear functions that are represented graphically
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(B) compare and contrast the results when adding two linear functions and multiplying two linear functions that are represented tabularly, graphically, and symbolically	(iii) compare and contrast the results when adding two linear functionsthat are represented symbolically
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(B) compare and contrast the results when adding two linear functions and multiplying two linear functions that are represented tabularly, graphically, and symbolically	(iv) compare and contrast the results when multiplying two linear functions that are represented tabularly
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(B) compare and contrast the results when adding two linear functions and multiplying two linear functions that are represented tabularly, graphically, and symbolically	(v) compare and contrast the results when multiplying two linear functions that are represented graphically

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(B) compare and contrast the results when adding two linear functions and multiplying two linear functions that are represented tabularly, graphically, and symbolically	(vi) compare and contrast the results when multiplying two linear functions that are represented symbolically
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(C) 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	(i) determine the quotient of a polynomial function of degree three when divided by a polynomial function of degree one when represented tabularly
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(C) 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	(ii) determine the quotient of a polynomial function of degree three when divided by a polynomial function of degree one when represented symbolically
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(C) 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	(iii) determine the quotient of a polynomial function of degree three when divided by a polynomial function of degree two when represented tabularly

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(C) 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	(iv) determine the quotient of a polynomial function of degree three when divided by a polynomial function of degree two when represented symbolically
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(C) 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	(v) determine the quotient of a polynomial function of degree four when divided by a polynomial function of degree one when represented tabularly
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(C) 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	(vi) determine the quotient of a polynomial function of degree four when divided by a polynomial function of degree one when represented symbolically
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(C) 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	(vii) determine the quotient of a polynomial function of degree four when divided by a polynomial function of degree two when represented tabularly

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(C) 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	(viii) determine the quotient of a polynomial function of degree four when divided by a polynomial function of degree two when represented symbolically
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(D) determine the linear factors of a polynomial function of degree two and of degree three when represented symbolically and tabularly and graphically where appropriate	(i) determine the linear factors of a polynomial function of degree two when represented symbollically
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(D) determine the linear factors of a polynomial function of degree two and of degree three when represented symbolically and tabularly and graphically where appropriate	(ii) determine the linear factors of a polynomial function of degree two when represented tabularly (where appropriate)
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(D) determine the linear factors of a polynomial function of degree two and of degree three when represented symbolically and tabularly and graphically where appropriate	(iii) determine the linear factors of a polynomial function of degree two when represented graphically (where appropriate)

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(D) determine the linear factors of a polynomial function of degree two and of degree three when represented symbolically and tabularly and graphically where appropriate	(iv) determine the linear factors of a polynomial function of degree three when represented symbollically
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(D) determine the linear factors of a polynomial function of degree two and of degree three when represented symbolically and tabularly and graphically where appropriate	(v) determine the linear factors of a polynomial function of degree three when represented tabularly (where appropriate)
(4) Number and algebraic methods. The student applies mathematical processes to simplify and perform operations on functions represented in a variety of ways, including real-world situations. The student is expected to:	(D) determine the linear factors of a polynomial function of degree two and of degree three when represented symbolically and tabularly and graphically where appropriate	(vi) determine the linear factors of a polynomial function of degree three when represented graphically (where appropriate)
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(A) add and subtract matrices	(i) add matrices

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(A) add and subtract matrices	(ii) subtract matrices
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(B) multiply matrices	(i) multiply matrices
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(C) multiply matrices by a scalar	(i) multiply matrices by a scalar
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(D) represent and solve systems of two linear equations arising from mathematical and real-world situations using matrices	(i) represent systems of two linear equations arising from mathematical situations using matrices

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(D) represent and solve systems of two linear equations arising from mathematical and real-world situations using matrices	(ii) represent systems of two linear equations arising from real-world situations using matrices
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(D) represent and solve systems of two linear equations arising from mathematical and real-world situations using matrices	(iii) solve systems of two linear equations arising from mathematical situations using matrices
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(D) represent and solve systems of two linear equations arising from mathematical and real-world situations using matrices	(iv) solve systems of two linear equations arising from real-world situations using matrices
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(E) represent and solve systems of three linear equations arising from mathematical and real-world situations using matrices and technology	(i) represent systems of three linear equations arising from mathematical situations using matrices

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(E) represent and solve systems of three linear equations arising from mathematical and real-world situations using matrices and technology	(ii) represent systems of three linear equations arising from mathematical situations using technology
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(E) represent and solve systems of three linear equations arising from mathematical and real-world situations using matrices and technology	(iii) represent systems of three linear equations arising from real-world situations using matrices
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(E) represent and solve systems of three linear equations arising from mathematical and real-world situations using matrices and technology	(iv) represent systems of three linear equations arising from real-world situations using technology
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(E) represent and solve systems of three linear equations arising from mathematical and real-world situations using matrices and technology	(v) solve systems of three linear equations arising from mathematical situations using matrices

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(E) represent and solve systems of three linear equations arising from mathematical and real-world situations using matrices and technology	(vi) solve systems of three linear equations arising from mathematical situations using technology
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(E) represent and solve systems of three linear equations arising from mathematical and real-world situations using matrices and technology	(vii) solve systems of three linear equations arising from real-world situations using matrices
(5) Number and algebraic methods. The student applies mathematical processes to represent, simplify, and perform operations on matrices and to solve systems of equations using matrices. The student is expected to:	(E) represent and solve systems of three linear equations arising from mathematical and real-world situations using matrices and technology	(viii) solve systems of three linear equations arising from real-world situations using technology
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(A) estimate a reasonable input value that results in a given output value for a given function, including quadratic, rational, and exponential functions	(i) estimate a reasonable input value that results in a given output value for a given function, including quadratic functions

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(A) estimate a reasonable input value that results in a given output value for a given function, including quadratic, rational, and exponential functions	(ii) estimate a reasonable input value that results in a given output value for a given function, including rational functions
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(A) estimate a reasonable input value that results in a given output value for a given function, including quadratic, rational, and exponential functions	(iii) estimate a reasonable input value that results in a given output value for a given function, including exponential functions
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(B) solve equations arising from questions asked about functions that model real-world applications, including linear and quadratic functions, tabularly, graphically, and symbolically	(i) solve equations arising from questions asked about functions that model real-world applications, including linear functions, tabularly
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(B) solve equations arising from questions asked about functions that model real-world applications, including linear and quadratic functions, tabularly, graphically, and symbolically	(ii) solve equations arising from questions asked about functions that model real-world applications, including linear functions, graphically

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(B) solve equations arising from questions asked about functions that model real-world applications, including linear and quadratic functions, tabularly, graphically, and symbolically	(iii) solve equations arising from questions asked about functions that model real-world applications, including linear functions, symbolically
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(B) solve equations arising from questions asked about functions that model real-world applications, including linear and quadratic functions, tabularly, graphically, and symbolically	(iv) solve equations arising from questions asked about functions that model real-world applications, including quadratic functions, tabularly
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(B) solve equations arising from questions asked about functions that model real-world applications, including linear and quadratic functions, tabularly, graphically, and symbolically	(v) solve equations arising from questions asked about functions that model real-world applications, including quadratic functions, graphically
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(B) solve equations arising from questions asked about functions that model real-world applications, including linear and quadratic functions, tabularly, graphically, and symbolically	(vi) solve equations arising from questions asked about functions that model real-world applications, including quadratic functions, symbolically

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(C) approximate solutions to equations arising from questions asked about exponential, logarithmic, square root, and cubic functions that model real-world applications tabularly and graphically	(i) approximate solutions to equations arising from questions asked about exponential functions that model real-world applications tabularly
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(C) approximate solutions to equations arising from questions asked about exponential, logarithmic, square root, and cubic functions that model real-world applications tabularly and graphically	(ii) approximate solutions to equations arising from questions asked about exponential functions that model real-world applications graphically
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(C) approximate solutions to equations arising from questions asked about exponential, logarithmic, square root, and cubic functions that model real-world applications tabularly and graphically	(iii) approximate solutions to equations arising from questions asked about logarithmic functions that model real-world applications tabularly
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(C) approximate solutions to equations arising from questions asked about exponential, logarithmic, square root, and cubic functions that model real-world applications tabularly and graphically	(iv) approximate solutions to equations arising from questions asked about logarithmic functions that model real-world applications graphically

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(C) approximate solutions to equations arising from questions asked about exponential, logarithmic, square root, and cubic functions that model real-world applications tabularly and graphically	(v) approximate solutions to equations arising from questions asked about square root functions that model real-world applications tabularly
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(C) approximate solutions to equations arising from questions asked about exponential, logarithmic, square root, and cubic functions that model real-world applications tabularly and graphically	(vi) approximate solutions to equations arising from questions asked about square root functions that model real-world applications graphically
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(C) approximate solutions to equations arising from questions asked about exponential, logarithmic, square root, and cubic functions that model real-world applications tabularly and graphically	(vii) approximate solutions to equations arising from questions asked about cubic functions that model real-world applications tabularly
(6) Number and algebraic methods. The student applies mathematical processes to estimate and determine solutions to equations resulting from functions and real-world applications with fluency. The student is expected to:	(C) approximate solutions to equations arising from questions asked about exponential, logarithmic, square root, and cubic functions that model real-world applications tabularly and graphically	(viii) approximate solutions to equations arising from questions asked about cubic functions that model real-world applications graphically
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(A) represent the domain and range of a function using interval notation, inequalities, and set (builder) notation	(i) represent the domain of a function using interval notation

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(A) represent the domain and range of a function using interval notation, inequalities, and set (builder) notation	(ii) represent the domain of a function using inequalities
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(A) represent the domain and range of a function using interval notation, inequalities, and set (builder) notation	(iii) represent the domain of a function using set (builder) notation
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(A) represent the domain and range of a function using interval notation, inequalities, and set (builder) notation	(iv) represent the range of a function using interval notation
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(A) represent the domain and range of a function using interval notation, inequalities, and set (builder) notation	(v) represent the range of a function using inequalities
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(A) represent the domain and range of a function using interval notation, inequalities, and set (builder) notation	(vi) represent the range of a function using set (builder) notation

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(B) compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions	(i) compare and contrast between the mathematical and reasonable domain of functions modeling real-world situations, including linear functions
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(B) compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions	(ii) compare and contrast between the mathematical and reasonable domain of functions modeling real-world situations, including quadratic functions
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(B) compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions	(iii) compare and contrast between the mathematical and reasonable domain of functions modeling real-world situations, including exponential functions
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(B) compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions	(iv) compare and contrast between the mathematical and reasonable domain of functions modeling real-world situations, including rational functions
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(B) compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions	(v) compare and contrast between the mathematical and reasonable range of functions modeling real-world situations, including linear functions

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(B) compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions	(vi) compare and contrast between the mathematical and reasonable range of functions modeling real-world situations, including quadratic functions
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(B) compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions	(vii) compare and contrast between the mathematical and reasonable range of functions modeling real-world situations, including exponential functions
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(B) compare and contrast between the mathematical and reasonable domain and range of functions modeling real-world situations, including linear, quadratic, exponential, and rational functions	(viii) compare and contrast between the mathematical and reasonable range of functions modeling real-world situations, including rational functions
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(C) 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 model	(i) 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
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(D) 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	(i) determine an appropriate function model, including linear functions, for a set of data arising from real-world situations using finite differences

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(D) 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	(ii) determine an appropriate function model, including linear functions, for a set of data arising from real-world situations using average rates of change
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(D) 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	(iii) determine an appropriate function model, including quadratic functions, for a set of data arising from real-world situations using finite differences
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(D) 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	(iv) determine an appropriate function model, including quadratic functions, for a set of data arising from real-world situations using average rates of change
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(D) 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	(v) determine an appropriate function model, including exponential functions, for a set of data arising from real-world situations using finite differences
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(D) 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	(vi) determine an appropriate function model, including exponential functions, for a set of data arising from real-world situations using average rates of change

TEKS (Knowledge and Skills)	Student Expectation	Breakout
(7) Modeling from data. The student applies mathematical processes to analyze and model data based on real-world situations with corresponding functions. The student is expected to:	(E) determine if a given linear function is a reasonable model for a set of data arising from a real-world situation	(i) determine if a given linear function is a reasonable model for a set of data arising from a real-world situation.

The English language proficiency standards (ELPS) outline English language proficiency level descriptors and student expectations for English language learners (ELLs). School districts are required to implement the ELPS as an integral part of each subject in the required curriculum. This document outlines the ELPS that have been designated as appropriate for inclusion in instructional materials. Additionally, many of the designated ELPS are most appropriate for inclusion in teacher materials and are only required to be included in student materials where specifically indicated.		
(c) Cross-curricular second language acquisition essential knowledge and skills		
1) Cross-curricular second language acquisition/learning strategies. The ELL uses language learning strategies to develop an awareness of his or her own learning processes in all content areas. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. The student is expected to:		
(A) use prior knowledge and experiences to understand meanings in English	(1) use prior knowledge to understand meanings in English	T: 9-12 S: 9-12
(A) use prior knowledge and experiences to understand meanings in English	(2) use prior experiences to understand meanings in English	T: 9-12 S: 9-12
(B) monitor oral and written language production and employ self-corrective techniques or other resources	(1) monitor oral language production and employ self-corrective techniques or other resources	T: 9-12
(B) monitor oral and written language production and employ self-corrective techniques or other resources	(2) monitor written language production and employ self-corrective techniques or other resources	NA
(C) use strategic learning techniques such as concept mapping, drawing, memorizing, comparing, contrasting, and reviewing to acquire basic and grade-level vocabulary	>>>>>	NA

(D) speak using learning strategies such as requesting assistance, employing non-verbal cues, and using synonyms and circumlocution (conveying ideas by defining or describing when exact English words are not known)	>>>>>	T: 9-12 S: 9-12
(E) internalize new basic and academic language by using and reusing it in meaningful ways in speaking and writing activities that build concept and language attainment	(1) internalize new basic language by using and reusing it in meaningful ways in speaking activities that build concept and language attainment	NA
(E) internalize new basic and academic language by using and reusing it in meaningful ways in speaking and writing activities that build concept and language attainment	(2) internalize new basic language by using and reusing it in meaningful ways in writing activities that build concept and language attainment	NA
(E) internalize new basic and academic language by using and reusing it in meaningful ways in speaking and writing activities that build concept and language attainment	(3) internalize new academic language by using and reusing it in meaningful ways in speaking activities that build concept and language attainment	NA
(E) internalize new basic and academic language by using and reusing it in meaningful ways in speaking and writing activities that build concept and language attainment	(4) internalize new academic language by using and reusing it in meaningful ways in writing activities that build concept and language attainment	NA
(F) use accessible language and learn new and essential language in the process	>>>>>	T: 9-12
(G) demonstrate an increasing ability to distinguish between formal and informal English and an increasing knowledge of when to use each one commensurate with grade-level learning expectations	(1) demonstrate an increasing ability to distinguish between formal and informal English	NA

(G) demonstrate an increasing ability to distinguish between formal and informal English and an increasing knowledge of when to use each one commensurate with grade-level learning expectations	(2) demonstrate an increasing knowledge of when to use [formal and informal English] commensurate with grade-level learning expectations	NA
(H) develop and expand repertoire of learning strategies such as reasoning inductively or deductively, looking for patterns in language, and analyzing sayings and expressions commensurate with grade-level learning expectations	>>>>>	NA
(2) Cross-curricular second language acquisition/listening. The ELL listens to a variety of speakers including teachers, peers, and electronic media to gain an increasing level of comprehension of newly acquired language in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in listening. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. The student is expected to:		
(A) distinguish sounds and intonation patterns of English with increasing ease	(1) distinguish sounds of English with increasing ease	NA
(A) distinguish sounds and intonation patterns of English with increasing ease	(2) distinguish intonation patterns of English with increasing ease	NA
(B) recognize elements of the English sound system in newly acquired vocabulary such as long and short vowels, silent letters, and consonant clusters	>>>>>	NA
(C) learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions	(1) learn new language structures heard during classroom instruction and interactions	T: 9-12

(C) learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions	(2) learn new expressions heard during classroom instruction and interactions	T: 9-12
(C) learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions	(3) learn basic vocabulary heard during classroom instruction and interactions	T: 9-12 S: 9-12
(C) learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions	(4) learn academic vocabulary heard during classroom instruction and interactions	T: 9-12 S: 9-12
(D) monitor understanding of spoken language during classroom instruction and interactions and seek clarification as needed	(1) monitor understanding of spoken language during classroom instruction and interactions	T: 9-12
(D) monitor understanding of spoken language during classroom instruction and interactions and seek clarification as needed	(2) seek clarification [of spoken language] as needed	T: 9-12 S: 9-12
(E) use visual, contextual, and linguistic support to enhance and confirm understanding of increasingly complex and elaborated spoken language	(1) use visual support to enhance and confirm understanding of increasingly complex and elaborated spoken language	NA
(E) use visual, contextual, and linguistic support to enhance and confirm understanding of increasingly complex and elaborated spoken language	(2) use contextual support to enhance and confirm understanding of increasingly complex and elaborated spoken language	NA
(E) use visual, contextual, and linguistic support to enhance and confirm understanding of increasingly complex and elaborated spoken language	(3) use linguistic support to enhance and confirm understanding of increasingly complex and elaborated spoken language	T: 9-12 S: 9-12

(F) listen to and derive meaning from a variety of media such as audio tape, video, DVD, and CD ROM to build and reinforce concept and language attainment	(1) listen to and derive meaning from a variety of media to build and reinforce concept attainment	NA
(F) listen to and derive meaning from a variety of media such as audio tape, video, DVD, and CD ROM to build and reinforce concept and language attainment	(2) listen to and derive meaning from a variety of media to build and reinforce language attainment	NA
(G) understand the general meaning, main points, and important details of spoken language ranging from situations in which topics, language, and contexts are familiar to unfamiliar	(1) understand the general meaning of spoken language ranging from situations in which topics are familiar to unfamiliar	NA
(G) understand the general meaning, main points, and important details of spoken language ranging from situations in which topics, language, and contexts are familiar to unfamiliar	(2) understand the general meaning of spoken language ranging from situations in which language [is] are familiar to unfamiliar	NA
(G) understand the general meaning, main points, and important details of spoken language ranging from situations in which topics, language, and contexts are familiar to unfamiliar	(3) understand the general meaning of spoken language ranging from situations in which contexts are familiar to unfamiliar	NA
(G) understand the general meaning, main points, and important details of spoken language ranging from situations in which topics, language, and contexts are familiar to unfamiliar	(4) understand the main points of spoken language ranging from situations in which topics are familiar to unfamiliar	NA
(G) understand the general meaning, main points, and important details of spoken language ranging from situations in which topics, language, and contexts are familiar to unfamiliar	(5) understand the main points of spoken language ranging from situations in which language [is] are familiar to unfamiliar	NA

(G) understand the general meaning, main points, and important details of spoken language ranging from situations in which topics, language, and contexts are familiar to unfamiliar	(6) understand the main points of spoken language ranging from situations in which contexts are familiar to unfamiliar	NA
(G) understand the general meaning, main points, and important details of spoken language ranging from situations in which topics, language, and contexts are familiar to unfamiliar	(7) understand the important details of spoken language ranging from situations in which topics are familiar to unfamiliar	NA
(G) understand the general meaning, main points, and important details of spoken language ranging from situations in which topics, language, and contexts are familiar to unfamiliar	(8) understand the important details of spoken language ranging from situations in which language [is] are familiar to unfamiliar	NA
(G) understand the general meaning, main points, and important details of spoken language ranging from situations in which topics, language, and contexts are familiar to unfamiliar	(9) understand the important details of spoken language ranging from situations in which contexts are familiar to unfamiliar	NA
(H) understand implicit ideas and information in increasingly complex spoken language commensurate with grade-level learning expectations	(1) understand implicit ideas in increasingly complex spoken language commensurate with grade-level learning expectations	NA
(H) understand implicit ideas and information in increasingly complex spoken language commensurate with grade-level learning expectations	(2) understand information in increasingly complex spoken language commensurate with grade-level learning expectations	NA
(I) demonstrate listening comprehension of increasingly complex spoken English by following directions, retelling or summarizing spoken messages, responding to questions and requests, collaborating with peers, and taking notes commensurate with content and grade-level needs	(1) demonstrate listening comprehension of increasingly complex spoken English by following directions commensurate with content and grade-level needs	NA

(I) demonstrate listening comprehension of increasingly complex spoken English by following directions, retelling or summarizing spoken messages, responding to questions and requests, collaborating with peers, and taking notes commensurate with content and grade-level needs	(2) demonstrate listening comprehension of increasingly complex spoken English by retelling or summarizing spoken messages commensurate with content and grade-level needs	NA
(I) demonstrate listening comprehension of increasingly complex spoken English by following directions, retelling or summarizing spoken messages, responding to questions and requests, collaborating with peers, and taking notes commensurate with content and grade-level needs	(3) demonstrate listening comprehension of increasingly complex spoken English by responding to questions and requests commensurate with content and grade-level needs	T: 9-12 S: 9-12
(I) demonstrate listening comprehension of increasingly complex spoken English by following directions, retelling or summarizing spoken messages, responding to questions and requests, collaborating with peers, and taking notes commensurate with content and grade-level needs	(4) demonstrate listening comprehension of increasingly complex spoken English by collaborating with peers commensurate with content and grade-level needs	T: 9-12
(I) demonstrate listening comprehension of increasingly complex spoken English by following directions, retelling or summarizing spoken messages, responding to questions and requests, collaborating with peers, and taking notes commensurate with content and grade-level needs	(5) demonstrate listening comprehension of increasingly complex spoken English by taking notes commensurate with content and grade-level needs	T: 9-12 S: 9-12
(3) Cross-curricular second language acquisition/speaking. The ELL speaks in a variety of modes for a variety of purposes with an awareness of different language registers (formal/informal) using vocabulary with increasing fluency and accuracy in language arts and all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in speaking. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. The student is expected to:		
(A) practice producing sounds of newly acquired vocabulary such as long and short vowels, silent letters, and consonant clusters to pronounce English words in a manner that is increasingly comprehensible	>>>>>	NA

(B) expand and internalize initial English vocabulary by learning and using high-frequency English words necessary for identifying and describing people, places, and objects, by retelling simple stories and basic information represented or supported by pictures, and by learning and using routine language needed for classroom communication	(1) expand and internalize initial English vocabulary by learning and using high-frequency English words necessary for identifying and describing people, places, and objects	NA
(B) expand and internalize initial English vocabulary by learning and using high-frequency English words necessary for identifying and describing people, places, and objects, by retelling simple stories and basic information represented or supported by pictures, and by learning and using routine language needed for classroom communication	(2) expand and internalize initial English vocabulary by retelling simple stories and basic information represented or supported by pictures	NA
(B) expand and internalize initial English vocabulary by learning and using high-frequency English words necessary for identifying and describing people, places, and objects, by retelling simple stories and basic information represented or supported by pictures, and by learning and using routine language needed for classroom communication	(3) expand and internalize initial English vocabulary by learning and using routine language needed for classroom communication	T: 9-12 S: 9-12
(C) speak using a variety of grammatical structures, sentence lengths, sentence types, and connecting words with increasing accuracy and ease as more English is acquired	(1) speak using a variety of grammatical structures with increasing accuracy and ease as more English is acquired	NA
(C) speak using a variety of grammatical structures, sentence lengths, sentence types, and connecting words with increasing accuracy and ease as more English is acquired	(2) speak using a variety of sentence lengths with increasing accuracy and ease as more English is acquired	NA
(C) speak using a variety of grammatical structures, sentence lengths, sentence types, and connecting words with increasing accuracy and ease as more English is acquired	(3) speak using a variety of sentence types with increasing accuracy and ease as more English is acquired	NA

(C) speak using a variety of grammatical structures, sentence lengths, sentence types, and connecting words with increasing accuracy and ease as more English is acquired	(4) speak using a variety of connecting words with increasing accuracy and ease as more English is acquired	T: 9-12 S: 9-12
(D) speak using grade-level content area vocabulary in context to internalize new English words and build academic language proficiency	(1) speak using grade-level content area vocabulary in context to internalize new English words	T: 9-12 S: 9-12
(D) speak using grade-level content area vocabulary in context to internalize new English words and build academic language proficiency	(2) speak using grade-level content area vocabulary in context to build academic language proficiency	T: 9-12 S: 9-12
(E) share information in cooperative learning interactions	>>>>>	T: 9-12 S: 9-12
(F) ask and give information ranging from using a very limited bank of high-frequency, high-need, concrete vocabulary, including key words and expressions needed for basic communication in academic and social contexts, to using abstract and content-based vocabulary during extended speaking assignments	(1) ask [for] information ranging from using a very limited bank of high-frequency, high-need, concrete vocabulary, including key words and expressions needed for basic communication in academic and social contexts, to using abstract and content-based vocabulary during extended speaking assignments	T: 9-12 S: 9-12
(F) ask and give information ranging from using a very limited bank of high-frequency, high-need, concrete vocabulary, including key words and expressions needed for basic communication in academic and social contexts, to using abstract and content-based vocabulary during extended speaking assignments	(2) give information ranging from using a very limited bank of high-frequency, high-need, concrete vocabulary, including key words and expressions needed for basic communication in academic and social contexts, to using abstract and content-based vocabulary during extended speaking assignments	T: 9-12 S: 9-12
(G) express opinions, ideas, and feelings ranging from communicating single words and short phrases to participating in extended discussions on a variety of social and grade-appropriate academic topics	(1) express opinions ranging from communicating single words and short phrases to participating in extended discussions on a variety of social and grade-appropriate academic topics	T: 9-12

(G) express opinions, ideas, and feelings ranging from communicating single words and short phrases to participating in extended discussions on a variety of social and grade-appropriate academic topics	(2) express ideas ranging from communicating single words and short phrases to participating in extended discussions on a variety of social and grade-appropriate academic topics	T: 9-12
(G) express opinions, ideas, and feelings ranging from communicating single words and short phrases to participating in extended discussions on a variety of social and grade-appropriate academic topics	(3) express feelings ranging from communicating single words and short phrases to participating in extended discussions on a variety of social and grade-appropriate academic topics	NA
(H) narrate, describe, and explain with increasing specificity and detail as more English is acquired	(1) narrate with increasing specificity and detail as more English is acquired	NA
(H) narrate, describe, and explain with increasing specificity and detail as more English is acquired	(2) describe with increasing specificity and detail as more English is acquired	NA
(H) narrate, describe, and explain with increasing specificity and detail as more English is acquired	(3) explain with increasing specificity and detail as more English is acquired	T: 9-12 S: 9-12
(I) adapt spoken language appropriately for formal and informal purposes	(1) adapt spoken language appropriately for formal purposes	NA
(I) adapt spoken language appropriately for formal and informal purposes	(2) adapt spoken language appropriately for informal purposes	NA
(J) respond orally to information presented in a wide variety of print, electronic, audio, and visual media to build and reinforce concept and language attainment	(1) respond orally to information presented in a wide variety of print, electronic, audio, and visual media to build and reinforce concept attainment	NA

(J) respond orally to information presented in a wide variety of print, electronic, audio, and visual media to build and reinforce concept and language attainment	(2) respond orally to information presented in a wide variety of print, electronic, audio, and visual media to build and reinforce language attainment	N/A
(4) Cross-curricular second language acquisition/reading. The ELL reads a variety of texts for a variety of purposes with an increasing level of comprehension in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in reading. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. For kindergarten and first grade, certain of these student expectations apply to text read aloud for students not yet at the stage of decoding written text. The student is expected to:		
(A) learn relationships between sounds and letters of the English language and decode (sound out) words using a combination of skills such as recognizing sound-letter relationships and identifying cognates, affixes, roots and base words	(1) learn relationships between sounds and letters of the English language	NA
(A) learn relationships between sounds and letters of the English language and decode (sound out) words using a combination of skills such as recognizing sound-letter relationships and identifying cognates, affixes, roots and base words	(2) decode (sound out) words using a combination of skills	NA
(B) recognize directionality of English reading such as left to right and top to bottom	>>>>>	NA
(C) develop basic sight vocabulary, derive meaning of environmental print, and comprehend English vocabulary and language structures used routinely in written classroom materials	(1) develop basic sight vocabulary used routinely in written classroom materials	T: 9-12 S: 9-12

(C) develop basic sight vocabulary, derive meaning of environmental print, and comprehend English vocabulary and language structures used routinely in written classroom materials	(2) derive meaning of environmental print	T: 9-12 S: 9-12
(C) develop basic sight vocabulary, derive meaning of environmental print, and comprehend English vocabulary and language structures used routinely in written classroom materials	(3) comprehend English vocabulary used routinely in written classroom materials	T: 9-12 S: 9-12
(C) develop basic sight vocabulary, derive meaning of environmental print, and comprehend English vocabulary and language structures used routinely in written classroom materials	(4) comprehend English language structures used routinely in written classroom materials	T: 9-12 S: 9-12
(D) use prereading supports such as graphic organizers, illustrations, and pretaught topic-related vocabulary and other prereading activities to enhance comprehension of written text	>>>>>	T: 9-12 S: 9-12
(E) read linguistically accommodated content area material with a decreasing need for linguistic accommodations as more English is learned	>>>>>	T: 9-12
(F) use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	(1) use visual and contextual support to read grade-appropriate content area text	T: 9-12 S: 9-12

(F) use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	(2) use visual and contextual support to enhance and confirm understanding	T: 9-12 S: 9-12
(F) use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	(3) use visual and contextual support to develop vocabulary needed to comprehend increasingly challenging language	T: 9-12 S: 9-12
(F) use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	(4) use visual and contextual support to develop grasp of language structures needed to comprehend increasingly challenging language	NA
(F) use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	(5) use visual and contextual support to develop background knowledge needed to comprehend increasingly challenging language	T: 9-12 S: 9-12
(F) use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	(6) use support from peers and teachers to read grade-appropriate content area text	T: 9-12 S: 9-12

(F) use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	(7) use support from peers and teachers to enhance and confirm understanding	T: 9-12 S: 9-12
(F) use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	(8) use support from peers and teachers to develop vocabulary needed to comprehend increasingly challenging language	T: 9-12 S: 9-12
(F) use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	(9) use support from peers and teachers to develop grasp of language structures needed to comprehend increasingly challenging language	T: 9-12 S: 9-12
(F) use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	(10) use support from peers and teachers to develop background knowledge needed to comprehend increasingly challenging language	T: 9-12 S: 9-12
(G) demonstrate comprehension of increasingly complex English by participating in shared reading, retelling or summarizing material, responding to questions, and taking notes commensurate with content area and grade level needs	(1) demonstrate comprehension of increasingly complex English by participating in shared reading commensurate with content area and grade level needs	NA

(G) demonstrate comprehension of increasingly complex English by participating in shared reading, retelling or summarizing material, responding to questions, and taking notes commensurate with content area and grade level needs	(2) demonstrate comprehension of increasingly complex English by retelling or summarizing material commensurate with content area and grade level needs	T: 9-12 S: 9-12
(G) demonstrate comprehension of increasingly complex English by participating in shared reading, retelling or summarizing material, responding to questions, and taking notes commensurate with content area and grade level needs	(3) demonstrate comprehension of increasingly complex English by responding to questions commensurate with content area and grade level needs	T: 9-12 S: 9-12
(G) demonstrate comprehension of increasingly complex English by participating in shared reading, retelling or summarizing material, responding to questions, and taking notes commensurate with content area and grade level needs	(4) demonstrate comprehension of increasingly complex English by taking notes commensurate with content area and grade level needs	T: 9-12 S: 9-12
(H) read silently with increasing ease and comprehension for longer periods	(1) read silently with increasing ease for longer periods	NA
(H) read silently with increasing ease and comprehension for longer periods	(2) read silently with increasing comprehension for longer periods	NA
(I) demonstrate English comprehension and expand reading skills by employing basic reading skills such as demonstrating understanding of supporting ideas and details in text and graphic sources, summarizing text and distinguishing main ideas from details commensurate with content area needs	(1) demonstrate English comprehension by employing basic reading skills commensurate with content area needs	NA

(I) demonstrate English comprehension and expand reading skills by employing basic reading skills such as demonstrating understanding of supporting ideas and details in text and graphic sources, summarizing text and distinguishing main ideas from details commensurate with content area needs	(2) expand reading skills commensurate with content area needs	NA
(J) demonstrate English comprehension and expand reading skills by employing inferential skills such as predicting, making connections between ideas, drawing inferences and conclusions from text and graphic sources, and finding supporting text evidence commensurate with content area needs	>>>>>	NA
(K) demonstrate English comprehension and expand reading skills by employing analytical skills such as evaluating written information and performing critical analyses commensurate with content area and grade level needs	>>>>>	NA
(5) Cross-curricular second language acquisition/writing. The ELL writes in a variety of forms with increasing accuracy to effectively address a specific purpose and audience in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in writing. In order for the ELL to meet grade-level learning expectations across foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. For kindergarten and first grade, certain of these student expectations do not apply until the student has reached the stage of generating original written text using a standard writing system. The student is expected to:		
(A) learn relationships between sounds and letters of the English language to represent sounds when writing in English	>>>>>	NA
(B) write using newly acquired basic vocabulary and content-based grade-level vocabulary	(1) write using newly acquired basic vocabulary	NA

(B) write using newly acquired basic vocabulary and content-based grade-level vocabulary	(2) write using content-based grade-level vocabulary	NA
(C) spell familiar English words with increasing accuracy, and employ English spelling patterns and rules with increasing accuracy as more English is acquired	(1) spell familiar English words with increasing accuracy	NA
(C) spell familiar English words with increasing accuracy, and employ English spelling patterns and rules with increasing accuracy as more English is acquired	(2) employ English spelling pattern with increasing accuracy as more English is acquired	NA
(C) spell familiar English words with increasing accuracy, and employ English spelling patterns and rules with increasing accuracy as more English is acquired	(3) employ English spelling rules with increasing accuracy as more English is acquired	NA
(D) edit writing for standard grammar and usage, including subject-verb agreement, pronoun agreement, and appropriate verb tenses commensurate with grade-level expectations as more English is acquired	(1) edit writing for standard grammar and usage, including subject-verb agreement commensurate with grade-level expectations as more English is acquired	NA
(D) edit writing for standard grammar and usage, including subject-verb agreement, pronoun agreement, and appropriate verb tenses commensurate with grade-level expectations as more English is acquired	(2) edit writing for standard grammar and usage, including pronoun agreement, commensurate with grade-level expectations as more English is acquired	NA
(D) edit writing for standard grammar and usage, including subject-verb agreement, pronoun agreement, and appropriate verb tenses commensurate with grade-level expectations as more English is acquired	(3) edit writing for standard grammar and usage, including appropriate verb tenses, commensurate with grade-level expectations as more English is acquired	NA

(E) employ increasingly complex grammatical structures in content area writing commensurate with grade level expectations such as (i) using correct verbs, tenses, and pronouns/antecedents; (ii) using possessive case (apostrophe -s) correctly; and, (iii) using negatives and contractions correctly	>>>>>	NA
(F) write using a variety of grade-appropriate sentence lengths, patterns, and connecting words to combine phrases, clauses, and sentences in increasingly accurate ways as more English is acquired	(1) write using a variety of grade-appropriate sentence lengths in increasingly accurate ways as more English is acquired	NA
(F) write using a variety of grade-appropriate sentence lengths, patterns, and connecting words to combine phrases, clauses, and sentences in increasingly accurate ways as more English is acquired	(2) write using a variety of grade-appropriate sentence patterns in increasingly accurate ways as more English is acquired	NA
(F) write using a variety of grade-appropriate sentence lengths, patterns, and connecting words to combine phrases, clauses, and sentences in increasingly accurate ways as more English is acquired	(3) write using a variety of grade-appropriate connecting words to combine phrases, clauses, and sentences in increasingly accurate ways as more English is acquired	NA
(G) narrate, describe, and explain with increasing specificity and detail to fulfill content area writing needs as more English is acquired	(1) narrate with increasing specificity and detail to fulfill content area writing needs as more English is acquired	NA
(G) narrate, describe, and explain with increasing specificity and detail to fulfill content area writing needs as more English is acquired	(2) describe with increasing specificity and detail to fulfill content area writing needs as more English is acquired	NA
(G) narrate, describe, and explain with increasing specificity and detail to fulfill content area writing needs as more English is acquired	(3) explain with increasing specificity and detail to fulfill content area writing needs as more English is acquired	NA