Mathematics – Student Learning Standards

STRAND ONE: Number, Operation and Quantitative Reasoning

TEKS Major Concept	LS #	Algebra II
Sequencing	1001	
Numerical Representation	1002	
Whole Number Place Value	1003	
Ordinal Numbers	1004	
Whole Number Comparison	1005	
Fraction Models	1006	
Fractions of a Set	1007	
Equivalent Fractions	1008	
Decimal Models	1009	
Money	1011	
Rational Number Comparison	1012	
Addition and Subtraction Models	1013	
Reasonableness	1014	
Basic Facts	1015	
Equations	1016	Analyze a situation modeled by a rational function, formulate an equation or inequality composed of a linear or quadratic function, and solve the problem. (10F) **B**
Operations: Addition and Subtraction	1017	Determine solutions of rational inequalities using graphs and tables. (10E) **B**
Properties of Addition	1018	
Rounding	1019	
Factors	1020	**Factor polynomial expressions and expand as a product of factors (e.g., $2x^3 + 3x^2 + 2x + 3 = (2x + 3)(x^2 + 1)$)** **D B**
	1021	Use tools **necessary to manipulate symbols** including factoring and properties of exponents to simplify expressions and to transform and solve equations **and inequalities.** (2A) **B**
Multiples	1022	
Multiplication	1023	
Properties of Multiplication	1024	
Estimation	1025	
Scientific Notation: Exponents	1027	
Squares and Irrational Numbers	1028	
Division	1029	
Algorithms	1030	
Order of Operations	1031	
	1032	

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Mathematics – Student Learning Standards

STRAND TWO: Patterns, Relationships, and Algebraic Thinking

TEKS Major Concept	LS #	Algebra II
Patterns	2001	
Pattern Application	2002	**Using multiple representations, develop functional relationships that represent patterns (e.g., Pascal's triangle).** **D B**
Number Patterns	2003	
Place Value Patterns	2004	
Fact Families	2005	
Pattern Application	2006	
Functions	2007	
Functions	2008	Identify and sketch graphs of parent functions, including linear (f(x) = x), quadratic ($f(x) = x^2$), exponential ($f(x) = a^x$), and logarithmic (f(x) = logax) functions, absolute value of x (f(x) = |x|), square root of x ($f(x) = x^{(1/2)}$), and reciprocal of x (f(x) = 1/x). (4A) **B**; Use characteristics of the quadratic parent function to sketch the related graphs and connect between the y=ax2 + bx + c and the y = a(x-h)2 + k symbolic representations of quadratic functions. (7A) **B**
	2009	Identify the mathematical domains and ranges of functions and determine reasonable domain and range values for continuous and discrete situations. (1A) **B**
Functions	2010	
	2011	Relate representations of quadratic functions, such as algebraic, tabular, graphical, and verbal descriptions. (6B) **B**; Relate representations of square root functions, such as algebraic, tabular, graphical, and verbal descriptions. (9B) **B**; Analyze various representations of rational functions with respect to problem situations. (10B) **B**
Rate of Change	2012	
Multiple Representations	2013	
	2014	
Graphing	2015	**Describe independent and dependent quantities in functional relationships (e.g., linear, quadratic, square root, rational, exponential).** **D B**
Multiple Representations	2016	
Graphing	2017	
	2018	
Functions	2019	Determine the reasonable domain and range values of quadratic functions, as well as interpret and determine the reasonableness of solutions to quadratic equations and inequalities. (6A) **B**; Determine the reasonable domain and range values of square root functions, as well as interpret and determine the reasonableness of solutions to square root equations and inequalities. (9C) **B**; Determine the reasonable domain and range values of rational functions, as well as interpret and determine the reasonableness of solutions to rational equations and inequalities. (10C) **B**; Determine the reasonable domain and range values of exponential and logarithmic functions, as well as interpret and determine the reasonableness of solutions to exponential and logarithmic equations and inequalities. (11C) **B**
Functions	2020	Use the parent function to investigate, describe, and predict the effects of changes in a, h, and k on the graphs of $y = a(x - h)^2 + k$ form of a function in applied and purely mathematical situations. (7B) **B**; Use the parent function to investigate, describe, and predict the effects of parameter changes on the graphs of square root functions and describe limitations on the domains and ranges. (9A) **B;** Use quotients of polynomials to describe the graphs of rational functions, predict the effects of parameter changes, describe limitations on the domains and ranges, and examine asymptotic behavior. (10A) **B**; Use the parent functions to investigate, describe, and predict the effects of parameter changes on the graphs of exponential and logarithmic functions, describe limitations on the domains and ranges, and examine asymptotic behavior. (11B) **B**
Functions	2021	Use the parent function to investigate, describe, and predict the effects of

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STRAND TWO: Patterns, Relationships, and Algebraic Thinking

TEKS Major Concept	LS #	Algebra II
Functions		changes in a, h, and k on the graphs of $y = a(x - h)^2 + k$ form of a function in applied and purely mathematical situations. (7B) **B**; Use the parent function to investigate, describe, and predict the effects of parameter changes on the graphs of square root functions and describe limitations on the domains and ranges. (9A) **B**; Use quotients of polynomials to describe the graphs of rational functions, predict the effects of parameter changes, describe limitations on the domains and ranges, and examine asymptotic behavior. (10A) **B**; Use the parent functions to investigate, describe, and predict the effects of parameter changes on the graphs of exponential and logarithmic functions, describe limitations on the domains and ranges, and examine asymptotic behavior. (11B) **B**
Functions	2022	Analyze situations involving quadratic functions and formulate quadratic equations or inequalities to solve problems. (8A) **B**; Analyze situations modeled by square root functions, formulate equations or inequalities, select a method, and solve problems. (9F) **B**; Connect inverses of square root functions with quadratic functions. (9G) **B**
Functions	2023	Solve quadratic equations and inequalities using graphs, tables, and algebraic methods **(including completing the square)**. (8D) **B**; Determine solutions of square root equations using graphs, tables, and algebraic methods. (9D) **B**; Determine solutions of square root inequalities using graphs and tables. (9E) **B**; Determine the solutions of rational equations using graphs, tables, and algebraic methods. (10D) **B**
Functions	2024	Compare and translate between algebraic and graphical solutions of quadratic equations. (8C) **B** Use complex numbers to describe the solutions of quadratic equations. (2B) **B**; Determine a quadratic function from its roots or a graph. (6C) **B** (2B) **B**; Determine a quadratic function from its roots or a graph. (6C) **B**
	2025	Analyze and interpret the solutions of quadratic equations using discriminants and solving quadratic equation using the quadratic formula. (8B) **B**
	2026	**Perform composition of functions, (e.g. f(g(x)), g(f(x)), fog(x)).** **D B**
Percent	2027	
Proportion	2028	Use functions to model and make predictions in problem situations involving direct and inverse variation. (10G) **B**
	2029	**Determine whether or not given situations can be represented by linear, quadratic, exponential, square root, or logarithmic functions (e.g., recognize that if the second difference is constant, the function is quadratic).** **D B**
Equations	2030	
	2031	
	2032	**Predict, find, and make critical judgments about solutions to functional relationships.** **D B**
	2033	Analyze situations and formulate systems of equations in two or more unknowns or inequalities in two unknowns to solve problems. (3A) **B**
Equations	2034	Use algebraic methods, graphs, tables, or matrices, to solve systems of equations or inequalities. (3B) **B**
	2035	Interpret and determine the reasonableness of solutions to systems of equations or inequalities for given contexts. (3C) **B**

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TEKS Major Concept	**LS #**	**Algebra II**
	2036	Extend parent functions with parameters such as an in f(x) = a/x and describe the effects of the parameter changes on the graph of parent functions. (4B) **B**; Use functions to model and make predictions in problem situations involving direct and inverse variation. (10G) **B**
	2037	Describe and analyze the relationship between a function and its inverse. (4C) **B**
Equations	2038	Determine solutions of exponential and logarithmic equations using graphs, tables, and algebraic methods. (11D) **B**; Determine solutions of exponential and logarithmic inequalities using graphs and tables. (11E) **B**; Analyze a situation modeled by an exponential function, formulate an equation or inequality, and solve the problem (11F) **B**

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STRAND THREE: Geometry and Spatial Reasoning

TEKS Major Concept	LS #	Algebra II
Attributes	3001	
	3002	
Attributes	3003	
	3004	
	3005	
Attributes	3006	
Similarity	3007	
Circles	3008	
Plane Geometry	3009	
Transformations	3010	
	3011	
	3012	
Symmetry	3013	
Nets	3014	
	3015	Describe a conic section as the intersection of a plane and a cone. (5A) **B**
	3016	Sketch graphs of conic sections to relate simple parameter changes in the equation to corresponding changes in the graph. (5B) **B**
	3017	Identify symmetries from graphs of conic sections. (5C) **B**
	3018	Identify the conic section from a given equation. (5D) **B**
	3019	Use the method of completing the square **to solve equations of conic sections**. (5E) **B**
	3020	
	3021	
	3022	
	3023	
	3024	
	3025	

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STRAND FOUR: Measurement		
TEKS Major Concept	**LS #**	**Algebra II**
Sequencing	4001	
Calendar	4002	
Time	4003	
Temperature	4004	
Linear Measurement	4005	
Perimeter	4006	
Area	4007	
Surface Area	4008	
Capacity	4009	
Volume	4010	
Volume	4011	
Weight/Mass	4012	
Estimation	4013	
Conversions	4014	
Angle Measurement	4015	
	4016	
Proportional Changes in Dimensions	4017	
	4018	
	4019	

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STRAND FIVE: Probability and Statistics

TEKS Major Concept	LS #	Algebra II
Graphing	5001	
	5002	**Interpret situations in terms of given graphs or create situations (e.g., tell a story, or describe an event) that fit given graphs.** **D B**
	5003	**Recognize misuses of graphical, numerical, tabular, or verbal information. Evaluate predictions and conclusions based on data analysis.** **D B**
	5004	Collect and organize data, make and interpret scatterplots, fit the graph of a function to the data, interpret the results, and proceed to model, predict, and make decisions and critical judgments. (1B) **B**
Statistics	5005	
	5006	
Theoretical Probability	5007	**Analyze real-life data, and use regression to determine the functional relationship of linear, quadratic and exponential functions.** **D B**
	5008	
	5009	
Experimental Probability	5010	

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STRAND SIX: Underlying Processes and Mathematical Tools

TEKS Major Concept	LS #	Algebra II
Real-World Application	6001	**Identify and apply mathematics to everyday experiences and activities, with other disciplines, and with other mathematical topics.** **D B**
Problem Solving	6002	**Develop and implement a problem-solving model that incorporates understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness.** **D B**
	6003	**Select or develop an appropriate problem-solving strategy to solve a problem.** **D B**
Mathematical Tools	6004	**Select appropriate tools to solve problems.** **D B**
Communication	6005	**Communicate mathematical ideas using language, efficient tools, appropriate units, and multiple representations.** **D B**
	6006	**Use different representations to communicate ideas effectively.** **D B**
	6007	**Validate his/her conclusions using mathematical properties and relationships and appropriate mathematical language.** **D B**
Generalization	6008	**Use inductive and/or deductive reasoning to formulate conjectures.** **D B**

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