

## Algebra II Scope and Sequence Aligned to SATEC Resources—DRAFT (4/06)

### Exponential and Logarithmic Functions

This unit includes equations, inequalities, and systems. There should be an emphasis on the connection between the 5 representations: graph, table, problem situation, pictorial, symbolic. Within this unit, connections to foundations for functions and how all functions have same traits should be made. Make explicit connections between exponential and log functions as inverse functions.

Objective	TEKS	TEKS Clarification	TAKS Objective	SATEC Lesson / Resources <sup>1</sup>	SATEC Correlated Assessments	Dana Center Assessments	Resources / Text
Use properties of exponents to simplify expressions including converting from exponential to radical form.	2A.2A	Revisit data activity from Foundations for Functions and reinforce common function characteristics.	Objectives 1, 2, 5				Solving Exponential Functions
Identify and sketch the exponential function.	2A.4A	Revisit data to extend the investigation of exponential and logarithmic functions to include writing equations, graphing and translating functions, and analyzing parameter changes in the context of situations.		Where Did the Buzz Bugs Go? Speed of a Fan	Where Did the Buzz Bugs Go?: Reflect and Apply Speed of Two Fans		Algebra II Institute Part I: II. 1.1, 2
Describe limitations of domain and range of exponential functions and examine asymptotic behavior.	2A.11B, 2A.1A	Write exponential equations in logarithmic form and vice versa.		Where Did the Buzz Bugs Go? Speed of a Fan	Where Did the Buzz Bugs Go?: Reflect and Apply Speed of Two Fans		Graphing Exponential Functions
Investigate, describe and predict the effects of parameter changes on the exponential function.	2A.11B, 2A.4B	Use logarithms to solve problems involving growth and decay.		Where Did the Buzz Bugs Go?	Where Did the Buzz Bugs Go?: Reflect and Apply	Exponential Function Parameters	
Develop the definition of logarithmic function as the inverse of the exponential function.	2A.11A, 2A.4C	Write exponential or logarithmic functions for a problem situation and determine the domain and range.				Comparing an Exponential Function and Its Inverse	Intro to Logarithmic Functions

<sup>1</sup> The SATEC Resources and Coordinated Assessments are available on the Mathematics TEKS Toolkit at [www.mathtekstoolkit.org/instruction/scope/alg2scope/satec.php](http://www.mathtekstoolkit.org/instruction/scope/alg2scope/satec.php). The Dana Center Assessments are on the toolkit at [www.mathtekstoolkit.org/instruction/alg2.php](http://www.mathtekstoolkit.org/instruction/alg2.php).

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Identify and sketch the logarithmic function.	2A.4A	<p>Numerically and algebraically develop log properties.</p> <p>Simplify exponential equations using logarithmic properties.</p> <p>Graph logarithmic equations using transformations.</p> <p>Evaluate expressions and solve equations involving logarithms on the calculator.</p> <p>Solve equations with variable exponents by using logarithms.</p> <p>Solve exponential inequalities.</p> <p>Use technology such as graphing calculators and/or computers to link multiple representations.</p>				Intro to Logs as Inverse of Exponential Functions	
Describe limitations of domain and range of logarithmic functions and examine asymptotic behavior.	2A.11B, 2A.1A						Intro to Logs as Inverse of Exponential Functions
Investigate, describe and predict the effects of parameter changes on the logarithmic function.	2A.11B, 2A.4B					Transformation Two-Step Logarithmic Function Parameters	Intro to Logs as Inverse of Exponential Functions Graphs of Log Functions Algebra II Institute Part 1: 1.1, 2.1
Solve exponential and logarithmic equations using graphs, tables, and algebraic methods.	2A.11D, 2A.2A			Where Did the Buzz Bugs Go? Speed of a Fan	Where Did the Buzz Bugs Go?: Reflect and Apply Speed of Two Fans	Bighorn Sheep	Intro to Logs as Inverse of Exponential Functions Solving Log Equations Algebra II Institute Part I: II. 2.1
Determine reasonableness of solutions to exponential and logarithmic equations.	2A.11C			Speed of a Fan	Speed of Two Fans		
Analyze a situation modeled by an exponential function, formulate an equation or	2A.11F, 2A.11D			Where Did the Buzz Bugs Go?	Where Did the Buzz Bugs Go?: Reflect and Apply	Saving Money, Making Money	Algebra II Institute Part I: II. 2.1

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inequality, and solve the problem using graphs, tables, and algebra.				Speed of a Fan	Speed of Two Fans		
Collect and organize data, make scatterplots, fit the curve to a function, interpret the results, and model, predict, and make decisions.	2A.1B			Where Did the Buzz Bugs Go? Speed of a Fan	Where Did the Buzz Bugs Go?: Reflect and Apply Speed of Two Fans		
Recognize that functions can be denoted in many forms: $y =$ , $d =$ , $y =$ and $f(x) =$ and determine which form is the most appropriate for a given situation.	(moved to Alg1)						
Perceive functions and equations as means for analyzing and understanding relationships and as a tool for expressing generalizations.	BU A3						
Use a variety of representations, tools, and technology and model situations to solve problems.	BU A5			Where Did the Buzz Bugs Go? Speed of a Fan	Where Did the Buzz Bugs Go?: Reflect and Apply Speed of Two Fans		
Use math processes throughout, including problem solving, computation, communication, connections, reasoning, multiple representations, modeling, and justification.	BU A6			Where Did the Buzz Bugs Go? Speed of a Fan	Where Did the Buzz Bugs Go?: Reflect and Apply Speed of Two Fans		