



Honors Algebra 2 UNIT PLANNER



Unit title	Unit 5: Exponential and Logarithmic Functions	Unit duration	4 weeks
Essential Questions (OR GUIDING QUESTIONS?)			
<ul style="list-style-type: none"> • What does exponential growth mean? What does exponential decay mean? • What are the characteristics of the graph of an exponential function? • Why are logarithms important? • What are the characteristics of the graph of a logarithmic function? • How are logarithms used to solve equations? • What is the meaning of half-life? • What kinds of situations are represented by an exponential function? • What are some real-world applications of logarithmic functions? 			
Assessments			
Common Formative Assessment – Solving TOD, Unit quiz(zes)			
Common Summative Assessment - Unit 5 Test			
Content Standards			
<u>Write expressions in equivalent forms to solve problems</u>			
MGSE9-12.A.SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. <i>(Limit to exponential and logarithmic functions.)</i>			
MGSE9-12.A.SSE.3c Use the properties of exponents to transform expressions for exponential functions. <i>For example, the expression 1.15^t, where t is in years, can be rewritten as $[1.15^{(1/12)}]^{(12t)} \approx 1.012^{(12t)}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.</i>			
<u>Analyze functions using different representations</u>			
MGSE9-12.F.IF.7 Graph functions expressed algebraically and show key features of the graph both by hand and by using technology. <i>(Limit to exponential and logarithmic functions.)</i>			
MGSE9-12.F.IF.7e Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.			
MGSE9-12.F.IF.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. <i>(Limit to exponential and logarithmic functions.)</i>			
MGSE9-12.F.IF.8b Use the properties of exponents to interpret expressions for exponential functions. <i>For example, identify percent rate of change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{(12t)}$, $y = (1.2)^{(t/10)}$, and classify them as representing exponential growth and decay. (Limit to exponential and logarithmic functions.)</i>			
<u>Build new functions from existing functions</u>			
MGSE9-12.F.BF.5 Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.			

Construct and compare linear, quadratic, and exponential models and solve problems

MGSE9-12.F.LE.4 For exponential models, express as a logarithm the solution to $ab^{(ct)} = d$ where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.

Learning Activities and Experiences

Topic	Resources	Content Covered	Standards
Test 1 – Properties and Solving Logarithms 12 Days Assessments for this Subunit: Properties of Logs and Rewriting Quiz, Unit 5 Part A Test: Properties of Logs, Rewrite, Solving logs			
Properties of Logs and Solving Logarithmic Equations	6-3 Logarithms Pearson enVision pg. 314 - 320	<ul style="list-style-type: none"> Understand the inverse relationship between exponents and logarithms. Use logarithms to solve exponential models. Evaluate logarithms using technology. 	MGSE9-12.F.IF.8
	6-5 Properties of Logarithms Pearson enVision pg. 327 – 332	<ul style="list-style-type: none"> Use properties of logarithms to rewrite logarithmic expressions. Use the Change of Base formula to evaluate logarithmic expressions and solve equations. 	MGSE9-12.F.IF.8
	6-6 Exponential and Logarithmic Equations Pearson enVision pg. 333 – 339	<ul style="list-style-type: none"> Use logarithms to express the solutions to exponential models. Solve exponential and logarithmic equations. 	MGSE9-12.A.SSE.3 MGSE9-12.F.BF.5
	Additional Resources:		
Test 2 - Exponential Equations and Graphing Log and Exponential Functions 10 Days Assessments for this Subunit Compound Interest Quiz, Unit 5 Part B: Solving Exponential Equations, Graphing Log and Exponentials			
Graphing Logarithmic Functions	6-4 Logarithmic Functions Pearson enVision pg. 321 - 326	<ul style="list-style-type: none"> Graph logarithmic functions and interpret their key features. Write and interpret the inverses of exponential and logarithmic functions. 	MGSE9-12.F.IF.7 MGSE9-12.F.IF.7e
	Additional Resources:		
Graphing & Solving Exponential Functions	6-1 Key Features of Exponential Functions Pearson enVision pg. 297 - 304	<ul style="list-style-type: none"> Interpret key features of exponential functions represented by graphs, tables, and equations. Graph transformations of exponential functions showing their intercepts and end behaviour. 	MGSE9-12.F.IF.7 MGSE9-12.F.IF.7e
	6-2 Exponential Models Pearson enVision pg. 305 - 312	<ul style="list-style-type: none"> Rewrite exponential functions to identify rates. Interpreted the parameters of an exponential function within the context of compound interest problems. Construct exponential models given two points or by using regression. 	MGSE9-12.A.SSE.3 MGSE9-12.A.SSE.3c MGSE9-12.F.IF.8 MGSE9-12.F.IF.8b

	6-6 Exponential and Logarithmic Equations Pearson enVision pg. 333 - 339	<ul style="list-style-type: none"> • Use logarithms to express the solutions to exponential models. • Solve exponential and logarithmic equations. 	MGSE9-12.A.SSE.3 MGSE9-12.A.SSE.3c MGSE9-12.F.BF.5 MGSE9-12.F.LE.4
Additional Resources:			
Personalized Learning and Differentiation			
<p>Teachers differentiate by providing examples (work samples or task-specific clarifications of assessment criteria); structuring support (advance organizers, flexible grouping, peer relationships); establishing flexible deadlines, and adjusting the pace.</p> <ul style="list-style-type: none"> -SWD/504- Accommodations provided -ELL- Five Principle ELL Curriculum Framework and Vocabulary Supports -Intervention Support- Re-teaching Activities in Small Groups with Progress Monitoring -Extensions- Enrichment Tasks and Projects 			
Resources			
Pearson enVision Textbook and Pearson Realize Online Resources DOE Framework Tasks			