Corsica Stickney Curriculum Map

Subject: Algebra 1 Grade:9th Unit6 Module 14 lessons 14.1,14.2 Module15lessons15.1,15.2,15.3,15.4,15.5 Module 16 lessons 16.1,16.2,16.3	Teacher: Mr. Jason Broughton Duration: January
Summary of unit: students will complete a Math in Careers task by writing and interpreting exponential functions based on a graph. Critical skills include modeling real-world situations and interpreting functional relationships.	
Stage 1 – Desired Results	
Standards: N-RN.A.1 Explain how ...rational exponents follows from extending the properties of integer exponents ... allowing for a notation for radicals F-LE.A.2 Construct… geometric... sequences, given a graph, a description of a relationship, or two input-output pairs F-BF.A.1a ...Determine an explicit expression, a recursive process, or steps for calculation from a context. F-IF.C.7e Graph exponential… functions, showing intercepts and end behavior F-BF.B.3 Identify the effect on the graph of replacing f(x) by f (x) + k, k f (x), f (kx), and f (x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology A-CED.A.1 Create equations ...and use them to solve problems… arising from… exponential functions. S-ID.B.6a Fit a function to the data ... to solve problems in the context of the data. F-LE.A.1c Recognize situations in which a quantity grows or decays by a constant percent rate ... relative to another	Essential Questions: How are radicals and rational exponents related? How can you write a radical expression as an expression with a rational exponent? How area the terms of a geometric sequence related? How do you write a geometric sequence? What are discrete exponential functions and how do you represent them? How do you graph an exponential function of the form f(x) = abx ? How does the graph of f(x) = abx change when a and b are changed? How can you solve equations involving variable exponents? How can you use exponential functions to model the increase or decrease of a quantity over time? How can you use exponential regression to model data? How can you recognize when to use a linear model or an exponential model?

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Language objective	Mathematical practices	Integrate mathematical practice
Students will explain how radicals and rational exponents are related Students will explain to a partner what the subsets and properties of real numbers are. Explain to a partner how to tell whether a sequence is a geometric sequence. Explain to a partner the difference between a recursive and an explicit rule for a geometric sequence. Explain to a partner what the graph of a discrete exponential function looks like. Explain the domain, range, and end behavior of the graphs of exponential functions of the form ƒ (x) = a b x with a < 0 and 0 < b < 1. Describe how the graph of an exponential function changes when you add a constant to the function. Explain to a partner how to use a graph to find the solution to an equation with a variable exponent. Compare and contrast exponential growth and exponential decay functions. Demonstrate how to use residuals to evaluate how well	MP.1 Persevere MP.4 Modeling MP.7 Using Structure	MP.1 Explain that, when writing an expression with a rational exponent as a radical, the power can also be placed under the radical sign. For example, 2 16 _ 2 3 can be written as (3 √——216) 2 or 3 √——21 6 2 . However, it is usually more convenient to evaluate the root and then evaluate the power. MP.1 Ask students to explain the difference between a recursive rule and an explicit rule for a sequence, and tell how each one is written. MP.4, which calls for students to use "modeling." Students use a specific geometric sequence to help them obtain general rules, both recursive and explicit, for representing geometric sequences. They then use those general rules to represent other geometric sequences. MP.4, which calls for students to use "modeling." Students use tables and graphs to represent exponential functions. They can use the graphs to determine the end behavior of the functions, and make generalizations about the effect of parameters a and b on the end behavior of an exponential function of the form f(x) = ab x . MP.7, which calls for students to "look for and make use of structure." Students will compare exponential functions. They will explore how changing the parameters of the functions affects the shapes of their

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an exponential regression equation fits a set of data. Describe the difference between a salary that changes by the same amount each year and a salary that changes by the same percent each year.		graphs, including how quickly the graphs rise or fall, end behavior, and y-intercepts. They will identify patterns that will allow them to predict how increasing, decreasing, or changing the sign of a parameter will affect the graph of an exponential function.

Stage 2 – Assessment Evidence

Performance Tasks: Homework quizzes, worksheet, Tests.	Unit Pre-Assessment: Assign ready-made or customized practice tests to prepare students for high-stakes tests

Stage 3 – Learning Plan

Learning Activities: procedures/topics
Reading and discussing lesson with class.
Giving students examples to be completed in class.
Students taking notes and using notes to complete homework assignments.

Lesson Description

MODULE 14 Rational Exponents and Radicals
Lesson14.1 Understanding Rational Exponents and Radicals
Lesson 14.2 Simplifying Expressions with Rational Exponents and Radicals

MODULE 15 Geometric Sequences and Exponential Functions
Lesson 15.1 Understanding Geometric Sequences
Lesson 15.2 Constructing Geometric Sequences
Lesson 15.3 Constructing Exponential Functions
Lesson 15.4 Graphing Exponential Functions
Lesson 15.5 Transforming Exponential Functions

MODULE 16 Exponential Equations and Models
Lesson 16.1 Using Graphs and Properties to Solve Equations with Exponents
Lesson 16.2 Modeling Exponential Growth and Decay
Lesson 16.3 Using Exponential Regression Models
Lesson 16.4 Comparing Linear and Exponential Models