Transition to STEM Unit Rubrics

Exponential Functions

Standard	4 - Mastery	3 - Proficient	2 - Basic	1- Below Basic	0 - No Evidence
CA-A1-A Understand the concept of a function and use function notation.	A. Apply composite function properties in an authentic task. AND A. Explain why an authentic task does not represent a function with explicit examples.	A. Use function notation to model a function from an authentic task. AND A. Explain why an authentic task represents a function with explicit examples.	A. Write the relationship in words, as expression, or an equation not using function notation. AND A. Explain why an authentic task represents a function without explicit examples.	A. Recognize *x* is the independent variable and *f(x)* is the dependent variable. AND A. Determine if a relation is a function.	A. Not yet able to understand a function or use function notation.
CA-A1-B Interpret the dependent and independent variables in the context of functions.	B. Not yet able to determine the independent or dependent variables within an authentic task.	B. Identify the independent **or** dependent variable within an authentic task.	B. Identify the independent and dependent variable within an authentic task.	B. Identify and interpret the independent and dependent variables within an authentic task.	B. Describe the relationship the dependent and independent variables have within an authentic task.
CA-A1-C Create and interpret expressions for functions in terms of the situations they model including selecting appropriate domains for these functions.	C. Not yet able to write and explain a function from an authentic task which includes stating appropriate domain.	C. Identify the parts of a function given for an authentic task.	C. Write functions representing an authentic task.	C. Write and interpret functions representing an authentic task including stating appropriate domain.	C. Find and correct errors of functions which represent an authentic task. Explain errors and corrections. Defend function if no error exists.
CA-A1-D Understand the relationship between a function and its graph.	D. Describe key parts of the graph and the corresponding parts (or process to find) making connections to the equation of a function.	D. Describe the type of relationship between a function and its graph within an authentic task.	D. Match a function to a graph.	D. Identify key features of a graph.	D. Not yet able to explain the relationship between a function and its graph.
CA-A1-E Find the domain, including implied domains, and the range of a function.	E. Explain and defend the implied domain of a function from an authentic task.	E. Find the domains, implied domains, and ranges of functions within an authentic task.	E. Find the domains, implied domains, and ranges of functions using equations.	E. Find the domain and range of functions graphically.	E. Not yet able to find the domains, implied domains, and ranges of functions.
CA-A1-F Analyze functions using different representations (verbal, graphic, numeric, algebraic).	F. Justify the most appropriate representations of functions and defend interpretations within an authentic task.	F. From various representations, analyze and interpret a function within an authentic task.	F. From various representations, analyze and interpret a function.	F. From one representation, analyze a function (verbally, graphically, or algebraically).	F. Not yet able to analyze functions using different representations within an authentic task.
CA-A3.A. Solve simple applications and create simple models involving exponential equations.	A. Find and correct errors with exponential equations which represent an authentic task. Explain errors and corrections. Justify process if no errors made.	A. Solve and interpret solutions of exponential equations from an authentic task. AND A. Write an exponential equation from an authentic task.	A. Solve exponential equations from a given authentic task.	A. Identify independent and dependent variables of an authentic task. AND A. Identify the key parts of an exponential equation.	A. Not yet able to write or interpret solutions of an exponential equation from an authentic task.

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CA-A3.B. Distinguish exponential growth from linear and polynomial growth.	B. Mathematically justify and explain type of growth in an authentic task.	B. Distinguish between exponential growth, linear growth, and polynomial growth in an authentic task.	B. Interpret key phrases in an authentic task relating to exponential growth, linear growth, and polynomial growth.	B. Define characteristics of exponential growth, linear growth, and polynomial growth (from both equations and graphs).	B. Not yet able to distinguish exponential growth from linear or polynomial growth.
CA-A3.C. Graph and recognize the graph of exponential functions of the form $f(x) = Cb^x$.	C. Prove solutions using both the graph and equation of an exponential function in an authentic task.	C. Graph an exponential function from an authentic task. Explain the significance of the asymptote. C. Write an exponential function from its graph in an authentic task.	C. Graph exponential growth and decay. Include the asymptote.	C. Determine if a graph shows growth or decay. AND C. Identify the key parts of an exponential graph. AND C. Know the exponential form $f(x) = Cb^x$.	C. Not yet able to graph or write an exponential function.
CA-A3-D Solve simple exponential equations numerically.	D. Find and correct errors in numerically solved exponential equations from an authentic task. Explain errors and corrections. Justify process if no errors are made.	D. Numerically solve an exponential equation from an authentic task. Interpret the solution.	D. Numerically solve an exponential equation for exact or estimated solutions (tables, graphs, guess & check).	D. Define an exponent.	D. Not yet able to numerically solve simple exponential equations.
CA-A3-E Solve simple exponential equations algebraically. (Optional Indicator)	E. Find and correct errors in algebraically solved exponential equations from an authentic task. Explain errors and corrections. Justify process if no errors are made.	E. Algebraically solve an exponential equation from an authentic task. Interpret the solution.	E. Algebraically solve an exponential equation.	E. Use common bases to rewrite equations.	E. Not yet able to algebraically solve an exponential equation from an authentic task.