Updated:

November 2021

Marking Period 2		Unit Unit Title: Algebra 1 – Linear and Exponential Modeling: Functions and Bivariate Statistics – Unit 2 - Module D		Recommended Instructional Days 10-12	
Doi	main:				
Strand: A.CED.A.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. F.BF.A.1 Write a function that describes a relationship between two quantities. a. Determine an explicit expression, a recursive	Progress In • Tests • Quizzes • Practice homework • Workboo • Workboo • Workshe • Focus Pa • Leveled o	ndicator: problems for ok pages ets acket assessments	Recommended Activ Interdisciplinary Conn Experiences to Explore N	ities, Investigations, ections, and/or Student JSLS-CLKS within Unit	
process, or steps for calculation from a context.					

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A.SSE.A.1 Interpret		
expressions that represent a		
quantity in terms of its context.		
a. Interpret parts of an		
expression, such as terms,		
factors, and coefficients.		
b. Interpret complicated		
expressions by viewing one or		
more of their parts as a single		
entity. For example, interpret		
$P(1+r)^n$ as the product of P		
and a factor not depending on		
Р.		
A.SSE.B.3 Choose and		
produce an equivalent form of		
an expression to reveal and		
explain properties of the		
quantity represented by the		
expression.		
c. Use the properties of		
exponents to transform		
expressions for exponential		
functions. For example: the		
expression 1.15^t can be		
rewritten as $(1.15)^{1/12t}$ to reveal		
the approximate equivalent		

monthly interest rate if the	
annual rate is 15%.	
F.LE.A.2 Construct linear and	
exponential functions,	
including arithmetic and	
geometric sequences, given a	
graph, a description of a	
relationship, or two	
input-output pairs (include	
reading these from a table).	
F.IF.A.3 Recognize that	
sequences are functions,	
sometimes defined recursively,	
whose domain is a subset of	
the integers. For example,	
the Fibonacci	
Sequence is defined	
recursively by f(0) =	
f(1) = 1, f(n + 1) = f(n) +	
$f(n-1)$ for $n \ge 1$.	

Mathemati	cs Practices	Essential Question/s: 1. What does the domain represent?Range represents?	
 Make sense of problems and persevere in solving them. Reason abstractly and quantitatively. Construct viable arguments and critique the reasoning of others. Model with mathematics. Use appropriate tools strategically. Attend to precision. 		2 . What does a scatter plot look like if there is no correlation between the data sets? Positive correlation? Negative correlation?3. How is identifying an arithmetic sequence similar to identifying a function rule?	
	ciure.	Activity Description:	
		Interdisciplinary Connections: Content: ;NJSLS#: Application to Finance and Investments	
Social and Emotional Learning:	Social and Emotional Learning:	Model Exponential Growth	
Competencies	Sub-Competencies	Exponential growth functions can be used to model	
 Self-Awareness Social Awareness Self-Management Relationship Skills Responsible Decision-Making 	 Recognize one's feelings and thoughts Recognize the impact of one's feelings and thoughts on one's own behavior Recognize One's personal traits, strengths, and limitations 	situations represented by an initial amount a and a growth rate r. In these situations, the base b is replaced by the growth factor A new investment account is opened with \$4000 at the interest rate shown. If no additional money is invested, what will be the value of the investment after 5 years?	

	 Recognize the importance of self-confidence in handling daily tasks and challenges Recognize and identify the thoughts, feelings, and perspectives of others Demonstrate an awareness of the differences among individuals, groups, and others' cultural backgrounds Demonstrate an understanding of the need for mutual respect when viewpoints differ Demonstrate an awareness of the expectations for social interactions in a variety of settings Understand and practice strategies for managing one's own emotions, thoughts, and behaviors Recognize the skills needed to establish and 	<pre>interfact the exponential growth function that models this interfact the exponential growth function that models this interfact the exponential growth function that models this interfact the value of a determined? B. How was the value of a determined? B. How was the value of a determined? I how was the value of the investment will be worth \$4984.73. I how how how how how how how how how how</pre>
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 achieve personal and educational goals Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals Establish and maintain healthy relationships Utilize positive communication and social skills to interact effectively with others Identify ways to resist inappropriate social pressure Demonstrate the ability to prevent and resolve interpersonal conflicts in constructive ways Identify who, when, where, or how to seek help for oneself or others when needed Develop, implement, and model effective problem-solving and 	Application to Science A scientist has 360 grams of a radioactive material that has a half-life of 2 years. Half-life is the length of time needed for half of the radioactive material to decay. How many grams of the radioactive material will remain in 7 years? Write a function of the form A(t)=abt for this situation, where A is the amount of radioactive material remaining, in grams, and t is the time, in years. Use the points (t, A(t)) = (0, 360) and (t, A(t)) = (2, 180). $A(t) = ab^t$ $360 = ab^{\theta}$ $180 = 360b^2$ $0.5 = b^2$ $0.71 \approx b$ So the function is $A(t) = 360(0.71)^2$, Evaluate the function when $t = 7$. $A(7) = 360(0.71)^7 \approx 32.74$ B. How can you use the graph to check this result? There will be about 33 grams of the radioactive material remaining in 7 years.
 Develop, implement, and model effective problem-solving and critical thinking skills Identify the consequences associated 	



Dev. Date March 2021



	 I. The Fibonacci sequence is 1, 1, 2, 3, 5, 8, 13, 21, a. Write a recursive function to describe the terms of the Fibonacci sequence. Begin with the conditions f(0) = f(1) = 1 and f(2) = f(1) + f(0). b. Suppose the first two terms of the Fibonacci sequence were f(0) = 2 and f(1) = 2, instead of f(0) = 1 and
	 f(1) = 1. Write the first 5 terms of the sequence. c. Explain how you can modify your answer from part a to describe the terms of the sequence found in part b.
	 Highlight on: Graduation Rates Creating algebraic inequalities to describe limits on funding, class size, school size, etc., how can a school or district maximize graduation rates?
Assessments (Formative)	Assessments (Summative)

To show evidence of meetin successfully	ng the standard/s, students will engage within:	To show evidence of meetin successfu	To show evidence of meeting the standard/s, students will successfully complete:			
 Formative Assessments: Entry and Exit Slips Quizzes Self Assessments 		Benchmarks: • Chapter Tests • Projects Summative Assessments: • Unit Assessment • District assessments • Standardized test				
	Differentiated Stude Teaching and Learni	ent Access to Content: ng <i>Resources/Materials</i>				
CoreAlternateResourcesCore ResourcesIEP/504/At-Risk/ESL		ELL Core Resources	Gifted & Talented Core Resources			
http://my.hrw.com https://www.khanacademy.or g https://www.desmos.com http://www.edulastic.com http://www.quizzizz.com http://www.edpuzzle.com http://www.youtube.com https://www.mathsisfun.com/	 Reteaching worksheets Skill building workbook Math manipulatives Leveled practice worksheets Differentiation Options Small group activities 	 Dictionary for native language Video tutorial in native language Success for English Learners worksheets Leveled Strategies for English Learners Linguistic Support 	 Enrichment worksheets and activities Challenge questions Problem Solving Workshop Leveled assessments 			

Supplemental Resources							
 Technology: Chromebooks, Graphing Calculators Other: Google Meets, Jamboard , whiteboard.fi, Google Classroom 							
	Differentiated Studer Recommended <i>Stra</i>	nt Access to Content: tegies & Techniques					
Core ResourcesAlternateELL Core ResourcesGifted & Talented CoreIEP/504/At-Risk/ESLIEP/504/At-Risk/ESLCore							
Deliver instruction utilizing varied learning styles including audio,visual, and tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat	Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method(repetition, simple explanations,additional examples, modeling, etc.), modify test content and/orformat, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments	Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric.	Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect student to related				

into segments of shorter tasks.	

	Disciplinary Concept: Global and Cultural Awareness					
NISLS CAREER READINESS.	Core Ideas:	Solutions to the problems faced by a global society require the contribution of individuals with different points of view and experiences.				
LIFE LITERACIES & KEY SKILLS	Performance Expectation/s:	9.4.12.GCA.1: Collaborate with individuals to analyze a variety of potential solutions to climate change effects and determine why some solutions (e.g., political. economic, cultural) may work better than others (e.g., SL.11-12.1., HS-ETS1-1, HS-ETS1-2, HS-ETS1-4, 6.3.12.GeoGI.1, 7.1.IH.IPERS.6, 7.1.IL.IPERS.7, 8.2.12.ETW.3).				
	Career Readiness, Life Literacies, & Key Skills Practices					
	Act as a responsible and contributing Attend to financial well-being. Consider the environmental, social an Demonstrate creativity and innovation Utilize critical thinking to make sense Model integrity, ethical leadership and Plan education and career paths align Use technology to enhance productivity Work productively in teams while usin	community member and employee. d economic impacts of decisions. h. e of problems and persevere in solving them. d effective management. ed to personal goals. ity, increase collaboration and communicate effectively. ng cultural/global competence.				

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)								
Amistad Law: N.J.S.A. 18A 52:16A-88		Holocaust Law: N.J.S.A. 18A:35-28		LGBT and Disabilities Law: <i>N.J.S.A.</i> <i>18A:35-4.35</i>	X	Diversity & Inclusion: <i>N.J.S.A. 18A:35-4.36a</i>		Standards in Action: <i>Climate Change</i>