Marking Period	Unit Title	Recommended Instructional Days
3	Trigonometric Equations and Identities	14-15 days

Domain:		Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit
NJSLS Strand: **A-SSE.2**. Use the structure of an expression to identify ways to rewrite it. **A-SSE.3** Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. **G.GPE.1** Derived the equations of a circle of given center and radius using the Pythagorean Theorem by completing the square to find the center and radius of a circle given an equation. **G.GPE.2** Derive the equation of a parabola given a focus and directrix. **G.GPE.3** (+) Derive the equation of ellipses and hyperbolas five the foci, using the fact that the sum or	***Progress Indicator:*** ***Tests • Quizzes • Practice problems for homework • Online textbook • Worksheets • IXL • Leveled assessments***	**Essential Question/s:** **How do the geometric properties of conic sections relate to their algebraic representations?** **Activity Description:** Parabolas Circles Ellipses Hyperbolas **Interdisciplinary Connections:** **Students will explore how conic sections can be used to design rooms that direct sound to specific locations. Then they will design their own room.** **Content: Design room** **NJSLS#: HS.PS4-1, HS.ETS1-2** **Example Tasks:** **At the end of each topic please review the Assessment Practice and Performance Tasks questions.**

difference of distance from the foci is constant.		Mixed Review Available Online **ASSESSMENT PRACTICE** **25.** Which of the following are true about the graph of the parabolic equation $x + y^2 = 2y - 1$? Select all that apply. Ⓐ opens downward Ⓑ vertex (1, 0) Ⓒ directrix $x = \frac{1}{4}$ Ⓓ focus $\left(-\frac{1}{4}, 0\right)$ **ASSESSMENT PRACTICE** **27.** Which equation of an ellipse has a vertical major axis? Select all that apply. Ⓐ $\frac{x^2}{12} + \frac{y^2}{55} = 1$ Ⓑ $\frac{x^2}{53} + \frac{y^2}{25} = 1$ Ⓒ $\frac{(x-9)^2}{82} + \frac{(y-10)^2}{120} = 1$ Ⓓ $\frac{(x+7)^2}{92} + \frac{(y+16)^2}{88} = 1$ Ⓔ $\frac{(x-6)^2}{35} + \frac{(y+11)^2}{53} = 1$

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ASSESSMENT PRACTICE

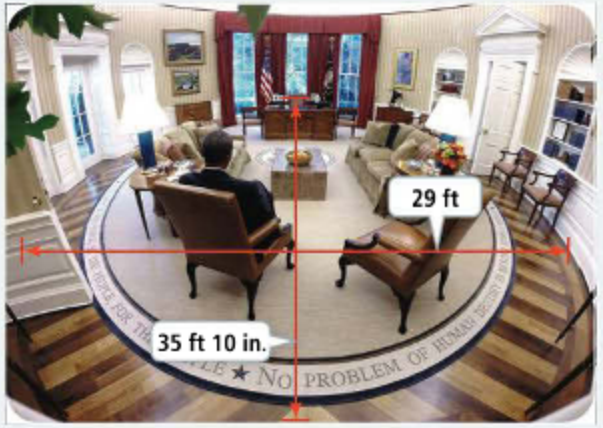
37. Solve the equation $4 \sin^2 \pi - 3 = 0$ for π measured in radians. Determine if each of the following are part of the solution set. Select *Yes* or *No*.

	Yes	No
a. $\frac{\pi}{6} + 2k\pi$, where k is an integer	❑	❑
b. $\frac{\pi}{3} + k\pi$, where k is an integer	❑	❑
c. $\frac{\pi}{3} + 2k\pi$, where k is an integer	❑	❑
d. $\frac{2\pi}{3} + 2k\pi$, where k is an integer	❑	❑
e. $\frac{2\pi}{3} + k\pi$, where k is an integer	❑	❑
f. $\frac{5\pi}{6} + k\pi$, where k is an integer	❑	❑

29. Performance Task The Oval Office in the White House in Washington, DC, is actually elliptical. Its major axis is 35 ft 10 in. long, and its minor axis is 29 ft long.

Part A Suppose that the president's desk chair is placed at one focus of the ellipse. How far is the chair from the wall behind it?

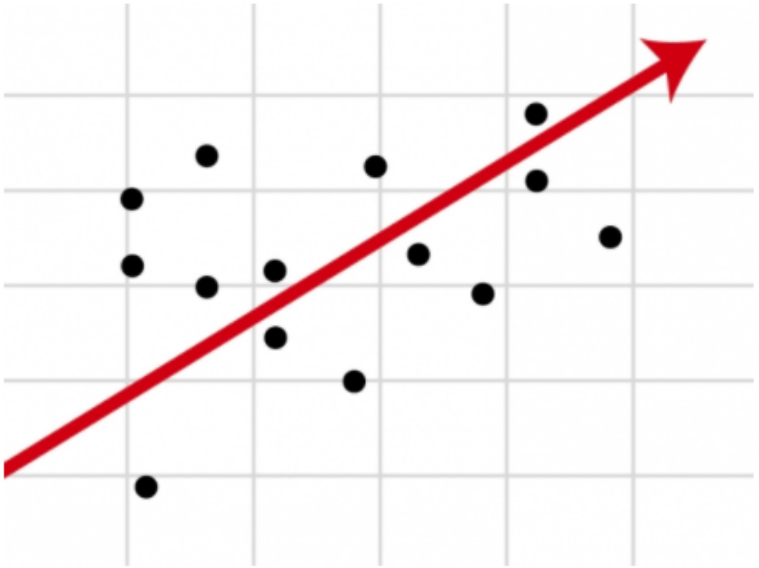
Part B If the president were to throw a tennis ball and bounce it off a wall in the Oval Office to the vice president, seated in a chair at the other focus of the ellipse, how far would the ball travel? (Assume that the path of the ball is level.)



Spot Light on: Climate

This lesson plan will allow you to teach introductory statistics through a linear regression assignment. The lesson plan includes a hands-on computer-based

		classroom activity to be conducted on a dataset of Global Temperature Anomalies (1850-2017). This activity includes a set of inquiry-based questions that will enable your students to apply their understanding of scatter plots, regression equations, correlation coefficients, linear regression, and confidence intervals for slopes. **Thus, the use of this lesson plan allows you to integrate the teaching of a climate science topic with a core topic in Mathematics.**



About Lesson Plan

Questions

Use this lesson plan to help your students find answers to:

1. Use an example to describe linear regression analysis.
2. Determine the difference in the confidence intervals for the slopes for two 30-year period datasets- 1850-1880 (beginning of industrial age) and 1987-2017 (last datapoint). What does the result suggest?
3. Use linear regression analyses to describe how global temperatures have changed from 1850 (pre-industrial)- 2017 (last datapoint).
4. Discuss reasons for global warming and its impact on Earth's climate.

Mathematics Practices		
1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reason of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.		
Social and Emotional Learning: ***Competencies***	**Social and Emotional Learning:** ***Sub-Competencies***	
Self- awareness Social Awareness Self- Management Relationship Skills Responsible Decision-Making	Recognizing the importance of self-confidence in handling daily tasks and challenges. Demonstrate an awareness of the expectations for social interactions in a variety of ways. Demonstrate an understanding of the need for mutual respect when viewpoints differ. Recognize the skills needed to establish and achieve personal and educational goals. Utilize positive communication and social skills to interact effectively with others. Develop, implement, and model effective problem solving and critical thinking skills.	

Assessments (Formative) ***To show evidence of meeting the standard/s, students will successfully engage within:***	**Assessments (Summative)** ***To show evidence of meeting the standard/s, students will successfully complete:***
<u>Formative Assessments:</u> ● Entry and Exit Slips ● Quizzes ● Self Assessments	**<u>Benchmarks:</u>** ● Chapter Tests ● Projects **<u>Summative Assessments:</u>** ● District Assessments ● Midterms ● Standardized Tests

Differentiated Student Access to Content: **Teaching and Learning *Resources/Materials***			
Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core Resources**
● Textbooks websites ● Achieve the core ● Khan Academy ● Desmos	● Skill building worksheets ● Math Manipulatives	● Dictionary for native languages ● Videos in their native language.	● Leveled Assessments ● Enrichment worksheets

Supplemental Resources
Technology: ● **Chromebooks, Graphing Calculators, Online math manipulatives** **Other:** ● **Zoom and Google Meets, Google Classroom, Interactive Textbooks**

Differentiated Student Access to Content: **Recommended *Strategies & Techniques***			
Core Resources	**Alternate Core Resources** ***IEP/504/At-Risk/ESL***	**ELL Core Resources**	**Gifted & Talented Core**
● **Deliver instruction utilizing varied learning styles including audio, visual, and**	● **Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of**	● **Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review,**	● **Create an enhanced set of introductory activities, integrate active teaching/learning**

tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics, repeat	**skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, 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 into segments of shorter tasks.**	**oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric.**	**opportunities, incorporate authentic components, propose interest-based extension activities, and connect student to related**

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept: Creativity and Innovation**	
	Core Ideas:	Solutions to the problems faced by a global society require the contribution of individuals with different points of view and experiences.
	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 community member and employee. **Attend to financial well-being.** **Consider the environmental, social and economic impacts of decisions.** **Demonstrate creativity and innovation.** **Utilize critical thinking to make sense of problems and persevere in solving them.**	

	Model integrity, ethical leadership and effective management. **Plan education and career paths aligned to personal goals.** **Use technology to enhance productivity, increase collaboration and communicate effectively.** **Work productively in teams while using 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: *N.J.S.A. 18A:35-4.35*		Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*	X	Standards in Action: *Climate Change*