Trimester:	Unit Title:	Recommended Instructional Days:
2	**Systems of Linear Equations**	**11-14 days**

Domain

Strand:

8.EE.C.7 Solve linear equations in one variable.

a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers)

b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

8.EE.C.8 Analyze and solve pairs of simultaneous linear equations.

a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

b. Solve systems of two linear equations in two variables using the substitution method and estimate solutions by graphing the equations. Solve simple cases by inspection. *For example: by inspection, conclude that 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6. Solve 3x + y = 30 and y = 2x using the substitution method; Solve y = 3x + 1 and y = -2x + 7 using the substitution method.*

c. Solve real-world and mathematical problems leading to two linear equations in two variables. *For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.*

Key:

Major Cluster **Supporting Cluster** **Additional Cluster** **Climate Change Opportunity**

Progress Indicators: ◊ Tests ◊ Homework / Classwork ◊ Projects ◊ Formative Assessments ◊ Summative Assessments

Mathematical 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.

Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit

Essential Questions:
What is meant by the "solution" to a system of equations?
How can you solve a system of equations by graphing?
How do you use substitution to solve a system of linear equations?
When is it easier or more beneficial to solve a system of equations by substitution?
How do you solve a system of linear equations by adding or subtracting?
How do you solve a system of linear equations by multiplying?
How are slopes and y-intercepts related to the number of solutions of a system of linear equations?
How do you solve a system with no solutions or infinitely many solutions?

Essential Understandings:
Systems of equations can be solved using various methods.
Systems of equations can be used to solve both real-world and mathematical problems.
Systems of equations can have one, none, or infinitely many solutions.

Vocabulary:
- system of linear equations
- solution of a system of linear equations

**Encourage students to practice using the unit vocabulary as they talk and write about mathematics. Understanding vocabulary will aid their understanding of the concepts. When students encounter a new definition, encourage them to write in their Big Ideas Student Journals. They will revisit these definitions during the Chapter Review.*

Suggested Activity Descriptions:

- STEAM Video *Gold Alloys* and Performance Task *Mixing Alloys*
- Getting Ready for Chapter 5 Chapter Exploration TB page 198
- Chapter Exploration TB page 199 Using a Graph to Solve a Problem
- Chapter Explorations TB page 205 Solving Systems Algebraically and Writing and Solving Systems of Equations
- Chapter Explorations TB page 211 Solving a System Algebraically
- Chapter Exploration TB page 219 Exploring Solutions of Systems
- Puzzle Time for each section (teacher resources)
- Enrichment and Extension Worksheets

Interdisciplinary Connections:

Science:

1. Question # 20 TB page 204 *Problem Solving:* A generator contains 60 gallons of fuel and uses 2.5 gallons per hour…
2. Question # 36 TB page 218 *Modeling Real Life:* A laboratory uses liquid nitrogen tanks of two different sizes…

Physical Education:

1. Example # 3 TB page 202 *Modeling Real Life:* In football, each extra point made is 1 point and each goal made is 3 points…
2. Question # 21 TB page 204 *Problem Solving:* You and your friend are in a canoe race…
3. Question # 15 TB page 208 *Dig Deeper:* The length of a volleyball court is twice its width…
4. Question # 15 TB page 215 A fitness instructor purchases exercise bikes and treadmills for two gyms…
5. Question # 17 TB page 216 *Modeling Real Life:* You can jog around your block twice and the park once in 10 minutes…
6. Question # 39 TB page 218 *Problem Solving:* The table shows the activities of two tourists at a vacation resort…

Technology:

1. Question # 13 TB page 202 *Dig Deeper*: Two apps on your phone take away points for using your phone at school…

Language Arts:

1. Writing Question #10 TB page 201 Explain why the solution of a system of linear equations is the point of intersection of their graphs.
2. Reasoning Question # 26 TB page 204 Is it possible for a system of two linear equations to have multiple solutions? Explain.
3. Reasoning Question # 7 TB page 207 Does solving a system of linear equations by graphing give the same solution as solving by substitution? Explain.

Spot Light On: Ron Buckmire

Social and Emotional Learning: *Competencies*	**Social and Emotional Learning: *Sub-Competencies***
SEL 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. • Identify and apply ways to persevere through alternative methods to achieve 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:***
Formative Assessments: • Teacher Observations • Exit Tickets • Quizzes • Self Assessments • Big Ideas Student Journals • Homework/Classwork • Teacher Created Assessments • Progress Monitoring Items • Formative Assessment Tips in Big Ideas Teacher Edition	**Benchmarks & Summative Assessments:** • Chapter/Unit Assessments • Standardized Tests • Project-based Assessments • Benchmark 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**
Big Ideas Student Journal, Dynamic Assessment System, iReady, Khan Academy, Illustrative Mathematics, Learn360, TeacherTube, BrainPOP, Freckle, LearnZillion, MobyMax, 60 minutes of weekly ST Math, Edulastic, Achieve the Core,	Reteach worksheets, Extra Practice worksheets, Math manipulatives, Scaffolding Instructions in each section of textbook, Tutorial Videos, Skills Review Handbook, Skills Trainer	Dictionary for native language, Video tutorial in native language, ELL Support in each section of Big Ideas Teacher's Edition	ST Math Challenge Objectives, G&T tasks, Enrichment and Extension worksheets, Art of Problem Solving, Leveled assessments

Desmos			
Supplemental Resources			
Technology: • Chromebooks • Scientific Calculators • Online math manipulatives **Other:** • Google Classroom, Google Meets, Schoology, Interactive Workbooks • Illustrative Mathematics • insidemathematics.org • National Library of Virtual Manipulatives			
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 tactile/kinesthetic, provide individual instruction as needed, modify assessments and/or rubrics.	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/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.	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 students to related content.

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept(s):** Planning and Budgeting	
	Core Ideas:	A budget aligned with an individual's financial goals can help prepare for life events.
	Performance Expectation/s:	9.1.8.PB.1: Predict future expenses or opportunities that should be included in the budget planning process.
	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*	**X**	LGBT and Disabilities Law: *N.J.S.A. 18A:35-4.35*	**X**	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*		Standards in Action: *Climate Change*