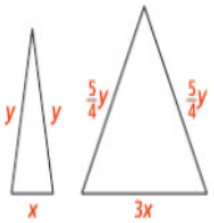
Algebra 2 Level B Unit 2

Marking Period	Unit Title:	Recommended Instructional Days
1	Systems of Equations and Inequalities	10-15 days

Domain: Algebra		
NJSLS Strand: **Key**: ■ Major Cluster □ Supporting Cluster ◎ Additional Cluster ■ **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.* ■ **A.CED.A.2** Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. ■ **A.CED.A.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and	***Progress Indicator:*** ***Tests • Quizzes • Practice problems for homework • Online textbook • Worksheets • Leveled assessments***	**Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-CLKS within Unit** **<u>Essential Question/s:</u>** **What does the solution of the system represent?** **What does the intersection of two lines represent?** **How do you know if an ordered pair is not a solution of a linear inequality?** **How do you determine which inequality symbol to use?** **<u>Activity Description</u>:** Solve Systems of Equations by Graphing Solve Systems of Equations by Elimination Solve Systems of Equations by Substitution System Applications Graphing Linear Inequalities Graphing Systems of Linear Inequalities Linear Inequalities Application Problems **<u>Interdisciplinary Connections</u>: Physical Education: 2.2 Physical Wellness; Physical Fitness; NJSLS#: 2.2.12.PF.2** In a basketball game, Marlene made 16 baskets. Each of the baskets was worth either 2 or 3 points and she scored a total of 39 points. Let x represent

interpret solutions as viable or nonviable options in a modeling context. *For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.* **A.REI.C.5 (+)** Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. **A.REI.C.6** Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. **A.REI.D.12** Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.		the number of two-point shots and y represent the number of 3-point shots. Write a system of equations in terms of x and y to model the situation. **Answer**: x + y = 16 2x + 3y = 39 **Example Tasks:** **Task 1:** Solve each using two different methods. Explain which method you found to be more efficient. 3x – 9y = 3 7x – 3y = 20 y = 1/2x - 6 6x – 3y = -24 5x + 3y = 16 2x + 6y = 19 **Answer:** (-5,-2) (3,1/3) (11,-1/2) **Task 2:** Solve. Show all your work and explain your steps. The triangle on the left has a perimeter of 14. The triangle on the right has a perimeter of 21. What are x and y?

		Task 2 **Solve. Show all your work and explain your steps.** The triangle on the left has a perimeter of 14. The triangle on the right has a perimeter of 21. What are x and y?  **Answer:** (2,6) **Task 3:** Three hundred fifty-eight tickets to the school basketball game on Friday were sold. Student tickets were $1.50 , and non-student tickets were $3.25 The school made $752.25. How many student and non-student tickets were sold? **Answer:** 235 student tickets and 123 non-student tickets were sold. **At the end of each topic please review the Assessment Practice and Performance Tasks questions.**

		ASSESSMENT PRACTICE **36.** One equation in a system of equations with one solution is $4x + 2y = 14$. Determine if each equation could be the second equation in the system. Select **Yes** or **No.** **a.** $2x + y = 7$ ○ Yes ● No **b.** $3x - 6y = -12$ ● Yes ○ No **c.** $2x + 6y = 32$ ● Yes ○ No **d.** $-3x + 10y = 1$ ● Yes ○ No **e.** $2x + y = 5$ ○ Yes ● No

Performance Task Each Sophomore, Junior, and Senior at a high school collected aluminum cans and plastic bottles. The table shows the average number of cans and bottles collected per student, by grade level during a 3 week recyling drive.

	Sophomores	Juniors	Seniors
Week 1	3	4	4
Week 2	4	4	3
Week 3	5	6	7

Part A Write a system of equations to represent the situation.

Part B Find the solution of the system of equations you found in Part A.

Part C What does your solution to part B represent in terms of this scenario?

<table>
<tr><td></td><td></td><td>Spotlight on:
Text Resource:
“Information Technology and the U.S. Workforce: Where Are We and Where Do We Go from Here?”

Recent years have yielded significant advances in computing and communication technologies, with profound impacts on society. Technology is transforming the way we work, play, and interact with others. From these technological capabilities, new industries, organizational forms, and business models are emerging.</td></tr>
<tr><td colspan="2">Mathematics Practices</td><td rowspan="4">Climate Change Examples:

• 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. Climate Change Example: Students may create equations and/or inequalities to represent the economic impact of climate change.
• Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods. Climate Change Example: Students may represent constraints describing the economic impact of climate change by equations, inequalities, and/or by systems of inequalities, and interpret solutions as viable or nonviable options.</td></tr>
<tr><td colspan="2">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.</td></tr>
<tr><td>Social and Emotional Learning:
Competencies</td><td>Social and Emotional Learning:
Sub-Competencies</td></tr>
<tr><td></td><td></td></tr>
</table>

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:***
Formative Assessments: ● Entry and Exit Slips ● Quizzes ● Self Assessments	**Benchmarks:** ● Chapter Tests ● Projects ● LinkIt! **Summative Assessments:** ● District Assessments ● 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**

• Savvas Envision • 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, Smartboards**

Other:
- **Zoom and Google Meets, Schoology, 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 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/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 student to related**

NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS	**Disciplinary Concept: Digital Citizenship**	
	Core Ideas:	**Digital communities influence many aspects of society, especially the workforce. The increased connectivity between people in different cultures and different career fields have changed the nature, content, and responsibilities of many careers.**
	Performance Expectation/s:	**9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).**
	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*	x	Diversity & Inclusion: *N.J.S.A. 18A:35-4.36a*	X	Standards in Action: *Climate Change*