(8th) Unit 5: Systems of Linear Equations

Content Area: **Math**
Course(s): **Math**
Time Period: **January**
Length: **4 weeks**
Status: **Published**

Unit Overview

In this unit, students will learn about the following topics:

- Solving linear systems of equations by graphing

- Solving linear systems of equations by substitution

- Solving linear systems of equations by elimination

- Solving linear systems with special solutions (infinitely many solutions or no solution)

Enduring Understandings

SWBAT:

- Solve systems of linear equations by graphing

- Determine whether an ordered pair is a solution to a system of linear equations

- Solve systems of linear equations by substitution

- Solve systems of linear equations by elimination

- Solve systems of linear equations with special solutions

- Convert equations to slope-intercept form to determine the number of solutions

- Solve real-world problems modeled by systems of linear equations

Essential Questions

How can we:

- graph a linear equation?
- find the point where two lines intersect?
- identify the point of intersection as the solution to the linear system?

- solve a linear system by graphing?

How can we:

- solve a linear equation in two variables for either variable?
- solve a system of linear equations by substitution?

How can we:

- add equations in a linear system?
- simulate subtracting equations in a linear system by multiplying by a negative and adding the equations?
- use the multiplication property of equality to produce equivalent equations?
- solve a system of linear equations by elimination?

How can we:

- determine the number of solutions of a system?
- solve a system of linear equations with any number of solutions?

Instructional Strategies & Learning Activities

- Guided Practice
- Daily Do Now
- Extra Practice & Puzzle Time (Resources)
- Scavenger Hunts
- Coloring Activities
- Task Cards (Around the World)
- Maze Activities
- Quizizz Online Assignments
- Kahoot! Online Games
- GimKit Online Games

Integration of 21st Century Themes and Skills

CRP.K-12.CRP1.1	Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.
CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through

	experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
TECH.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
TECH.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.

Technology & Design Integration

CS.6-8.8.1.8.AP.6	Refine a solution that meets users' needs by incorporating feedback from team members and users.
CS.6-8.8.1.8.DA.5	Test, analyze, and refine computational models.
TECH.8.1.8.A.1	Demonstrate knowledge of a real world problem using digital tools.
TECH.8.1.8.A.CS1	Understand and use technology systems.
TECH.8.1.8.B.CS1	Apply existing knowledge to generate new ideas, products, or processes.
TECH.8.1.8.F	Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
TECH.8.2.8.D.CS1	Apply the design process.

Interdisciplinary Connections

ELA.L.KL.8.2.A	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases.
ELA.L.KL.8.2.B	Gather vocabulary knowledge when selecting a word or phrase important to comprehension or expression.
ELA.L.VL.8.3.A	Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
ELA.L.VL.8.3.B	Analyze the impact of specific word choices on meaning and tone.
ELA.L.VL.8.3.C	Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., precede, recede, secede).
ELA.L.VL.8.3.D	Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.
VPA.1.3.8.D.2	Apply various art media, art mediums, technologies, and processes in the creation of allegorical, theme-based, two- and three-dimensional works of art, using tools and technologies that are appropriate to the theme and goals.

Differentiation

Definitions of Differentiation Components:

- Content – the specific information that is to be taught in the lesson/unit/course of instruction.
- Process – how the student will acquire the content information.
- Product – how the student will demonstrate understanding of the content.

- Learning Environment – the environment where learning is taking place including physical location and/or student grouping

Differentiation occurring in this unit:

- High-achieving students will assist low-achieving students in mixed ability groupings for games and activities.
- High-achieving students can complete sudoku puzzles and logic puzzles as extension activities.
- Limit number/difficulty of problems for low-achieving students to demonstrate mastery.
- Narrow down problem choice to core concepts for low-achieving students.
- Leveled group-based activities, determined by formative assessment.

Modifications & Accommodations

- High-achieving students will assist low-achieving students in mixed ability groupings for games and activities.
- High-achieving students can complete sudoku puzzles and logic puzzles as extension activities.
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- Narrow down problem choice to core concepts for low-achieving students.
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Benchmark Assessments

Schoolwide Benchmark assessments:

- Linkit Benchmarks (Form A in September, Form B in January, Form C in June): Linked to NJSLA standards

Additional Benchmarks used in this unit:

- IXL Diagnostic + continued practice during IXL periods

Formative Assessments

Formative Assessments used in this unit:

- Kahoot! Games

- Quizizz Games

- Homework

- Q & A

- Scavenger Hunts

- Coloring Activities

- Task Cards

- Partner Activities

Summative Assessments

Summative assessments for this unit:

- Chapter Test
- Quizzes

Instructional Materials

1. Big Ideas Math: Math & You 6th Grade Textbook
2. Quizizz
3. Kahoot!
4. Scavenger Hunts
5. Task Cards
6. Coloring Activities
7. GimKit

Standards

MATH.8.EE.C.8.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.
MATH.8.EE.C.8.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.
MATH.8.EE.C.8.c	Solve real-world and mathematical problems leading to two linear equations in two variables.