

# Jan. BI Alg. I Unit 5: Solving Systems of Linear Equations

Content Area: **Math**  
Course(s):  
Time Period: **January**  
Length: **6-8 Weeks**  
Status: **Published**

## Unit Overview

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Solving Systems of Linear Equations by:

- Graphing
- Substitution
- Elimination
- Solving Special Systems of Linear Equations
- Solving Equations by Graphing
- Graphing Linear Inequalities in Two Variables
- Systems of Linear Inequalities

## Enduring Understandings

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SWBAT:

- Solve systems of linear equations by graphing
- Check solutions of systems of linear equations
- Use systems of equations to solve real-life problems
- Solve systems of linear equations by substitution
- Solve systems of linear equations by elimination
- Solve systems of linear equations with either zero or infinitely many solutions
- Use graphing to solve equations with variables on both sides
- Solve linear equations by graphing
- Solve absolute value equations by graphing
- Graph a linear inequalities in two variables
- Graph a system of linear inequalities
- Check solutions of linear inequalities

## Essential Questions

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- How can we solve systems of linear equations by graphing?
- How can we solve systems of linear equations by substitution?
- How can we solve systems of linear equations by elimination?
- How can we solve systems of linear equations with either zero or infinitely many solutions?
- How do we use graphing to solve equations with variables on both sides?
- How do we graph a linear inequality in two variables?
- How can we graph a system of linear inequalities?

## Instructional Strategies & Learning Activities

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

## Integration of Career Readiness, Life Literacies and Key Skills

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TECH.9.4.8.IML.7	Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose (e.g., 1.2.8.C2a, 1.4.8.CR2a, 2.1.8.CHSS/IV.8.AI.1, W.5.8, 6.1.8.GeoSV.3.a, 6.1.8.CivicsDP.4.b, 7.1.NH. IPRET.8).
TECH.9.4.8.CI.4	Explore the role of creativity and innovation in career pathways and industries. An individual's strengths, lifestyle goals, choices, and interests affect employment and income.
TECH.9.4.8.IML.12	Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.
WRK.9.2.8.CAP.10	Evaluate how careers have evolved regionally, nationally, and globally.
TECH.9.4.8.GCA.2	Demonstrate openness to diverse ideas and perspectives through active discussions to achieve a group goal.
TECH.9.4.8.GCA	Global and Cultural Awareness
WRK.9.2.8.CAP.12	Assess personal strengths, talents, values, and interests to appropriate jobs and careers to maximize career potential.
WRK.9.2.8.CAP.3	Explain how career choices, educational choices, skills, economic conditions, and personal behavior affect income.

TECH.9.4.8.IML.1	Critically curate multiple resources to assess the credibility of sources when searching for information.
TECH.9.4.8.DC.5	Manage digital identity and practice positive online behavior to avoid inappropriate forms of self-disclosure.
TECH.9.4.8.CT	Critical Thinking and Problem-solving
TECH.9.4.8.TL.2	Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).
WRK.9.2.8.CAP.2	Develop a plan that includes information about career areas of interest.
TECH.9.4.8.GCA.1	Model how to navigate cultural differences with sensitivity and respect (e.g., 1.5.8.C1a).
WRK.9.2.8.CAP.4	Explain how an individual's online behavior (e.g., social networking, photo exchanges, video postings) may impact opportunities for employment or advancement.
TECH.9.4.8.TL.3	Select appropriate tools to organize and present information digitally.
TECH.9.4.8.IML.3	Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).
WRK.9.2.8.CAP	Career Awareness and Planning
WRK.9.2.8.CAP.1	Identify offerings such as high school and county career and technical school courses, apprenticeships, military programs, and dual enrollment courses that support career or occupational areas of interest.
TECH.9.4.8.IML.4	Ask insightful questions to organize different types of data and create meaningful visualizations.  There are variety of resources available to help navigate the career planning process.

## Technology and Design Integration

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CS.6-8.8.2.8.ITH.2	Compare how technologies have influenced society over time.
CS.6-8.8.1.8.IC.1	Compare the trade-offs associated with computing technologies that affect individual's everyday activities and career options.
CS.6-8.8.2.8.ITH.1	Explain how the development and use of technology influences economic, political, social, and cultural issues.
CS.6-8.8.1.8.DA.1	Organize and transform data collected using computational tools to make it usable for a specific purpose.
CS.6-8.8.2.8.ED.2	Identify the steps in the design process that could be used to solve a problem.
CS.6-8.8.1.8.DA.3	Identify the appropriate tool to access data based on its file format.
CS.6-8.8.1.8.CS.4	Systematically apply troubleshooting strategies to identify and resolve hardware and software problems in computing systems.
CS.6-8.8.1.8.DA.2	Explain the difference between how the computer stores data as bits and how the data is displayed.

## Interdisciplinary Connections

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LA.RI.8.1	Cite the textual evidence and make relevant connections that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
LA.RI.8.2	Determine a central idea of a text and analyze its development over the course of the text,

	including its relationship to supporting ideas; provide an objective summary of the text.
LA.W.8.1.A	Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
LA.W.8.1.B	Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text.
LA.RI.8.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.
LA.W.8.1.D	Establish and maintain a formal style.
LA.RI.8	Reading Informational Text
LA.RI.8.8	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.
LA.W.8.1.E	Provide a concluding statement or section that follows from and supports the argument presented.
LA.SL.8.1.C	Pose questions that connect the ideas of several speakers and respond to others' questions and comments with relevant evidence, observations, and ideas.
LA.SL.8.1.D	Acknowledge new information expressed by others, and, when warranted, qualify or justify their own views in light of the evidence presented.

## Differentiation

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- Understand that gifted students, just like all students, come to school to learn and be challenged.
- Pre-assess your students. Find out their areas of strength as well as those areas you may need to address before students move on.
- Consider grouping gifted students together for at least part of the school day.
- Plan for differentiation. Consider pre-assessments, extension activities, and compacting the curriculum.
- Use phrases like "You've shown you don't need more practice" or "You need more practice" instead of words like "qualify" or "eligible" when referring to extension work.
- Encourage high-ability students to take on challenges. Because they're often used to getting good grades, gifted students may be risk averse.
- **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:**

Additional support for struggling learners will be available.

Challenges will be offered to students requiring additional depth of knowledge.

## **Modifications & Accommodations**

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Refer to QSAC EXCEL SMALL SPED ACCOMMODATIONS spreadsheet in this discipline.

### **Modifications and Accommodations used in this unit:**

IEP and 504 accommodations will be utilized.

## **Benchmark Assessments**

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**Benchmark Assessments** are given periodically (e.g., at the end of every quarter or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.

### **Schoolwide Benchmark assessments:**

Aimsweb benchmarks 3X a year

Linkit Benchmarks 3X a year

### **Additional Benchmarks used in this unit:**

## **Formative Assessments**

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Assessment allows both instructor and student to monitor progress towards achieving learning objectives, and can be approached in a variety of ways. **Formative assessment** refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. It includes effective tools for helping to shape learning, and can even bolster students' abilities to take ownership of their learning when they understand that the goal is to improve learning, not apply final marks (Trumbull and Lash, 2013). It can include students assessing themselves, peers, or even the instructor, through writing, quizzes, conversation, and more. In short, formative assessment occurs throughout a class or course, and seeks to improve student achievement of learning objectives through approaches that can support specific student needs (Theal and Franklin, 2010, p. 151).

### **Formative Assessments used in this unit:**

- Kahoot! Games
- Quizizz Games
- Homework
- Q & A
- Scavenger Hunts
- Coloring Activities
- Task Cards
- Partner Activities

## Summative Assessments

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**Summative assessments** evaluate student learning, knowledge, proficiency, or success at the conclusion of an instructional period, like a unit, course, or program. Summative assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

### Summative assessments for this unit:

- Chapter Tests
- Quizzes








## Instructional Materials

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1. Big Ideas Math: Algebra 1: A Common Core Curriculum
2. Quizizz
3. Kahoot
4. Scavenger Hunts
5. Task Cards
6. Coloring Activities
7. Resources Book
8. Scientific Calculator
9. Graphing Calculator

## Standards

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|---|----|--|
|  |    | Represent constraints by equations or inequalities, and by     |
|  | 0x | CCSS.Math.Content.HSA  |
|   |    | systems of equations and/or inequalities, and interpret        |
|   |    | solutions as viable or non-viable options in a modeling        |
|   |    | context.   |
|  |    | Prove that, given a system of two equations in two             |
|  | 0x | CCSS.Math.Content.HSA  |
|   |    | variables, replacing one equation by the sum of that           |
|   |    | equation and a multiple of the other produces a system         |
|   |    | with the same solutions.                                       |
|  |    | Solve systems of linear equations exactly and                  |
|  | 0x | CCSS.Math.Content.HSA  |
|   |    | approximately (e.g., with graphs), focusing on pairs of        |
|   |    | linear equations in two variables.                             |
|  | 0x | CCSS.Math.Content.HSA  |
|   |    | Explain why the $\square$ -coordinates of the points where the |

 -REI.D.11



graphs of the equations  $y = f(x)$  and  $y = g(x)$  intersect are the solutions of the equation  $f(x) = g(x)$ ; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where  $f(x)$  and/or  $g(x)$  are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.



 CCSS.Math.Content.HSA

 -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.