

# Mr. Leonardo Lesson Plan

Date: 6/10/25	Grade: 9	Subject: Algebra 1
<b>Topic:</b> System of Equations		
<b>Essential Questions:</b> What does the solution to a system of quadratic and linear equations represent graphically and algebraically? How can you verify solutions to a quadratic/linear system algebraically?		
<b>Learning Target:</b> I can create a series of steps to solve a quad-linear system of equations algebraically in order to verify a solution.		
<b>Vocabulary:</b> linear equation, quadratic equation, solution		
<b>Materials:</b> Smartboard, TI-84 Plus calculator, pen/pencil, notebook, ruler, steps to solving slope intercept form anchor chart card		
<b>Key Points:</b> <ul style="list-style-type: none"><li>• The slope-intercept form of a linear equation is <math>y = mx + b</math>, where <math>m</math> is the slope and <math>b</math> is the y-intercept.</li><li>• The solution to the system of equations is the point <math>(x, y)</math> where the graphs intersect.</li><li>• Graphing both equations on the same coordinate plane helps visualize the solution.</li><li>• Solving the systems algebraically will yield the same solution as graphing the system.</li></ul>		
NYS Standards: <b>AI-A.REI.7a</b> - Solve a system, with rational solutions, consisting of a linear equation and a quadratic equation (parabolas only) in two variables both algebraically and graphically. <b>AI-A.REI.11</b> Given the equations $y = f(x)$ and $y = g(x)$ : i) <b>recognize</b> that each x-coordinate of the intersection(s) is the solution to the equation $f(x) = g(x)$ ; ii) find the solutions approximately using technology to graph the functions or make tables of values; and iii) <b>interpret the solution in context.</b> <b>Notes:</b> Algebra I tasks are limited to cases where $f(x)$ and $g(x)$ are linear, polynomial, absolute value, and exponential functions of the form $f(x) = a(b)^x$ where $a > 0$ and $b > 0$ ( $b \neq 1$ ). Students should be taught to find the solutions approximately by using technology to graph the functions and by making tables of values. When solving any problem, students can choose either strategy.		
<b>Key Takeaways:</b> To practice solving systems of equations algebraically. Equations are given in both slope-intercept and standard form. Vertical and horizontal lines included.		

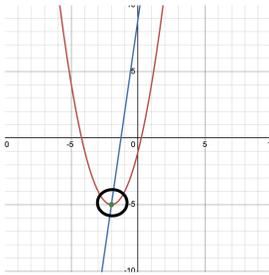
**Warm-up (5 minutes):** Students will be asked to convert two equations into slope-intercept form.

$$-3x - 2y = 12$$

**Illustration/modeling (8 minutes):** I will graph the quadratic function and linear function to show the solution (intersection).

Find the solution below by graphing the systems of equation.

$$y = x^2 + 4x - 1$$
$$y = 7x + 9$$



Solve the system of equations below algebraically.

$$y = x^2 + 4x - 1$$
$$y = 7x + 9$$

Finding y-value

**We do/You do (15 minutes):**

For the first problem students and I will be generating a series of steps to solving quad/linear systems. The discussion will be student-led with minimal guiding questions from the teacher. The second problem the students will be utilizing the steps they generated to complete it independently.

$$y = -x^2 + 9$$
$$-4x + 2y = 12$$

$$y = -x^2 + 9$$
$$-4x + 2y = 12$$

The students will reference the steps written on the anchor chart that have been created by their peers throughout the remainder of the lesson.

At the completion of this, students will be asked to self-assess their knowledge of solving quad-linear equations algebraically using the fist to five method. When raising a fist they will be instructed that keeping a closed fist equals no understanding and raising 5 fingers shows full understanding. This will allow me to focus on specific students that need additional support in the group activity.

**Group/Partner Activity (15 minutes):** Students will be placed with a partner based on seating arrangements/skill level.

The students will reference the steps written on the anchor chart that have been created by their peers throughout the remainder of the lesson.

**Social Emotional Learning:** At the end of the group activity students have been asked “what is your favorite food?” in order to build a classroom environment where students feel a sense of inclusivity and trust with the teacher. It is an opportunity for me to understand students outside of the classroom and generate conversations not regarded to math.

**Differentiation:**

- I will be circulating during the we do and group activity to observe students completing worksheets and to ask clarifying questions and scaffolded support to the card activity.
- Multiple modalities with the same topic. Engaging with the same ideas in many ways provides students multiple opportunities to make sense of a complex concept and provides access points for different types of learners.

**Closure (3 minutes):** Mood meter check in.

## IEP Cheat Sheet

**Period:** \_\_\_\_\_ **Class /Subject:** Algebra 1

**Teacher Name(s):** Mr. Leonardo

<b>IEP Supports / Differentiation</b>	<b>Student Name</b>
<b>Extended Time</b> (tests / assignments)	
<b>Test Read Aloud</b>	
<b>Graphic Organizer</b> (Outlines, Checklists, Rubrics, etc.)	
<b>Breaks</b>	
<b>Refocusing / Redirection Prompts</b>	
<b>Visual Aids</b> (videos, images, samples, etc.)	
<b>Modeling / Examples</b> (Think-aloud/read-aloud, rephrasing)	
<b>Teacher check-ins</b> (one-on-one)	
<b>Positive Reinforcement / Praise / Feedback</b>	
<b>Repetition</b> (task, directions/instructions, etc.)	
<b>Preferential Seating</b>	
<b>Separate Location</b> (no more than 15 students)	
<b><u>Note(s):</u></b>	