Lesson Planning Template

Unit F: Linear Systems
Topic: Solve systems of equations using a method of your choice
AZ State Standard(s): A1.A-REI.C.6: Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables. Include problem solving opportunities utilizing real-world context.
Student Objective Statement: I can efficiently solve a system of equations by graphing, substitution, or the elimination method.

Teacher-Specific Goals

13 Management Considerations in a Blended Learning Classroom

Collaborative Station
Small Group Instruction
Independent Tech Station
Timekeeping
Transitions
Encourage Problem Solving
Behavioral Management Software/Approach
Debriefing with Students
Materials/Software Needed
Room Layout
Tech Troubleshooting
Student Resources
Providing Clear Direction

Notes:	

Plans for Instruction by Group	
Introduction to the lesson or the stations if they are new Whole group mini-lesson before breaking into stations	**<u>Whole Group Mini Lesson:</u>** Complete this 3-Act Math Task with the teacher facilitating each step while students are working in groups (2-3 students per group) **<u>Act 1: Spark Curiosity</u>** Watch this video together: https://youtu.be/e8Gnsn9stwk Ask students: What are you wondering? What comes to mind while watching this? After getting students' ideas/input, be sure to explain (if it hasn't come up): The middle object is a scale. I wonder how much each item weighs? **<u>Act 2: Reveal More Information</u>** Watch this video together: https://youtu.be/8XXZnZ9S0I8 Ask students: What did you notice? What do you wonder? (You may replay this video multiple times and invite students to come to the board and pause the video on critical points while explaining their thinking) Show these two images on the board:

(The weight of 4 bottles and 5 glue sticks is 679 grams)

(The weight of 3 bottles of glue and 12 glue sticks is 680 grams)

Explain: This is a system of equations! We have two unknown values (the weight of a bottle of glue and the weight of a glue stick), and we are trying to figure out both values. We also have two pieces of information (how much certain numbers of each object added together weighs).

Ask students: How much does each item weigh? Give students time to work together to form a solution with their groups. Invite them to use any method, including any methods they have already been learning about which help them solve systems of equations.

Monitor students while working in order to determine when to show the solution. Invite groups to come to the board to write their guess for each item (draw a table on the board to keep track of guesses)

Act 3: Reveal the Solution
Watch this video together: https://youtu.be/12U_CJEaPw0

Were students correct? How did they find their solution? Invite multiple groups to share.
Ask:

- Did every group choose the same method?
- Why might you choose one method over another for solving?
- How does this relate to what we have been learning the past couple of weeks about how to solve systems of equations?

State the objective for the day and explain that it will be up to students to choose the best method for solving. Sometimes we may prefer a certain method, but that doesn't always mean it's the best method. They will be working to learn how to be EFFICIENT when solving systems, and work to choose the best method depending on the information they are given. While there is no one right way to do each problem, sometimes there are more efficient ways to solve some problems.

Stations	**Small Group Instruction**	**Technology/Independent**	**Collaboration/ Maniuplatives**
	Almost there students (Group 1): Materials: Systems of Equations Practice Worksheet, Pencil Ask students to determine their order of preference for solving systems of equations using each of the three methods (graphing, substitution, elimination). Once they have reflected, ask them to share why they chose the order they chose (e.g., Why do you like substitution best? Why is elimination more difficult?) Direct them to the system of equations on the worksheet. Ask them to examine it, then decide individually which method they want to try to use to solve it. Then give time for students to work individually, and remind them that now is a great time to ask the teacher or each other any questions while working.	Students work on ALEKS. They will be submitting an exit ticket showing what they accomplished and something specific they learned while working at this station.	Materials: Scales for weighing small objects Students work in pairs or groups of 3 to create a real-world problem like the problem in the warm-up/mini lesson today. They can use any items in the classroom to form their problem. Each team will record a video to present their problem on Flip. They must document their answer so they can confirm whether other groups solve their problem correctly.

	Once students are finished, have them compare their solutions. If they chose different methods, have them explain their process for solving. As a group, decide upon what we believe the solution is. Have students individually choose a second method for solving the same system. Then give them time to work out the problem, but in a different way. Allow them to see whether they come to the same solution as the first time they solved the system. If time allows, have students complete the problem using the third method. Ask students: Why is there more than one way to solve the same problem? Why might it be important to become proficient at solving problems in more than one way? Direct them to the last question on the worksheet and have them respond before moving to the next station.		Tomorrow, the group will choose another group's video on Flip and solve their problem, and put their answer in the comments. Groups will review the comments and provide feedback accordingly to help a group if the answer is incorrect, or confirm if the answer is correct.
	On track students (Group 2): Materials: mini whiteboards Teacher will present various systems of equations and students will solve each system individually on their whiteboard. Then they will have a "showdown" on the countdown of 3 where they show each other their work and solution and must compare to determine what the correct solution is. Invite reflection from students about the different ways they are solving the same problem. Be sure to include systems which are presented in different formats (include at least 1 which could easily be solved using graphing, 1 using substitution, 1 using		

	elimination). Reinforce the idea that there is always more than one way to solve the problem, but sometimes one way may be more efficient.		
	Ready for More students (Group 3): Materials: Chromebooks, Google Form for submitting their created problems Explain that tomorrow we will be doing a unit review, and that part of our objective in this unit has been to apply systems of equations in real-world contexts. Our class needs to continue developing our abilities to transform real-world contexts into algebraic equations. Invite students to research real-world examples for systems of linear equations, then create an original problem which would be useful for our class during our review tomorrow. Students will submit their written problem on a Google form, and the problems will be added to a Nearpod lesson for tomorrow.		
Rotation Order	**Small Group Instruction (Teacher-Led)**	**Technology/Independent**	**Collaboration/Manipulatives**
Rotation 1	Group 1 - Almost There	Group 2	Group 3
Rotation 2	Group 2 - On Track	Group 3	Group 1
Rotation 3	Group 3 - Ready for More	Group1	Group 2
Assessment/ Accountability	Exit Ticket where students account for what they learned at the ALEKS/independent station		
Closing	Debrief on station expectations and students' success. Reflection and input on the learning experience: ● What did you learn today? (or a practice problem) ● What did you like about today's stations? ● What would add or change to the stations?		

Student Groups		
Group 1 - Almost There	Group 2 - On Track	Group 3 - Ready for More
1. 2. 3. 4. 5. Student Roles	1. 2. 3. 4. 5. Students Roles	1. 2. 3. 4. 5. Student Roles

Personal Reflection on the Lesson	
Glows	
Grows	
Next Steps	