Curriculum Sample Template
Max. 8 Pages

Grade Level	9	**Content Area**	Mathematics (Algebra)
Course Title (grades 9-12 Only)	Algebra I		
Length of Unit	2 weeks (1 week on lessons, 1 week on project)	**Time of Year**	Block 8 of 10
Expected Prior Knowledge *The knowledge/skills mastered earlier in the year foundational to the mastery of the required Standard in the current sample.*	Slope intercept form, graphing data to form a line. Using two points to create an equation. Solving an equation for a variable		
Alignment to Program of Instruction *Briefly outline methods of instruction found in this sequence of lessons that align to the Program of Instruction described in A.3.*	The culminating project that students will be completing is a real life application of the standard. This fits with the rigor/ relevance framework outlined in the Program of Instruction.		
Standard Number and Description *List the Number* and full description for the required Standard.*	HS.A-REI.6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations with two variables.		
Summative Assessment *Describe a cumulative and comprehensive activity, clearly separate from instruction and guided or independent practice, which allows each student to individually demonstrate mastery of the required Standard. A copy of the summative assessment must be attached to the curriculum sample.*	Students will be completing a paper pencil test in which they will solve a system of equations using substitution. Students will have to check their answers graphically.		
Scoring Scale and Mastery Level *Explain how the assessment is scored, to include points per question, how points are awarded, total points possible, criteria necessary to demonstrate mastery, and grading scale. A copy of the answer key and scoring rubric (whichever applicable) must be attached to the curriculum sample.*	The summative assessment will consist of 5 questions. Each question will be worth 2 points. Students will receive 1 point for correctly solving the system of equations, and 1 point for graphing the system to check their work. The following will be the grading scale: 0-6 = No Grade (required retake), 7 = C, 8 = B, 9-10 = A. Students will demonstrate mastery with a score of 7 (70%) or better.		
Materials/Resources Needed	Data on companies offering voluntourism, graph paper, ruler, colored pencils, poster board, class computers or computer lab with Internet access, document camera and projector.		

* ***Standard Number****: For English Language Arts (Reading and Writing), use Grade, Strand, Standard (e.g., 3.RI.2). For K-8 Math, use Grade, Domain, Standard (e.g., 6.EE.7). For HS Math, use Conceptual Category-Domain, Standard (e.g., A-REI.6). For Science, use Grade, Strand, Concept, PO (e.g., 4.1.3.1).*

Lesson (add as needed)	**Instruction**	**Student Activities**
1	Students are introduced, through an article, to voluntourism. The article details a mother and sons experiences in India Students are asked to write a summary of the article. Students are then told that different companies offer different rates for different amounts of time. Students are introduced to their project which will be a presentation on what they want to do for summer. The assignment is as follows: Through research, find one summer program that you would love to attend. Find out the details about the program: the location, the dates, the ages of participants, the supervision, what is included in the cost and what is not included in the cost. Also, save some research on competing programs to show a comparison in your presentation. Make a mathematical analysis of the total cost of attending this program and the alternate program. Be sure to document the sources of your information. Illustrate at least one category of costs by using a table of values, a line graph, and an equation or a function to describe the relationship between two variables. Use the same tools to compare the alternate program. Then show when the two programs would be equal for cost and time by solving a system of equations and graphing it. Write a letter to your family, persuading them to allow you to attend this program. Sometimes organizations like Rotary International or American Association of University Women (AAUW) fund certain summer programs. If this is the case, you can address your letter to	Students will read an article Students will write a summary of the article Students will solve equations for a variable Students will solve an equation for a variable as a ticket out of class Students will solve homework problems in which they will solve for a variable example : Solve for y; $3x - 6y = 18$ Subtract 3x from each side $\underline{-3x} \quad \underline{-3x}$ $\underline{-6y} = \underline{-3x} + \underline{18}$ Divide each side by -6 $-6 \quad -6 \quad -6$ $y = \frac{1}{2}X - 3$ simplify

	them. Your letter must refer to your mathematical analysis, which must be attached to the letter. Your letter and your mathematical analysis must be posted on a presentation board along with any illustrations, photos or other information that you think will be supportive to your request. At this time the teacher will inform the students that they already have all of the necessary skills to complete this project except for the ability to solve a system of equations. The teacher will inform the students that they will be introduced to this skill in the next couple of lessons so that they can complete their project Next the students will review how to solve an equation for 1 variable. Students will be given several equations and asked to solve for x or y. The teacher will circulate the classroom helping individuals who need it. At the conclusion of class the students will be given a problem to finish that will be their ticket out of class. Students will be given homework in which they will have to solve for variable a There will be a separate rubric for the project that is not included in this curriculum sample. The project is introduced so that it can be demonstrated how this instruction relates to the rigor/ relevance framework (Program of Instruction), and how the standard will be used in a real-world example.	
2	Students will be given bell work in which they will solve for a variable (y) reviewing their previous day's work. Students will then be asked to graph two equations using slope, intercept, form. The equations will come from their solving for (y) invtheir bell work. Students will be called on to show and explain their solutions and graphs in the front of the class using the document camera. Students will now be told that where the graphs intersect is called the solution for that system of equations. When they have two unknowns they can solve for each of them by graphing or by a method called substitution. Students will now be shown an example of solving by substitution. After several examples by the teacher the students will attempt several as a class. Next students will be grouped and asked to solve some systems of equations and check their answers by graphing.	Students will solve for a variable Students will , as a class, solve a system of equation using substitution Students will, in teams, solve and graph a system of equations Students will, in teams, demonstrate their solutions Students will individually solve and graph systems of equations example: $2y + 6x = 18$ and $4x + y = 12$ solve the second equation for y: $y = -4x + 12$ substitute in first equation for y: $2(-4x + 12) + 6x = 18$

	When students have completed their problems the groups will demonstrate their solutions for the class using the document camera. Students will then be given homework in which they will solve and graph systems of equations Students will be given bell work in which they will solve for a variable (y), reviewing their previous day's work. Students will then be asked to graph two equations using slope intercept form. The equations will come from their solving for y in their bell work. Students will be called to show and explain their solutions and graphs in the front of the class on using the document camera. Students will now be told that where the graphs intersect is called the solution for that system of equations. That when they have 2 unknowns they can solve for each of them by graphing, or by a method called substitution. Students will now be shown an example of solving by substitution. After several examples by the teacher the students will	solve for x: 2(-4x + 12) + 6x = 18 distributive property -8x + 24 + 6x = 18 combine like terms -2x + 24 = 18 subtract 24 from each side -2x = -6 divide by each side by -2 x = 3 Substitute x back into the second equation: y = -4(3) + 12 y = 0 Solution for system of equation (3,0)
3	Students are asked to solve and graph a system of equation for bell work. After checking bell work students will be given several problems to practice for their test. Teacher will circulate throughout the room to check for understanding and help students with individual needs.	Students will solve and graph systems of equations
4	Students will review solving and graphing a system of equations. Students will take the summative assessment in which they will solve and graph systems of equations. After students finish their assessment they will start to research for their project.	Students will solve and graph systems of equations Students will begin research work on projects

Paste Summative Assessment Here:

Solving Systems of Equations by Substitution

- Solve each system of equations (1 point)
- Graph each system of equations to check your answer (1 point)

1. y = -3x +5

5x – 4y = -3

2. -4x + y = 6

$-5x - y = 21$

3. $-5x + y = -2$
$-3x + 6y = -12$

4. $-5x + y = -3$
$3x - 8y = 24$

5. $x + 3y = 1$
$-3x - 3y = -15$

Paste Answer Key/Scoring Rubric Here:

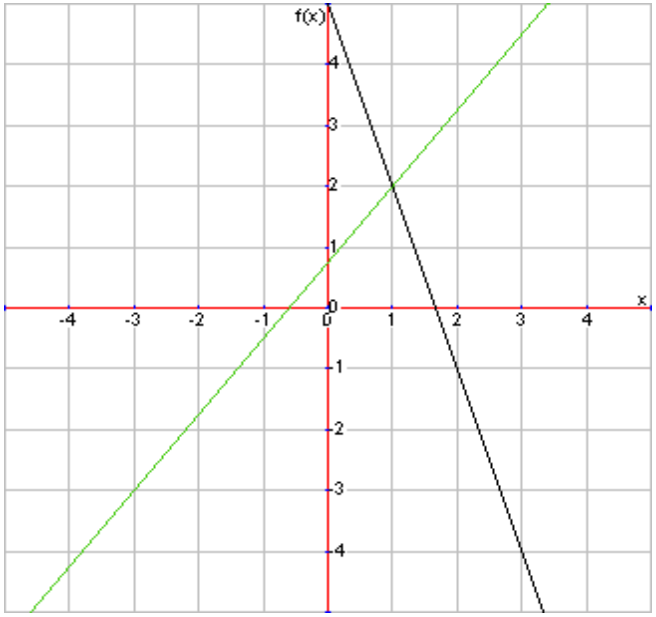
The summative assessment will consist of 5 questions. Each question will be worth 2 points. Students will receive 1 point for correctly solving the system of equations, and 1 point for graphing the system to check their work. The following will be the grading scale: 0-6 = No Grade (required retake), 7 = C, 8 = B, 9-10 = A. Students will demonstrate mastery with a score of 7 (70%) or better.

Solving Systems of Equations by Substitution
Answer Key

1. $y = -3x + 5$
$5x - 4y = -3$

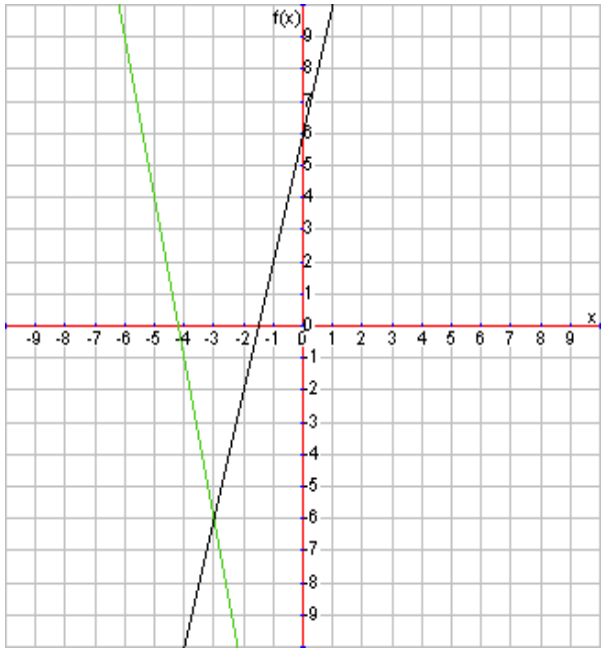
Substitute for y into second equation:	$5x - 4(-3x + 5) = -3$	distributive property
	$5x + 12x - 20 = -3$	combine like terms
	$17x - 20 = -3$	add 20 to each side
	$17x = 17$	divide each side by 17
	$x = 1$	
Substitute x in first equation:	$y = -3(1) + 5$	
	$y = 2$	

Solution (1,2)

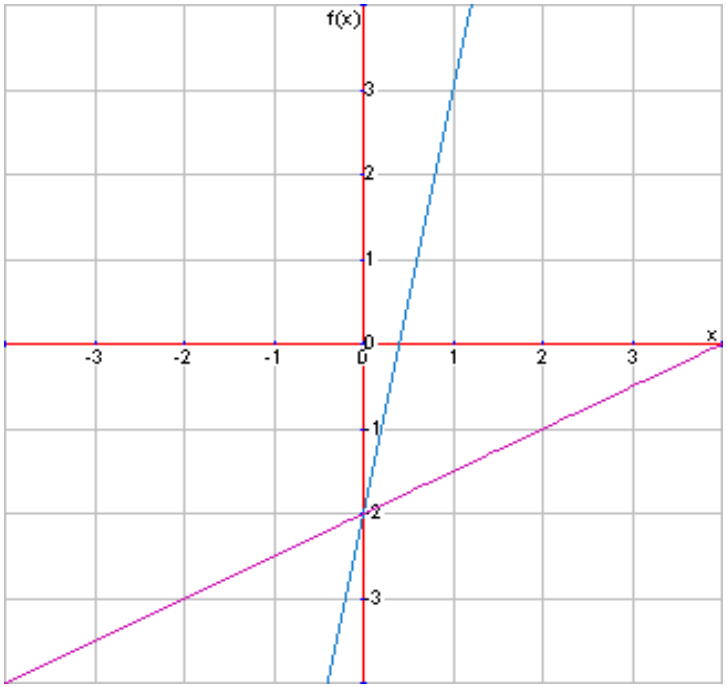


For the rest of the problems I will only show the solution. The algebra steps were shown for example purpose only

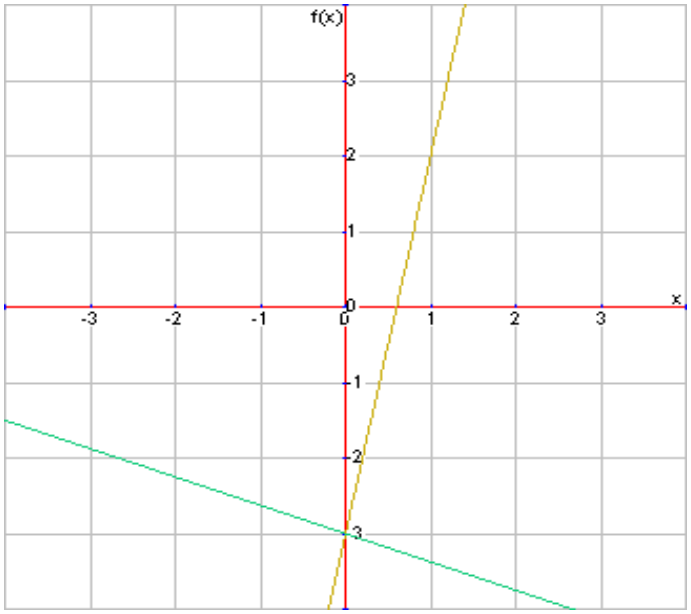
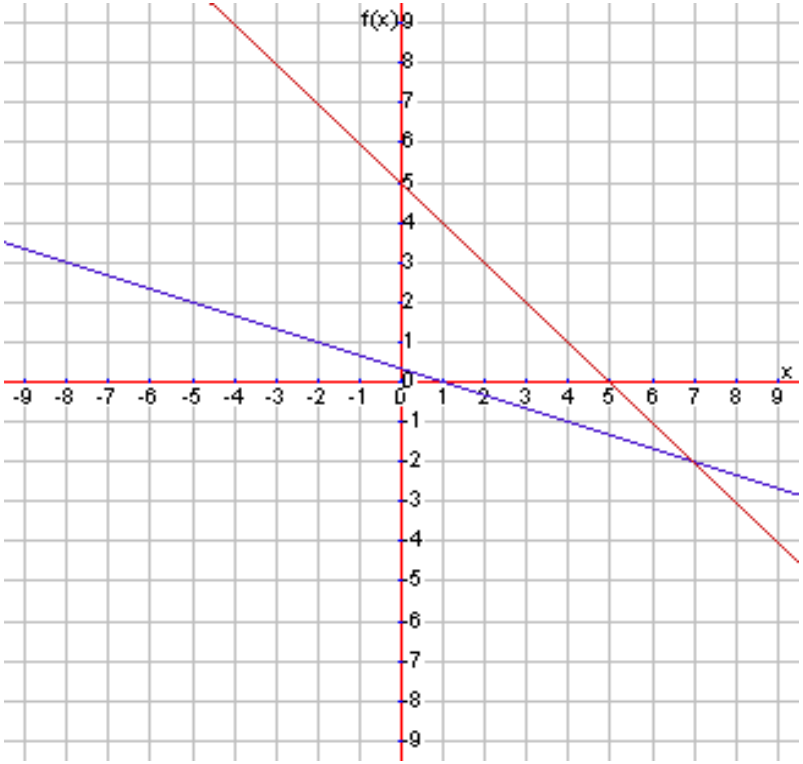
2. solution (-3,-6)



3. solution (0,-2)



4. Solution (0,-3)



5. Solution (7,-2)