Curriculum Sample: HS Math: Algebra
Max. 8 Pages

Grade Level	High School (9th)	**Content Area**	Math
Course Title (grades 9-12 Only)	Honors Algebra 1/Geometry 1		
Length of Unit	Five 55-minute periods	**Time of Year**	Third Quarter
Expected Prior Knowledge *The knowledge/skills mastered earlier in the year foundational to the mastery of the required Standard in the current sample.*	Students will already know how to solve equations for a variable and they will have working knowledge of graphing, coordinate planes, and lines. Students will also know order of operations and how to substitute a value 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 school's program of instruction stresses alignment with Hunter's Essential Elements of Instruction. Instruction during this unit will include direct instruction of key points and examples, guided practice including worksheets and partner activities, independent practice, and daily formative assessments conducted at the end of each class period.		
Standard Number and Description *List the Number* and full description for the required Standard.*	A-REI.6 **Conceptual Category:** Algebra **Domain:** Reasoning with Equations and Inequalities (A-REI) **Standard:** #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 complete a 10 question open-response summative to assess their ability at determining the solution to a system of equations from graphs and by solving. The summative is attached.		
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*	The 10 open-response questions will be scored on an absolute scale with an answer key provided for both correct answers and appropriate justification. Credit will only be awarded for answers that completely match the answer key, and no partial credit will be awarded. Students must get at least 8 of the 10 questions completely correct to master the standard.		

scoring rubric (whichever applicable) must be attached to the curriculum sample.	
Materials/Resources Needed	Worksheets, construction paper, white boards, markers, poster paper, rulers

* ***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	SWBAT identify the approximate solution to a system of two linear equations by looking at a graph Key Points: • The solution to a system of two linear equations is the point where the two lines intersect • If the lines are parallel (and do not intersect) then there is no solution to the system • If the lines are coinciding (the same line) then there are infinite solutions • To determine the approximate solution to a system, graph the lines on a coordinate plane and find the point where they intersect Your solution is written as a coordinate point in the format (x, y)	Do Now: Students will review basic concepts of a coordinate plane and graphing linear equations. Guided Practice: Students will be given a worksheet with multiple example problems. They will work independently on a problem and then participate in a Think-Pair-Share where they share their answers with a partner. Independent Practice: Students will create a poster that explains what a system is and how to find the solution point. They will also create multiple example problems for other students to work on by drawing graphs. Exit Ticket: Students will participate in a gallery walk and answer the questions posted around the room by other students on their poster.
2	SWBAT solve a system of equations exactly using the elimination method Key Points: • To find the exact solution point to a system of equations, there are multiple Algebraic methods that can be used such as the elimination method • When using the elimination method, follow these key steps: 1. Ensure that the variables are lined up vertically 2. Find the variable that has opposites (ie: 4x and -4x) 3. Cancel out the variable that has opposite values 4. Add/subtract the remaining values (combine the two equations) 5. Solve for the remaining variable 6. Once you have the value for one of the variables, plug that value back into one of the original equations and solve for the other variable 7. Write your answer as a solution point (x, y)	Do Now: Students will review yesterday's lesson by writing a brief summary of what a system is and how to find the solution point. They will then answer 3 example problems. Guided Practice: Students will be given a worksheet with multiple example problems. The teacher will instruct the students to do the first step and then he/she will review that step in class immediately. It is imperative that students understand each key step before moving on to the next one. Independent Practice: Students will work independently on a worksheet. For each question they will be required to write the key step involved so that they understand the process of solving using the elimination method. Exit Ticket: Students will complete 2 problems. Teacher will check their answers and give them a stamp when both questions are correct.

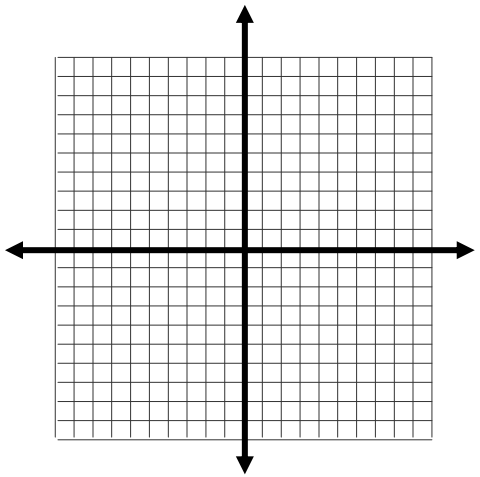
	To check your answer, plug the x and y values back into both equations separately and solve. The equations should be equal	
3	SWBAT solve a system of equations exactly using the elimination method Key Points: • This lesson will expand on yesterday's lesson by providing more difficult problems and additional steps • First, if the variables are not lined up vertically, the equations must be manipulated using solving skills so that they are arranged correctly • Second, check to see if one of the variables has opposites (like yesterday). If there aren't any opposites, follow these steps: 1. Pick a variable to eliminate (either x or y) 2. Look at the coefficients: How can you make the coefficients opposite? (ie: you are given -2x and 4x) 3. Multiply one of the equations by an integer so that the chosen variable becomes opposite values (ie: multiply the -2x by 2 so that it becomes -4x, which is the opposite of 4x) 4. Eliminate the variable Follow the remaining steps from yesterday's lesson	Do Now: Students will review yesterday's lesson by completing 3 problems and checking their answers with other students. Guided Practice: Students will be given a worksheet with multiple example problems. The teacher will instruct the students to do the first step and then he/she will review that step in class immediately. Teacher will focus on challenging problems that include multiplication in order to eliminate a variable. Independent Practice: Students will work in teams of 3-4 and participate in a competition. Each student will receive a white board and marker. They must work together to solve a problem and every student must have the work on their white board to receive credit. The first team to answer correctly receives a point. Exit Ticket: Students will complete 2 problems to turn in immediately. Teacher will check their answers and give them a stamp when both questions are correct.
4	WBAT solve a system of linear equations using the elimination method and check their answers by graphing the lines on a coordinate plane Key Points: • This lesson combines the previous two lessons and allows students more time to practice manipulating equations, solving, and graphing • First, solve the system using the elimination method. Find a solution point • Second, solve the equations so that they are in slope-intercept form • Third, graph the lines on a coordinate plane Lastly, check your solution point on the graph to ensure it is the same as your solution from the elimination method	Do Now: Students will warm up by reviewing key concepts from earlier lessons. Guided Practice: Students will be given a worksheet with multiple example problems that include systems and graphs. Students will work with a partner to complete problems and graph the lines to check their solution points. Independent Practice: Students will be given poster paper and 1 problem from the worksheet. They will work with their partners to write the steps on the paper and solve the problem. The student pairs will then present their problem to the class and explain their answers. Exit Ticket: Students will answer the following questions: *What is a system? What does the solution look like?*
5	SWBAT solve systems of equations approximately and exactly by using	Do Now: Students will complete a brief review worksheet that

	graphs and the elimination method Key Points: • This is a continuation of yesterday's lesson and combines everything the students have learned from the previous four lessons The focus is on having students understand the concept of systems and what the solution represents	summarizes everything learned thus far. Guided Practice: Students will share their answers from the homework and ask any remaining questions. Independent Practice: Student assessment. Exit Ticket: Summative assessment.

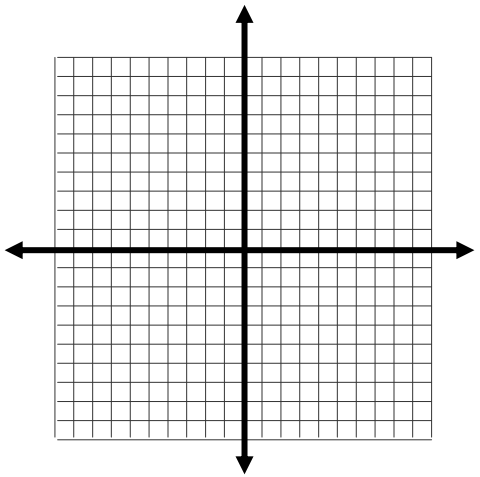
Paste Summative Assessment Here:

Draw an example of each type of lines on the graphs.

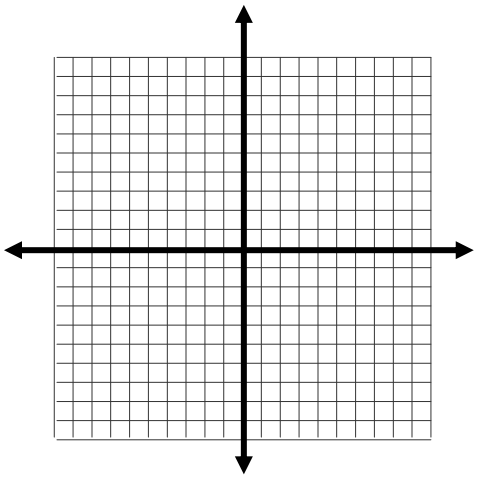
1. Intersecting Lines:



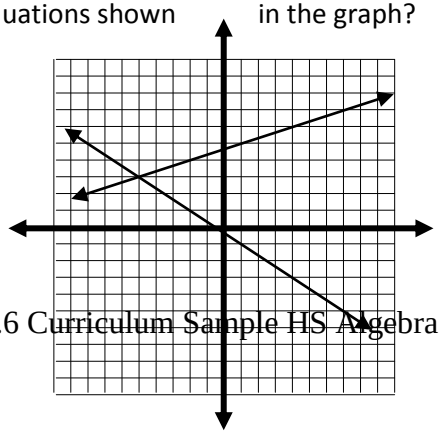
2. Coincident Lines:



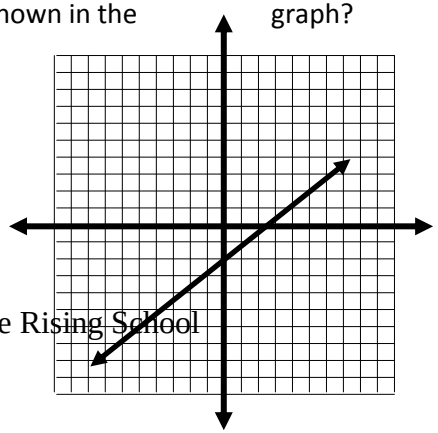
3. Parallel Lines:



4. What is the solution to the system of linear equations shown in the graph?



5. What is the solution to the coincident lines shown in the graph?



Solution: _____ Solution: _____

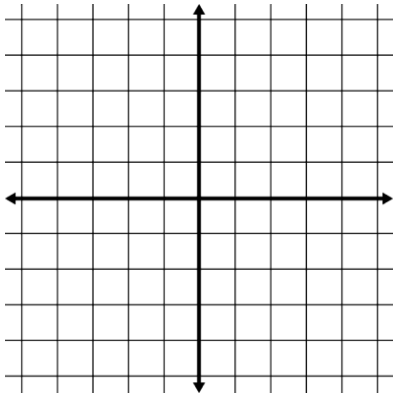
Solve the system. Give the point of intersection or tell if there are "no solutions" or "infinitely many" solutions.

6. $x+3y=4$
$5x-3y=2$

7. $-3x+5y=6$
$3x+2y=-6$

8. $-3x+6y=15$
$-12x-4y=-24$

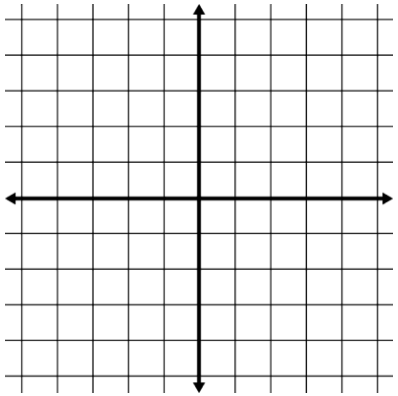
13. $y=-3x+4$
$y=-3x-2$



How many solutions? _____

What is the solution point
(if there is one)? _____

14. $y=-2x-1$
$y=2x-1$

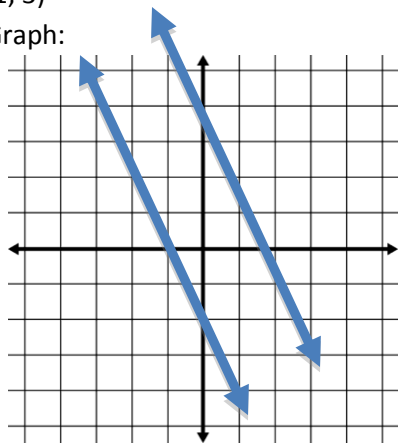


How many solutions? _____

What is the solution point
(if there is one)? _____

Paste Answer Key/Scoring Rubric Here:

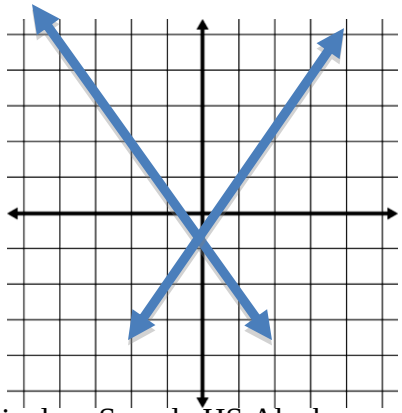
1. Student will draw a picture that shows two lines intersecting in exactly one point.
2. Student will draw a picture that shows one line on top of another line.
3. Student will draw a picture that shows two lines that never intersect and are parallel.
4. (-5, 3)
5. Infinite solutions
6. (1, 1)
7. (-2, 0)
8. (1, 3)
9. Graph:



Solution: None; the lines are parallel

Solution Point: None

10. Graph:



Solutions: One solution
Solution Point: (0, -1)