Choice Lesson Plan (Cooperative Learning II)

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*Subject*: Math I

*Topic or Unit of Study:* Solving Systems of Equations- Substitution

*Grade Level:* 9th Grade

*Materials:*

* Paper and Pencils
* [Steps to Solve a System of Equations by Substitution Handout](Steps%20to%20Solving%20by%20Substitution.docx)
* [Using Substitution to Solve Systems of Equations Activity](Solving%20by%20Substitution%20Activity.docx)
* [Math Scavenger Hunt](Scavenger%20Hunt%20Instructions.docx) Teacher Resource
* [Math Scavenger Hunt](Scavenger%20Hunt%20Student%20Answer%20Sheet.docx) Student Answer Sheet

*Summary:* Students are given a brief teaching of the method behind solving systems of equations. Following the teacher’s input, the students will be given a handout on the steps for solving systems using substitution and will work in pairs to finish the substitution activity. Then following the activity, the students will participate in a scavenger hunt around the room. Following the scavenger hunt, the teacher will assign extra practice for homework.

1. *Focus and Review (5-7 min):* “Yesterday I introduced systems of equations and how to solve them by graphing. On the board I’ve got an example that we talked about yesterday. Today, we are going to learn how to solve the system using substitution.” The problem should be

The students will be randomly asked to explain the steps of solving this problem by graphing.

1. *Statement of Instructional Objective(s) and Assessments:*

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| *Objectives (2 min)* | *Assessments* |
| Each student will be able to correctly solve three out of four systems of equations by substitution. | The teacher will give put up four systems of equations and will give the students 10 min to solve them using substitution independently.  |

1. *Teacher Input (30 min):* The teacher will start with the problem from part I and explain each step in solving a system of equation by substitution. After explaining the process, the teacher will hand out the *Steps to Solve a System of Equations by Substitution Handout*. The teacher will also bring up Problem 4 in the textbook (pg. 392) to show what infinitely many and no solution look like.
2. *Guided Practice (25 min):* With the use of the handout, the teacher will go over the examples given on the *Using Substitution to Solve Systems of Equations Activity*. Following the finish of the practice, the students will be divided into teams of two or three to complete the *Math Scavenger Hunt*. The instructions and answers for the scavenger hunt are on the teacher resource page. After all students are done, they will return to their seats and talk about any problems they might have run into and confusions they may have.
3. *Independent Practice (10-15 min):* The teacher will give put up four systems of equations and will give the students 10 min to solve them using substitution independently. They will be allowed to use the *Steps to Solve a System of Equations by Substitution Handout* as a reference, but are advised to try doing it alone. When class is almost over, the teacher will assign problems from the book to complete for homework (pg. 1, 3, 13-17 odd, 21, 25, and 27)
4. *Closure (3 min):* The students will turn in their worksheets for the scavenger hunt. The teacher will look through them to make sure each student understands the material. “So to recap, yesterday we learned how to solve by graphing and today we learned how to solve by using substitution. Tomorrow we will solve systems using Elimination.”

*STANDARDS:*

HSA-REI.C.6 (Solve a system of equations using graphs and substitution)

HSA-REI.D.11 (Relate the solution to a system of equations to the point at which lines intersect)

*Plans for Individual Differences:*

During the Teacher Input phase, the teacher will make sure to do a word problem from the book to explain where each number comes from and how the equations are given in the problem. Sandra would be placed in a team with someone who normally does not understand how to follow the instructions, since one of her strongest abilities is to memorize and follow steps. Being able to help someone else to understand would help her to better understand the steps. Since number 27 in the homework is a word problem, she will be assigned number 23 instead. 23 will be good for her because it requires her to analyze what she gets as the solution to decide how many solutions there are. She must still attempt to do 27 and if there is evidence of Sandra trying to understand the problem, and putting in effort to attempt to solve it, then she will receive extra credit for that exercise.

*References (APA style):*

Mullet, P. (n.d.). Eureka!. Eureka!. Retrieved April 25, 2014, from http://mercury.educ.kent.edu/database/eureka/detail\_lesson2.cfm?LessonsID=232