

Solving Systems of Equations Instructional Unit

by

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Day #1

M8A5b. Solve systems of equations graphically and algebraically, using technology as appropriate.

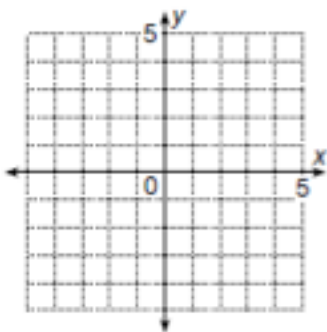
Essential Question: What is a system of equations and how is it solved using the Graphing Method?

Activities:

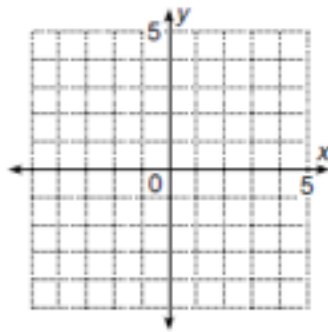
To begin this lesson, start with the GSP tab labeled Graphing Method. Have the students write down the definitions. Next, have the students graph system 1. Have them to figure out that the coordinates of the intersection are the unique solution to this system. The students will need to solve system 2 by graphing as well to figure out that there are no solutions. System 3 warrants a discussion about infinite solutions.

Have the students answer the following 2 problems using the graphing method:

1. $y = x + 2$
 $y = 2x + 1$



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



Homework: Assign a range of 5–6 appropriate problems from course textbook.

Day #2

M8A5b. Solve systems of equations graphically and algebraically, using technology as appropriate.

Essential Question: What is a system of equations and how is it solved using the Equivalent Forms Method?

Activities:

Go over the students' homework assignment from the previous day and make sure that they understand the Graphing Method. Next refer to the GSP tab labeled Equivalent Forms Method. Have the students to solve the sample system using the steps given. Students will then work on the following problems:

a. $y = 3x - 2$
 $y = 2x + 3$

b. $y = 7x + 4$
 $y = 9x - 6$

c. $y = 22x + 4$
 $y = 14x + 28$

d. $y = -x + 9$
 $y = 2x + 30$

e. $y = 2x + 6$
 $y = x + 3$

f. $y = -5x + 8$
 $y = -2x - 7$

Homework: Assign a range of 8–10 appropriate problems from the course textbook.

Day #3

M8A5b. Solve systems of equations graphically and algebraically, using technology as appropriate.

Essential Question: What is a system of equations and how is it solved using the Substitution Method?

Activities:

Go over the students' homework assignment from the previous day and make sure that they understand the Equivalent Forms method. Next refer to the GSP tab labeled Substitution Method. Work with the students to solve the sample systems using the steps given. **This method requires precise explanations so be prepared.** Students will then work on the following problems:

a. $3x + 2y = 14$
 $y = x + 2$

b. $4x - 2y = 24$
 $y = x - 5$

c. $-3x + 51 = 8y$
 $y = -6x$

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

e. $x = 5y - 26$
 $6x + y = -1$

f. $7x - 2y = 18$
 $x = y$

Homework: Have the students to complete the in-class assignment.

Day #4

M8A5b. Solve systems of equations graphically and algebraically, using technology as appropriate.

Essential Question: What is a system of equations and how is it solved using the Combination Method?

Activities:

Go over the students' homework assignment from the previous day and make sure that they understand the Substitution method. Next refer to the GSP tab labeled Combination Method. Emphasize that this method is referred to by many names including the Addition method and the Elimination method. Work with the students to solve the sample systems using the steps given. **This method requires clear and precise explanations.** Work through the following problems with the students:

a. $2x - 4y = 10$
 $-2x + 6y = -4$

b. $7x + 10y = 6$
 $7x - 10y = 8$

Next have the students complete the in-class assignment below.

c. $6x - 7y = -4$
 $-4x - 7y = 26$

d. $x + y = 3$
 $x - y = -9$

e. $-5x - 6y = 16$
 $-5x + 8y = 4$

f. $3x - 2y = 12$
 $-3x + 4y = -8$

Homework Assignment:

3. $5x + 7y = 77$
 $5x + 3y = 53$

4. $2x + 5y = -1$
 $x + 2y = 0$

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

6. $2x + y = 3$
 $-2x + y = 1$

Day #5

M8A5b. Solve systems of equations graphically and algebraically, using technology as appropriate.

Essential Question: How can I apply what I have learned solving systems of equations?

Activities:

Go over the students' homework assignment from the previous day and make sure that they understand the Combination method. Also review the other methods to confirm that the students have a good understanding of solving systems of equations. Next have the students to form partner pairs and work on the assignment labeled Solving Systems of Equations Practice.

Homework: Review the week's notes and homework assignments.