

8 Algebra CC
Unit 8 Review (Linear Systems)

Important Terminology

System

Substitution

Elimination

Solution Set

What should I be able to do?

1. Determine if a system has one solution, no solution or infinitely many solutions.
2. Solve a system of linear equations graphically.
3. Solve a system of linear equations algebraically (*using either substitution or elimination*).
4. Write a system of equations to model a situation.
5. Solve a system of equations that models a situation and make sense of the solution set in the context of the problem.

Practice Problem Set

Solve the following systems using the **elimination method**. Show a check.

1) $3x + 2y = 4$

$-2x + 2y = 24$

2) $3x + 2y = 4$

$4x + 3y = 7$

Solve the following systems using the **substitution method**. Show a check.

3) $x + 2y = 7$

$x = y - 8$

4) $x + y = 7$

$2x + 3y = 21$

For the following word problems, set up a system of equations and solve. Remember to define your variables, show all work and answer the question.

5) Jack bought 3 slices of cheese pizza and 4 slices of mushroom pizza for a total cost of \$12.50. Grace bought 3 slices of cheese pizza and 2 slices of mushroom pizza for a total of \$8.50. What is the cost of one slice of mushroom pizza?

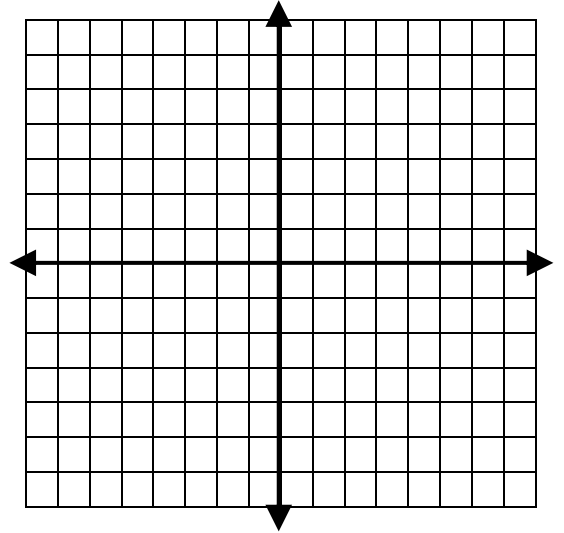
6) Lulu tells her little brother, Jack, that she is holding 20 coins all of which are dimes and quarters. They have a value of \$4.10. She says she will give him the coins if he can tell her how many of each she is holding. Solve this problem for Jack.

7) A discount movie theater charges \$5 for an adult ticket and \$2 for a child's ticket. One Saturday, the theater sold 785 tickets for \$3280. How many children's tickets were sold?

Solve the following system of equations graphically.

8) $x + y = 6$

$y = 2x - 6$



9) Two classmates have decided to read all volumes in a popular series of books. Alice has already read 9 volumes and will continue to read new ones at a rate of 2 volumes per week. Kate, who hasn't started reading the series yet, will read 3 volumes per week. At some point, Kate will catch up with Alice and they will be reading the same book.

a. Write a system of equations to represent the total number of books, y , in relation to the number of weeks, x .

Alice: _____

Kate: _____

b. Solve the system algebraically.

c. What does the solution represent in the context of this problem?

10) Alan says that the two systems of equations shown below have the same solution. State whether you agree or disagree with Alan. Justify your response.

System #1	System #2
$8x + 9y = 48$	$8x + 9y = 48$
$12x + 5y = 21$	$-8.5y = -51$

11) Determine if each system below has one solution, no solution or infinitely many solutions. Justify your response.

a) $4x + 2y = 18$
 $12x + 6y = 54$

b) $y = x - 1$
 $y - x = 10$

c) $x + y = 1$
 $5x - 4y = -7$