6 Chapter Test

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Do you know HOW?

Solve each system by graphing. Tell whether the system has *one solution, infinitely many solutions,* or *no solution.*

1. $y = 3x - 7$
   $y = -x + 1$
2. $x + 3y = 12$
   $x = y - 8$
3. $x + y = 5$
   $x + y = -2$

Solve each system using substitution.

4. $y = 4x - 7$
   $y = 2x + 9$
5. $8x + 2y = -2$
   $y = -5x + 1$
6. $y + 2x = -1$
   $y - 3x = -16$

Solve each system using elimination.

7. $4x + y = 8$
   $-3x - y = 0$
8. $2x + 5y = 20$
   $3x - 10y = 37$
9. $3x + 2y = -10$
   $2x - 5y = 3$

Solve each system of inequalities by graphing.

10. $y > 4x - 1$
    $y \leq -x + 4$
11. $x > -3$
    $-3x + y \geq 6$
12. **Garage Sale** You go to a garage sale. All the items cost \$1 or \$5. You spend less than \$45. Write and graph a linear inequality that models the situation.
13. **Gardening** A farmer plans to create a rectangular garden that he will enclose with chicken wire. The garden can be no more than 30 ft wide. The farmer would like to use at most 180 ft of chicken wire.
    a. Write a system of linear inequalities that models this situation.
    b. Graph the system to show all possible solutions.

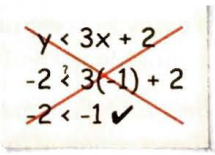
Write a system of equations to model each situation. Solve by any method.

14. **Education** A writing workshop enrolls novelists and poets in a ratio of 5 : 3. There are 24 people at the workshop. How many novelists are there? How many poets are there?

STEM 15. **Chemistry** A chemist has one solution containing 30% insecticide and another solution containing 50% insecticide. How much of each solution should the chemist mix to get 200 L of a 42% insecticide?

Do you UNDERSTAND?

16. **Open-Ended** Write a system of two linear equations that has no solution.
17. **Error Analysis** A student concluded that $(-2, -1)$ is a solution of the inequality $y < 3x + 2$, as shown below. Describe and correct the student's error.



18. **Reasoning** Consider a system of two linear equations in two variables. If the graphs of the equations are not the same line, is it possible for the system to have infinitely many solutions? Explain.

Reasoning Suppose you add two linear equations that form a system, and you get the result shown below. How many solutions does the system have?

19. $x = 8$
20. $0 = 4$
21. $0 = 0$