PRACTICE & PROBLEM SOLVING

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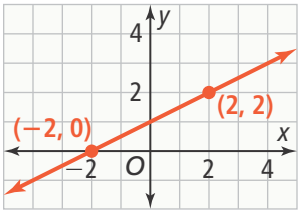
Practice Tutorial

Additional Exercises Available Online

UNDERSTAND

8. Use Structure Describe the solution set for the system of equations that includes the equation of the line shown and each equation below.



a. $y = \frac{1}{2}x - 3$

b. $2x + y = 6$

c. $x - 2y = -2$

9. Look for Relationships Write an equation in slope-intercept form that would have infinitely many solutions in a system of equations with $5x - 2y = 8$.

10. Communicate Precisely Copy and complete the table by writing the word *same* or *different* to show how the slope and *y*-intercept of each equation relate to the number of solutions in a system of two linear equations.

Number of solutions	Slopes	*y*-intercepts
One solution	■	■
Infinitely many solutions	■	■
No solution	■	■

11. Error Analysis Describe and correct the error a student made in finding the solution of the system of equations.

$y + 3x = 9$

$y = 3x + 9$

There are an infinite number of solutions since the coefficients of the variables and the constants are the same. ✗

12. Higher Order Thinking The solution of a system of equations is (3, 2). One of the equations in the system is $2x + 3y = 12$. Write an equation in slope-intercept form that could be the second equation in the system.

PRACTICE

Solve each system of equations by graphing. SEE EXAMPLE 1

13. $y = -2x - 2$
$y = 3x - 7$

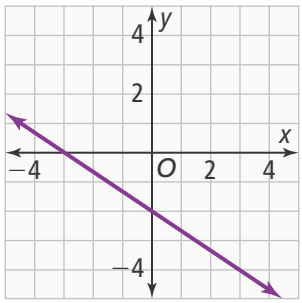
14. $y = x$
$y = 2x$

15. $x + y = -5$
$y = \frac{1}{2}x - 2$

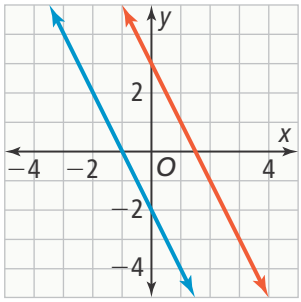
16. $3x + 2y = -3$
$2x - 3y = -15$

Determine whether each system of equations shown in the graph has *no solution* or *infinitely many solutions*. SEE EXAMPLE 2

17.



18.



Write and solve a system of equations for the given situation. SEE EXAMPLE 3

19. Roshaun has saved $150 and continues to add $10 each week. Keegan starts with $0 and saves $25 each week.

a. In how many weeks will they have the same amount of money?

b. What amount of money will they each have saved?

Solve each system of equations by graphing. Round your answers to the thousandths, if necessary. SEE EXAMPLE 4

20. $y = 5x + 1$
$y = 2x + 6$

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

22. $y = 9x + 2$
$y = -3x - 4$

23. $y = \frac{1}{3}x + 9$
$y = -\frac{3}{4}x + 4$

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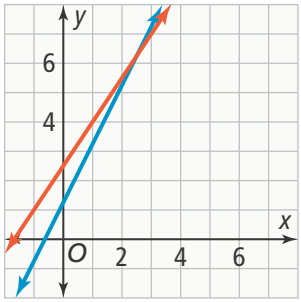
APPLY

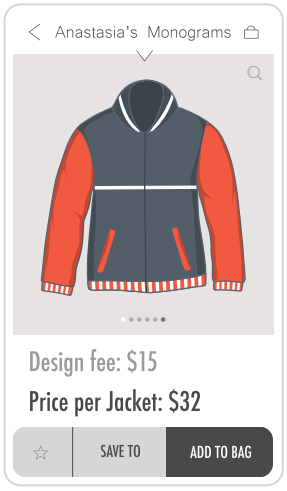
24. Use the graph to determine the solution for the system of equations.



a. Reason How does the graph show that the solution of the system of equations has an x-value between 2 and 3?

b. What is the approximate solution of the system of equations?

25. Model With Mathematics Gabriela considers buying fleece jackets from Anastasia's Monograms or Monograms Unlimited. Anastasia's charges a one time design fee and a price per jacket. Monograms Unlimited only charges a price per jacket.



a. Write and solve a system of equations to represent the cost for a jacket from each company.

b. What does the solution mean?

c. Gabriela needs to buy 10 jackets. Which company should she choose? How does the graph help her decide? Explain.

26. Reason How do you know when the solution to a system of equations is a precise answer and when it is an approximate answer?

ASSESSMENT PRACTICE

27. Consider the system of equations.

$y = \frac{3}{4}x + 2$

$3x + 4y = 8$

The graph of the system of equations has _____ line(s) and the solution of the system is _____.

28. SAT/ACT Select which is the solution of the system of equations.

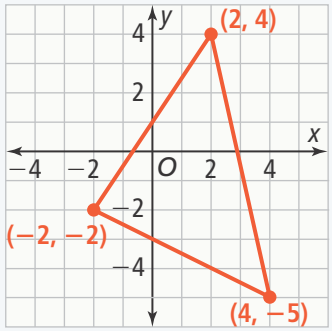
$y = -3x - 3$

$y = -0.5x + 2$

Ⓐ (0, 2) Ⓑ (−1, 0)

Ⓒ (−1, 2) Ⓓ (−2, 3)

29. Performance Task The lines that form the three sides of the triangle can be grouped into three different systems of two linear equations.



Part A Describe the system of equations that has each solution.

a. (2, 4)

b. (−2, −2)

c. (4, −5)

Part B Replace the solution (4, −5) to make an acute triangle. What are the coordinates of the new triangle?

Part C Describe the system of equations that will produce each of the new coordinates.