

EXERCISES

Practice and Problem Solving

For more practice, see *Extra Practice*.

Practice by Example

Example 1 (page 299)

Find the x - and y -intercepts of each equation.

1. $x + 2y = 18$

2. $3x - y = 9$

3. $-5x + y = 30$

4. $-6x + 3y = -9$

5. $4x + 12y = -18$

6. $9x - 6y = -72$

7. $-2x - 3y = -12$

8. $7x - 2y = 4$

9. $-8x + 10y = 40$

Example 2 (page 299)

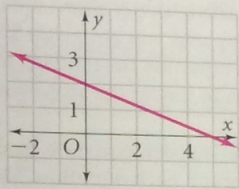
Match each equation with its graph.

10. $2x - 5y = 10$

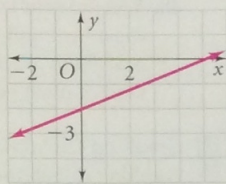
11. $-2x + 5y = 10$

12. $2x + 5y = 10$

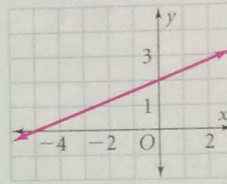
A.



B.



C.



Graph each equation using x - and y -intercepts.

13. $x + y = 2$

14. $x + y = -5$

15. $x + y = -7$

16. $-3x + y = 6$

17. $-2x + y = -6$

18. $5x - 3y = 15$

Example 3 (page 299)

For each equation, tell whether its graph is a horizontal or a vertical line.

19. $y = -1$

20. $x = 4$

21. $y = 2\frac{1}{2}$

22. $x = -3.75$

Graph each equation.

23. $y = 3$

24. $x = -7$

25. $y = -1.5$

26. $x = 4.5$

Example 4 (page 300)

Write each equation in standard form using integers.

27. $y = 3x + 1$

28. $y = 4x - 7$

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

30. $y = \frac{2}{3}x + 5$

31. $y = -\frac{3}{4}x - 4$

32. $y = -\frac{4}{3}x - 7$

33. $y = \frac{7}{2}x + \frac{1}{4}$

34. $y = -\frac{2}{5}x + \frac{1}{10}$

35. $y = -3x$

Example 5 (page 300)

36. **Fund-Raising** The sophomore class holds a car wash to raise money. A local merchant donates all of the supplies. A wash costs \$5 per car and \$6.50 per van or truck.

a. Define a variable for the number of cars. Define a different variable for the number of vans or trucks.

b. Write an equation in standard form to relate the number of cars and vans or trucks the students must wash to raise \$800.

37. **Fitness** Larry runs at an average rate of 8 mi/h. He walks at an average rate of 3 mi/h.

a. Define a variable for time spent walking. Define a different variable for time spent running.

b. Write an equation in standard form to relate the times he could spend running and walking if he travels a distance of 15 mi.

using x - and y -intercepts:
 2. Substitute 0 in for x (in the equation) and solve for y . (y -intercept)
 3. Draw a straight line with arrows on ends through both points

1) $-2x + 3y = 12$

B Apply Your Skills

Graph each equation.

- 38. $-3x + 2y = -6$
- 39. $x + y = 1$
- 40. $2x - 3y = 18$
- 41. $y + x = -4$
- 42. $y = 2x + 5$
- 43. $y = -3x - 1$
- 44. $2 - y = x - 6$
- 45. $9 + y = 8 - x$
- 46. $6x = y$



Real-World Connection

A peanut contains about 0.24 gram of protein.

47. Nutrition Suppose you are preparing a snack mix. You want the total protein from peanuts and granola to equal 28 grams. Peanuts have 7 grams of protein per ounce, and granola has 3 grams of protein per ounce.
 a. Write an equation for the protein content of your mix.
 b. Graph your equation. Use your graph to find how many ounces of granola you should use if you use 1 ounce of peanuts.

48. You are sent to the store to buy sliced meat for a party. You are told to get roast beef and turkey, and you are given \$30. Roast beef is \$4.29/lb and turkey is \$3.99/lb. Write an equation in standard form to relate the pounds of each kind of meat you could buy at the store with \$30.

Graphing Calculator Write each equation in slope-intercept form. Then use a graphing calculator to graph each equation. Make a sketch of the graph. Include the x - and y -intercepts.

- 49. $8x - 10y = -100$
- 50. $-6x + 7y = 21$
- 51. $12x + 15y = -45$
- 52. $-5x + 9y = -15$
- 53. $16x + 11y = -88$
- 54. $3x - 27y = 18$

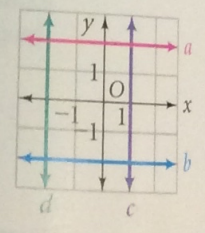
55. Writing Two of the forms of a linear equation are slope-intercept form and standard form. Explain when each is the more useful.

56. Critical Thinking The definition of standard form states that A and B can't both be zero. Explain why.

57. Error Analysis A student says that the equation $3x + 2y = 6$ is a standard form of the equation $y = \frac{3}{2}x + 3$. What is the student's error?

Write an equation for each line on the graph.

- 58. a
- 59. b
- 60. c
- 61. d



62. a. Fund-Raising Suppose your school is having a talent show to raise money for new music supplies. You estimate that 200 students and 150 adults will attend. You estimate \$200 in expenses. Write an equation to find what ticket prices you should set to raise \$1000.
b. Open-Ended Graph your equation. Choose three possible prices you could set for students' and adults' tickets. Which is the best choice? Explain.

63. Write an equation of a line that has the same slope as the line $3x - 5y = 7$ and the same y -intercept as the line $2y - 9x = 8$.

64. Geometry Graph each of the four lines below on the same graph. What figure do the four lines form?
 $-2x + 3y = 10$ $3x + 2y = -2$ $-2x + 3y = -3$ $3x + 2y = 11$

65. a. Graph $2x + 3y = 6$ and $2x + 3y = 18$.
b. What is the slope of each line?
c. Compare the x -intercepts of the two lines. How are they related? How are the y -intercepts related?

C Challenge

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