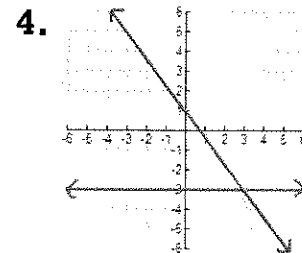
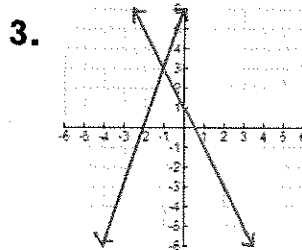
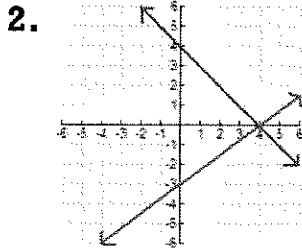


## EXERCISES

1. Al was sick when his math class learned how to solve systems of linear equations by graphing. Explain the process Al needs to follow to find the solution to a system of linear equations by graphing.



Use each graph to solve the system of linear equations.



Decide whether the given ordered pair is a solution to the system of equations. Show all work necessary to justify your answer.

5.  $y = -4x$   
 $y = \frac{1}{2}x + 7$   
 $(-2, 8)$

6.  $x + 5y = 8$   
 $4x - 5y = 7$   
 $(3, 1)$

7.  $y = x - 9$   
 $x + y = -1$   
 $(4, -5)$

8. Polly took a quiz on solving systems of linear equations. She was not sure how she did on two of the harder problems when she turned in the quiz. Later, her friend told her she should have checked her answers. Did Polly answer the questions correctly? Use words and/or numbers to support your answer.

a.  $y = 4x - 1$   
 $2x - y = -13$   
 Polly's solution  $(-2, -9)$

b.  $3x + 6y = 15$   
 $-2x + 3y = -3$   
 Polly's solution  $(3, 1)$

Solve each system of equations by graphing. Show all work necessary to prove that your answer is correct. If there is not exactly one solution, determine if the system of equations has infinitely many solutions or no solution.

9.  $y = -\frac{1}{4}x + 6$   
 $y = \frac{1}{2}x + 3$

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

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

12.  $y = -\frac{1}{4}x + 1$   
 $x + 4y = 4$

13.  $y = \frac{1}{3}x + 2$   
 $y = -\frac{2}{3}x + 5$

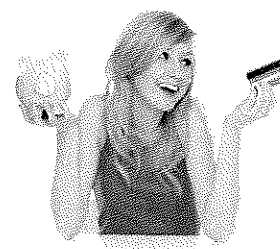
14.  $y = \frac{2}{3}x - 3$   
 $x = -3$

15.  $y = -5 + \frac{3}{2}x$   
 $-2x + 4y = 4$

16.  $y = -3x + 4$   
 $2x - y = 1$

17.  $2x + 5y = 5$   
 $y = -\frac{2}{5}x + 4$

**18.** Sarah begins the year with \$100 in her savings account. Each week, she spends \$8. Martin begins the year with no money saved, but each week he puts \$12 into an account. Let  $x$  represent the number of weeks since the beginning of the year and  $y$  represent the total money in the account.



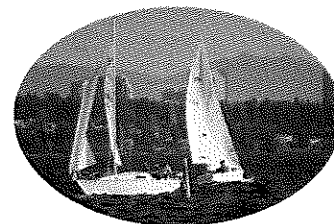
- Write a linear equation to represent Sarah's total money in her savings based on the number of weeks that have passed.
- Write a linear equation to represent Martin's total money in his savings based on the number of weeks that have passed.
- Graph both equations on the same first quadrant coordinate plane.
- At what point do the lines intersect? What is the real-world meaning of this point?



**19.** The perimeter of Karen's rectangular garden is 42 feet. The length of the garden is 3 feet more than twice the width. Let  $y$  represent the length of the garden and  $x$  represent the width of the garden.

- Write a linear equation that represents the perimeter of Karen's garden.
- Write a linear equation that describes the length of the garden in terms of the width.
- Graph both equations on the same coordinate plane.
- What are the length and width of Karen's garden?

**20.** Barry and Helen each own sailboats that are docked in different locations. Both decide to go sailing on Saturday morning and leave at the same time. Barry's sailing path can be described by the linear equation  $y = 12x - 30$  and Helen's path can be described by the equation  $y = 3x + 60$ . At what point will they cross paths? Show all work necessary to justify your answer.



- 21.** Javier is solving a system of equations that has values in the solution which are not integers. Why might solving the system by graphing not give him the most accurate answer? Explain your reasoning.
- 22.** Missy says her system of linear equations has exactly two solutions,  $(2, 8)$  and  $(7, -5)$ . Is this possible? Explain your reasoning.

## REVIEW

Determine if the two lines in each system of equations are intersecting, parallel or the same line. State how many solutions there will be for each system. Use words and/or numbers to show how you determined your answer.

**23.**  $y = -2x - 5$   
 $y = 2x + 1$

**24.**  $4x - 8y = 16$   
 $y = \frac{1}{2}x - 2$

**25.**  $y = 5(x + 3) - 1$   
 $y = 5x + 7$

**26.**  $y = \frac{2}{3}x - 1$   
 $-2x + 3y = 3$

**27.**  $y = \frac{1}{3}x + 3$   
 $x + 2y = 6$

**28.**  $y = 3(2x + 1) - 5$   
 $y = 6(x - 1) + 4$