Chapter 6 Test

Form K

Do you know HOW?

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

1. $y = \frac{1}{2}x + 4$
$y = -2x - 1$
(−2, 3); one solution

2. $y = x + 2$
$y = 3x + 6$
(−2, 0); one solution

3. $x + y = 2$
$x + y = -1$
no solution

Solve each system using substitution.

4. $x + y = 1$
$2x + 3y = -4$
(7, −6)

5. $x - 4y = 11$
$2y - x = -7$
(3, −2)

6. $2x + y = 1$
$x - 2y = 23$
(5, −9)

Solve each system using elimination.

7. $2x + 3y = 10$
$2x - y = -14$
(−4, 6)

8. $x + y = -6$
$x - y = 6$
(0, −6)

9. $3x = -2y - 5$
$2y = -5x + 5$
(5, −10)

Solve each problem.

10. The sum of two numbers is 23. If one of the numbers is halved, the sum will become 17. What are the numbers?
11 and 12

11. The perimeter of a rectangle is 60 cm. The length is four times the width. What are the length and the width of the rectangle?
length = 24 cm; width = 6 cm

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

12. Sarah is 25 years older than her son Gavin. In ten years, Sarah will be twice Gavin's age. How old are Sarah and Gavin now?
Sarah = 40 yr; Gavin = 15 yr

13. A chemist is mixing a solution that is 2% acid and another solution that is 8% acid. She needs to make 75 mL of a solution that is 5% acid. How much of each solution should she use?
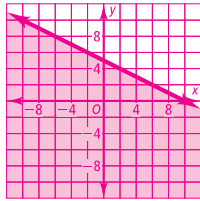**37.5 mL of the 2% solution and 37.5 mL of the 8% solution**
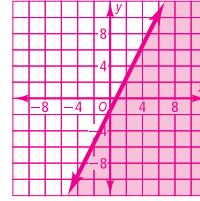
Chapter 6 Test (continued)   *Form K*

Graph each inequality in the coordinate plane.
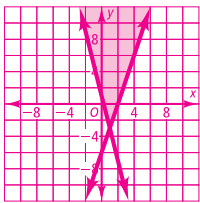
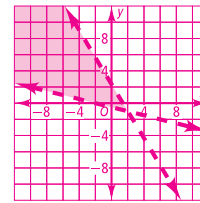**14.** $x + 2y \leq 10$

15. $4x - 2y \geq 3$

Solve each system of inequalities by graphing.
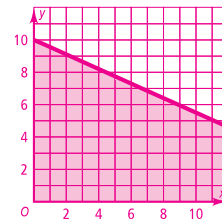
16. $4x + y \geq 1$
$3x - y \leq 6$

17. $x + 4y > -2$
$5x + 3y < 7$

18. For a work banquet, Jack can spend no more than $200 on dessert. Fruit pies cost $9 each and cakes cost $20 each. Write the linear inequality that models the situation. Graph the inequality.
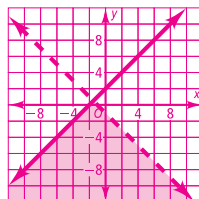
9x + 20y ≤ 200

Do you UNDERSTAND?

19. Writing How do you check to see if an ordered pair satisfies a system of inequalities graphically?
You can plot the point on the graph and see if it lies within the shaded region.

20. Open-Ended Write a system of inequalities in which the shaded region is below both lines. Graph the system.
Answers may vary. Sample:
y ≤ x + 2
y < −x − 1

21. Open-Ended Write a system of linear equations that has no solution.
Answers may vary. Sample:
y = 3x + 5
y = 3x − 1