Name _____ Class _____ Date _____

Practice 6-5

Solving Systems of Linear Equations Using Addition

1. Find the most efficient algebraic method to solve each system of equations.

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

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

2. Which system of equations is best solved using addition?

❍ A. $-3x + 5y = 9$
$3x - 2y = -9$

❍ B. $x = 5y + 9$
$-3x - 2y = -9$

❍ C. $x = 5y + 9$
$-3x - 2y = 9$

3. Solve the system of equations using addition.

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

4. Solve the system using addition.

$7x + 2y = -13$
$-7x + y = 25$

5. The sum of two numbers is 23. When the second number is subtracted from the first number, the difference is 9. Find the two numbers.

6. There are two red jars of marbles and one blue jar of marbles. Jars of the same color marbles contain the same number of marbles in them. There are 35 marbles in total. The difference between the number of marbles in a red jar and the number of marbles in a blue jar is 4. Find the number of marbles in each type of jar.

7. a) Writing Solve the system using addition.

$x - 3.1y = 11.5$
$-x + 3.5y = -13.5$

b) Explain why the addition method is a good choice for solving the system. If you wanted to solve for x first, is the addition method still a good choice? Explain.

8. **Reasoning** Which method is the most efficient algebraic method to solve the system of equations?

$$x = 4y + 12$$
$$-3x - 3y = -12$$

- ❍ A. The substitution method, because one of the equations is in "y =" form.
- ❍ B. The substitution method, because one of the equations is in "x =" form.
- ❍ C. The addition method, because the x-terms are additive inverses.
- ❍ D. The addition method, because the y-terms are additive inverses.

9. **Error Analysis** Lois claims the solution to the system of equations is (–1, –4).

$$5.5x + 5.3y = -27.3$$
$$4.1x - 5.3y = -11.1$$

a) Solve the system of equations using addition.

b) What mistake might Lois have made?

- ❍ A. She used the opposite sign for y in the answer.
- ❍ B. She used the opposite sign for x in the answer.
- ❍ C. She exchanged x and y in the answer.
- ❍ D. She used the opposite sign for x and y.

10. **Trains** Two trains, Train A and Train B, weigh a total of 312 tons. Train A is heavier than Train B. The difference of their weights is 170 tons. What is the weight of each train?

11. **Multiple Representations** Solve the system of equations using addition.

$$x - 7y = 11$$
$$x + 7y = -17$$

a) Which of the following shows the correct solution, written two ways?

- ❍ A. (–3, –2), x = –2 and y = –3
- ❍ B. (–2, –3), x = –2 and y = –3
- ❍ C. (–3, –2), x = –3 and y = –2
- ❍ D. (11, –17), x = –17 and y = 11
- ❍ E. (11, –17), x = 11 and y = –17
- ❍ F. (–7, 7), x = 7 and y = –7

b) Draw a graph to show the solution in a third way.

12. Which systems of equations are best solved using addition? Check all that apply.

❑ A. $x = -3y + 9$
$5.1x - 5.1y = 9$

❑ B. $5.1x + 5.1y = 9$
$5.1x - 5.1y = -9$

❑ C. $3x + 3y = 9$
$-3x - 5y = -9$

❑ D. $x = 3y + 9$
$3x - 5y = -9$

13. On a team, 6 girls and 3 boys scored a total of 72 points. The difference between the number of points scored by the 6 girls and the number of points scored by the 3 boys is 36. Each girl scored the same number of points and each boy scored the same number of points. Find the number of points scored by each girl and each boy.

14. Think About the Process Suni needs to solve the system of equations using addition.

$$-5x + 3y = 15$$
$$2x - 3y = -15$$

a) What variable should Suni solve for first?

❍ A. y

❍ B. x

b) Find the solution.

15. Think About the Process Two friends spent $47 at the mall. The first friend spent less than the second friend. The difference between the amount each friend spent was $31. To find the amount each friend spent, solve a system of equations using the addition method.

a) What is the next step after writing the system of equations?

❍ A. Graph the system of equations.

❍ B. Add the equations to eliminate a variable.

❍ C. Solve one of the equations for one of the variables.

❍ D. Substitute an expression for one of the variables into the other equation.

b) Find the amount each friend spent.

Practice 6-5: Solving Systems of Linear Equations Using Addition

1. first system: addition
   second system: substitution
2. A
3. (4, 2)
4. (–3, 4)
5. 16, 7
6. Red jar: 13
   Blue jar: 9
7. **a)** (–4, –5)
   b) Answers will vary
8. B
9. **a)** (–4, –1)
   b) C
10. Train A: 241 t
    Train B: 71 t
11. **a)** C
    b) Answers will vary
12. B, C
13. Each girl scored 9 points and each boy scored 6 points.
14. **a)** B
    b) (0,5)
15. **a)** B
    b) The first friend spent $8 and the second friend spent $39.