Practice

Solving Systems Using Elimination

Solve each system using elimination.

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

2. $x + 2y = 3$
$x - y = 6$

3. $2x - y = 4$
$3x - y = 2$

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

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

6. $x + 2y = -4$
$x + y = 2$

7. $3x - 2y = 8$
$2x - 2y = 5$

8. $x - 2y = 3$
$3x - y = 2$

9. $2x - 4y = -6$
$x - y = -1$

10. Writing For the system $\begin{array}{l} 3x - 5y = 9 \\ 2x + y = 3 \end{array}$, which variable should you eliminate first and why? How will you eliminate that variable?

11. Open-Ended If you do not have equal coefficients for both variables, can you still use the elimination method? Explain.

12. In a class, 45 students take the SAT exam. The number of boys is 8 more than the number of girls.

a. Write a system that models the above situation.
b. Do you need to multiply any of the equations by a constant? If so, which equation and what is the constant?

13. Open-Ended Write a system for which using the elimination method to solve the system is easier than the substitution method. Explain.

14. Error Analysis A student solved a system of linear equations using the elimination method as follows. Describe and correct the error made by the student.

$3x - 5y = 4$	$6x - 10y = 8$	Multiply equation 1 by 2.
$-2x + 3y = 2$	$\underline{-6x + 3y = 6}$	Multiply equation 2 by 3.
	$-7y = 14$	Add the equations.
	$y = -2$	Divide by -7.

Practice (continued)   *Form G*

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15. A farm raises a total of 220 chickens and pigs. The number of legs of the stock in the farm totals 520. How many chickens and pigs are at the farm?

16. You drive a car that runs on ethanol and gas. You have a 20-gallon tank to fill and you can buy fuel that is either 25 percent ethanol or 85 percent ethanol. How much of each type of fuel should you buy to fill your tank so that it is 50 percent ethanol?

17. Your math test has 38 questions and is worth 200 points. The test consists of multiple-choice questions worth 4 points each and open-ended questions worth 20 points each. How many of each type of question are there?

18. A student bought 3 boxes of pencils and 2 boxes of pens for $6. He then bought 2 boxes of pencils and 4 boxes of pens for $8. Find the cost of each box of pencils and each box of pens.

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

19. $x - 3y = -7$
$2x = 6y - 14$

20. $3x - 5y = -2$
$x + 3y = 4$

21. $x + 2y = 6$
$2x - 4y = -12$

22. $5x + y = 15$
$3y = -15x + 6$

23. $3x = 4y - 5$
$12y = 9x + 15$

24. $3x - y = -2$
$-2x + 2y = 8$

25. $x + 2y = -4$
$-3x + 2y = 4$

26. $x + y = -2$
$-x - y = 4$

27. $3x - 2y = -3$
$6y = 9x + 9$

28. $-4x - 3y = 5$
$3x - 2y = -8$

29. $x - 3y = 1$
$2x + 2y = 10$

30. $-4x - 2y = 20$
$2x + y = 19$

31. How is the multiplication or division property of equality used in the elimination method? Are the properties always needed? Explain.