

5.2 Exercises



Vocabulary and Concept Check

1. **WRITING** Describe how to solve a system of linear equations by substitution.
2. **NUMBER SENSE** When solving a system of linear equations by substitution, how do you decide which variable to solve for in Step 1?
3. **REASONING** Does solving a system of linear equations by graphing give the same solution as solving by substitution? Explain your reasoning.



Practice and Problem Solving

Write a system of linear equations that has the ordered pair as its solution.
Use a method from Activity 1 to solve the system.

4.



5.



6.



Tell which equation you would choose to solve for one of the variables when solving the system by substitution. Explain your reasoning.

7. $2x + 3y = 5$

$4x - y = 3$

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

$x + 6y = 0$

9. $2x + 10y = 14$

$5x - 9y = 1$

Solve the system of linear equations by substitution. Check your solution.

1

10. $y = x - 4$

$y = 4x - 10$

11. $y = 2x + 5$

$y = 3x - 1$

12. $x = 2y + 7$

$3x - 2y = 3$

13. $4x - 2y = 14$

$y = \frac{1}{2}x - 1$

14. $2x = y - 10$

$x + 7 = y$

15. $8x - \frac{1}{3}y = 0$

$12x + 3 = y$

16. **SCHOOL CLUBS** There are a total of 64 students in a drama club and a yearbook club. The drama club has 10 more students than the yearbook club.

- a. Write a system of linear equations that represents this situation.
- b. How many students are in the drama club? the yearbook club?

17. **THEATER** A drama club earns \$1040 from a production. It sells a total of 64 adult tickets and 132 student tickets. An adult ticket costs twice as much as a student ticket.

- a. Write a system of linear equations that represents this situation.
- b. What is the cost of each ticket?



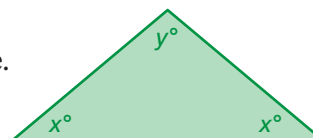
Solve the system of linear equations by substitution. Check your solution.

- 2 18. $y - x = 0$ 19. $x + 4y = 14$ 20. $-2x - 5y = 3$
 $2x - 5y = 9$ $3x + 7y = 22$ $3x + 8y = -6$

21. **ERROR ANALYSIS** Describe and correct the error in solving the system of linear equations.

X	$2x + y = 5$	Equation 1	Step 1:	Step 2:
	$3x - 2y = 4$	Equation 2	$2x + y = 5$ $y = -2x + 5$	$2x + (-2x + 5) = 5$ $2x - 2x + 5 = 5$ $5 = 5$

22. **STRUCTURE** The measure of the obtuse angle in the isosceles triangle is two and a half times the measure of one base angle. Write and solve a system of linear equations to find the measures of all the angles.



23. **ANIMAL SHELTER** An animal shelter has a total of 65 abandoned cats and dogs. The ratio of cats to dogs is 6 : 7. How many cats are in the shelter? How many dogs are in the shelter? Justify your answers.

24. **NUMBER SENSE** The sum of the digits of a two-digit number is 8. When the digits are reversed, the number increases by 36. Find the original number.

25. **Repeated Reasoning** A DJ has a total of 1075 dance, rock, and country songs on her system. The dance selection is three times the size of the rock selection. The country selection has 105 more songs than the rock selection. How many songs on the system are dance? rock? country?



Fair Game Review what you learned in previous grades & lessons

Write the equation in standard form. (Section 4.5)

26. $3x - 9 = 7y$ 27. $8 - 5y = -2x$ 28. $6x = y + 3$

29. **MULTIPLE CHOICE** Use the figure to find the measure of $\angle 2$. (Section 3.1)

- (A) 17° (B) 73°
 (C) 83° (D) 107°

