Name_____ Class_____ Date_____

3-5 Practice

Form G

Systems With Three Variables

Solve each system by elimination. Check your answers.

1. $\begin{cases} x+y+z=-1 \\ 2x-y+2z=-5 \\ -x+2y-z=4 \end{cases}$

2. $\begin{cases} x+y+z=3 \\ 2x-y+2z=6 \\ 3x+2y-z=13 \end{cases}$

3. $\begin{cases} 2x+y=9 \\ x-2z=-3 \\ 2y+3z=15 \end{cases}$

4. $\begin{cases} x-y+2z=10 \\ -x+y-2z=5 \\ 3x-3y+6z=-2 \end{cases}$

5. $\begin{cases} 2x-y+z=-4 \\ 3x+y-2z=0 \\ 3x-y=-4 \end{cases}$

6. $\begin{cases} 2x-y-z=4 \\ -x+2y+z=1 \\ 3x+y+z=16 \end{cases}$

7. $\begin{cases} x+5y+5z=-10 \\ x+y+z=2 \\ x+2y+3z=-3 \end{cases}$

8. $\begin{cases} x-y-z=0 \\ x-2y-2z=3 \\ -2x+2y-z=3 \end{cases}$

9. $\begin{cases} 3x+y+z=6 \\ 3x-2y+2z=14 \\ 3x+3y-3z=-6 \end{cases}$

10. $\begin{cases} x+y+z=-2 \\ 2x+2y-3z=11 \\ 3x-y+z=4 \end{cases}$

11. $\begin{cases} x-5y+z=3 \\ x+2y-2z=-12 \\ 2x+2y=6 \end{cases}$

12. $\begin{cases} 2x+3z=2 \\ 3x+6y=6 \\ x-2z=8 \end{cases}$

Solve each system by substitution. Check your answers.

13. $\begin{cases} x+y-z=0 \\ 3x-y+z=4 \\ 5x+z=7 \end{cases}$

14. $\begin{cases} x-2y=1 \\ x+3y+z=0 \\ 2x-2z=18 \end{cases}$

15 $\begin{cases} x+y+4z=5 \\ -2x+2z=3 \\ 3x+y-2z=0 \end{cases}$

16. $\begin{cases} 3x+2y+2z=4 \\ -6x+4y-2z=-9 \\ 9x-2y+2z=10 \end{cases}$

17. $\begin{cases} 2x-3y+z=-3 \\ x-5y+7z=-11 \\ -10x+4y-6z=28 \end{cases}$

18. $\begin{cases} x+y+z=-8 \\ x-y-z=6 \\ 2x-3y+2z=-1 \end{cases}$

19. $\begin{cases} 14x-3y+5z=-15 \\ 3x+2y-6z=10 \\ 7x-y+4z=-5 \end{cases}$

20. $\begin{cases} 5x-3y+2z=39 \\ 4x+4y-3z=34 \\ 3x-2y+6z=14 \end{cases}$

21. $\begin{cases} x+y+z=6 \\ 2x-y+2z=6 \\ -x+y+3z=10 \end{cases}$

22. $\begin{cases} 2x+y-z=3 \\ 3x-y+3z=3 \\ -x-3y+2z=3 \end{cases}$

23. $\begin{cases} 2x-3y+z=4 \\ -2x+3y-z=-4 \\ 6x-9y+3z=12 \end{cases}$

24. $\begin{cases} x+y-z=1 \\ x+2z=3 \\ 2x+2y=4 \end{cases}$

Name_____ Class _____ Date_____

3-5 Practice (continued) *Form G*

Systems With Three Variables

Write and solve a system of equations for each problem.

25. The sum of three numbers is –2. The sum of three times the first number, twice the second number, and the third number is 9. The difference between the second number and half the third number is 10. Find the numbers.

26. Monica has \$1, \$5, and \$10 bills in her wallet that are worth \$96. If she had one more \$1 bill, she would have just as many \$1 bills as \$5 and \$10 bills combined. She has 23 bills total. How many of each denomination does she have?

27. Writing How do you decide whether substitution is the best method to solve a system in three variables?

28. Error Analysis A student solves the system of equations. $\begin{cases} 2x + y - z = 13 \\ x + 3y + 3z = 47 \\ 5x - y + z = 1 \end{cases}$

The student gets a solution of (2, 12, 3). Is the solution correct? How can you be sure? Show your work.

29. Reasoning Why is there no solution to the system? $\begin{cases} 2x - 3y + z = 5 \\ 2x - 3y + z = -2 \\ -4x + 6y - 2z = 10 \end{cases}$

30. The first number plus the third number is equal to the second number. The sum of the first number and the second number is six more than the third number. Three times the first number minus two times the second number is equal to the third number. What is the sum of the three numbers?

31. Which of the following is a system with the solution (6, –2, –3)?

(A) $\begin{cases} 2x + y - z = 5 \\ x + 4y + 2z = 16 \\ 15x + 6y - 2z = 12 \end{cases}$

(B) $\begin{cases} 4x - 3y + z = 31 \\ x - 2y + 2z = 8 \\ -3x + y - 4z = -13 \end{cases}$

(C) $\begin{cases} -2x - 2y + z = 16 \\ 3x - 3y + 2z = 9 \\ 4x + y - z = -20 \end{cases}$

(D) $\begin{cases} -x + 2y - z = -7 \\ 3x + 5y + 2z = 2 \\ -2x + 3y + 4z = -30 \end{cases}$