

Odd questions → write answers on separate sheet

Name _____ Date _____ Class _____

LESSON
6-3 **Practice C**
Solving Systems by Elimination

Solve each system by elimination.

1.
$$\begin{cases} x + y = 2 \\ 2x - y = 7 \end{cases}$$

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

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

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

5.
$$\begin{cases} 2x - 2y = 14 \\ x + 4y = -13 \end{cases}$$

6.
$$\begin{cases} y - x = 17 \\ 2y + 3x = -11 \end{cases}$$

7.
$$\begin{cases} x + 6y = 1 \\ 2x - 3y = 32 \end{cases}$$

8.
$$\begin{cases} -\frac{1}{2}x + y = 4 \\ \frac{1}{3}x - y = -3 \end{cases}$$

9.
$$\begin{cases} 3x + y = -15 \\ 2x - 3y = 23 \end{cases}$$

10.
$$\begin{cases} 5x - 2y = -48 \\ 2x + 3y = -23 \end{cases}$$

11.
$$\begin{cases} 4x - 3y = -9 \\ 5x - y = 8 \end{cases}$$

12.
$$\begin{cases} 3x - 3y = -1 \\ 12x - 2y = 16 \end{cases}$$

13. At a bakery, Riley bought 3 bagels and 2 muffins for \$7.25. Karen bought 5 bagels and 4 muffins for \$13.25. What is the cost of each item?
- _____

LESSON 6-3 Practice A Solving Systems by Elimination

Fill in the blanks to solve each system by elimination.

1. $\begin{cases} x + 3y = 14 \\ 2x - 3y = -8 \end{cases}$

Add the equations:
 $x + 3y = 14$
 $+ 2x - 3y = -8$
 $3x + 0y = 6$

$\frac{3x}{3} = \frac{6}{3}$
 $x = 2$

Substitute 2 for x in one of the equations:

$x + 3y = 14$
 $2 + 3y = 14$
 $- 2 \quad - 2$
 $3y = 12$
 $+ 3 \quad + 3$
 $y = 4$

Solution: $(2, 4)$

2. $\begin{cases} 2x + 2y = 4 \\ 3x + 2y = 7 \end{cases}$

Subtract the equations:
 $2x + 2y = 4$
 $-(3x + 2y = 7)$
 $-x + 0y = -3$

or
 $2x + 2y = 4$
 $-3x - 2y = -7$
 $-x + 0y = -3$
 $-x = -3$
 $+ -1 \quad + -1$
 $x = 3$

Substitute 3 for x in one of the equations:

$3x + 2y = 7$
 $3(3) + 2y = 7$
 $9 + 2y = 7$
 $- 9 \quad - 9$
 $2y = -2$
 $+ 2 \quad + 2$
 $y = -1$

Solution: $(3, -1)$

3. $\begin{cases} 3x + 4y = 26 \\ x - 2y = -8 \end{cases}$

Multiply the second equation by 2. Then, add the equations:

$3x + 4y = 26$
 $2(x - 2y = -8)$
 $3x + 4y = 26$
 $+ 2x - 4y = -16$
 $5x + 0 = 10$
 $5x = 10$
 $+ 5 \quad + 5$
 $x = 2$

Substitute 2 for x in one of the equations:

$x - 2y = -8$
 $2 - 2y = -8$
 $- 2 \quad - 2$
 $-2y = -10$
 $+ -2 \quad + -2$
 $y = 5$

Solution: $(2, 5)$

Solve each system by elimination.

4. $\begin{cases} 3x - 2y = 1 \\ 2x + 2y = 14 \end{cases}$
 $(3, 4)$

5. $\begin{cases} x + y = 4 \\ 3x + y = 16 \end{cases}$
 $(3, -2)$

6. $\begin{cases} 3x + 2y = -26 \\ 2x - 6y = -10 \end{cases}$
 $(-8, -1)$

7. The sum of two numbers is -1 . When twice the first number and four times the second number are added, the sum is -10 . What are the two numbers?
3 and -4

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19

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LESSON 6-3 Practice B Solving Systems by Elimination

Follow the steps to solve each system by elimination.

1. $\begin{cases} 2x - 3y = 14 \\ 2x + y = -10 \end{cases}$

Subtract the second equation:

$2x - 3y = 14$
 $-(2x + y = -10)$
 $-4y = 24$

Solve the resulting equation:

$y = -6$

Use your answer to find the value of x :

$x = -2$
 Solution: $(-2, -6)$

2. $\begin{cases} 3x + y = 17 \\ 4x + 2y = 20 \end{cases}$

Multiply the first equation by -2 . Then, add the equations:

$-6x - 2y = -34$
 $+ 4x + 2y = 20$
 $-2x = -14$

Solve the resulting equation:

$x = 7$

Use your answer to find the value of y :

$y = -4$
 Solution: $(7, -4)$

Solve each system by elimination. Check your answer.

3. $\begin{cases} x + 3y = -7 \\ -x + 2y = -9 \end{cases}$
 $(-2, -3)$

4. $\begin{cases} 3x + y = -26 \\ 2x - y = -19 \end{cases}$
 $(-9, 1)$

5. $\begin{cases} x + 3y = -14 \\ 2x - 4y = 32 \end{cases}$
 $(4, -6)$

6. $\begin{cases} 4x - y = -5 \\ -2x + 3y = 10 \end{cases}$
 $(-\frac{1}{2}, 3)$

7. $\begin{cases} y - 3x = 11 \\ 2y - x = 2 \end{cases}$
 $(-4, -1)$

8. $\begin{cases} -10x + y = 0 \\ 5x + 3y = -7 \end{cases}$
 $(-\frac{1}{5}, -2)$

Solve.

9. Brianna's family spent \$134 on 2 adult tickets and 3 youth tickets at an amusement park. Max's family spent \$146 on 3 adult tickets and 2 youth tickets. What is the price of a youth ticket? \$22

10. Carl bought 19 apples of 2 different varieties to make a pie. The total cost of the apples was \$5.10. Granny Smith apples cost \$0.25 each and Gala apples cost \$0.30 each. How many of each type of apple did Carl buy?
7 Gala apples; 12 Granny Smith apples

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20

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LESSON 6-3 Practice C Solving Systems by Elimination

Solve each system by elimination.

1. $\begin{cases} x + y = 2 \\ 2x - y = 7 \end{cases}$
 $(3, -1)$

2. $\begin{cases} 3x - 2y = -2 \\ 3x + y = 5 \end{cases}$
 $(2, 4)$

3. $\begin{cases} x + y = -7 \\ 3x + y = 5 \end{cases}$
 $(-1, -6)$

4. $\begin{cases} -3x - 4y = -2 \\ 6x + 4y = 3 \end{cases}$
 $(\frac{1}{2}, \frac{1}{4})$

5. $\begin{cases} 2x - 2y = 14 \\ x + 4y = -13 \end{cases}$
 $(3, -4)$

6. $\begin{cases} y - x = 17 \\ 2y + 3x = -11 \end{cases}$
 $(-8, 8)$

7. $\begin{cases} x + 6y = 1 \\ 2x - 3y = 32 \end{cases}$
 $(13, -2)$

8. $\begin{cases} -\frac{1}{2}x + y = 4 \\ \frac{1}{3}x - y = -3 \end{cases}$
 $(-6, 1)$

9. $\begin{cases} 3x + y = -15 \\ 2x - 3y = 23 \end{cases}$
 $(-2, -8)$

10. $\begin{cases} 5x - 2y = -48 \\ 2x + 3y = -23 \end{cases}$
 $(-10, -1)$

11. $\begin{cases} 4x - 3y = -9 \\ 5x - y = 8 \end{cases}$
 $(3, 7)$

12. $\begin{cases} 3x - 3y = -1 \\ 12x - 2y = 16 \end{cases}$
 $(\frac{5}{3}, 2)$

13. At a bakery, Riley bought 3 bagels and 2 muffins for \$7.25. Karen bought 5 bagels and 4 muffins for \$13.25. What is the cost of each item?
bagel: \$1.25; muffin: \$1.75

14. A chemist has a beaker of a 3% acid solution and a beaker of a 7% acid solution. He needs to make 75 mL of a 4% acid solution.

a. Complete the table.

| | 3% solution | + | 7% solution | = | 4% solution |
|-------------------------|-------------|---|-------------|---|-------------|
| Amount of Solution (mL) | x | + | y | = | 75 |
| Amount of Acid (mL) | $0.03x$ | + | $0.07y$ | = | $0.04(75)$ |

b. Use the information in the table to write a system of linear equations.

$\begin{cases} x + y = 75 \\ 0.03x + 0.07y = 3 \end{cases}$

c. Solve the system of equations to find how much he will use from each beaker.

56.25 mL of the 3% solution; 18.75 mL of the 7% solution

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21

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LESSON 6-3 Reteach Solving Systems by Elimination

Elimination can be used to solve a system of equations by adding terms vertically. This will cause one of the variables to be eliminated. It may be necessary to multiply one or both equations by some number to use this method.

I. Elimination may require no change to either equation.

$\begin{cases} 3x + y = 6 \\ 5x - y = 10 \end{cases}$ Adding vertically will eliminate y .
 $\begin{cases} 3x + y = 6 \\ 5x - y = 10 \\ \hline 8x + 0 = 16 \end{cases}$

II. Elimination may require multiplying one equation by an appropriate number.

$\begin{cases} 2x + 5y = 9 \\ x - 3y = 10 \end{cases}$ Multiply bottom equation by -2 .
 $\begin{cases} 2x + 5y = 9 \\ -2(x - 3y) = -2(10) \\ \hline 2x + 5y = 9 \\ -2x + 6y = -20 \\ \hline 0 + 11y = -11 \end{cases}$

III. Elimination may require multiplying both equations by different numbers.

$\begin{cases} 5x + 3y = 2 \\ 4x + 2y = 10 \end{cases}$ Multiply the top by -2 and the bottom by 3.
 $\begin{cases} -2(5x + 3y) = -2(2) \\ 3(4x + 2y) = 3(10) \\ \hline -10x - 6y = -4 \\ 12x + 6y = 30 \\ \hline 2x + 0 = 26 \end{cases}$

Solve each system by elimination.

1. $\begin{cases} 2x - y = 20 \\ 3x + 2y = -19 \end{cases}$
 $(3, -14)$

2. $\begin{cases} 3x + 2y = 10 \\ 3x - 2y = 14 \end{cases}$
 $(4, -1)$

3. $\begin{cases} x + y = 12 \\ 2x + y = 6 \end{cases}$
 $(-6, 18)$

4. $\begin{cases} 3x - y = 2 \\ -8x + 2y = 4 \end{cases}$
 $(-4, -14)$

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22

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