

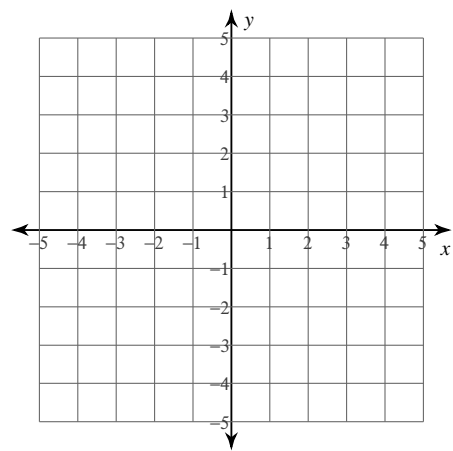
Solving Systems of Equations

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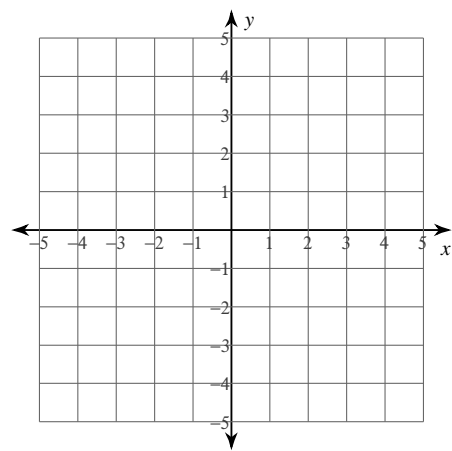
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Solve each system by graphing.

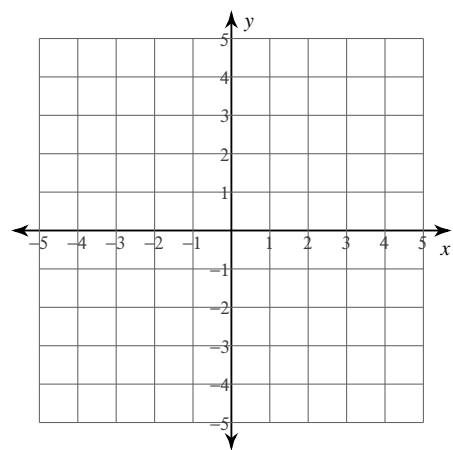
1) $-x = y - 4$
 $y - 3 = 0$



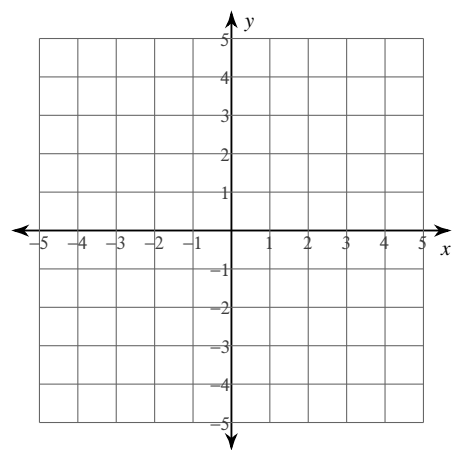
2) $-2 = -y + x$
 $0 = -y - 4x - 3$



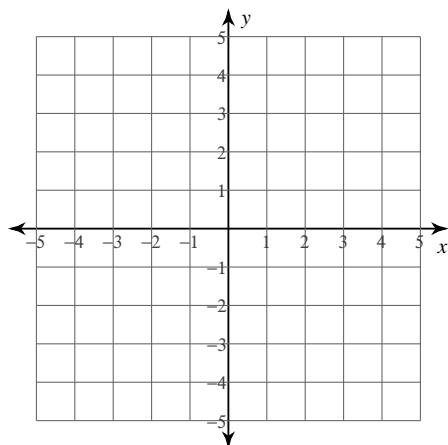
3) $4y - 6x = 16$
 $1 = -x - y$



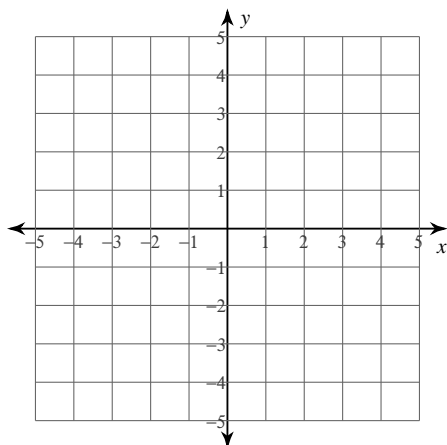
4) $y = 4x + 1$
 $-x - y - 4 = 0$



$$5) \begin{aligned} 0 &= -x + y + 3 \\ -y &= -2 - x \end{aligned}$$



$$6) \begin{aligned} -y + 3 + 4x &= 0 \\ 4x &= -4 + y \end{aligned}$$



Solve each system by substitution. Do all your work on a separate paper. Write your answer next to each question, as an ordered pair, (x, y) .

$$7) \begin{aligned} 4x - 5y &= -15 \\ y &= -3x + 22 \end{aligned}$$

$$8) \begin{aligned} -4x - y &= 23 \\ y &= -7 \end{aligned}$$

$$9) \begin{aligned} 8x - 5y &= 8 \\ y &= 7x + 20 \end{aligned}$$

$$10) \begin{aligned} 5x + 3y &= -9 \\ y &= 2x - 3 \end{aligned}$$

$$11) \begin{aligned} -4x + 7y &= 16 \\ y &= 4x + 16 \end{aligned}$$

$$12) \begin{aligned} y &= 3x + 4 \\ -6x + 4y &= 4 \end{aligned}$$

$$13) \begin{aligned} -6x - 2y &= -20 \\ 3x + y &= 10 \end{aligned}$$

$$14) \begin{aligned} -5x + 6y &= -8 \\ x - 4y &= 24 \end{aligned}$$

$$15) \begin{aligned} -3x + y &= -12 \\ -2x - y &= -8 \end{aligned}$$

$$16) \begin{aligned} -2x + y &= -2 \\ 7x - y &= 2 \end{aligned}$$

$$17) \begin{aligned} -x - 2y &= -3 \\ x + y &= -2 \end{aligned}$$

$$18) \begin{aligned} 4x + 2y &= 0 \\ 2x + y &= 5 \end{aligned}$$

$$19) \begin{aligned} -3x - 2y &= 22 \\ y &= -5 \end{aligned}$$

$$20) \begin{aligned} 12x - 15y &= 15 \\ -4x + 5y &= -5 \end{aligned}$$

$$\begin{aligned} 21) \quad & 2x + 8y = 22 \\ & 2x + 2y = 16 \end{aligned}$$

$$\begin{aligned} 22) \quad & 6x + 2y = -18 \\ & -3x + 5y = -9 \end{aligned}$$

$$\begin{aligned} 23) \quad & -x - 5y = -16 \\ & -7x + 8y = 17 \end{aligned}$$

$$\begin{aligned} 24) \quad & 3x - 3y = 0 \\ & 3x + 7y = 0 \end{aligned}$$

Solve each system by elimination. Do all work on a separate paper. Write your answers next to the question, as an ordered pair, (x, y) .

$$\begin{aligned} 25) \quad & 4x + y = -11 \\ & 5x - y = -7 \end{aligned}$$

$$\begin{aligned} 26) \quad & -3x + 5y = 4 \\ & 3x - 3y = -6 \end{aligned}$$

$$\begin{aligned} 27) \quad & -x - 4y = 8 \\ & x - 2y = 10 \end{aligned}$$

$$\begin{aligned} 28) \quad & -2x + 4y = 14 \\ & 2x + 2y = -8 \end{aligned}$$

$$\begin{aligned} 29) \quad & -3x - 4y = -4 \\ & 3x + 6y = 0 \end{aligned}$$

$$\begin{aligned} 30) \quad & -5x + 2y = 6 \\ & 6x - 2y = -8 \end{aligned}$$

$$\begin{aligned} 31) \quad & 2x - 6y = 10 \\ & -4x - 6y = -2 \end{aligned}$$

$$\begin{aligned} 32) \quad & -x - 2y = 4 \\ & -x - 6y = 0 \end{aligned}$$

$$\begin{aligned} 33) \quad & 4x - 6y = 8 \\ & 4x - 3y = 8 \end{aligned}$$

$$\begin{aligned} 34) \quad & -2x - 2y = -4 \\ & -2x - 4y = -4 \end{aligned}$$

$$\begin{aligned} 35) \quad & -x + 5y = -18 \\ & -x + 4y = -14 \end{aligned}$$

$$\begin{aligned} 36) \quad & -6x + 4y = 6 \\ & -6x + 6y = 6 \end{aligned}$$

$$\begin{aligned} 37) \quad & -2x + 2y = -2 \\ & -3x - 8y = 8 \end{aligned}$$

$$\begin{aligned} 38) \quad & -x - 2y = -4 \\ & 6x + 4y = -16 \end{aligned}$$

$$\begin{aligned} 39) \quad & -2x + 4y = 4 \\ & 4x - 3y = -18 \end{aligned}$$

$$\begin{aligned} 40) \quad & 3x - 8y = 18 \\ & 6x - 4y = 0 \end{aligned}$$

$$\begin{aligned} 41) \quad & -2x - 6y = -4 \\ & -3x - 3y = -6 \end{aligned}$$

$$\begin{aligned} 42) \quad & 5x - 3y = -12 \\ & 3x + y = -10 \end{aligned}$$

$$\begin{aligned} 43) \quad & -3x - 3y = -12 \\ & 4x + 2y = 4 \end{aligned}$$

$$\begin{aligned} 44) \quad & -5x + 6y = 5 \\ & -3x - 5y = 3 \end{aligned}$$

45) $6x + 6y = 6$
 $-4x - 5y = -5$

46) $-3x + 4y = 8$
 $4x - 5y = -11$

Define variables for each question. Write a system of equations. Tell whether you are using "elimination" or "substitution" to solve. Solve. (Show work on separate paper and write answer as a sentence below the question.)

- 47) Stefan's school is selling tickets to the annual dance competition. On the first day of ticket sales the school sold 13 adult tickets and 2 student tickets for a total of \$78. The school took in \$143 on the second day by selling 13 adult tickets and 7 student tickets. Find the price of an adult ticket and the price of a student ticket.

- 48) The sum of two numbers is 19. Their difference is 1. What are the numbers?

- 49) Molly and Ryan are selling pies for a school fundraiser. Customers can buy apple pies and lemon meringue pies. Molly sold 11 apple pies and 11 lemon meringue pies for a total of \$242. Ryan sold 4 apple pies and 11 lemon meringue pies for a total of \$193. What is the cost each of one apple pie and one lemon meringue pie?

- 50) The sum of two numbers is 20. Their difference is 6. What are the numbers?

- 51) The difference of two numbers is 7. Their sum is 21. Find the numbers.

- 52) The school that Jimmy goes to is selling tickets to the annual talent show. On the first day of ticket sales the school sold 7 senior citizen tickets and 13 student tickets for a total of \$214. The school took in \$114 on the second day by selling 7 senior citizen tickets and 3 student tickets. What is the price each of one senior citizen ticket and one student ticket?
- 53) The senior classes at High School A and High School B planned separate trips to Yellowstone National Park. The senior class at High School A rented and filled 14 vans and 1 bus with 153 students. High School B rented and filled 14 vans and 7 buses with 483 students. Each van and each bus carried the same number of students. How many students can a van carry? How many students can a bus carry?
- 54) The indoor climbing gym is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 12 vans and 13 buses with 772 students. High School B rented and filled 9 vans and 13 buses with 748 students. Each van and each bus carried the same number of students. Find the number of students in each van and in each bus.
- 55) Matt and Natalie each improved their yards by planting rose bushes and shrubs. They bought their supplies from the same store. Matt spent \$83 on 14 rose bushes and 11 shrubs. Natalie spent \$65 on 5 rose bushes and 11 shrubs. Find the cost of one rose bush and the cost of one shrub.
- 56) Totsakan and Kristin are selling fruit for a school fundraiser. Customers can buy small boxes of tangerines and large boxes of tangerines. Totsakan sold 6 small boxes of tangerines and 9 large boxes of tangerines for a total of \$180. Kristin sold 12 small boxes of tangerines and 2 large boxes of tangerines for a total of \$168. What is the cost each of one small box of tangerines and one large box of tangerines?

Answers to Solving Systems of Equations

- | | | | |
|--|----------------|---------------------|---------------------|
| 1) (1, 3) | 2) (-1, 1) | 3) (-2, 1) | 4) (-1, -3) |
| 5) No solution | 6) No solution | 7) (5, 7) | 8) (-4, -7) |
| 9) (-4, -8) | 10) (0, -3) | 11) (-4, 0) | 12) (-2, -2) |
| 13) Infinite number of solutions | 14) (-8, -8) | 15) (4, 0) | |
| 16) (0, -2) | 17) (-7, 5) | 18) No solution | 19) (-4, -5) |
| 20) Infinite number of solutions | 21) (7, 1) | 22) (-2, -3) | |
| 23) (1, 3) | 24) (0, 0) | 25) (-2, -3) | 26) (-3, -1) |
| 27) (4, -3) | 28) (-5, 1) | 29) (4, -2) | 30) (-2, -2) |
| 31) (2, -1) | 32) (-6, 1) | 33) (2, 0) | 34) (2, 0) |
| 35) (-2, -4) | 36) (-1, 0) | 37) (0, -1) | 38) (-6, 5) |
| 39) (-6, -2) | 40) (-2, -3) | 41) (2, 0) | 42) (-3, -1) |
| 43) (-2, 6) | 44) (-1, 0) | 45) (0, 1) | 46) (-4, -1) |
| 47) adult ticket: \$4, student ticket: \$13 | | 48) 9 and 10 | |
| 49) apple pie: \$7, lemon meringue pie: \$15 | | 50) 7 and 13 | 51) 7 and 14 |
| 52) senior citizen ticket: \$12, student ticket: \$10 | | 53) Van: 7, Bus: 55 | 54) Van: 8, Bus: 52 |
| 55) rose bush: \$2, shrub: \$5 | | | |
| 56) small box of tangerines: \$12, large box of tangerines: \$12 | | | |