Decide whether the ordered pair is a solution of the system of linear equations.

1. $(1, 1), (0, 3)$

$2x + y = 3$

$x - 2y = -1$

2. $(2, 4), (-3, 8)$

$4x + y = -4$

$-x - y = 1$

3. $(-5, -2), (4, 1)$

$x - y = 3$

$3x - y = 11$

4. $(-6, -4), (-4, 0)$

$x - 3y = 6$

$2x - y = -8$

5. $(-3, -4), (3, 6)$

$-4x + y = 8$

$5x - 3y = -3$
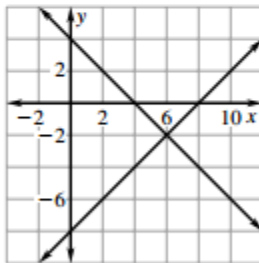
6. $(3, -4), (-6, 2)$

$-2x - y = 6$

$3x + 4y = -10$

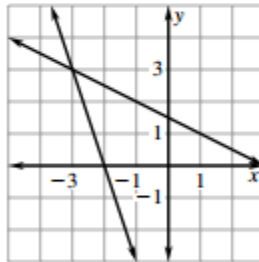**Use the graph to solve the linear system. Check your solution algebraically.**
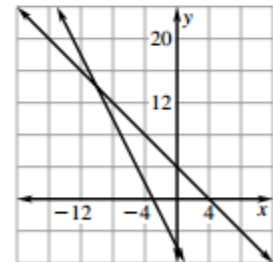
7. $-x + y = -8$

$x + y = 4$

8. $3x + y = -6$

$-x - 2y = -3$

9. $4x + 2y = -12$

$2x + 2y = 8$

Graph and check to solve the linear system.

10. $x = 6$

$y = -3$

11. $y = x - 2$

$y = -x - 4$

12. $y = 2x - 4$

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

13. $-3x + y = 6$
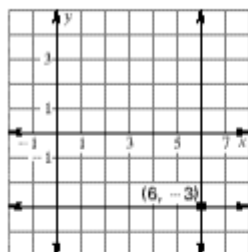
$-x + y = -2$

14. $x + 2y = -6$

$-3x + y = -10$

15. $y = \frac{1}{2}x + 3$
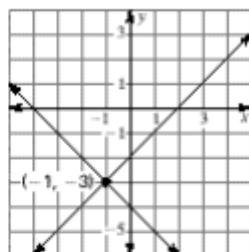
$y = x + 4$

ANSWERS

1. yes; no   **2.** no; no   **3.** no; yes   **4.** yes; no

5. yes; no   **6.** no; no   **7.** $(6, -2)$ **8.** $(-3, 3)$

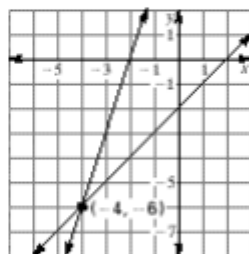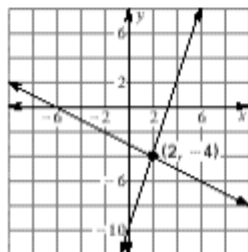**9.** $(-10, 14)$

10.

11.

12.
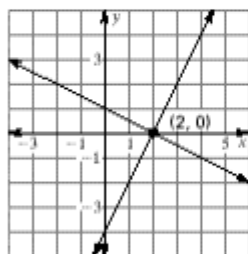
13.

14.

15.
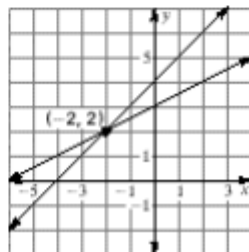
Word Problems

1. Wendy is researching transportation companies for her catering business. Peter's Pick Up charges $2 per mile and charges a flat fee of $68. Helen's Haulers charges $100, no matter how many miles driven. Write a system of equations and graph it.
2. Jonas needs a cell phone. He has a choice between two companies. Terri's telephone has a flat fee of $29.95 and $0.10 a minute. Carrie's connection has a flat fee of $4.95 and $0.40 a minute. Write and graph a system of equations.

ANSWERS

1. $y = 2x + 68$
   $y = 100$
2. $y = 29.95 + 0.1x$
   $y = 4.95 + .4x$

Use the substitution method to solve the linear system.

10. $y = x + 3$

$3x - y = 5$

11. $4x + y = 9$

$y = -7$

12. $3x = 9$

$-2x + y = -8$

13. $x - 2y = -13$

$y = -2x - 6$

14. $x - y = 10$

$5x - y = -6$

15. $4x + y = 2$

$x - y = -17$

16. $-x + 3y = 4$

$x + 6y = 14$

17. $3x + 2y = 8$

$x + 4y = -4$

18. $x - 5y = -3$

$4x - 3y = 5$

19. $2x + 5y = 4$

$x + 5y = 7$

20. $\frac{1}{2}x + y = 2$

$2x + 3y = 9$

21. $\frac{1}{3}x + \frac{5}{6}y = 1$

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

Answers

10. $(4, 7)$

11. $(4, -7)$ **12.** $(3, -2)$ **13.** $(-5, 4)$

14. $(-4, -14)$ **15.** $(-3, 14)$ **16.** $(2, 2)$

17. $(4, -2)$ **18.** $(2, 1)$ **19.** $(-3, 2)$

20. $(6, -1)$ **21.** $(-22, 10)$

Use linear combinations to solve the system of linear equations.

1. $x + y = 11$
$x - y = 7$

2. $x - 2y = 8$
$-x + 3y = -15$

3. $3x + y = -8$
$-3x + 4y = -2$

4. $2x - 4y = 14$
$-2x + 3y = -11$

5. $\frac{1}{2}x - y = -3$
$-5x + y = 12$

6. $7.5x - 1.2y = -2.7$
$-1.5x + 1.2y = -3.3$

7. $x + 2y = -3$
$x - 4y = 15$

8. $-x - 5y = 30$
$2x - 7y = 25$

9. $-x + 8y = 16$
$3x + 4y = 36$

10. $4x - 3y = -3$
$4x + 5y = 5$

11. $4x + 5y = -2$
$5x - 4y = -23$

12. $9x - 4y = -18$
$-3x + 8y = 6$

13. $4x = -11 + y$
$y = -6x - 9$

14. $x = 2y - 3$
$2y = 3x + 13$

15. $4y = 15 - 3x$
$2y = 3x + 21$

16. $4x = 5y - 14$
$3y - 8x = -14$

17. $5x = 4y - 30$
$2x + 3y = -12$

18. $\frac{2}{3}y = 10 + 4x$
$5x = \frac{1}{3}y - 8$

ANSWERS

1. $(9, 2)$ **2.** $(-6, -7)$ **3.** $(-2, -2)$
4. $(1, -3)$ **5.** $(-2, 2)$ **6.** $(-1, -4)$
7. $(3, -3)$ **8.** $(-5, -5)$ **9.** $(8, 3)$ **10.** $(0, 1)$
11. $(-3, 2)$ **12.** $(-2, 0)$ **13.** $(-2, 3)$
14. $(-5, -1)$ **15.** $(-3, 6)$ **16.** $(4, 6)$
17. $(-6, 0)$ **18.** $(-1, 9)$

Match the graph with its linear system. Does the system have exactly one solution, no solution, or infinitely many solutions?
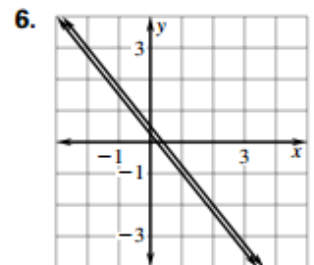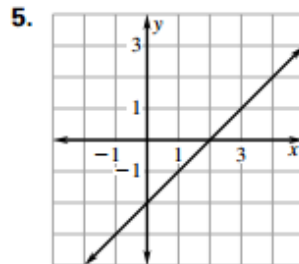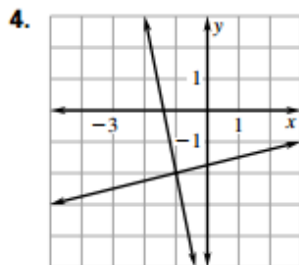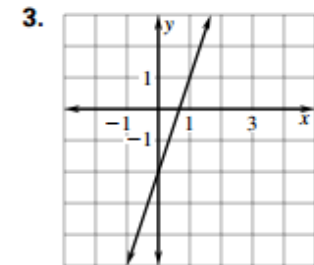
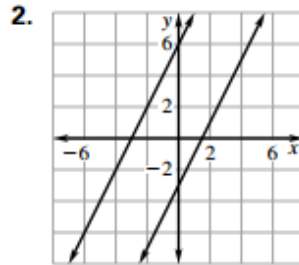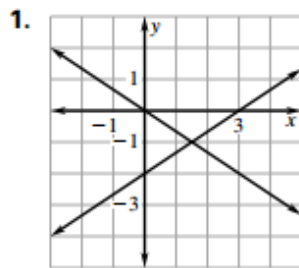**A.** $-2x + y = 6$
  $-4x + 2y = -6$

B. $x - 4y = 7$
  $5x + y = -7$

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

D. $5x + 4y = 2$
  $-5x - 4y = -1$

E. $-2x + 3y = -6$
  $2x + 3y = 0$

F. $x - y = 2$
  $7x - 7y = 14$

1.

2.

3.

4.

5.

6.

Use the substitution method or linear combinations to solve the linear system and tell how many solutions the system has.

7. $-8x + 8y = -6$
  $3x - 3y = 8$

8. $-6x - 6y = -12$
  $-2x - 2y = -4$

9. $-4x - 2y = 2$
  $4x - 2y = 18$

10. $6x - 4y = -6$
  $3x + 2y = 1$

11. $3x - 2y = -5$
  $-9x + 6y = 15$

12. $x + 3y = -3$
  $\frac{1}{3}x + y = 1$

Use the graphing method to solve the linear system and tell how many solutions the system has.

13. $2x + y = 7$
  $4x + 2y = -10$

14. $-2x + 3y = 18$
  $-2x + 3y = -18$

15. $-x + 4y = -3$
  $3x - 12y = 3$

16. $6x - 5y = 3$
  $-2x + \frac{5}{3}y = 1$

17. $x - 7y = 10$
  $-6x + 4y = -22$

18. $\frac{1}{2}x + y = -2$
  $\frac{3}{2}x + 3y = 6$

1. E; exactly one solution   **2.** A; no solution

3. C; infinitely many solutions

4. B; exactly one solution

5. F; infinitely many solutions.   **6.** D; no solution   **7.** no solution   **8.** infinitely many solutions   **9.** exactly one solution $(2, -5)$

10. exactly one solution $\left(-\frac{1}{3}, 1\right)$

11. infinitely many solutions   **12.** no solution

13. no solution   **14.** no solution

15. no solution   **16.** no solution

17. exactly one solution $(3, -1)$

18. no solution