

# Algebra 1 · Systems of Linear Equations · Quiz

Common Core A-REI.C.5, A-REI.C.6, A-REI.D.11, A-CED.A.3 · mathovore.fr

Name: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Score: \_\_\_\_\_

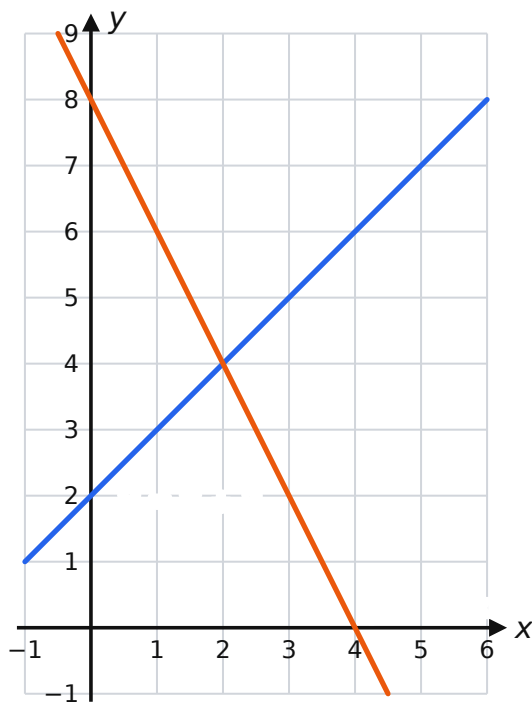
Take this ten-question quiz to check what you know about solving systems of linear equations and reading where graphs meet. Each question has exactly one correct answer. Read the explanation after each choice, especially for the ones you miss.

**Algebra 1 Common Core: A-REI.C.5 · A-REI.C.6 · A-REI.D.11 · A-CED.A.3**

## Questions

### Question 1

The graph shows two lines. What is the solution of the system?



Two lines in the plane.

- A. (4, 2)
- B. (0, 2)
- C. (3, 5)
- D. (2, 4)

### Question 2

Which ordered pair is the solution of  $x+y=7$  and  $x-y=1$ ?

- A. (4, 3)
- B. (5, 2)
- C. (3, 4)
- D. (6, 1)

### Question 3

What is the solution of  $y=2x$  and  $x+y=12$ ?

- A. (8, 4)
- B. (6, 6)
- C. (4, 8)
- D. (3, 6)

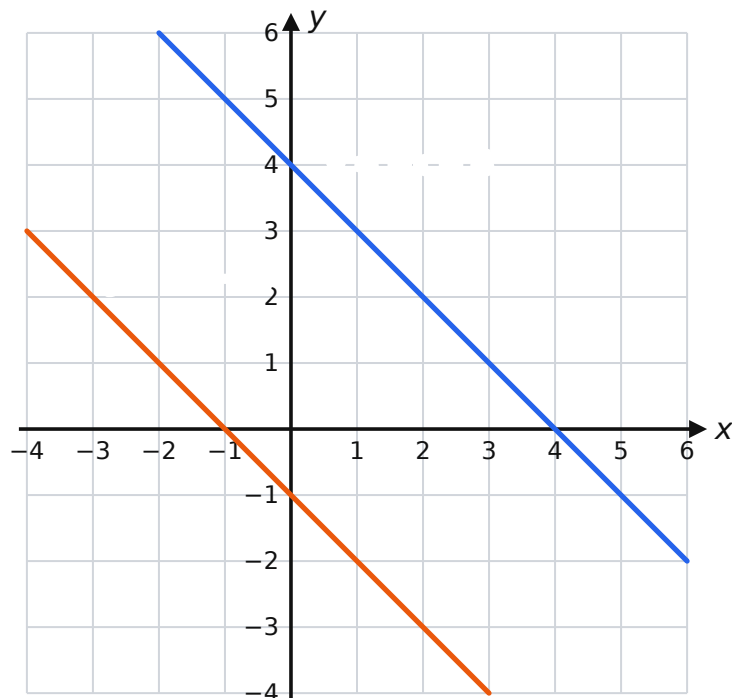
### Question 4

Which first step eliminates a variable in  $2x+3y=7$  and  $4x-3y=5$ ?

- A. Subtract the equations to eliminate  $y$
- B. Add the equations to eliminate  $x$
- C. Subtract the equations to eliminate  $x$
- D. Add the equations to eliminate  $y$

### Question 5

How many solutions does the system in the graph have?



Two lines in the plane.

- A. Exactly one solution
- B. Exactly two solutions
- C. Infinitely many solutions
- D. No solution

### Question 6

How many solutions does the system  $y = 2x + 1$  and  $4x - 2y = -2$  have?

- A. Infinitely many solutions
- B. No solution
- C. Exactly one solution
- D. Exactly two solutions

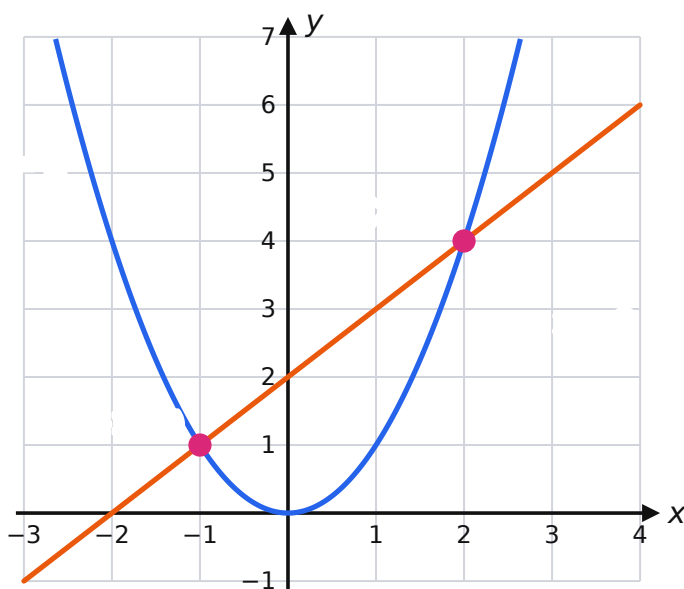
### Question 7

A theater sold 40 tickets, some at \$3 and the rest at \$5, for \$164. How many \$5 tickets were sold?

- A. 18
- B. 22
- C. 20
- D. 24

### Question 8

Which values of  $x$  solve  $x^2 = x + 2$ , using the graph?



The graphs of two functions.

- A.  $x = -1$  and  $x = 2$
- B.  $x = 1$  and  $x = 4$
- C.  $x = -2$  and  $x = 1$
- D.  $x = 1$  and  $x = 2$

### Question 9

The pair  $(3,2)$  solves  $2x+y=8$  and  $x-y=1$ . Which equation must  $(3,2)$  also solve?

- A.  $x = 9$
- B.  $3x = 9$
- C.  $x + 2y = 9$
- D.  $3y = 9$

### Question 10

Bike rental A costs \$12 plus \$4 per hour. Rental B costs \$4 plus \$6 per hour. After how many hours do they cost the same?

- A. 2 hours
- B. 8 hours
- C. 4 hours
- D. 28 hours

## Answer key

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1. **D** - The solution is the crossing point, (2,4). The point (4,2) swaps the coordinates, and the others lie on only one line.
2. **A** - Only (4,3) satisfies both:  $4+3=7$  and  $4-3=1$ . Each other pair satisfies just one equation.
3. **C** - Substituting gives  $3x=12$ , so  $x=4$  and  $y=8$ . The pair (3,6) fits  $y=2x$  but not the sum.
4. **D** - The y-terms  $3y$  and  $-3y$  are opposites, so adding cancels y. Subtracting would double the y-terms instead.
5. **D** - The lines have the same slope and different intercepts, so they are parallel and never meet.
6. **A** - Solving  $4x-2y=-2$  for  $y$  gives  $y=2x+1$ , the same line, so every point on it is a solution.
7. **B** - With  $t$  tickets at \$5:  $3(40-t)+5t=164$ , so  $2t=44$  and  $t=22$ . The value 18 is the number of \$3 tickets.
8. **A** - The solutions are the x-coordinates of the intersection points (-1,1) and (2,4). The values 1 and 4 are y-coordinates.
9. **B** - Adding the equations gives  $3x=9$ , and  $3(3)=9$ . The other equations are not consequences of the pair.
10. **C** - Set  $12+4h=4+6h$ :  $8=2h$ , so  $h=4$ . The value 28 is the common cost, not the number of hours.

### Remember:

- Standards A-REI.C.5, A-REI.C.6, A-REI.D.11 and A-CED.A.3: solve systems by graphing, substitution and elimination, and model real situations.
- Two lines meet once, never, or everywhere: one solution, no solution, or infinitely many.
- Substitution works best when a variable is already isolated; elimination works best when coefficients match or are opposites.
- Adding equations is valid because equal quantities added to equal quantities stay equal.
- The x-coordinates where two graphs meet solve  $f(x)=g(x)$  for lines, parabolas and exponentials alike.