

Algebra 1 · Systems of Linear Equations · Test Answer Key

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

Use this key to score the test out of 20 points. Each solution shows a full method and a scoring guide, so partial credit can be given when the setup is right but an arithmetic slip changes the final answer. Accept any valid method unless the question names one.

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

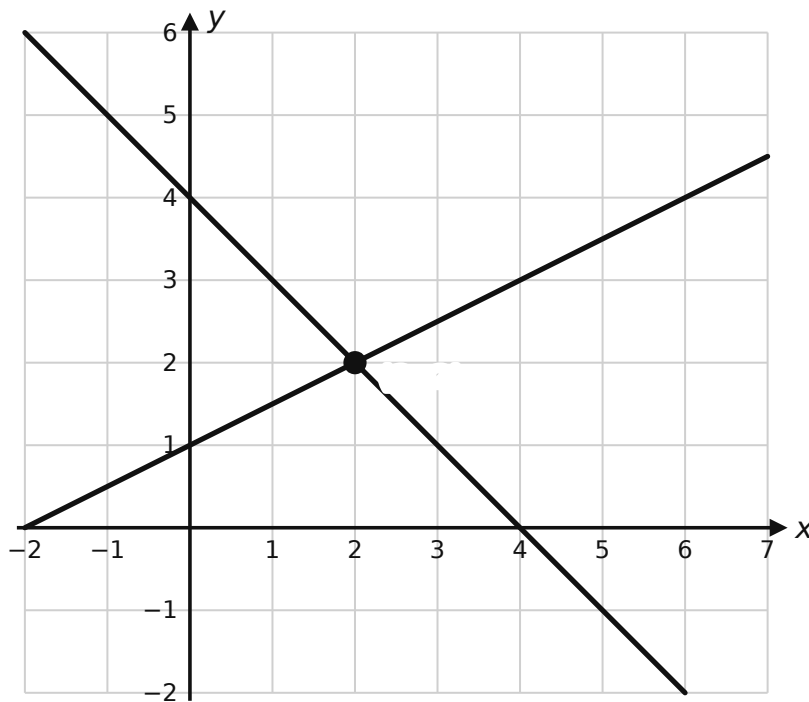
Question 1: Is it a solution? (2 points)

- a. $2(4) + (-1) = 7$ and $4 - 3(-1) = 7$. Both true: **yes**.
- b. $2(3) + 1 = 7$ is true, but $3 - 3(1) = 0 \neq 7$. **No**.

Scoring: 1 point for each part, with both equations checked in each.

Question 2: Read the solution (2 points)

- a. The lines cross at $(2, 2)$.
- b. $-2 + 4 = 2$ and $\frac{1}{2}(2) + 1 = 2$. Both are true.

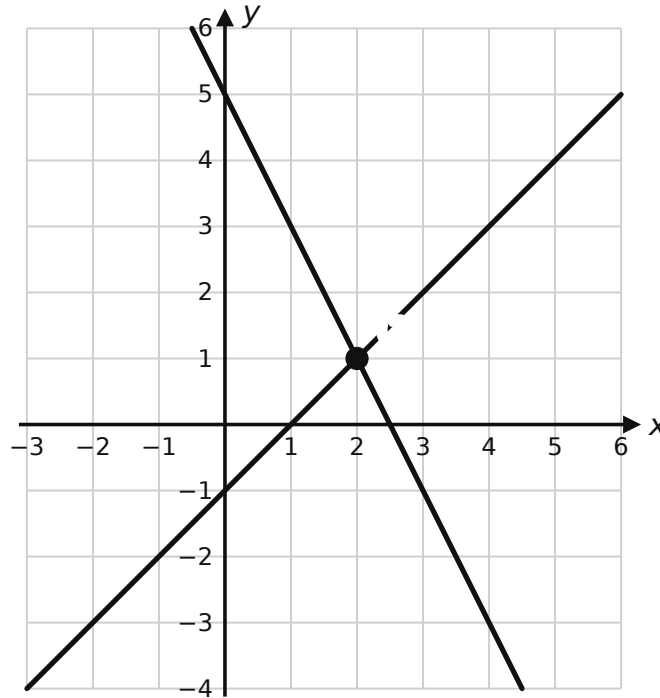


The crossing point is the solution.

Scoring: 1 point for the point, 1 point for checking both equations.

Question 3: Solve by graphing (2 points)

Line 1 passes through $(0, -1)$ and $(2, 1)$. Line 2 passes through $(0, 5)$ and $(2, 1)$. They cross at $(2, 1)$.



Both lines pass through $(2, 1)$.

Scoring: 1 point for both lines graphed correctly, 1 point for the solution.

Question 4: Substitution (2 points)

Substitute: $3x + 2(4x - 7) = 8$, so $11x - 14 = 8$ and $x = 2$. Then $y = 4(2) - 7 = 1$.

Check: $3(2) + 2(1) = 8$.

The solution is $(2, 1)$.

Scoring: 1 point for $x = 2$, 1 point for $y = 1$.

Question 5: Opposite coefficients (2 points)

Add the equations: $7x = -14$, so $x = -2$. Then $5(-2) + 3y = -1$ gives $3y = 9$ and $y = 3$.

Check: $2(-2) - 3(3) = -13$.

The solution is $(-2, 3)$.

Scoring: 1 point for $x = -2$, 1 point for $y = 3$.

Question 6: Multiply first (2 points)

Multiply the first equation by 3 and the second by 2: $9x + 6y = 30$ and $10x + 6y = 34$.

Subtract: $x = 4$. Then $12 + 2y = 10$ gives $y = -1$.

Check: $5(4) + 3(-1) = 17$.

The solution is $(4, -1)$.

Scoring: 1 point for a correct elimination setup with $x = 4$, 1 point for $y = -1$.

Question 7: Count the solutions (2 points)

- a. $6x + 2y = 4$ gives $y = -3x + 2$, the same line. **Infinitely many solutions.**
- b. $4x - 2y = 6$ gives $y = 2x - 3$. The slopes are equal (2) and the intercepts differ (-3 and 5).
No solution.

Scoring: 1 point per part, for the correct count with a valid reason.

Question 8: Explain elimination (2 points)

- a. A solution makes $3x + y = 11$ and $2x - y = 4$ both true. Adding equal amounts to both sides of equations keeps them true, so the sum $5x = 15$ is also true for that pair.
- b. $x = 3$. Then $3(3) + y = 11$ gives $y = 2$. Check: $2(3) - 2 = 4$. The solution is $(3, 2)$.

Scoring: 1 point for an explanation based on equal quantities added to equal quantities, 1 point for $(3, 2)$.

Question 9: Ticket problem (2 points)

Let s be student tickets and a adult tickets: $s + a = 150$ and $6s + 10a = 1100$.

Substitute $s = 150 - a$: $900 - 6a + 10a = 1100$, so $4a = 200$ and $a = 50$. Then $s = 100$.

Check: $6(100) + 10(50) = 1100$.

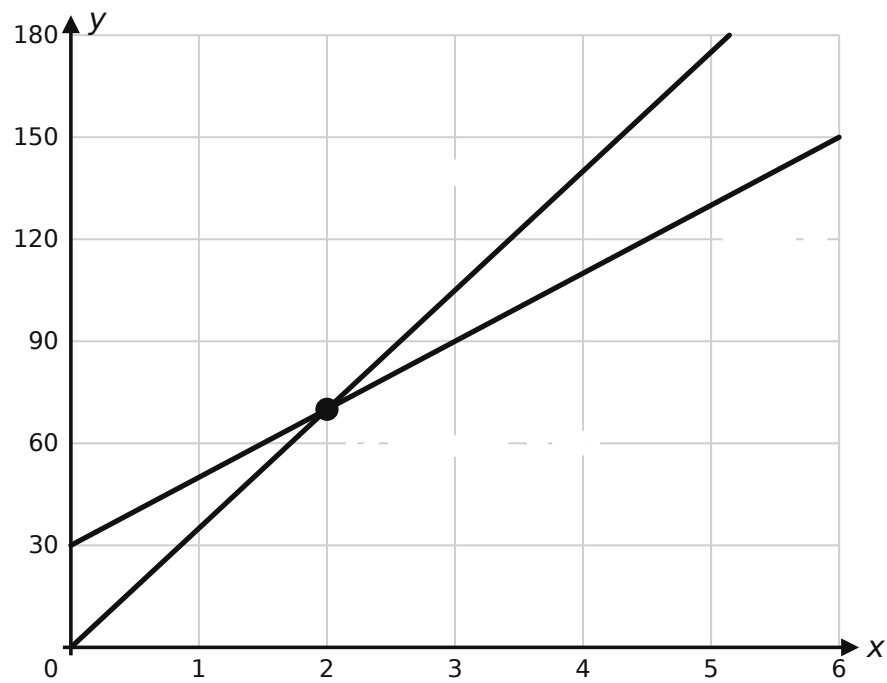
100 student tickets and 50 adult tickets.

Scoring: 1 point for a correct system, 1 point for the two answers.

Question 10: Gym memberships (2 points)

- a. Gym A: $C = 20m + 30$. Gym B: $C = 35m$.

b. $20m+30=35m$, so $30=15m$ and $m=2$. Cost: $35(2)=70$, and $20(2)+30=70$. **After 2 months, both cost \$70.**



The lines meet at 2 months.

Scoring: 1 point for both equations, 1 point for $m=2$ and \$70.

Total
20 points