

Solving Systems of Linear Equations

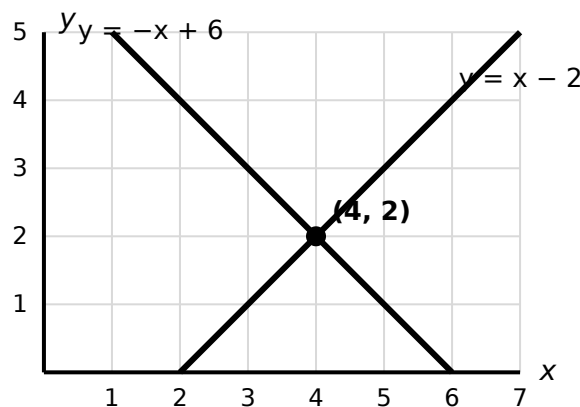
Grade 8 math · Test Answer Key · Standards: 8.EE.C.8a, 8.EE.C.8b, 8.EE.C.8c

Use the scoring lines. Credit any correct method for each system: graphing, substitution or elimination. Partial credit applies when the method is right but an arithmetic slip follows.

Standards: 8.EE.C.8a, 8.EE.C.8b, 8.EE.C.8c · **Level:** Grade 8

Question 1 Read and verify (2 points)

The lines cross at (4, 2). Check: $4 - 2 = 2$ and $-4 + 6 = 2$.



Intersection at (4, 2).

(4, 2)

Scoring: 1 point for the pair, 1 point for both checks.

Question 2 Substitution (3 points)

Replace y: $2x + 4x - 5 = 13$, so $6x = 18$ and $x = 3$. Then $y = 4(3) - 5 = 7$. Check: $6 + 7 = 13$.

(3, 7)

Scoring: 1 point for the substitution, 1 point for x, 1 point for y.

Question 3 Elimination (3 points)

Add the equations: $6x = 24$, so $x = 4$. Then $16 + 3y = 25$ gives $y = 3$. Check: $8 - 9 = -1$.

(4, 3)

Scoring: 1 point for adding correctly, 1 point for x , 1 point for y .

Question 4 Classify the systems (3 points)

- a. Same slope 5, different intercepts: no solution.
- b. Multiply the second equation by 3: it becomes the first. Same line: infinitely many.
- c. Slopes 4 and -1 differ: one solution.

(a) none (b) infinitely many (c) one

Scoring: 1 point per part.

Question 5 County fair tickets (3 points)

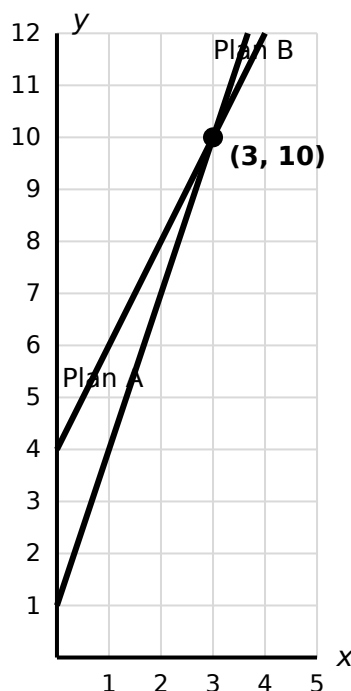
Let x = adult and y = child tickets. $x + y = 120$ and $9x + 5y = 860$. Substitute $x = 120 - y$: $1,080 - 9y + 5y = 860$, so $-4y = -220$ and $y = 55$. Then $x = 65$. Check: $585 + 275 = 860$.

65 adult and 55 child tickets

Scoring: 1 point for the system, 1 point for y , 1 point for x .

Question 6 Pool memberships (3 points)

- a. The lines cross at $(3, 10)$.
- b. After 3 visits both plans cost \$10.
- c. For 5 visits: A costs $2(5) + 4 = \$14$ and B costs $3(5) + 1 = \$16$, so Plan A is cheaper.



Intersection at (3, 10).

(a) (3, 10) (b) equal cost of \$10 after 3 visits (c) Plan A

Scoring: 1 point per part.

Question 7 Is it a solution? (2 points)

$2(-2) + 5 = 1$: true. $-2 - 5 = -7$: true. Both are true.

Yes, (-2, 5) is a solution.

Scoring: 1 point per check.

Question 8 Parallel on purpose (1 point)

Keep the slope 2 and change the intercept, for example $y = 2x + 5$. Parallel lines never meet.

Example: $y = 2x + 5$

Scoring: 1 point for slope 2 with a different intercept.