

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 · maths-pdf.fr/en/

Use this key to grade the systems of equations test. Each solution shows the full work, and the scoring note explains how the points are awarded. The test totals 20 points. Give partial credit for correct steps, even when the final answer is wrong.

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

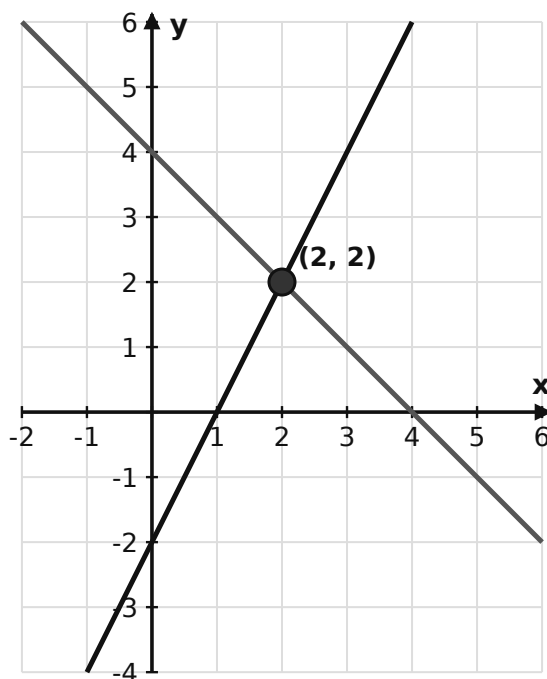
Question 1 - Check a solution [2 pts]

First: $3+2(-1)=1$ true. Second: $3(3)-(-1)=10$ true.

Yes

Scoring: 1 point for each equation checked correctly.

Question 2 - Solve by graphing [2 pts]



The lines meet at (2, 2).

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

$(2,2)$

Scoring: 1 point for graphing both lines correctly; 1 point for the solution.

Question 3 - Substitution [2 pts]

Substitute: $3x+(2x-3)=12$, so $5x=15$ and $x=3$.

$$y=2(3)-3=3.$$

$(3,3)$

Scoring: 1 point for x ; 1 point for y .

Question 4 - Elimination [2 pts]

Add: $6x=12$, so $x=2$. Then $4(2)+3y=17$ gives $y=3$.

$(2,3)$

Scoring: 1 point for x ; 1 point for y .

Question 5 - Elimination with multiplying [2 pts]

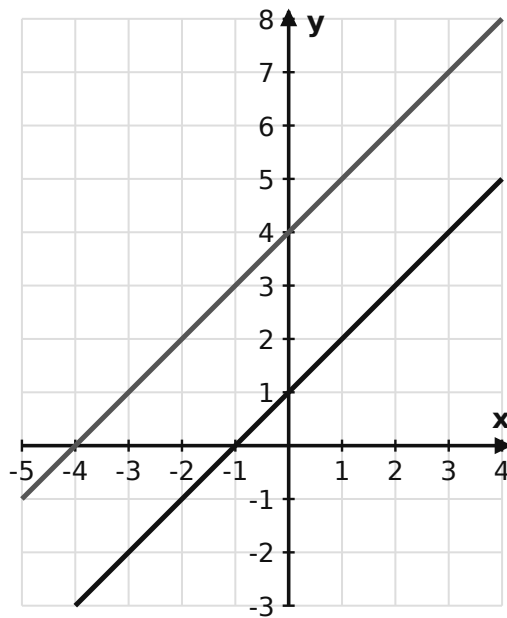
Multiply the first by 5 and the second by 2: $15x+10y=35$ and $4x-10y=-16$. Add: $19x=19$, so $x=1$.

$$3(1)+2y=7 \text{ gives } y=2.$$

$(1,2)$

Scoring: 1 point for a correct elimination step; 1 point for the solution.

Question 6 - Number of solutions [2 pts]



Lines for question 6b.

- a) Rewrite the second: $2y = -4x + 6$, so $y = -2x + 3$. The same line: **infinitely many solutions**.
- b) Equal slopes, different intercepts: parallel lines, **no solution**.

Scoring: 1 point for each part with reasoning.

Question 7 - Ticket sales [3 pts]

- a) $s + a = 150$ and $5s + 8a = 930$.
- b) Substitute $s = 150 - a$: $5(150 - a) + 8a = 930$, so $750 + 3a = 930$, $a = 60$, and $s = 90$.
- c) $90 + 60 = 150$ and $5(90) + 8(60) = 450 + 480 = 930$.

90 student tickets and 60 adult tickets

Scoring: 1 point per part.

Question 8 - Break-even point [3 pts]



Break-even at 20 lawns.

a) $200 + 5x = 15x$.

b) $200 = 10x$, so $x = 20$. Revenue: $15(20) = 300$.

c) After 20 lawns, cost and revenue are both \$300; the business breaks even.

20 lawns; \$300

Scoring: 1 point per part.

Question 9 - Find the error [2 pts]
--

Check the second equation: $4 - 6 = -2$, not 2.

Add the equations: $2x = 12$, so $x = 6$. Then $y = 4$.

(6,4)

Scoring: 1 point for showing the pair fails; 1 point for the correct solution.

Total
20 points