Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Solving Systems by Elimination

Solving Systems by Elimination | A1-U06-P04

96 problems · Four activity formats

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Topic focus

Across 96 tasks this topic asks for first error, corrected row, and ordered pair, complete solution set, aligned system and ordered pair, multiplier and surviving equation or impossibility justification and ordered pair.

8 PDFs and a README; 56 buyer pages.

The following pages use the same questions, given data, and notation as the final files. Question/card serial numbers and internal IDs are omitted in this preview only. Table values and matching responses are retained. Full answer keys are not included.

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Algebra 1

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Name: _____ **Date:** _____ **Class:** _____

Answer each question and record the matching bank letter. Give exact values. Give the whole requested response, including any reasoning the question asks for.

Solve the system $5x + 4y = -7$ and $x - 4y = 13$ by choosing addition or subtraction so a variable cancels immediately. Verify the result in both original equations. Bank label: _____	One coefficient pair in $2x - 3y = 2$ and $2x - 2y = 4$ is already aligned. Solve by elimination. Verify the result in both original equations. Bank label: _____
Use the ready cancellation in $3x$-$y = 14$ and $-3x + 2y = -7$ to determine the ordered pair. Verify the result in both original equations. Bank label: _____	Without scaling either equation, eliminate a variable and solve the system $4x + y = -25$ and $7x + y = -40$. Verify the result in both original equations. Bank label: _____
For the system $5x + 3y = 0$ and $9x - 3y = 0$, explain whether addition or subtraction creates the cancellation, then solve. Verify the result in both original equations. Bank label: _____	For the system $3x - 3y = 15$ and $-3x - 5y = 17$, explain whether addition or subtraction creates the cancellation, then solve. Verify the result in both original equations. Bank label: _____
Choose a nonzero multiplier for one row of $x + 3y = 16$ and $7x + 9y = 28$ and solve by elimination. Check the ordered pair in both originals. Bank label: _____	Use one whole-equation scaling before combining the equations in $16x + 21y = -137$ and $4x + 4y = -28$. Check the ordered pair in both originals. Bank label: _____

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Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. Give the whole requested response, including any reasoning the question asks for.

Rewrite each equation in aligned standard form before eliminating for $2(x+2)-3y=3$ and $-3x+2y=-1$. Verify the final ordered pair in the original displayed equations.	A student's elimination work contains one first invalid step for $2x-2y=-4$ and $4x-3y=-8$: "Multiply $E1$ by 2 but leave its right side as -4." Identify the first error, give the corrected combination, solve, and verify the ordered pair.
Determine k so that $E1+$ kE2 eliminates the specified variable, and give the surviving equation for $E1$: $2x-3y=-10$ and $E2$: $3x-3y=-6$; eliminate x.	Carry out the indicated elimination and interpret the constant statement without discarding the original constraint for $x-2y=-2$ and $2x-4y=-4$ by forming $-2E1+E2$.
Simplify the system carefully, align like terms, and then solve by elimination for $5x-3y=-6+2x$ and $2x+4y=32$. Verify the final ordered pair in the original displayed equations.	The linear structure is hidden. Normalize both rows before forming an elimination combination for $0.4x+0.3y=1.0$ and $-0.4x-0.6y=0.8$. Verify the final ordered pair in the original displayed equations.

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Name: _____ **Date:** _____ **Class:** _____

Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

Incoming: $(0, 0)$

Scale exactly one equation in $2x - 2y = 16$ and $4x - 5y = 39$ to create cancellation, then solve. Check the ordered pair in both originals.

Your response: _____

Incoming: $(7, -2)$

Scale exactly one equation in $2x - 2y = 11$ and $4x - 7y = 16$ to create cancellation, then solve. Give the answer exactly and check it.

Your response: _____

Incoming: $(-2, 0)$

Choose a nonzero multiplier for one row of $x + 3y = -2$ and $5x + 9y = 2$ and solve by elimination. Check the ordered pair in both originals.

Your response: _____

Incoming: $(4, 2)$

Solve $3x + y = -10$ and $9x - 2y = -10$ by elimination; only one original equation needs to be multiplied. Check the ordered pair in both originals.

Your response: _____

Incoming: $(1, -7)$

Solve the system $3x + y = -5$ and $-3x + 3y = 9$ by choosing addition or subtraction so a variable cancels immediately. Verify the result in both original equations.

Your response: _____

Incoming: $(-2, -4)$

Use direct elimination to solve the system $4x + 2y = -24$ and $7x + 2y = -30$. Verify the result in both original equations.

Your response: _____

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Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

For the system $5x - 3y = -28$ and $9x + 3y = -42$, explain whether addition or subtraction creates the cancellation, then solve. Verify the result in both original equations. First choose either adding the two equations or subtracting one from the other to cancel a variable immediately, without scaling. Explain your choice using the displayed coefficients, carry out the chosen operation, solve, and verify both original equations. You need not carry out the other operation.

Carry out the indicated elimination and interpret the constant statement without discarding the original constraint for $-5x + y = -1$ and $-10x + 2y = -2$ by forming $-2E1 + E2$. After carrying out the required combination, compare these two claims about the resulting constant statement: A says that it alone completely describes the solution set in the coordinate plane; B says that the solution set must satisfy both the collapsed statement and the retained original equation. Decide which reasoning is valid, explain the difference, and give the complete solution set. If the collapsed statement is false, explain why both descriptions produce an empty set.

Solving Systems by Elimination

Full Worked Solutions - excerpt

Worked example

Problem. Use direct elimination to solve the system $2x - y = 0$ and $2x = 0$. Verify the result in both original equations.

Answer. $(0, 0)$

Explanation and check.

Subtract the second equation from the first; this gives $-y = 0$. Solving that one-variable equation gives $y = 0$. Substitution into $2x - y = 0$ gives the remaining coordinate, so the solution is $(0, 0)$. Both original equations are true at that pair.

Worked example

Problem. Find efficient multipliers for both equations and solve by elimination for $2x - y = -4$ and $3x - 4y = -6$.

Answer. $(-2, 0)$

Explanation and check.

Form $3E1 - 2E2$; this gives $5y = 0$. Solving that one-variable equation gives $y = 0$. Substitution into $2x - y = -4$ gives the remaining coordinate, so the solution is $(-2, 0)$. Both original equations are true at that pair.