

Algebra 1
Linear Equations: Solving, Coefficients & Reasoning

Solving Linear Equations with Variables on Both Sides | A1-U02-P07

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
04	Error Analysis & Strategy	24 tasks
05	Quick Answer Key	96 answers
06	Full Worked Solutions	96 solutions
07	Teacher / Parent Use Guide	included
08	Terms of Use & License	included

Topic focus
Across 96 tasks this topic asks for balance operations, exact solution, and two-side check, coefficient comparison, operation permission, and remaining relation, coefficient value or identifiability/admissibility result, first error, corrected balance operation, exact solution, and check, local forms, cross-side coefficient, exact solution, and check and net-form comparison, exact solutions, and relation.
8 PDFs and a README; 50 buyer pages.

Algebra 1

Linear Equations: Solving, Coefficients & Reasoning

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.

Simplify each side of $3x + 5 + 2x - 1 = x + 7 + 3x + 1$ independently before collecting across equality. State both local totals and solve. _____ Bank label: _____	Track signs through the local simplification of $-4x + 6 + x + 3 = 2x - 5 - 3x + 18$, then compare the two resulting variable coefficients and verify x. _____ Bank label: _____
Solve $-3x + 9 - 5x - 2 = 4x + 3 - x + 48$ by comparing the simplified coefficient and constant on each side. Check in the original interleaved form. _____ Bank label: _____	Simplify each side of $6x - 8 + x + 5 = -2x - 6 + 7x + 9$ independently before collecting across equality. State both local totals and solve. _____ Bank label: _____
Complete $5x - 4 = kx + 32$ so its prescribed solution is $x = 6$. State the coefficient and prove the target is the unique solution. _____ Bank label: _____	Solve $-5x + 9 = -x - 15$ by applying the same variable and constant operations to both complete sides. Verify the result. _____ Bank label: _____
For $-6x + 13 = 4x - 37$, compare the two x-coefficients first. Use their difference to solve exactly and confirm both original sides. _____ Bank label: _____	Isolate x in $8x + 2 = -3x - 64$ without using a 'move-and-change-sign' shortcut. Name each balance-preserving operation and verify. _____ Bank label: _____

Algebra 1

Linear Equations: Solving, Coefficients & Reasoning

Name: _____ Date: _____ Class: _____

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.

Solve $3x + 5 = x + 13$ by applying the same variable and constant operations to both complete sides. Verify the result. _____ _____	Solve $7x + 9 = -x + 33$ by carrying out both cross-side collection choices. Explain why they preserve equality and where their intermediates differ. _____ _____
Equation A is $3x + 5 = x + 13$. Equation B is created when we increase the right constant by 2: $3x + 5 = x + 15$. Predict the solution change from net constants, then confirm both values. _____ _____	Substitute $x = -3$ into $-2x + 7 = kx + 25$ to determine k. Then check that the completed equation still has unequal x-coefficients. _____ _____
Equation A is $-2x + 7 = 3x + 12$. Equation B is created when we change the left constant by -3: $-2x + 4 = 3x + 12$. Predict the solution change from net constants, then confirm both values. _____ _____	Simplify the variable coefficients in $3x + 2x + 7 = 4x + x + 9$. Is division by their cross-side difference legitimate, and what constant relation remains? Stop before full solution-count classification. _____ _____

Algebra 1

Linear Equations: Solving, Coefficients & Reasoning

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: -7 Simplify each side of $9x - 11 + 5x + 3 = 6x - 4 - 2x + 16$ independently before collecting across equality. State both local totals and solve. Your response: _____	Incoming: 2 Track signs through the local simplification of $-6x + 7 + 4x - 9 = 3x + 12 + x - 62$, then compare the two resulting variable coefficients and verify x. Your response: _____
Incoming: $-\frac{3}{4}$ Solve $-5x + 13 - 2x - 6 = -3x + 8 + 4x + 55$ by comparing the simplified coefficient and constant on each side. Check in the original interleaved form. Your response: _____	Incoming: $-\frac{9}{8}$ Track signs through the local simplification of $-11x - 7 + 5x + 10 = -2x + 4 + 8x + 107$, then compare the two resulting variable coefficients and verify x. Your response: _____
Incoming: $\frac{5}{9}$ For $8x + 2 - 4x + 7 = x - 10 + 2x + 28$, expose each side's net linear expression first. Only then consolidate the variable across the equality and solve. Your response: _____	Incoming: 0 For $x + 9 = 4x + 15$, compare the two x-coefficients first. Use their difference to solve exactly and confirm both original sides. Your response: _____

Algebra 1

Linear Equations: Solving, Coefficients & Reasoning

Name: _____ Date: _____ Class: _____

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 $5x + 7 = 2x + 19$, compare two first steps: *L*—subtract $2x$ from both sides, leaving coefficient 3 on the left; *R*—subtract $5x$ from both sides, leaving coefficient -3 on the right. Choose an efficient valid route and solve.

Both routes for $-3x - 5 = 4x + 9$ collect the variable on one side. Compare their resulting coefficient signs, select the cleaner path, and verify x .

Compare collecting variable terms on the left with collecting them on the right in $-6x + 11 = -2x + 31$. Give both resulting variable equations, explain why they have the same solution set despite opposite coefficient signs, and solve exactly.

Compare $5x - 3 = -x + 33$ with $10x - 6 = -2x + 66$. Explain whether the common scaling changes the solution set, and verify without resolving every step twice.

Linear Equations: Solving, Coefficients & Reasoning

Full Worked Solutions - excerpt

Worked example

Problem. Simplify each side of $3x + 5 + 2x - 1 = x + 7 + 3x + 1$ independently before collecting across equality. State both local totals and solve.

Answer. 4

Explanation and check.

Local collection gives coefficients 5 and 4 with constants 4 and 8. Their cross-side differences yield $x = 4$, verified before simplification.

Worked example

Problem. Track signs through the local simplification of $-4x + 6 + x + 3 = 2x - 5 - 3x + 18$, then compare the two resulting variable coefficients and verify x .

Answer. -2

Explanation and check.

After signed local simplification, the nonzero coefficient difference is -2 . The constant difference matches 4, so $x = -2$; both original sides agree.