

Algebra 1
One-Step to Two-Step Equations

3-topic bundle | 288 problems | Four activity formats

- 01

Equality and One-Step Additive Equations

View individual product and its full preview
- 02

One-Step Multiplication and Division Equations

View individual product and its full preview
- 03

Two-Step Equations

View individual product and its full preview

In every topic

Answer Bank Challenge	24 tasks
Grid Rounds	24 tasks
Match & Move	24 cards
Error Analysis & Strategy	24 tasks
Quick Answer Key and Full Worked Solutions	included
Teacher / Parent Use Guide and Terms of Use	included

Product previews

The following pages show the cover, all four activity formats, and worked examples for each included resource, in the order listed above.

24 PDFs and 3 READMEs; 152 buyer PDF pages across the three products.

Preview pages are not included in the buyer page count. Check the list against resources you already own.

This is a fixed collection of the three listed products. Purchase includes the existing individual resource files. To open a product's online preview, follow its title link above and select View Preview.

Algebra 1
Equality and One-Step Additive Equations

Equality and One-Step Additive Equations | A1-U02-COMB-P01-P02

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 checked solution audit, completed equation, constant with verification, contextual solution and check, effect of constant changes and equivalent transformed equation and inverse.
8 PDFs and a README; 54 buyer pages.

Algebra 1

Equality and One-Step Additive Equations

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

Interpret the statement $3 + 5 = 8$. Decide whether it is true, compare the values of the two complete sides, and explain what the equals sign asserts without describing it as an instruction to compute the right side.

Bank label: _____

Interpret the statement $3 + 4 = 8$. Decide whether it is true, compare the values of the two complete sides, and explain what the equals sign asserts without describing it as an instruction to compute the right side.

Bank label: _____

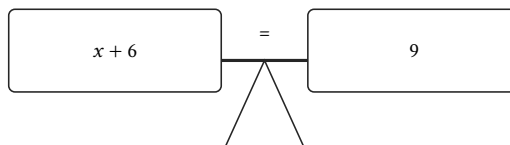
Under the stated domain $[-2, -1, 0, 1, 2]$, compare the complete solution sets of $x = 2$ and $(x - 2)(x + 1) = 0$. Use direct membership or the supplied finite domain rather than visual similarity, then state whether the equations are equivalent.

Given domain: $[-2, -1, 0, 1, 2]$

x	Equation 1	Equation 2
-2	not a solution	not a solution
-1	not a solution	solution
0	not a solution	not a solution
1	not a solution	not a solution
2	solution	solution

Bank label: _____

Starting from $x + 6 = 9$, add 7 to both sides. Write the resulting equation with the operation applied to each complete side, state the inverse operation, and explain why the transformation preserves the full solution set.



Bank label: _____

Algebra 1

Equality and One-Step Additive Equations

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. A value without its unit is not a complete answer.

Diagnose the proposed transformation $x + 3 = 7 \rightarrow x + 4 = 7$. Decide whether it preserves the full solution set, identify the reversibility or information-loss mechanism, and give a value witnessing any lost or newly admitted solution. 	Compare the complete equations $x + 2 = 5$ and $x + 5 = 8$. Recover one reversible operation applied to both sides that connects them, or explain why no single operation from the stated families can work. Verify by applying your proposal to both complete sides.
Justify the transition $2x + 6 = 8 \rightarrow 8 = 2x + 6$. Identify every change, distinguish a same-operation-on-both-sides step from value-preserving rewriting within one side, and name the inverse when an equation operation is used. 	Under the stated domain all real x, compare the complete solution sets of $x + 1 = 3$ and $2x + 2 = 6$. Use direct membership or the supplied finite domain rather than visual similarity, then state whether the equations are equivalent.
For the original equation $2x + 3 = -5$, verify each candidate $[-4, -3]$ by substitution. Evaluate the complete left and right sides separately and classify each value as a solution or non-solution; do not solve the equation by a general procedure. 	Starting from $x + 2 = 5$, add 3 to both sides. Write the resulting equation with the operation applied to each complete side, state the inverse operation, and explain why the transformation preserves the full solution set.

Algebra 1

Equality and One-Step Additive Equations

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.

Examine the proposed reasoning for $n - 9 = -4$: $n - 9 + 9 = -4$; $n = -4$. Decide whether equality was preserved; then state and check the correct result.

A student solves $x + 7 = 19$ with these steps: $x + 7 - 7 = 19 + 7$; $x = 26$. Audit the work, identify the first issue if any, give the corrected solution, and verify it.

For the equation $t + (-6) = 15$, a solution record reads $t = 15 - 6$; $t = 9$. Diagnose the inverse-operation reasoning and repair the conclusion when necessary.

Examine the proposed reasoning for $a + \frac{11}{12} = -\frac{1}{3}$: $a = -\frac{1}{3} - \frac{11}{12}$; $a = \frac{7}{12}$. Decide whether equality was preserved; then state and check the correct result.

Equality and One-Step Additive Equations

Full Worked Solutions - excerpt

Worked example

Problem. Interpret the statement $3 + 5 = 8$. Decide whether it is true, compare the values of the two complete sides, and explain what the equals sign asserts without describing it as an instruction to compute the right side.

Answer. true; both sides name the same value

Explanation and check.

The complete left value and complete right value are both 8.

Worked example

Problem. Interpret the statement $3 + 4 = 8$. Decide whether it is true, compare the values of the two complete sides, and explain what the equals sign asserts without describing it as an instruction to compute the right side.

Answer. false; the side values differ

Explanation and check.

The left side is 7, while the right side is 8.

Algebra 1
One-Step Multiplication and Division Equations

One-Step Multiplication and Division Equations | A1-U02-P03

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
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Topic focus
Across 96 tasks this topic asks for allowable scale with restriction, coefficient effect with signs, completed multiplicative equation, contextual exact solution, equivalent operations and solution and exact value with substitution.
8 PDFs and a README; 48 buyer pages.

Algebra 1

One-Step Multiplication and Division Equations

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

Find x in $-12x = -192$ with exact arithmetic; include the original-equation verification. _____ Bank label: _____	Use a reciprocal operation to isolate x in $\frac{x}{7} = -3$. State the exact solution and a check. _____ Bank label: _____
Read $(\frac{11}{8})u = \frac{33}{4}$ as a supplied multiplicative relation for the original length under an improper fraction scale. Determine u in meters and verify. _____ Bank label: _____	Determine the unique solution of $5x = 50$. Name the inverse multiplicative step you use. _____ Bank label: _____
For the template $\frac{x}{a} = -7$, make $x = -21$ work. Check the nonzero restriction on the coefficient or divisor. _____ Bank label: _____	Rewrite $\frac{x}{-8} = \frac{5}{8}$ with x alone by applying an equivalent reciprocal step to both sides. _____ Bank label: _____
Reverse the coefficient-solving task: $ax = 35$ is required to have target -5. Find the missing data and test admissibility. _____ Bank label: _____	Solve $(\frac{3}{4})x = \frac{15}{8}$ and verify the value in the original equation. _____ Bank label: _____

Algebra 1

One-Step Multiplication and Division Equations

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. A value without its unit is not a complete answer.

The equation display is $0x = 9$. A solver proposes to divide both sides by 0. Is that operation permitted? Explain by inspecting the proposed divisor. 	Before solving $7x = 0$, assess the step 'divide both sides by 7'. Distinguish a zero coefficient from a zero right side.
Read $(\frac{2}{3})a = 14$ as a supplied multiplicative relation for the original measure from a two-thirds portion. Determine a in meters and verify. 	For $0x = -4$, decide whether the proposed step "multiply both sides by $\frac{1}{0}$" is permitted. State the inverse restriction without doing a full solution-set classification.
Two solvers attack $(-\frac{2}{5})x = -6$. One will divide both sides by $-\frac{2}{5}$; the other will multiply both sides by $-\frac{5}{2}$. Explain their equivalence and finish the solution. 	For the pair $3x = 36$ and $9y = 36$, determine the order of x and y. Qualify your reasoning using the coefficient signs.

Algebra 1

One-Step Multiplication and Division Equations

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: $x < y$; $-8 < 4$ A coefficient changes while the product side stays 15: $1.5x = 15$; $2.5y = 15$. Compare the solutions and verify. Your response: _____	Incoming: $x > y$; $10 > 6$ The equation is $(-\frac{11}{6})x = -22$. Compare division by the coefficient with multiplication by its reciprocal, then report the checked value of x. Your response: _____
Incoming: $a = -4$ Without assuming that a larger coefficient always means a smaller signed solution, compare $-5x = 40$ with $10y = 40$. Your response: _____	Incoming: $-\frac{52}{5}$ Find x in $(\frac{4}{11})x = \frac{60}{77}$ with exact arithmetic; include the original-equation verification. Your response: _____
Incoming: 30 liters Use the given grouping equation $-0.4s = 3.2$. The variable s is the signed time under a negative change rate, measured in seconds; find and check it. Your response: _____	Incoming: 9 Reverse the nonzero scaling in $\frac{x}{-7} = 1$, then confirm both sides agree. Your response: _____

Algebra 1

One-Step Multiplication and Division Equations

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.

Audit this work for $4x = 28$: $x = \frac{28}{4}$; $x = 7$. Identify the first invalid reciprocal or division step, repair it, and verify.

Diagnose the multiplicative reasoning in $\frac{x}{5}$ times $5 = -4$; $x = -4$ for $\frac{x}{5} = -4$. Name any sign or reciprocal error and correct the result.

Someone claims $x = \frac{7}{-4}$; $x = -\frac{7}{4}$ solves $\frac{x}{-4} = 7$. Locate a one-sided, inverse, or sign mistake if present and verify the repaired answer.

Check the equality logic used on $(\frac{5}{8})x = -15$: $x = -15$ times $\frac{8}{5}$; $x = -24$. Report the first issue or defend the method, then substitute the conclusion.

One-Step Multiplication and Division Equations

Full Worked Solutions - excerpt

Worked example

Problem. Find x in $-12x = -192$ with exact arithmetic; include the original-equation verification.

Answer. 16

Explanation and check.

Undo the multiplier -12 on both sides. This isolates x at 16; the original relation checks.

Worked example

Problem. Use a reciprocal operation to isolate x in $\frac{x}{7} = -3$. State the exact solution and a check.

Answer. -21

Explanation and check.

Apply the reciprocal of the effective scale to the full equality. The result is $x = -21$, and substitution reproduces -3 .

Algebra 1
Two-Step Equations

Two-Step Equations | A1-U02-P04
96 problems · Four activity formats

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Topic focus
Across 96 tasks this topic asks for exact value and verification, exact value with inverse order, exact value with unit and contextual check, first invalid step, corrected solution, and check, input, reverse path, and forward check and parameter value or feasibility classification.
8 PDFs and a README; 50 buyer pages.

Algebra 1

Two-Step Equations

Name: _____ Date: _____ Class: _____

Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

Isolate x in $-2x + 9 = -3$, preserving the equality at every step. _____ Bank label: _____	Use this operation diagram: input $x \rightarrow$ multiply by 3 $\rightarrow$ add 5 $\rightarrow$ output 17. Traverse the arrows backward to recover x, then run the machine forward as a check. _____ Bank label: _____
Determine the value of x that makes $7x + 2 = -19$ true. Show the two inverse operations. _____ Bank label: _____	Isolate x in $2x + 11 = 25$, preserving the equality at every step. _____ Bank label: _____
Complete $5(-3) + k = -22$ so that the prescribed input $x = -3$ works. Determine k and verify the resulting equality. _____ Bank label: _____	Without skipping the check, solve $5x + 15 = 15$ and explain whether $x = 0$ works. _____ Bank label: _____
Solve $9(x - 5) = -27$ by reversing the outer operation before the inner shift. _____ Bank label: _____	Isolate x in $(-\frac{7}{4})x + \frac{2}{3} = \frac{25}{6}$, preserving the equality at every step. _____ Bank label: _____

Algebra 1

Two-Step Equations

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. A value without its unit is not a complete answer.

Solve $-3x - 6 = -24$. Keep the result exact and verify it in the original equation. _____ _____	Solve $8x - 5 = -29$. Keep the result exact and verify it in the original equation. _____ _____
The complete rule is input $x \rightarrow$ multiply by $-4 \rightarrow$ add 7 $\rightarrow$ output 19. What input produced the stated output? Include the intermediate value in your verification. _____ _____	Use the given equation $64 - 5x = 24$ for this initial-minus-use situation: x measures operating intervals in hours; 64 is the initial amount and 5 is removed per unit of x. Recover x and explain both inverse steps. _____ _____
The conversion rule has already been modeled as $(\frac{9}{5})x + 32 = 77$; x is the input temperature; the conversion multiplies by $\frac{9}{5}$ and then shifts by 32. Find the source value x in degrees and check by converting forward. _____ _____	Solve $-5(x - 4) = 35$ by reversing the outer operation before the inner shift. _____ _____

Algebra 1

Two-Step Equations

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: -23 A two-stage machine applies 'divide by 4' and then 'add 3'. Its output is 5. Recover the input and list the inverse steps in reverse order. Your response: _____	Incoming: 8 The complete rule is input $x \rightarrow$ multiply by $\frac{1}{2} \rightarrow$ add $-3 \rightarrow$ output 2. What input produced the stated output? Include the intermediate value in your verification. Your response: _____
Incoming: $\frac{23}{6}$ What value of x satisfies $\frac{x+2}{7} = -3$? Show how the grouped quantity is isolated first. Your response: _____	Incoming: $\frac{7}{4}$ Complete $\frac{\frac{11}{6} - \frac{5}{4}}{d} = \frac{7}{3}$ so that the prescribed input $x = \frac{11}{6}$ works. Determine d and verify the resulting equality. Your response: _____
Incoming: $\frac{8}{3}$ Use this operation diagram: input $x \rightarrow$ add 9 $\rightarrow$ divide by $-5 \rightarrow$ output -2. Traverse the arrows backward to recover x, then run the machine forward as a check. Your response: _____	Incoming: 4 Determine the value of x that makes $4x - 7 = 13$ true. Show the two inverse operations. Your response: _____

Algebra 1

Two-Step Equations

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 $(\frac{3}{2})(x + 4) = \frac{15}{2}$, Route A would multiply both sides by the reciprocal $\frac{2}{3}$ to isolate the group. Route B would split the rational scale into numerator and denominator and undo those two factors separately. Carry out both valid routes, compare their intermediate arithmetic, and solve.

Two valid plans for $(\frac{5}{3})(x - 2) = \frac{20}{3}$ are: A—multiply both sides by the reciprocal $\frac{3}{5}$ to isolate the group; B—split the rational scale into numerator and denominator and undo those two factors separately. Decide which better exposes the grouped quantity here and verify the common solution.

Inspect $\frac{x+5}{\frac{7}{4}} = -\frac{21}{4}$. Compare the valid full-group route (multiply both sides by the full divisor $\frac{7}{4}$) with the factor-by-factor route (rewrite division by the rational number as reciprocal multiplication, then undo that multiplier); report x and the cleaner route.

For $(-\frac{3}{2})(x + 6) = 9$, Route A would multiply both sides by the reciprocal $-\frac{2}{3}$ to isolate the group. Route B would split the rational scale into numerator and denominator and undo those two factors separately. Carry out both valid routes, compare their intermediate arithmetic, and solve.

Two-Step Equations

Full Worked Solutions - excerpt

Worked example

Problem. Isolate x in $-2x + 9 = -3$, preserving the equality at every step.

Answer. 6

Explanation and check.

First undo the full offset: the variable term equals -12 . Its effective coefficient is -2 , so division gives $x = 6$. Substitution in $-2x + 9 = -3$ reproduces -3 .

Worked example

Problem. Use this operation diagram: input $x \rightarrow$ multiply by 3 $\rightarrow$ add 5 $\rightarrow$ output 17. Traverse the arrows backward to recover x , then run the machine forward as a check.

Answer. 4

Explanation and check.

Starting at 17, subtract 5 gives the prior stage value 12; then divide by 3 gives $x = 4$. Forward verification applies multiply by 3 and add 5 and returns 17.