

Algebra 1
**Expressions to Equations & Contextual Models | Algebra 1 |
7-Topic Bundle**

7-topic bundle | 672 problems | Four activity formats

Included topics

The following pages list all 7 included resources in the suggested order, with a link to each product. Each resource retains its complete 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 preview pages show the cover, all four activity formats, and worked examples for each included resource, in the listed order.

56 PDFs and 7 READMEs; 367 buyer PDF pages across the 7 products.

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

Sets & Steps

Math Practice & Worked Solutions

Algebra 1

Included topics

7-topic bundle | 672 problems | Four activity formats

01 Reading and Translating Algebraic Expressions

[View individual product and its full preview](#)

02 Expression Evaluation and Properties of Operations

[View individual product and its full preview](#)

03 Distributive Property and Combining Like Terms

[View individual product and its full preview](#)

04 Equations with the Distributive Property

[View individual product and its full preview](#)

05 Equations with Like Terms

[View individual product and its full preview](#)

06 Writing Linear Equations from Word Problems

[View individual product and its full preview](#)

07 Checking Linear Models and Contextual Solutions

[View individual product and its full preview](#)

7 included resources | Complete resource previews follow this guide.

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Algebra 1

Reading and Translating Algebraic Expressions

Reading and Translating Algebraic Expressions | A1-U01-COMB-P09-P10

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 contextual expression with unit rationale, correctly grouped two-stage expression, equivalent-description labels with structural reason, first error and corrected structural labels, first mismatch and repaired expression and marked subexpression role at named level.

8 PDFs and a README; 55 buyer pages.

Algebra 1

Reading and Translating Algebraic Expressions

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.

In $\frac{7}{x+4} + 1$, treat the marked subexpression “$x + 4$” as one quantity. Describe its role in the whole expression at the requested level “path from marked group to the root” without expanding or evaluating. Compare its immediate role with its role after moving one level outward, and explain why both descriptions can be true. _____ Bank label: _____	Construct one expression satisfying all requirements: outer operation is division; numerator is the two-term sum $-x + 5$; denominator is $2(y + 1)$; the quotient is one outer term. Then audit your expression by listing its outer signed terms. Equivalent answers are allowed; do not simplify by expanding or combining. _____ Bank label: _____
At the outer additive level of $\frac{n+7}{13} - 6y + 2$, list the signed terms in order. Keep every product, quotient, or parenthesized factor intact; do not expand or combine anything. _____ Bank label: _____	At the outer additive level of $-(y - 5) + 9y - 4$, list the signed terms in order. Keep every product, quotient, or parenthesized factor intact; do not expand or combine anything. _____ Bank label: _____

Algebra 1

Reading and Translating Algebraic Expressions

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.

In $(x + 3)^2 + y$, treat the marked subexpression "$x + 3$" as one quantity. Describe its role in the whole expression at the requested level "outermost operation" without expanding or evaluating. 	Audit the annotation: In $-3(a + b)$, $-3a$ is one outer term and $-3b$ is another. Identify the first structural labeling error, correct all affected labels, and justify the correction using the relevant operation level.
Use the complete operation tree for $5(n + 3) + y$. Classify the outer components as additive terms or multiplicative/division operands, then name the factors inside one product if present. Base the labels on operations, not visual proximity. 	Use the complete operation tree for $-(t + 2)$. Classify the outer components as additive terms or multiplicative/division operands, then name the factors inside one product if present. Base the labels on operations, not visual proximity.
In $(2x - y)^2 + 4$, treat the marked subexpression "$2x - y$" as one quantity. Describe its role in the whole expression at the requested level "immediate parent operation" without expanding or evaluating. 	In $4^{n+1} - 2$, treat the marked subexpression "$n + 1$" as one quantity. Describe its role in the whole expression at the requested level "immediate parent operation" without expanding or evaluating.

Algebra 1

Reading and Translating
Algebraic Expressions

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: $\frac{q}{17}$ Translate “divide 26 by z.” Before writing the expression, identify the minuend/subtrahend or dividend/divisor in that order. Use z as the variable and do not rely on the left-to-right word order alone. Your response: _____	Incoming: $\frac{26}{z}$ Translate “m subtracted from 28.” Before writing the expression, identify the minuend/subtrahend or dividend/divisor in that order. Use m as the variable and do not rely on the left-to-right word order alone. Your response: _____
Incoming: $23n$ Translate “the ratio of q to 17.” Before writing the expression, identify the minuend/subtrahend or dividend/divisor in that order. Use q as the variable and do not rely on the left-to-right word order alone. Your response: _____	Incoming: $(n + 33)^2$ Translate “25 times the difference between t and 13” compositionally. Write the inner named sum, difference, product, or quotient first, then use it as one grouped operand of the outer operation. Do not expand or evaluate. Your response: _____
Incoming: terms: $+6(x + 11), -(5y - 1)$ Translate “subtract 25 from q.” Before writing the expression, identify the minuend/subtrahend or dividend/divisor in that order. Use q as the variable and do not rely on the left-to-right word order alone. Your response: _____	Incoming: terms: $+4t, -7(y + 3), +1$ Construct one expression satisfying all requirements: exactly three outer terms; one term is $-2(x + y)$; one term has implicit coefficient $+1$ on z; constant is 0. Then audit your expression by listing its outer signed terms. Equivalent answers are allowed; do not simplify by expanding or combining. Your response: _____

Algebra 1

Reading and Translating Algebraic Expressions

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.

The supplied model is $C = F + rn$, with definitions: C : total charge in USD; F : fixed fee in USD; r : usage price in USD/unit; n : number of usage units. Interpret F and rn in context, stating whether each is a separate contribution, a repeated-group factor, or a product and tracking its unit. Use the requested focus “grouped factor.” Do not build or solve the model.

The supplied model is $T = k(a + b)$, with definitions: T : total items; k : number of identical groups; a : red items per group; b : blue items per group. Interpret $a + b$ and k in context, stating whether each is a separate contribution, a repeated-group factor, or a product and tracking its unit. Use the requested focus “selected outer term.” Do not build or solve the model.

The supplied model is $R = S - uq$, with definitions: R : remaining material in meters; S : starting material in meters; u : meters used per piece; q : pieces made. Interpret S and uq in context, stating whether each is a separate contribution, a repeated-group factor, or a product and tracking its unit. Use the requested focus “selected product.” Do not build or solve the model.

Audit the annotation: In $4(x + 2)$, x and 2 are the two outer terms. Identify the first structural labeling error, correct all affected labels, and justify the correction using the relevant operation level.

Reading and Translating Algebraic Expressions

Full Worked Solutions - excerpt

Worked example

Problem. Audit the proposed translation of “three times the sum of x and 2”: $3x + 2$. Identify the first operator or operand-role mismatch and repair the expression while preserving every correct component.

Answer. $3(x + 2)$

Explanation and check.

The whole sum must be one factor.

Worked example

Problem. Audit the proposed translation of “five less than x ”: $5 - x$. Identify the first operator or operand-role mismatch and repair the expression while preserving every correct component.

Answer. $x - 5$

Explanation and check.

Less-than makes x the minuend and 5 the subtrahend.

Algebra 1
Expression Evaluation and Properties of Operations

Expression Evaluation and Properties of Operations | A1-U01-COMB-P11-P12

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
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08	Terms of Use & License	included

Topic focus

Across 96 tasks this topic asks for comparison with structural explanation, counterexample and corrected rule, equivalent rewrite, value, and property explanation, exact value, exact value or insufficiency with witnesses and exact value with grouping shown.

8 PDFs and a README; 54 buyer pages.

Algebra 1

Expression Evaluation and Properties of Operations

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.

An answer may be used more than once.

Evaluate $x(x - 1) + 2x$ when $x = -5$. Replace every occurrence of x before simplifying.

Evaluate $-(x^3) + 2x$ when $x = -3$. Show the substituted negative input in parentheses so the base of each power is clear.

Bank label: _____

Bank label: _____

Use the given assignments $x = 0, y = 0$ to evaluate $4(x + y) - 3x$. Match every value to its symbol and preserve the grouping.

$$4(x + y) - 3x$$

variable	value
x	0
y	0

Use the given assignments $x = 0, y = 2$ to evaluate $x(y - 3) + 3y$. Match every value to its symbol and preserve the grouping.

$$x(y - 3) + 3y$$

variable	value
x	0
y	2

Bank label: _____

Bank label: _____

Algebra 1

Expression Evaluation and Properties of Operations

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.

Use the given assignments $x = -2$, $y = 0$ to evaluate $x(y - 3) + 3y$. Match every value to its symbol and preserve the grouping. _____ _____	Use the given assignments $x = 0$, $y = 0$ to evaluate $x(y - 5) + 5y$. Match every value to its symbol and preserve the grouping. _____ _____
Evaluate $\frac{x+2}{x+7}$ at $x = -2$. Check the denominator in the original expression before simplifying; if it is zero, state why the value is undefined. _____ _____	Evaluate $\frac{x+1}{x-(-2)}$ at $x = -2$. Check the denominator in the original expression before simplifying; if it is zero, state why the value is undefined. _____ _____
Evaluate $\frac{x+3}{x-(0)}$ at $x = 0$. Check the denominator in the original expression before simplifying; if it is zero, state why the value is undefined. _____ _____	Evaluate $\frac{x+5}{x-(1)}$ at $x = 1$. Check the denominator in the original expression before simplifying; if it is zero, state why the value is undefined. _____ _____

Algebra 1

Expression Evaluation and Properties of Operations

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: 18 Evaluate $-(x^4) - (-x)^2$ when $x = -4$. Show the substituted negative input in parentheses so the base of each power is clear. Your response: _____	Incoming: -272 Use the given assignments $x = 1, y = 3$ to evaluate $2x + y$. Match every value to its symbol and preserve the grouping. Your response: _____
Incoming: -12 Evaluate $-(x^3) - (-x)^2$ when $x = -3$. Show the substituted negative input in parentheses so the base of each power is clear. Your response: _____	Incoming: 8 Complete $2(4 \cdot 8) = \underline{\hspace{2cm}}$ using only the associative property of multiplication. Preserve every operand and make no additional simplification. Your response: _____
Incoming: -6 Evaluate $-(x^4) + 3x$ when $x = -4$. Show the substituted negative input in parentheses so the base of each power is clear. Your response: _____	Incoming: -3 Evaluate $4x + x - 6$ when $x = 1$. Replace every occurrence of x before simplifying. Your response: _____

Algebra 1

Expression Evaluation and Properties of Operations

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.

Choose and justify a method before solving (direct substitution, an organized value table, or an equivalent-form check). Then complete the task: Use the given assignments $x = -2$, $y = -2$ to evaluate $2(x + y) - x$. Match every value to its symbol and preserve the grouping.

$$2(x + y) - x$$

variable	value
x	-2
y	-2

Choose and justify a method before solving (direct substitution, an organized value table, or an equivalent-form check). Then complete the task: Use the given assignments $x = -3$, $y = 3$, $z = 0$ to evaluate $(x + 2y)(z - x)$. Match every value to its symbol and preserve the grouping.

$$(x + 2y)(z - x)$$

variable	value
x	-3
y	3
z	0

Expression Evaluation and Properties of Operations

Full Worked Solutions - excerpt

Worked example

Problem. Evaluate $2x + x - 1$ when $x = -6$. Replace every occurrence of x before simplifying.

Answer. -19

Explanation and check.

Replace both occurrences of x by -6 : $2(-6) + (-6) - 1 = -19$.

Worked example

Problem. Evaluate $3x + x - 3$ when $x = 0$. Replace every occurrence of x before simplifying.

Answer. -3

Explanation and check.

Replace both occurrences of x by 0 : $3(0) + (0) - 3 = -3$.

Algebra 1
Distributive Property and Combining Like Terms

Distributive Property and Combining Like Terms | A1-U01-COMB-P13-P15

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 admissible witness and exact values, coefficient or inconsistency proof, collected expression, decomposition, distributed computation, exact value, equivalent form and verification and expanded and collected form.
8 PDFs and a README; 53 buyer pages.

Algebra 1

Distributive Property and Combining Like Terms

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.

Audit the work " $(\frac{2}{3})(6x - 9) = 4x - 9$." Identify the first missing or invalid factor-term pairing, correct the expansion or factorization, and verify the correction at the simple value stated or at a value you choose.

Bank label: _____

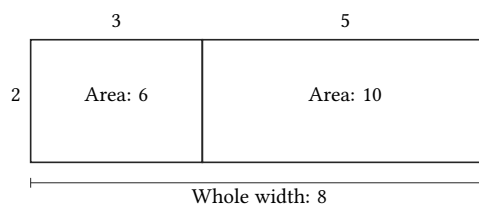
Compute $(25)(12)$ by decomposing one factor into a useful sum or difference and distributing. Show why your chosen decomposition reduces the work.

Bank label: _____

Complete or assess the distributive identity $3(\text{ } x + 2) = 6x + 6$. Recover the missing component by matching corresponding products; if no value works, explain the conflicting requirements.

Bank label: _____

A rectangle has common height 2 and is partitioned into vertical strips with widths 3, 5; the whole width is 8. Use the stated partition incidence to write the total area both as height times whole width and as the sum of strip areas. Explain why the expressions are equal.



Bank label: _____

Algebra 1

Distributive Property and Combining Like Terms

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.

Compute $(2)(22)$ by decomposing one factor into a useful sum or difference and distributing. Show why your chosen decomposition reduces the work. 	Audit the work "$3(x + 5) = 3x + 5$." Identify the first missing or invalid factor-term pairing, correct the expansion or factorization, and verify the correction at the simple value stated or at a value you choose.
Audit the work "$-(x - 4) = -x - 4$." Identify the first missing or invalid factor-term pairing, correct the expansion or factorization, and verify the correction at the simple value stated or at a value you choose. 	Audit the work "$2(x + 3) + 4(y - 1) = 2x + 6 + 4y - 1$." Identify the first missing or invalid factor-term pairing, correct the expansion or factorization, and verify the correction at the simple value stated or at a value you choose.
Audit the work "$-6x + 12 = -6(x + 2)$." Identify the first missing or invalid factor-term pairing, correct the expansion or factorization, and verify the correction at the simple value stated or at a value you choose. 	Audit the work "$8x + 12 + 4y = 4(2x + 12 + y)$." Identify the first missing or invalid factor-term pairing, correct the expansion or factorization, and verify the correction at the simple value stated or at a value you choose.

Algebra 1

Distributive Property and Combining Like Terms

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 the work " $2(a + b - 3) = 2a + b - 6$." Identify the first missing or invalid factor-term pairing, correct the expansion or factorization, and verify the correction at the simple value stated or at a value you choose.

Audit the work " $-4(y + 2) = -4y + 8$." Identify the first missing or invalid factor-term pairing, correct the expansion or factorization, and verify the correction at the simple value stated or at a value you choose.

Audit the work " $6x + 10 = 3(2x + 5)$." Identify the first missing or invalid factor-term pairing, correct the expansion or factorization, and verify the correction at the simple value stated or at a value you choose.

Audit the simplification " $2x + 5x^2 = 7x^2$." Identify the first invalid grouping or state that it is valid, compare complete variable parts, and give the corrected result with a coefficient-based explanation.

Distributive Property and Combining Like Terms

Full Worked Solutions - excerpt

Worked example

Problem. Audit the work “ $(\frac{2}{3})(6x - 9) = 4x - 9$.” Identify the first missing or invalid factor-term pairing, correct the expansion or factorization, and verify the correction at the simple value stated or at a value you choose.

Answer. The scalar $\frac{2}{3}$ was not applied to -9 . Correct: $4x - 6$; at $x = 0$, both correct forms equal -6 .

Explanation and check.

Check every factor-term pairing. The scalar $\frac{2}{3}$ was not applied to -9 . Correct: $4x - 6$; at $x = 0$, both correct forms equal -6 .

Worked example

Problem. Compute $(25)(12)$ by decomposing one factor into a useful sum or difference and distributing. Show why your chosen decomposition reduces the work.

Answer. $25(10 + 2) = 250 + 50 = 300$

Explanation and check.

Use the displayed benchmark split and distribute to get easier partial products:

$$25(10 + 2) = 250 + 50 = 300$$

Algebra 1
Equations with the Distributive Property

Equations with the Distributive Property | A1-U02-P05

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 distribution, combined coefficient, exact solution, and check, equivalence classification, operation validity, and proof, first error, corrected equation, solution, and original-form check, missing value or feasibility classification with verification, recovered data or inconsistency proof with term matching and strategy justification, exact solution, and check.

8 PDFs and a README; 49 buyer pages.

Algebra 1

Equations with the
Distributive Property

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.

The target solution $x = 4$ must satisfy $3(2x + b) - x = 35$. Recover the missing inside constant b, classify uniqueness, and verify. _____ Bank label: _____	Substitute $x = -3$ into the incomplete grouped equation $m(2x + 4) + x = 1$. Determine m and check the completed original form. _____ Bank label: _____
Choose k so that $x = 5$ satisfies $2(kx + 3) - 4x = 16$. Keep the group intact during substitution, then test the result. _____ Bank label: _____	Expand the grouped side of $-3(4x + 6) - 5x = 101$, solve the resulting linear equation, and verify in the unexpanded equation. _____ Bank label: _____
Solve $5(4x - 9) - 8x = -21$. Distribute across every complete group before combining the exposed variable terms, then check the original form. _____ Bank label: _____	Expand the grouped side of $-7(2x + 1) + 5x = -43$, solve the resulting linear equation, and verify in the unexpanded equation. _____ Bank label: _____
In $6(3x - 4) - 11x = -45$, the grouped variable contribution interacts with an outside variable term. Expose that interaction and solve exactly. _____ Bank label: _____	Track every sign while solving $4(-2x + 7) + 5x = 46$; state the net coefficient after distribution and confirm the answer in the original groups. _____ Bank label: _____

Algebra 1

Equations with the
Distributive Property

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.

Determine x in $2x - 3(4x - 7) = 1$. Show the distribution step and the combined coefficient before isolating x. _____ _____	For $-4(3x - 2) = 68$, decide whether expansion is useful or whole-group isolation is cleaner. Support the choice with a complete solution and check. _____ _____
Check the stated algebraic move from $5(-x + 7) + 2x = 17$ to $-10x + 70 + 4x = 34$. Decide whether one common nonzero operation reaches every term and whether the equations are equivalent. _____ _____	Analyze the structure of $5(-x + 7) = 5$. Explain how the placement of every variable term controls the choice between distribution and group isolation, then solve. _____ _____
Compare the original grouped equation $-2(-3x + 4) - 5x = 0$ with the candidate intermediate $6x - 8 - 5x = 0$. Are they equivalent, and does full distribution justify the displayed line? _____ _____	The template $-6(x + b) + 4x = 30$ is said to produce the expanded intermediate $-6x + 48 + 4x = 30$. Recover inside constant b, reconstruct the original, and solve it. _____ _____

Algebra 1

Equations with the
Distributive Property

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: $\frac{11}{4}$ Substitute $x = -5$ into the incomplete grouped equation $m(\frac{3}{2}x - \frac{7}{3}) + (\frac{4}{5})x = -\frac{209}{8}$. Determine m and check the completed original form. Your response: _____	Incoming: $\frac{9}{4}$ Track every sign while solving $5(-3x + 4) + 2x = 33$; state the net coefficient after distribution and confirm the answer in the original groups. Your response: _____
Incoming: 9 The target solution $x = 7$ must satisfy $5(-2x + b) + 3x = -\frac{141}{4}$. Recover the missing inside constant b , classify uniqueness, and verify. Your response: _____	Incoming: 4 Complete the grouped equation $(\frac{7}{4})(\frac{2}{3}x + b) - (\frac{5}{6})x = -\frac{493}{180}$ for the prescribed solution $x = -\frac{9}{5}$. Explain why the missing data are or are not uniquely determined. Your response: _____
Incoming: 1 In $4(3x + 2) - 7x = -22$, the grouped variable contribution interacts with an outside variable term. Expose that interaction and solve exactly. Your response: _____	Incoming: $-\frac{4}{7}$ In $4(-x + 6) + 3x = 19$, the grouped variable contribution interacts with an outside variable term. Expose that interaction and solve exactly. Your response: _____

Algebra 1

Equations with the Distributive Property

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 $3(2x + 5) - x = 35$: $6x + 5 - x = 35$; $5x = 30$; $x = 6$. Identify the first incorrect distributed term, repair the equation, and verify the solution.

Track the signed distribution in $-2(3x - 4) + x = 23$. The proposed work is $-6x - 8 + x = 23$; $-5x = 31$; $x = -\frac{31}{5}$. Diagnose its first sign error and give the checked value of x .

Audit this work for $4(6 - x) + 3x = 19$: $24 - x + 3x = 19$; $2x = -5$; $x = -\frac{5}{2}$. Identify the first incorrect distributed term, repair the equation, and verify the solution.

Review the constant contribution in the attempted solution of $5(2x - 3) - 4x = -27$: $10x - 3 - 4x = -27$; $6x = -24$; $x = -4$. Locate the distribution error and solve correctly.

Equations with the Distributive Property

Full Worked Solutions - excerpt

Worked example

Problem. The target solution $x = 4$ must satisfy $3(2x + b) - x = 35$. Recover the missing inside constant b , classify uniqueness, and verify.

Answer. 5

Explanation and check.

Replace x by 4 while retaining the group. After substituting the target, the remaining nonzero coefficient on b determines $b = 5$ uniquely. Rechecking the completed group at the target confirms the unique result.

Worked example

Problem. Substitute $x = -3$ into the incomplete grouped equation $m(2x + 4) + x = 1$. Determine m and check the completed original form.

Answer. -2

Explanation and check.

At $x = -3$, first evaluate the known inside quantity and the outside x -term. After substituting the target, the remaining nonzero coefficient on m determines $m = -2$ uniquely. A direct substitution check confirms the recovered factor condition.

Algebra 1
Equations with Like Terms

Equations with Like Terms | A1-U02-P06

96 problems · Four activity formats

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Topic focus

Across 96 tasks this topic asks for cancelled pair, surviving term, exact solution, and check, first invalid step, corrected grouping, solution, and check, missing value or identifiability classification with check, net coefficient, exact solution, and verification, route validity, efficiency, exact solution, and check and separate totals, exact solution, and verification.

8 PDFs and a README; 49 buyer pages.

Algebra 1

Equations with
Like Terms

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.

In $x + 4x - 2x - 6 = 3$, include every implicit or fractional coefficient when collecting like terms. What is x? _____ Bank label: _____	Solve $3x + 7 + 5x - 4 - 2x + 9 = 36$ by collecting variable terms and constant terms as two separate groups. Show both totals and verify. _____ Bank label: _____
Substitute $x = -3$ into $-2x + 7 + 5x + d = -6$, then determine the missing constant d. Check the completed equation in its original order. _____ Bank label: _____	Some constants or coefficients in $6x - 8 - x + 3 + 3x + 5 = 16$ cancel. Identify only the true inverse pairs, then solve the reduced equation. _____ Bank label: _____
Choose k so that $x = 6$ solves $4x + kx - 3x - 8 = -14$. Explain what the target determines before simplifying the full expression. _____ Bank label: _____	In $2x + 5 - 7x - 5 + 4x + 11 = 14$, determine which additive group has total zero and which terms survive. Solve without combining unlike terms. _____ Bank label: _____
Track the signs of every x-term in $-4x + 2x - 3x + 9 = 34$. State the net coefficient, solve exactly, and verify. _____ Bank label: _____	Simplify and solve $-6x + 9 + 5x - 9 + 3 = -3$. Identify the constant inverse pair without discarding either variable contribution. _____ Bank label: _____

Algebra 1

Equations with
Like Terms

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: 11 Solve $5x - 8x + 2x - 11 = -21$. Combine the three signed coefficients before applying inverse operations, then check the original equation. Your response: _____	Incoming: 10 In $-8x + 7x + 4x - 5 = 10$, include every implicit or fractional coefficient when collecting like terms. What is x? Your response: _____
Incoming: -7 Some constants or coefficients in $7x - 8 - 13x + 8 + 9x + 17 = 50$ cancel. Identify only the true inverse pairs, then solve the reduced equation. Your response: _____	Incoming: $-\frac{5}{7}$ Solve $-(\frac{23}{21})x - \frac{13}{16} + (\frac{5}{7})x + \frac{19}{24} + (\frac{4}{15})x + \frac{1}{48} = \frac{62}{385}$ by collecting variable terms and constant terms as two separate groups. Show both totals and verify. Your response: _____
Incoming: -8 Substitute $x = -\frac{9}{5}$ into $-(\frac{3}{2})x - \frac{5}{6} + (\frac{7}{4})x + d = \frac{1}{60}$, then determine the missing constant d. Check the completed equation in its original order. Your response: _____	Incoming: -2 The prescribed solution $x = 4$ must satisfy $3x + kx - x + 5 = 21$. Recover the missing coefficient k and verify after collecting coefficients. Your response: _____

Algebra 1

Equations with Like Terms

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 the coefficient collection in $3x - 5x + 4x + 7 = 15$. The proposed work is $12x + 7 = 15$; $x = \frac{2}{3}$. Locate the first invalid total and provide a checked correction.

For $4x + 7 - 4x - 7 + 3x + 5 + 2x - 1 = 34$, compare Route A (pair the explicit additive inverses first, then collect the survivors) with Route B (combine terms strictly from left to right). Carry out the efficient valid collection and solve.

Choose an addition order for $2x + 4 + 5x + 6 - 3x - 2 + x + 3 = -9$: A—pair coefficients and constants into convenient small sums before adding; B—combine every term strictly from left to right. Explain the arithmetic advantage, find x , and check.

Audit two proposed grouping routes for $-6x + 8 + 2x - 3 + 5x - 5 - 2x + 7 = -2$. Route A will keep each negative sign attached while grouping variable terms separately from constants; Route B will drop subtraction signs when moving terms into new visual groups. Classify them and solve with preserved signs.

Equations with Like Terms

Full Worked Solutions - excerpt

Worked example

Problem. In $x + 4x - 2x - 6 = 3$, include every implicit or fractional coefficient when collecting like terms. What is x ?

Answer. 3

Explanation and check.

Treat the three x -terms as coefficient copies of one variable. Their total is 3, reducing the left side to $3x - 6$. Hence $x = 3$, and the original equality is true.

Worked example

Problem. Solve $3x + 7 + 5x - 4 - 2x + 9 = 36$ by collecting variable terms and constant terms as two separate groups. Show both totals and verify.

Answer. 4

Explanation and check.

The x -coefficients total 6, while the constants independently total 12. Thus $6x + 12 = 36$, giving $x = 4$; the interleaved original checks.

Algebra 1
Writing Linear Equations from Word Problems

Modeling with Linear Equations (Mixture and Applications) | A1-U02-P11

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 all correct equations and a term-to-context justification, average equation and missing value, conservation equation and component amount, context, variable meaning and units, solved interpretation, and feasibility check, equality equation and matching input and equation and original reference amount.
8 PDFs and a README; 58 buyer pages.

Algebra 1

Writing Linear Equations from Word Problems

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.

A quantitative relationship is described by these labeled values: A25-liter blend uses 80% and 30% solutions and contains 12.5 liters of active ingredient. Let x be liters of the 80% solution. Account for both component weights without treating their counts as independent; then solve and check the total. _____ Bank label: _____	A quantitative relationship is described by these labeled values: A12-kilogram mixture uses powders labeled 0.06 g/g and 20 g/kg and contains 400 g of active material. Let x be kilograms of the first powder. First reconcile the concentration units, then use the fixed total to write and solve one equation for x. _____ Bank label: _____
A lab has 50 grams of salt. Each identical batch uses 2.75 grams, and 28 grams remain. Build a one-variable equation for this total. Explain the sign of the rate before interpreting the root. _____ Bank label: _____	A tank starts with 94 liters and drains 7 liters each minute until 45 liters remain. Define the unknown, translate the fixed and repeated contributions into one equation, solve, and attach the requested unit. _____ Bank label: _____
Four sample masses average 12.5 grams. Three masses are 10.5, 13, and 11.5 grams. Write one average equation and determine the unknown observation or common group average. _____ Bank label: _____	A quantitative relationship is described by these labeled values: An account balance becomes \$270 after an 8% increase. Identify which quantity the rate is applied to, construct the equation, and solve for the base. _____ Bank label: _____
Five batches average 12.4 liters and three batches average x liters. The combined eight-batch average is 13 liters. Translate the mean into a total for the stated count, then solve for the missing contribution. _____ Bank label: _____	A price is reduced 20% and then increased 25% of the reduced price; the final price is \$100. Let x denote the correct reference base. Write and solve an equation that keeps the percent tied to that base. _____ Bank label: _____

Algebra 1

Writing Linear Equations from Word Problems

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.

Equation: $5x + 2(x - 4) = 62$. Required interpretation: x and $x - 4$ are positive measured lengths. Construct and solve a real situation matching the complete equation, making the fixed term, rate, and total explicit. 	A quantitative relationship is described by these labeled values: Six route counts average 7. Five counts are 3, 5, 8, 11, and 9. Translate the mean into a total for the stated count, then solve for the missing contribution.
Two teams have 91 volunteers; the smaller team has 13 fewer than the larger team. Write a single equation that preserves the stated part relationship. Find every part, not only the reference value. 	Equation: $0.75p = 48$. Required interpretation: p is an original price in dollars. Construct and solve a real situation matching the complete equation, making the fixed term, rate, and total explicit.
A48-kilogram alloy order uses materials costing \$30 or \$18 per kilogram for \$1,080. Let x be kilograms of the \$30 material. Build a one-variable conservation model for the two unequal contributions. Determine the amount named by x. 	A quantitative relationship is described by these labeled values: Two angles forming a line are labeled $7x - 12$ degrees and $2x + 3$ degrees. Construct the additive constraint represented here; solve and check that the component measures form the stated whole.

Algebra 1

Writing Linear Equations
from Word Problems

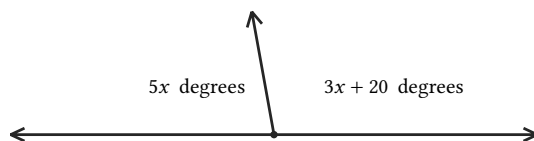
Name: _____ Date: _____ Class: _____

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.

A student copies the numerical values into an equation in the order they appear without defining the unknown or checking units. Diagnose the specific reasoning error, then complete the original task: A data table summarizes the quantities as follows: Two reservoirs each start at 15 liters and both drain 2 liters per minute. Construct the equality and decide whether the descriptions match once, never, or for every admissible input. State the relevant domain.

Reservoir	Initial volume (L)	Drain rate (L/min)
A	15	2
B	15	2

A student treats every stated measure as an independent addend and ignores the geometric relationship. Diagnose the specific reasoning error, then complete the original task: A labeled diagram gives this information: A straight angle is divided into parts measuring $5x$ degrees and $3x + 20$ degrees. Translate the labeled parts into the appropriate perimeter or angle relation and solve for the shared variable.



Writing Linear Equations from Word Problems

Full Worked Solutions - excerpt

Worked example

Problem. A quantitative relationship is described by these labeled values: A 25-liter blend uses 80% and 30% solutions and contains 12.5 liters of active ingredient. Let x be liters of the 80% solution. Account for both component weights without treating their counts as independent; then solve and check the total.

Answer. 10 liters of the 80% solution

Explanation and check.

Because the combined quantity is fixed, the second component is the total minus x . Weighting both parts gives $0.80x + 0.30(25 - x) = 12.5$. Solving yields $x = 10$ liters of 80% solution; the complementary amount and both weighted contributions reproduce the given total.

Worked example

Problem. A quantitative relationship is described by these labeled values: A 12-kilogram mixture uses powders labeled 0.06 g/g and 20 g/kg and contains 400 g of active material. Let x be kilograms of the first powder. First reconcile the concentration units, then use the fixed total to write and solve one equation for x .

Answer. 4 kilograms of the first powder

Explanation and check.

Put both concentrations in units compatible with the chosen component amount: $0.06 \text{ g/g} = 60 \text{ g/kg}$. The conserved mixture then gives $60x + 20(12 - x) = 400$, so $x = 4$ kilograms of first powder. The complementary amount makes the active-material total check.

Algebra 1
Checking Linear Models and Contextual Solutions

Checking Linear Models and Contextual Solutions | A1-U02-P12

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 justified interpretation.
8 PDFs and a README; 49 buyer pages.

Algebra 1

Checking Linear Models and Contextual Solutions

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.

A table lists a \$12 entry fee and \$0.45 per mile for m miles. A student proposes $\frac{C}{m} = 12 + 0.45$. Use the units to decide whether this is a total-cost model and state the correct equation. _____ Bank label: _____	For n equally spaced fence posts, a supplied formula gives spacing $r = \frac{360}{n-1}$ feet. The site permits at most 31 posts. Determine n's full contextual domain. _____ Bank label: _____
A30-item split defines category counts x and $30-x$. One summary says A exceeds B by 8; another says B exceeds A by 4. Classify the information. _____ Bank label: _____	Solving $3.75b + 9 = 54$ gives $b = 12$ bottles. Orders must contain complete cartons of 8 bottles. Is 12 a feasible order size? _____ Bank label: _____
A student proposes 23 and 24 for two consecutive integers whose sum is 47. Verify both 'consecutive' and the sum. _____ Bank label: _____	A calculation shows 58 items needed, 9 per pack, and $\frac{58}{9} = 6.444\dots$. A student chooses 6 packs by nearest-number rounding. Audit the decision and quantify the shortage or surplus after repair. _____ Bank label: _____
On a180-km route, one equation returns $x = 68$ for distance traveled and another returns $r = 112$ for distance remaining. Determine whether they conflict. _____ Bank label: _____	A map table gives 7.5 cm and a scale of 4 km per map centimeter. Someone writes $d = \frac{7.5}{4}$ km. Use unit cancellation to choose the correct operation and distance. _____ Bank label: _____

Algebra 1

Checking Linear Models and Contextual Solutions

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: Report 3.7 meters. A transit card balance follows $B = 85 - 6.40r$, where r counts rides and the rider cannot spend beyond the initial balance. Give the feasible domain for r. Your response: _____	Incoming: r is an integer with $0 \leq r \leq 13$. During a ten-dose treatment, d records how many doses a patient has completed, including observations before the first and after the last dose. List the domain. Your response: _____
Incoming: No. The feasible values are 4, 5, 6, and 7. A supplied equation gives cable length $x = 3.746$ meters. The measurement is to be reported to the nearest tenth of a meter. What should be reported? Your response: _____	Incoming: Display $83.5 \frac{km}{h}$. A temperature equation is valid only from 6:30<i>a.m.</i> through 3:00<i>p.m.</i> Let t measure hours since 6:30<i>a.m.</i> Translate the clock-time window into a domain for t. Your response: _____
Incoming: Report approximately 121 square centimeters. A theater sold 260 tickets in all. Let a be the number of adult tickets. State the contextual domain for a without using any price information. Your response: _____	Incoming: $-120 \leq h \leq 450$. For the supplied revenue equation $7s + 4(36 - s) = 198$, s counts \$7 seats and $36 - s$ counts \$4 seats. Identify every domain restriction imposed by those two counts. Your response: _____

Algebra 1

Checking Linear Models and Contextual Solutions

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.

A calculation $d = 48(2.5) = 120$ is numerically correct but reports '120 hours.' Diagnose and correct the answer unit.

A pump runs at 1.8 liters per minute for 50 seconds. A technician records 90 liters. Audit the time unit and calculate the volume.

A solution to the exact equation $5n = 38$ says, 'n=7.6', so the answer is 8 boxes.' Diagnose the final step.

A \$120 service receives a 7.5% fee. A calculation uses $F = 120 + 7.5(120)$. Identify the interpretation error and find F .

Checking Linear Models and Contextual Solutions

Full Worked Solutions - excerpt

Worked example

Problem. A table lists a \$ 12 entry fee and \$ 0.45 per mile for m miles. A student proposes $\frac{C}{m} = 12 + 0.45$. Use the units to decide whether this is a total-cost model and state the correct equation.

Answer. The proposal mixes dollars per mile with dollars; total cost is $C = 12 + 0.45m$ dollars.

Explanation and check.

Dividing total C by m changes its unit to dollars per mile, while the right side adds a dollar amount to a rate. Keeping the fixed total and multiplying the rate by miles gives compatible dollar terms.

Worked example

Problem. For n equally spaced fence posts, a supplied formula gives spacing $r = \frac{360}{n-1}$ feet. The site permits at most 31 posts. Determine n 's full contextual domain.

Answer. n is an integer with $2 \leq n \leq 31$.

Explanation and check.

A post count is integral. At least two posts are needed to create a spacing, which also keeps $n - 1$ nonzero; the site supplies the upper bound 31.