

Sets & Steps

Math Practice & Worked Solutions

Algebra 1

Numbers, Quantities & Expressions Collection | Algebra 1 | 9-Topic Bundle

9-topic bundle | 864 problems | Four activity formats

Included topics

The following pages list all 9 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.

72 PDFs and 9 READMEs; 520 buyer PDF pages across the 9 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 listed products. Purchase includes the existing individual resource files. To open a product's online preview, follow its title link and select View Preview.

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Sets & Steps

Math Practice & Worked Solutions

Algebra 1

Included topics

9-topic bundle | 864 problems | Four activity formats

01 Classifying Real Numbers

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

02 Ordering and Estimating Real Numbers

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

03 Signed Rational Number Operations

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

04 Mixed Operations with Rational Numbers

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

05 Order of Operations with Grouping Symbols

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

06 Units, Conversions, and Defining Quantities

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

07 Reading and Translating Algebraic Expressions

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

08 Expression Evaluation and Properties of Operations

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

09 Distributive Property and Combining Like Terms

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

9 included resources | Complete resource previews follow this guide.

Published by Tusils LLC.

Algebra 1
Classifying Real Numbers

Classifying Real Numbers | A1-U01-P01

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 classification with justification.
8 PDFs and a README; 48 buyer pages.

Algebra 1

Classifying Real Numbers

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.

Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $\sqrt{11}$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R. _____ Bank label: _____	Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $(2 - \sqrt{5})(2 + \sqrt{5})$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R. _____ Bank label: _____
Determine whether the number is rational, irrational, or not determined by the evidence. Justify your decision: 1.08333...; after 08, the digit 3 repeats forever. _____ Bank label: _____	Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $\frac{0.125}{0.5}$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R. _____ Bank label: _____
Determine whether the number is rational, irrational, or not determined by the evidence. Justify your decision: $0.d_1d_2d_3\dots$ where $d_n = 3$ when n is a power of 2 and 0 otherwise. _____ Bank label: _____	Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $\frac{\sqrt{12}}{\sqrt{3}}$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R. _____ Bank label: _____
Determine whether the number is rational, irrational, or not determined by the evidence. Justify your decision: 0.314159...; only these six digits are supplied and no continuation rule is given. _____ Bank label: _____	Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $\sqrt{0}$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R. _____ Bank label: _____

Algebra 1

Classifying Real Numbers

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 whether the number is rational, irrational, or not determined by the evidence. Justify your decision: 13.6 is exact and terminating. 	Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value -2.75, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R.
Determine whether the number is rational, irrational, or not determined by the evidence. Justify your decision: 4.000 is exact. 	Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $-\frac{4}{1}$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R.
Determine whether the number is rational, irrational, or not determined by the evidence. Justify your decision: $0.d_1d_2d_3\dots$ where $d_n = 1$ when n is a perfect square and 0 otherwise. 	Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $1 - \sqrt{2}$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q, and R.

Algebra 1

Classifying Real Numbers

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 gives this classification argument: (1) $\sqrt{36}$ contains a radical sign. (2) Every radical is irrational. (3) Therefore $\sqrt{36}$ is irrational. Identify the first invalid claim and repair it, or state that the argument is correct.

A student gives this classification argument: (1) 0.333... repeats forever. (2) A nonterminating decimal is irrational. (3) Therefore 0.333... is irrational. Identify the first invalid claim and repair it, or state that the argument is correct.

A student gives this classification argument: (1) $\frac{7}{2}$ is a ratio of integers. (2) Its denominator is nonzero. (3) Therefore it is rational but not an integer. Identify the first invalid claim and repair it, or state that the argument is correct.

A student gives this classification argument: (1) If x is irrational, then x is real. (2) If x is real, then x is irrational. (3) Thus every real number is irrational. Identify the first invalid claim and repair it, or state that the argument is correct.

Classifying Real Numbers

Full Worked Solutions - excerpt

Worked example

Problem. Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $\sqrt{11}$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q , and R .

Answer. irrational; also R

Explanation and check.

Eleven is not a perfect square, so $\sqrt{11}$ is irrational and real.

Worked example

Problem. Use $N = \{1, 2, 3, \dots\}$, $W = \{0, 1, 2, \dots\}$, Z for integers, Q for rational numbers, and R for real numbers. For the exact value $(2 - \sqrt{5})(2 + \sqrt{5})$, name the smallest set it belongs to and then list every containing set among N, W, Z, Q , and R .

Answer. Z ; also Q, R

Explanation and check.

The conjugate product is

$$4 - 5 = -1$$

an integer.

Algebra 1
Ordering and Estimating Real Numbers

Ordering and Estimating Real Numbers | A1-U01-P02

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
02	Grid Rounds	24 tasks
03	Match & Move	24 cards
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08	Terms of Use & License	included

Topic focus
Across 96 tasks this topic asks for allowed integer radicands, allowed integer radicands; justified checking-strategy choice, allowed real radicands, exact consecutive-integer bounds, justified strategy choice, relation symbol and exact justification and least-to-greatest list.
8 PDFs and a README; 53 buyer pages.

Algebra 1

Ordering and Estimating Real Numbers

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.

Use the trial-square table to estimate $\sqrt{17}$ to the nearest tenth. Explain how the midpoint row determines the rounding direction. Table: $4.1^2 = 16.81$; $4.15^2 = 17.2225$; $4.2^2 = 17.64$.

Trial	Exact square
4.1	16.81
4.15	17.2225
4.2	17.64

Bank label: _____

Order these exact rational numbers from least to greatest. Use an equals sign for any tie: $-\frac{23}{41}$, -1.5 , 0 , $\frac{39}{24}$.

Bank label: _____

Order these exact real numbers from least to greatest, showing equality if needed: $-\sqrt{39}$, -3 , 0 , $\sqrt{10}$. Use exact integer bounds and squared comparisons to justify the radical placements.

Bank label: _____

Order these exact real numbers from least to greatest, showing equality if needed: $-\sqrt{8}$, -2.8 , $\sqrt{4}$, 2 . Use exact integer bounds and squared comparisons to justify the radical placements.

Bank label: _____

Algebra 1

Ordering and Estimating Real Numbers

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.

Assume n is a nonnegative integer and $\frac{3}{2} < \sqrt{n} \leq 4$. Determine every possible value of n, preserving the endpoint conditions exactly. _____ _____	Assume n is a nonnegative integer and $1 < \sqrt{n} \leq \frac{7}{2}$. Determine every possible value of n, preserving the endpoint conditions exactly. _____ _____
Assume n is a nonnegative integer and $\frac{3}{2} \leq \sqrt{n} < \frac{9}{2}$. Determine every possible value of n, preserving the endpoint conditions exactly. _____ _____	Assume n is a nonnegative integer and $\frac{5}{2} \leq \sqrt{n} \leq \frac{9}{2}$. Determine every possible value of n, preserving the endpoint conditions exactly. _____ _____
Assume n is a nonnegative real number and $\frac{3}{2} \leq \sqrt{n} < 3$. Determine every possible value of n, preserving the endpoint conditions exactly. _____ _____	Without rounding either number, insert $<$, $>$, or $=$ between $\sqrt{11}$ and $\frac{10}{3}$. Justify the comparison using signs and exact squares. _____ _____

Algebra 1

Ordering and Estimating Real Numbers

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: $-\sqrt{41} < -\frac{3}{2} < \sqrt{12} < 6.4$ Order these exact real numbers from least to greatest, showing equality if needed: $-\sqrt{20}$, -4.5, $\sqrt{4}$, 2. Use exact integer bounds and squared comparisons to justify the radical placements. Your response: _____	Incoming: $-4.5 < -\sqrt{20} < \sqrt{4} = 2$ Order these exact real numbers from least to greatest, showing equality if needed: $-\sqrt{24}$, $\sqrt{34}$, 4.8, $-\frac{4}{2}$. Use exact integer bounds and squared comparisons to justify the radical placements. Your response: _____
Incoming: $4 < n \leq 9$ Order these exact real numbers from least to greatest, showing equality if needed: $-\sqrt{41}$, $\sqrt{12}$, 6.4, $-\frac{3}{2}$. Use exact integer bounds and squared comparisons to justify the radical placements. Your response: _____	Incoming: $-\sqrt{5} < -\frac{7}{5} < 0 < \sqrt{15}$ Order these exact real numbers from least to greatest, showing equality if needed: $-\sqrt{37}$, -6.1, $\sqrt{4}$, 2. Use exact integer bounds and squared comparisons to justify the radical placements. Your response: _____
Incoming: $n \in \{5, 6, 7, 8, 9, 10, 11, 12\}$ Assume n is a nonnegative real number and $\frac{5}{2} \leq \sqrt{n} < \frac{9}{2}$. Determine every possible value of n, preserving the endpoint conditions exactly. Your response: _____	Incoming: $-1.1 < -\frac{19}{33} < 0 < \frac{31}{20}$ Order these exact rational numbers from least to greatest. Use an equals sign for any tie: $-\frac{37}{19}$, -0.3, $\frac{5}{4}$, 1.25. Your response: _____

Algebra 1

Ordering and Estimating Real Numbers

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.

Evaluate this reasoning: From $3 < \sqrt{10} < 4$, a student reports $\sqrt{10} = 3.2$ to the nearest tenth. State whether the conclusion and evidence are valid, then repair the justification with exact comparisons.

Evaluate this reasoning: A calculator shows $\sqrt{2}$ as 1.41, so a student concludes $\sqrt{2} = 1.41$ exactly. State whether the conclusion and evidence are valid, then repair the justification with exact comparisons.

Evaluate this reasoning: A student says $\sqrt{20}$ is halfway between $\sqrt{16}$ and $\sqrt{25}$, so $\sqrt{20} = 4.5$. State whether the conclusion and evidence are valid, then repair the justification with exact comparisons.

Evaluate this reasoning: A student writes $-\sqrt{12} > -3$ because $\sqrt{12} > 3$. State whether the conclusion and evidence are valid, then repair the justification with exact comparisons.

Ordering and Estimating Real Numbers

Full Worked Solutions - excerpt

Worked example

Problem. Use the trial-square table to estimate $\sqrt{17}$ to the nearest tenth. Explain how the midpoint row determines the rounding direction. Table: $4.1^2 = 16.81$; $4.15^2 = 17.2225$; $4.2^2 = 17.64$.

Trial	Exact square
4.1	16.81
4.15	17.2225
4.2	17.64

Answer. $\sqrt{17} \approx 4.1$

Explanation and check.

The table brackets the root between 4.1 and 4.2. Since 17 is below the midpoint square 17.2225, round to 4.1.

Worked example

Problem. Order these exact rational numbers from least to greatest. Use an equals sign for any tie: $-\frac{23}{41}$, -1.5 , 0 , $\frac{39}{24}$.

Answer. $-1.5 < -\frac{23}{41} < 0 < \frac{39}{24}$

Explanation and check.

Writing the values as exact fractions gives the order $-1.5 < -\frac{23}{41} < 0 < \frac{39}{24}$.

Algebra 1
Signed Rational Number Operations

Adding and Subtracting Rational Numbers | A1-U01-COMB-P03-P04

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 addition-of-the-opposite rewrite and exact value, exact sum, exact sum with sign explanation, exact total or unit rate with units, exact value and efficient grouping and exact value with grouping-preserving rewrite.
8 PDFs and a README; 59 buyer pages.

Algebra 1

Signed Rational
Number 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.

Rewrite $\frac{23}{4} - (-3)$ as addition of the opposite, then compute its exact value. _____ Bank label: _____	Evaluate $-\frac{5}{3} + \frac{9}{4} + (-\frac{3}{2}) + \frac{5}{3}$. Show an efficient regrouping that uses cancellation or compatible denominators. _____ Bank label: _____
Compute the exact sum $\frac{2}{5} + \frac{3}{5}$. Show how the common sign and magnitudes determine the result. _____ Bank label: _____	Compute the exact sum $0.6 + 0.5$. Show how the common sign and magnitudes determine the result. _____ Bank label: _____
Compute the exact sum $\frac{2}{3} + \frac{7}{9}$. Show how the common sign and magnitudes determine the result. _____ Bank label: _____	Compute $\frac{5}{3} + (-\frac{5}{3})$. Compare the two magnitudes to justify the sign of the sum. _____ Bank label: _____
Compute the exact sum $-4 + (-\frac{5}{7})$. Show how the common sign and magnitudes determine the result. _____ Bank label: _____	Rewrite $\frac{25}{6} - \frac{5}{4}$ as addition of the opposite, then compute its exact value. _____ Bank label: _____

Algebra 1

Signed Rational
Number 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.

Evaluate $\frac{7}{5} + (-\frac{7}{5}) + \frac{1}{3} + \frac{2}{3}$. Show an efficient regrouping that uses cancellation or compatible denominators. _____ _____	Evaluate $\frac{3}{5} + (-\frac{3}{5}) + \frac{7}{2} + (-\frac{7}{2})$. Show an efficient regrouping that uses cancellation or compatible denominators. _____ _____
Evaluate $\frac{8}{3} + (-\frac{8}{3}) + 1 + \frac{2}{3}$. Show an efficient regrouping that uses cancellation or compatible denominators. _____ _____	Evaluate $\frac{7}{2} + (-\frac{7}{2}) + 1 + (-1)$. Show an efficient regrouping that uses cancellation or compatible denominators. _____ _____
Evaluate $-\frac{6}{5} + 1 + (-\frac{3}{2}) + \frac{6}{5}$. Show an efficient regrouping that uses cancellation or compatible denominators. _____ _____	Evaluate $-1 + \frac{3}{4} + (-\frac{3}{4}) + 1$. Show an efficient regrouping that uses cancellation or compatible denominators. _____ _____

Algebra 1

**Signed Rational
Number 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.

Evaluate this signed-number method: Temperatures are -3°C and 5°C , so a student says their directed difference $5 - (-3)$ is -8°C . Identify the first invalid step if there is one, repair the calculation, and verify the result exactly.

Evaluate this signed-number method: A student computes $0 - (-\frac{9}{4}) = -\frac{9}{4}$ because the zero contributes no sign. Identify the first invalid step if there is one, repair the calculation, and verify the result exactly.

Evaluate this signed-number method: To check $-4 + 9 = 5$, a student subtracts 9 from 5 and obtains -4 . Identify the first invalid step if there is one, repair the calculation, and verify the result exactly.

Signed Rational Number Operations

Full Worked Solutions - excerpt

Worked example

Problem. Evaluate this method: A student says $\frac{4}{5} \div 0 = 0$ because zero makes an answer zero. Identify the first invalid step if any and repair the reasoning exactly.

Answer. incorrect

Explanation and check.

Division by zero is undefined; the zero-factor rule applies to multiplication, not a zero divisor.

Worked example

Problem. Evaluate this method: A student says a product of three negative nonzero factors is positive. Identify the first invalid step if any and repair the reasoning exactly.

Answer. incorrect

Explanation and check.

Three is odd, so the product of three negative nonzero factors is negative.

Algebra 1
Mixed Operations with Rational Numbers

Mixed Operations with Rational Numbers | A1-U01-P05

96 problems · Four activity formats

01	Answer Bank Challenge	24 tasks
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Topic focus
Across 96 tasks this topic asks for efficient exact representation and value, exact rational value, first invalid step and repaired exact result, missing stage and forward verification, mixed expression and exact quantity with units and supported or not supported with decisive bound.
8 PDFs and a README; 58 buyer pages.

Algebra 1

Mixed Operations with Rational Numbers

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.

Use the fully labeled operation diagram. A2-arrow operation machine starts with an unknown value, multiplies by $(-\frac{1}{2})$, then adds $\frac{3}{4}$, and ends at $-\frac{23}{28}$. Recover the starting value by undoing the arrows in reverse order, then verify it forward.

_____	Multiply by $-\frac{1}{2} \rightarrow$	_____	Add $\frac{3}{4} \rightarrow$	$-\frac{23}{28}$
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Bank label: _____

Evaluate $\frac{6}{5}(-3) - \frac{8}{3}$ exactly. Complete the multiplication or division before the addition or subtraction, and show the common-denominator step if one is needed.

Bank label: _____

Use the fully labeled operation diagram. A2-arrow operation machine starts with an unknown value, multiplies by $(-\frac{3}{4})$, then adds $(-\frac{3}{4})$, and ends at $-\frac{33}{28}$. Recover the starting value by undoing the arrows in reverse order, then verify it forward.

_____	Multiply by $-\frac{3}{4} \rightarrow$	_____	Add $-\frac{3}{4} \rightarrow$	$-\frac{33}{28}$
-------	---	-------	--------------------------------	------------------

Bank label: _____

Evaluate $\frac{5}{4} - \frac{10}{3} \div \frac{5}{2}$ exactly. Complete the multiplication or division before the addition or subtraction, and show the common-denominator step if one is needed.

Bank label: _____

Algebra 1

Mixed Operations with Rational Numbers

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.

Start at $\frac{6}{5}$ and follow the fixed order: divide by 5, then add one negative rational number. Construct the adjustment that reaches $-\frac{14}{25}$, and verify that the final result is noninteger. 	Evaluate $\frac{5}{6} - (-0.5) \cdot 1$ exactly. Choose fraction or terminating-decimal form to reduce the work, state why your choice avoids rounding, and give the exact value. 												
Use the quantities in the table. A position changes at a constant signed rate of 6 meters per hour for 2 hours, then has an additional signed change of $\frac{5}{2}$ meters. Write the mixed expression and find the net change in meters. <table border="1" data-bbox="151 1045 795 1176"> <thead> <tr> <th>Quantity</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>signed rate</td> <td>6</td> <td>meters per hour</td> </tr> <tr> <td>time</td> <td>2</td> <td>hours</td> </tr> <tr> <td>later adjustment</td> <td>$\frac{5}{2}$</td> <td>meters</td> </tr> </tbody> </table> 	Quantity	Value	Unit	signed rate	6	meters per hour	time	2	hours	later adjustment	$\frac{5}{2}$	meters	Evaluate $1.25 \div (-\frac{7}{10}) - 2$ exactly. Choose fraction or terminating-decimal form to reduce the work, state why your choice avoids rounding, and give the exact value.
Quantity	Value	Unit											
signed rate	6	meters per hour											
time	2	hours											
later adjustment	$\frac{5}{2}$	meters											
Evaluate $0.25 + \frac{4}{9} \cdot 3$ exactly. Choose fraction or terminating-decimal form to reduce the work, state why your choice avoids rounding, and give the exact value. 	Evaluate $1.2 + \frac{2}{7} \cdot \frac{1}{2}$ exactly. Choose fraction or terminating-decimal form to reduce the work, state why your choice avoids rounding, and give the exact value. 												

Algebra 1

Mixed Operations with Rational Numbers

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: add $(-\frac{1}{3})$: $\frac{8}{3} \rightarrow 4 \rightarrow \frac{11}{3}$ A2-arrow operation machine starts with an unknown value, divides by $\frac{3}{2}$, then subtracts $\frac{2}{3}$, and ends at $-\frac{20}{21}$. Recover the starting value by undoing the arrows in reverse order, then verify it forward. <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <tr> <td style="width: 20%; text-align: center;">_____</td> <td style="width: 20%; text-align: center;">Divide by $\frac{3}{2} \rightarrow$</td> <td style="width: 20%; text-align: center;">_____</td> <td style="width: 20%; text-align: center;">Subtract $\frac{2}{3} \rightarrow$</td> <td style="width: 20%; text-align: center;">$-\frac{20}{21}$</td> </tr> </table> Your response: _____	_____	Divide by $\frac{3}{2} \rightarrow$	_____	Subtract $\frac{2}{3} \rightarrow$	$-\frac{20}{21}$	Incoming: $-\frac{3}{7}$ Evaluate $\frac{7}{6} + \frac{1}{5} \cdot 2$ exactly. Complete the multiplication or division before the addition or subtraction, and show the common-denominator step if one is needed. Your response: _____
_____	Divide by $\frac{3}{2} \rightarrow$	_____	Subtract $\frac{2}{3} \rightarrow$	$-\frac{20}{21}$		
Incoming: $\frac{3}{10}$ Start at $\frac{8}{3}$ and follow the fixed order: divide by $\frac{2}{3}$, then add one negative rational number. Construct the adjustment that reaches $\frac{11}{3}$, and verify that the final result is noninteger. Your response: _____	Incoming: $\frac{9}{2}$ Evaluate $-\frac{7}{5} - \frac{5}{2} \div \frac{5}{2}$ exactly. Complete the multiplication or division before the addition or subtraction, and show the common-denominator step if one is needed. Your response: _____					
Incoming: $-\frac{493}{24}$ A2-arrow operation machine starts with an unknown value, adds $(-\frac{2}{3})$, then multiplies by 6, and ends at $\frac{38}{7}$. Recover the starting value by undoing the arrows in reverse order, then verify it forward. <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <tr> <td style="width: 20%; text-align: center;">_____</td> <td style="width: 20%; text-align: center;">Add $-\frac{2}{3} \rightarrow$</td> <td style="width: 20%; text-align: center;">_____</td> <td style="width: 20%; text-align: center;">Multiply by $6 \rightarrow$</td> <td style="width: 20%; text-align: center;">$\frac{38}{7}$</td> </tr> </table> Your response: _____	_____	Add $-\frac{2}{3} \rightarrow$	_____	Multiply by $6 \rightarrow$	$\frac{38}{7}$	Incoming: $\frac{71}{10}$ Evaluate $\frac{3}{4} - \frac{1}{2} \div 2$ exactly. Complete the multiplication or division before the addition or subtraction, and show the common-denominator step if one is needed. Your response: _____
_____	Add $-\frac{2}{3} \rightarrow$	_____	Multiply by $6 \rightarrow$	$\frac{38}{7}$		

Algebra 1

Mixed Operations with Rational Numbers

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 worked calculation for $\frac{3}{4} + (\frac{2}{5})(\frac{5}{2})$. Step 1: Add $\frac{3}{4} + \frac{2}{5}$ first. Step 2: Multiply that result by $\frac{5}{2}$. Identify the first invalid step, preserve every valid prefix, and give the repaired exact result. If no step is invalid, say so.

Audit this worked calculation for $\frac{2}{5} + (\frac{1}{3})(\frac{3}{4})$. Step 1: Multiply $\frac{1}{3}$ by $\frac{3}{4}$ to get $\frac{1}{4}$. Step 2: Add $\frac{2}{5} + \frac{1}{4}$ as $\frac{3}{9} = \frac{1}{3}$. Identify the first invalid step, preserve every valid prefix, and give the repaired exact result. If no step is invalid, say so.

Audit this worked calculation for $\frac{3}{4} \div (\frac{5}{6}) - \frac{1}{10}$. Step 1: Rewrite as $\frac{3}{4}$ times $\frac{5}{6}$ minus $\frac{1}{10}$. Step 2: Report $\frac{21}{40}$. Identify the first invalid step, preserve every valid prefix, and give the repaired exact result. If no step is invalid, say so.

Audit this worked calculation for $(\frac{3}{4} + \frac{5}{6})(\frac{2}{3})$. Step 1: Cancel the 3 in $\frac{3}{4}$ with the outside factor $\frac{2}{3}$. Step 2: Multiply the remaining expression. Identify the first invalid step, preserve every valid prefix, and give the repaired exact result. If no step is invalid, say so.

Mixed Operations with Rational Numbers

Full Worked Solutions - excerpt

Worked example

Problem. Start at $\frac{7}{3}$. Use each operation exactly once—add $\frac{8}{3}$ and multiply by $\frac{3}{4}$ —in an order that reaches $\frac{15}{4}$. The intermediate value must be positive. Construct and verify the chain.

Answer. $\frac{7}{3} \rightarrow$ add $\frac{8}{3} \rightarrow 5 \rightarrow$ multiply by $\frac{3}{4} \rightarrow \frac{15}{4}$

Explanation and check.

Adding first gives the required positive intermediate 5; multiplying it by $\frac{3}{4}$ reaches $\frac{15}{4}$.

Worked example

Problem. Start at $\frac{3}{2}$. Use each operation exactly once—add $\frac{4}{3}$ and multiply by $\frac{3}{2}$ —in an order that reaches $\frac{17}{4}$. The intermediate value must be positive. Construct and verify the chain.

Answer. $\frac{3}{2} \rightarrow$ add $\frac{4}{3} \rightarrow \frac{17}{6} \rightarrow$ multiply by $\frac{3}{2} \rightarrow \frac{17}{4}$

Explanation and check.

Adding first gives the required positive intermediate $\frac{17}{6}$; multiplying it by $\frac{3}{2}$ reaches $\frac{17}{4}$.

Algebra 1
Order of Operations with Grouping Symbols

Order of Operations with Grouping Symbols | A1-U01-P06

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 valid groupings or impossibility proof, all valid groupings or impossibility proof; justified strategy selection, equivalent expression or tree and exact value, equivalent expression or tree and exact value; justified strategy selection, exact value or undefined verdict and exact value or undefined verdict; justified strategy selection.
8 PDFs and a README; 63 buyer pages.

Algebra 1

Order of Operations with Grouping Symbols

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.

Evaluate $5 + 7 \cdot 4 - 1$. At each precedence level, work from left to right; show the decisive first operation.

Bank label: _____

Evaluate $3 + 2 \cdot 5 - 1$. At each precedence level, work from left to right; show the decisive first operation.

Bank label: _____

Algebra 1

Order of Operations with Grouping Symbols

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.

Translate $(4 - 3) \div 4$ into an operation tree whose leaves and operation nodes preserve every grouping, and state its exact value. _____ _____	Insert grouping into $4 + 4 - 4 \div 4$ to obtain 4, without reordering operands or operations. Any full parenthesization preserving the displayed order is allowed. Give every valid grouping, or prove none works by checking the permitted structures. _____ _____
Insert grouping into $5 - 4 + 5 \cdot 3$ to obtain $\frac{33}{2}$, without reordering operands or operations. Only these grouping templates are allowed: $(5 - (4 + 5)) \cdot 3$; $5 - (4 + (5 \cdot 3))$; $(5 - 4) + (5 \cdot 3)$. Give every valid grouping, or prove none works by checking the permitted structures. _____ _____	Evaluate $(10 - 6)(2 + 1)$. Record each completed inner group before using it in the enclosing operation. _____ _____
Insert grouping into $2 - 4 + 6 \cdot 2$ to obtain 8, without reordering operands or operations. Any full parenthesization preserving the displayed order is allowed. Give every valid grouping, or prove none works by checking the permitted structures. _____ _____	A fraction bar has numerator $[8 + 1 \cdot 5]$ and denominator $[5 - 5]$. Evaluate each whole group, then evaluate the compound fraction or state that it is undefined. _____ _____

Algebra 1

Order of Operations with Grouping Symbols

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.

Compare $(-9)^4$ and -9^4 . Evaluate both, state whether they are equal, and explain how the parentheses and exponent parity control the sign.

Audit the evaluation of $-|4 - 9| + 2$. Step 1: Compute $4 - 9 = -5$. Step 2: Replace $|-5|$ by -5 , so the external negative gives $-(-5)$. Step 3: Add 2 and report 7. Identify the first invalid step, preserve the valid prefix, and give the corrected value. If every step is valid, say so.

Audit the evaluation of $18 \div [7 - (5 - 4)]$. Step 1: Compute $5 - 4 = 1$. Step 2: Compute $7 - 1 = 6$. Step 3: Replace the bracket by 7 and report $\frac{18}{7}$. Identify the first invalid step, preserve the valid prefix, and give the corrected value. If every step is valid, say so.

Compare $(-5)^2$ and -5^2 . Evaluate both, state whether they are equal, and explain how the parentheses and exponent parity control the sign.

Order of Operations with Grouping Symbols

Full Worked Solutions - excerpt

Worked example

Problem. Evaluate $5 + 7 \cdot 4 - 1$. At each precedence level, work from left to right; show the decisive first operation.

Answer. 32

Explanation and check.

First

$$7 \cdot 4 = 28$$

Then move left to right:

$$5 + 28 - 1 = 32$$

Worked example

Problem. Evaluate $3 + 2 \cdot 5 - 1$. At each precedence level, work from left to right; show the decisive first operation.

Answer. 12

Explanation and check.

First

$$2 \cdot 5 = 10$$

Then move left to right:

$$3 + 10 - 1 = 12$$

Algebra 1
Units, Conversions, and Defining Quantities

Operations with Measurements and Unit Conversion | A1-U01-COMB-P07-P08

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 compatibility verdict with dimensional trace, coordinate value with axis units, defect list and repaired definition, definition with datum and sign meanings, equivalent measurement with cancellation and equivalent rate with two unit cancellations.

8 PDFs and a README; 77 buyer pages.

Algebra 1

Units, Conversions, and
Defining Quantities

Name: _____ Date: _____ Class: _____

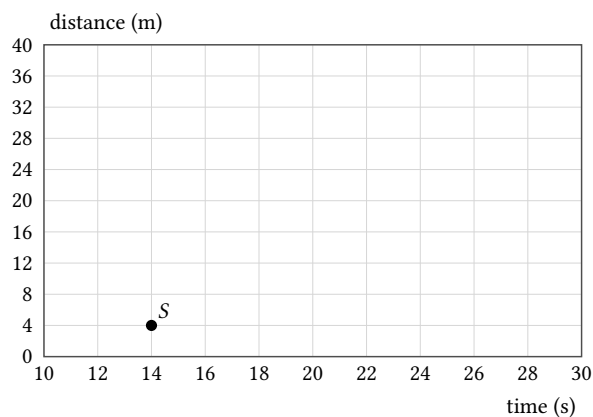
Answer each question and record the matching bank letter. Give exact values. A value without its unit is not a complete answer.

One board is 6 ft 11 in long and another is 14 in long. Find their combined length in inches. Organize all quantities in one consistent unit system before calculating.

Quantity	Value	Unit
first piece feet	6	<i>ft</i>
first piece inches	11	in
second piece	14	in

Bank label: _____

A graph uses an x -axis starting at 10 s with 2 s per tick and a y -axis starting at 0 m with 4 m per tick. Point S is at tick indices (2, 1). Report its coordinate pair with units.



Bank label: _____

Algebra 1

Units, Conversions, and
Defining Quantities

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.

There are exactly 5 identical items, each measured as 28.4 g to the nearest 0.1 g. A calculator gives 142.0 g. State an appropriately reported total and explain why the exact count does not add measurement precision. 	The data are 105, 118, 131, 144 units. The table gives two axis proposals. Choose a proposal that shows every value and uses at least half of its available intervals from the smallest to largest value. Justify by computing each displayed range and the data span. <table border="1" data-bbox="824 617 1471 741"> <thead> <tr> <th>proposal</th> <th>origin</th> <th>units per tick</th> <th>available intervals</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>0</td> <td>20</td> <td>8</td> </tr> <tr> <td>B</td> <td>100</td> <td>5</td> <td>10</td> </tr> </tbody> </table> 	proposal	origin	units per tick	available intervals	A	0	20	8	B	100	5	10
proposal	origin	units per tick	available intervals										
A	0	20	8										
B	100	5	10										
In $T = rt + b$, the known units are T: $^{\circ}\text{C}$, r: $^{\circ}\text{C}/\text{min}$, t: min. Infer the required unit of b by reversing the dimensional operations. Build a numerator-denominator unit ledger and cancel known factors. Verify the result in the formula. 	There are exactly 3 identical items, each measured as 26.3 g to the nearest 0.1 g. A calculator gives 78.9 g. State an appropriately reported total and explain why the exact count does not add measurement precision. 												

Algebra 1

Units, Conversions, and Defining Quantities

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: 24 in Compare these legitimate variable choices: m = elapsed time in minutes; h = elapsed time in hours. State their relationship ($m = 60h$) and decide which choice is more direct for the stated focus “minutes.” Do not construct or solve a full model. Your response: _____	Incoming: Relationship: $m = 60h$. The m definition answers a question requesting minutes directly. Compare these legitimate variable choices: u = liters used; r = liters remaining from an initial T liters. State their relationship ($r = T - u$) and decide which choice is more direct for the stated focus “remaining.” Do not construct or solve a full model. Your response: _____												
Incoming: 420 min Using 1 ft = 12 in, convert 2 ft to in. Write a ratio equal to 1 so that ft cancels, and check whether the new magnitude is sensible. Your response: _____	Incoming: Let e be the elapsed time from first alarm to all-clear, measured in seconds. A report asks for the distinct customers, not the number of purchases. Define the variable c operationally: name exactly what is counted or measured and include its unit. Clarify its scope so it cannot be confused with a nearby total, rate, object, or reference interval. Your response: _____												
Incoming: kg/m³ Material costs 4 USD/kg. What is the cost of 4 packages of 350 g each? Organize all quantities in one consistent unit system before calculating. <table border="1" data-bbox="152 1486 797 1608"> <thead> <tr> <th>Quantity</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>unit price</td> <td>4</td> <td>USD/kg</td> </tr> <tr> <td>mass per package</td> <td>350</td> <td>g</td> </tr> <tr> <td>packages</td> <td>4</td> <td>count</td> </tr> </tbody> </table> Your response: _____	Quantity	Value	Unit	unit price	4	USD/kg	mass per package	350	g	packages	4	count	Incoming: 0.158 m Using 1 lb = 16 oz, convert 21 oz to lb. Write a ratio equal to 1 so that oz cancels, and check whether the new magnitude is sensible. Your response: _____
Quantity	Value	Unit											
unit price	4	USD/kg											
mass per package	350	g											
packages	4	count											

Algebra 1

Units, Conversions, and Defining Quantities

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 worked solution: $5 \text{ m} \left(\frac{100 \text{ cm}}{1 \text{ m}} \right) \left(\frac{100 \text{ cm}}{1 \text{ m}} \right) = 50000 \text{ cm}$. Identify the first invalid stage, if any, track the units, and give the corrected conclusion.

Choose the strategy that directly produces the required value and units, and justify the unit operations. Choice A: use $\left(\frac{1 \text{ km}}{1000 \text{ m}} \right) (3600 \text{ s}/(1 \text{ hr}))$. Choice B: use $(1 \text{ km}/(1000 \text{ m})) (1 \text{ hr}/(3600 \text{ s}))$. Convert 3 m/s to $\frac{\text{km}}{\text{hr}}$. Use the supplied relations $1 \text{ km} = 1000 \text{ m}$ and $1 \text{ hr} = 3600 \text{ s}$, orienting one ratio for the numerator unit and one for the denominator unit. Show both cancellations. Explain why reversing either factor would leave an unwanted unit or create a reciprocal-rate error.

Audit this worked solution: Because $A = L^2$ has area units, it must be the correct area formula for every shape. Identify the first invalid stage, if any, track the units, and give the corrected conclusion.

Audit this worked solution: Convert 6 m/s to $\frac{\text{km}}{\text{hr}}$: $6 \left(\frac{1 \text{ km}}{1000 \text{ m}} \right) = \frac{3}{500} \text{ km/hr}$. Identify the first invalid stage, if any, track the units, and give the corrected conclusion.

Units, Conversions, and Defining Quantities

Full Worked Solutions - excerpt

Worked example

Problem. Audit this worked solution: An axis starts at 0 and rises by 2.5 per tick; tick 6 is labeled 6. Identify the first invalid stage, if any, track the units, and give the corrected conclusion.

Answer. First invalid stage: axis reading. Correct conclusion: 15 units.

Explanation and check.

Multiply the tick index by 2.5.

Worked example

Problem. Diagnose the proposed definition “Let b be the bicycle.” Identify the missing semantic component or components, then rewrite it as an operational variable definition.

Answer. Missing: quantity measured. Repair: Let b be the distance the bicycle travels, in kilometers.

Explanation and check.

A symbol must represent a measurable attribute, not the physical object.

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: _____

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
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 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: _____

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
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 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: _____

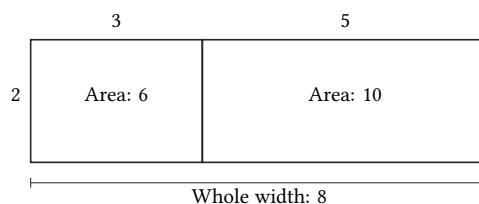
Compute $(25)(12)$ by decomposing one factor into a useful sum or difference and distributing. Show why your chosen decomposition reduces the work.

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: _____

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:

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