

Algebra 1
Linear Word Problems & Model Checks | Algebra 1 | 2-Topic Bundle

2-topic bundle | 192 problems | Four activity formats

01 Writing Linear Equations from Word Problems

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

02 Checking Linear Models and Contextual Solutions

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

In every topic

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

Product previews

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

16 PDFs and 2 READMEs; 107 buyer PDF pages across the 2 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.

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

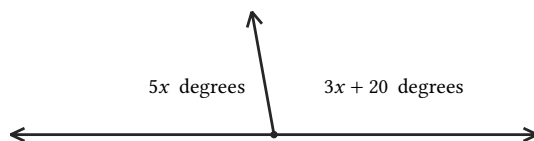
Name: _____ Date: _____ Class: _____

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
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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: _____

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 $-4c + 10 = 34$ gives $c = -6$. Here c is a signed temperature change recorded in whole degrees. Judge the root without treating it as a count. 	Four scores are 76, 88, 91, and x, and their exact average is 84. Is x uniquely determined? Verify the resulting total.
An appliance uses 1.5 kilowatts for t minutes, but $E = 1.5t$ is labeled in kilowatt-hours. Rewrite E consistently in terms of t. 	An exact trophy-count equation has algebraic root $n = 7.4$. Should the result be rounded to 7 trophies, 8 trophies, or treated another way?
A model lists both $4x - 3 = 17$ and $4x - 3 = 21$ for the same quantity x. Classify the information as unique, insufficient, or incompatible. 	A decay model $14 - 2t = 14$ gives $t = 0$. Because t is elapsed time since observation began, should zero be retained or discarded? Justify with the original equation.

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.