

Algebra 1
One-Step Multiplication and Division Equations

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

96 problems · Four activity formats

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

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Name: _____ Date: _____ Class: _____

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

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

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Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. A value without its unit is not a complete answer.

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

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Begin at START. Answer the card, then find the matching final answer at the top of another card. Use the recording sheet for your reasoning. Visit each card once and continue to FINISH.

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

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Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

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

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

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

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

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Full Worked Solutions - excerpt

Worked example

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

Answer. 16

Explanation and check.

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

Worked example

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

Answer. -21

Explanation and check.

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