Sets & Steps
Math Practice & Worked Solutions

Algebra 1

Addition and Subtraction Inequalities

Addition and Subtraction Inequalities | A1-U03-P02

96 problems · Four activity formats

Topic focus

Across 96 tasks this topic asks for solution inequality with order-preservation justification and solution inequality with order-preservation justification; justified method selection.

8 PDFs and a README; 48 buyer pages.

The following pages use the same questions, given data, and notation as the final files. Question/card serial numbers and internal IDs are omitted in this preview only. Table values and matching responses are retained. Full answer keys are not included.

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Algebra 1

Addition and Subtraction Inequalities

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.

Recover k so that $k < x + 2$ has solution $x > 6$. Bank label: _____	Choose a so $2.4 \geq x + a$ has the upper boundary -0.6. Bank label: _____
Isolate x in $-\frac{7}{4} > x + \frac{1}{2}$ and put x first afterward. Bank label: _____	Solve $x - \frac{11}{12} < \frac{1}{6}$ exactly. Bank label: _____
Solve $-11.2 \leq x + 3.8$. Bank label: _____	Determine the exact solution of $x - \frac{5}{6} < -\frac{1}{3}$. Bank label: _____
Solve $6.4 > x + 1.9$ with an x-first answer. Bank label: _____	Solve $x + \frac{1}{6} < \frac{5}{12}$ exactly. 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. Give the whole requested response, including any reasoning the question asks for.

Which of $0.8 > x - 0.6$ and $1.5 > x + 0.4$ permits more values?	A student reports $x < 6$ for $x + 2 \leq 8$. Does the endpoint test support that strictness?
A solution to $x - \frac{7}{5} < \frac{3}{5}$ is written $x \leq 2$. Test the boundary to judge the equality bar.	The proposed solution of $x + 7 < 3$ is $x < -3$. Test the claimed boundary and determine the actual one.
Find the signed offset a that makes $x + a \geq -2$ solve to $x \geq 5$.	Is there a value of b for which $3 < x\text{-}b$ has the real solution $x \geq 7$?

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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: $x > \frac{7}{6}$. An inequality says that x plus negative 4 is greater than 6. Undo the signed offset. Your response: _____	**Incoming:** $x > 10$. Isolate x in $-\frac{5}{3} < x - \frac{2}{3}$. Your response: _____
Incoming: a = −7. Solve $\frac{1}{3} < x - \frac{5}{6}$ and report x first. Your response: _____	**Incoming:** $x < -\frac{2}{9}$. Solve $x - \frac{7}{6} \leq -\frac{1}{2}$ with exact arithmetic. Your response: _____
Incoming: The shift gives $12 \geq x$, so $x \leq 12$. State the solution of $x + 0 \leq 4$ and explain the zero offset. Your response: _____	**Incoming:** $x > 1$. Solve $0 \geq x - 0.04$ and preserve the inclusive symbol. 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.

A student solves $x - 2.5 \geq -1$ as $x \geq -3.5$ by subtracting 2.5 again. Diagnose and correct.

A tenth-scaled graph proposes $x \leq -3$ for $x + 2.25 \leq -0.75$. Audit its endpoint and sides.

A proposed solution to $x - 5 \leq -2$ is $x \geq 3$. Evaluate $2, 3$, and 4 to locate the direction error.

A student correctly chooses $a + 3$ translation for $x - 3 > -8$ but reverses the symbol and tests only $x = -6$. Explain why that test is misleading and repair the ray.

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Full Worked Solutions - excerpt

Worked example

Problem. Recover k so that $k < x + 2$ has solution $x > 6$.

Answer. k = 8.

Explanation and check.

Subtracting 2 gives $k - 2 < x$. The lower boundary $k - 2$ must be 6, so $k = 8$.

Worked example

Problem. Choose a so $2.4 \geq x + a$ has the upper boundary -0.6.

Answer. a = 3.

Explanation and check.

Solving gives $x \leq 2.4$-a. Requiring 2.4-$a = -0.6$ yields $a = 3$.