

Algebra 1
Absolute Value Equations and Inequalities

Solving Absolute Value Inequalities | A1-U03-P07
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

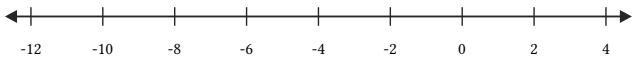
Topic focus
Across 96 tasks this topic asks for exact distance condition or solution set with complete case reasoning.
8 PDFs and a README; 58 buyer pages.

Algebra 1

Absolute Value Equations and Inequalities

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.

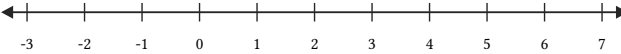
Reconstruct the parameterized symmetric interval. target set: $[a - r, a + r]$ with $r > 0$; form restriction: closed inside condition _____ Bank label: _____	Construct a valid absolute-value inequality whose solution is empty. target set: empty set; form restriction: strict inside condition with radius 0 _____ Bank label: _____
Find all x. condition: $4x \leq 12$ _____ Bank label: _____	Find all x satisfying $7-x = 4$. _____ Bank label: _____
Solve and graph the result.  condition: $\left \left(\frac{1}{2}\right)x + 2\right < 3$ _____ Bank label: _____	Isolate and solve both branches. equation: $3 -2x - 4 + 6 = 30$ _____ Bank label: _____
Find every solution of $x - 3 = 2$. _____ Bank label: _____	Classify and solve $x - 4 = 0$. _____ 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.

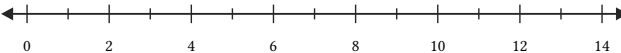
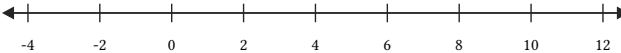
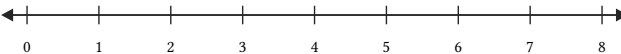
Normalize the outer operations and solve. equation: $2 x - 4 + 1 = 11$ 	Determine the solution set without an invalid case split. equation: $-2 x - 6 = 4$
Interpret the condition in x-units, giving its center and radius. condition: $2x - 6 \leq 8$ 	Construct the required scaled condition.  membership constraints: include -1, include 5, exclude 6, both included points are endpoints, interior coefficient 2
Write the model and list ages. context: An integer age is within 2 years of age 15, including both limits.; quantity: a years, integer 	Describe $t = 6$ without solving it.

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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: The solution is $-2 < x < 10$. Find midpoint, radius, and the corresponding condition. target set: $x \leq -\frac{2}{3}$ OR $x \geq \frac{10}{3}$; form restriction: closed outside condition Your response: _____	Incoming: Use $x - \frac{4}{3} \geq 2$. Use distance to solve and display the rays.  condition: $7 - x > 5$ Your response: _____
Incoming: The solution is $x \leq 2$ OR $x \geq 6$. Find the open interval and mark its graph endpoints.  condition: $-0.5x + 2 < 3$ Your response: _____	Incoming: The roots are $x = -6$ and $x = 4$. Clear the outer divisor and find the closed interval. condition: $\frac{ x-6 }{2} \leq 4$ Your response: _____
Incoming: The only solution is $x = 3$. Give the exact interval. condition: $x - 1 \leq \frac{5}{2}$ Your response: _____	Incoming: Use $x - 2 \leq 0.8$. Graph and state $x - 4 \leq 2$.  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.

Apply the missing contextual step.

Supplied solution steps:

1. $|t - 3| > 5$
2. $t \geq 0$ hours
3. student answer $t < -2$ or $t > 8$

Correct the center and interval.

Supplied solution steps:

1. $|x + 4| < 2$
2. student center 4
3. answer $2 < x < 6$

State and prove the containment relation.

condition A: $|x - a| \leq r$; condition B: $|x - a| \leq s$, with $0 < r < s$

Absolute Value Equations and Inequalities

Full Worked Solutions - excerpt

Worked example

Problem. Reconstruct the parameterized symmetric interval.

target set: $[a - r, a + r]$ with $r > 0$; form restriction: closed inside condition

Answer. Use $|x - a| \leq r$.

Explanation and check.

The midpoint is a and the positive half-width is r .

Worked example

Problem. Construct a valid absolute-value inequality whose solution is empty.

target set: empty set; form restriction: strict inside condition with radius 0

Answer. Use $|x - 1| < 0$.

Explanation and check.

No distance is strictly below zero.