

Algebra 1
Inequality Graphs and Interval Notation

Inequality Graphs and Interval Notation | A1-U03-P08

96 problems · Four activity formats

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Topic focus
Across 96 tasks this topic asks for exact equivalent set representation with endpoint evidence.
8 PDFs and a README; 64 buyer pages.

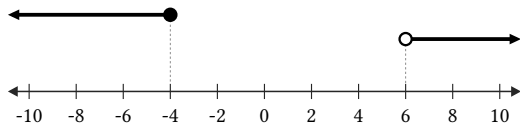
Algebra 1

Inequality Graphs and Interval Notation

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.

Although the displayed window stops at -10 and 10 , arrows continue. State the full set.



Bank label: _____

Represent the singleton $\{2\}$ on a number line.

Bank label: _____

From the complete menu, list every value in the represented ray. Use the declared universe: exhaustive menu $\{-1, 0, 3, 7\}$. The represented real set is $[3, \infty)$. The scope of the supplied evidence is exhaustive declared finite universe.

Bank label: _____

Classify exactly when these encodings agree and otherwise give a symbolic witness.

The two encodings to compare are $[a, b]$ and $[a, b)$ with $a \leq b$.

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.

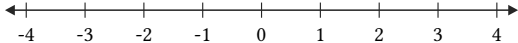
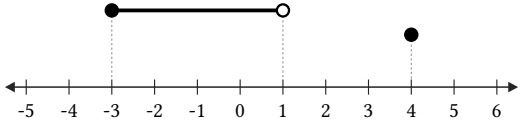
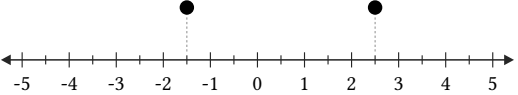
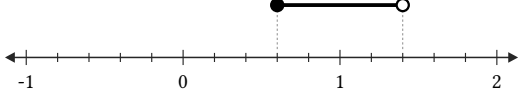
List the integer members, preserving the open upper endpoint. Use the declared universe: integers. The represented real set is $[-4, 3)$. The scope of the supplied evidence is all integers constrained by the bounded interval.	Construct the isolated fraction and the separate bounded interval on one exact scale. Represent $\{-\frac{5}{2}\} \cup [\frac{1}{2}, \frac{7}{4})$ using quarter-unit ticks from -3 to 2.
Encode the union and preserve its one-point gap. The supplied condition is $x < 2$ OR $x > 2$.	Are these sets equal? If not, exhibit a value from the differing region rather than an endpoint only. Encoding A is $[-5, -1] \cup [2, 6]$. Encoding B is $[-5, 6]$.
Determine whether the apparent parameterized interval compression is valid. Encoding A is $[a, b) \cup (b, c]$ with $a < b < c$. Encoding B is $[a, c]$.	Check every join before deciding whether the encodings are equivalent. Encoding A is $[-4, -1) \cup [-1, 2) \cup \{2\}$. Encoding B is $[-4, 2]$.

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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 set is $[0, \infty)$. List every prime member of the represented interval. Use the declared universe: prime integers. The represented real set is $(0, 12]$. The scope of the supplied evidence is all prime integers in the bounded interval. Your response: _____	Incoming: The set is $\{2, 3, 5, 7, 11\}$. The exact specification contains no shading and no isolated points. What is the set?  Your response: _____
Incoming: The set is $\{-2, -1, 0, 1, 2\}$. Translate $x \geq 0$ to interval notation. The supplied condition is $x \geq 0$. Your response: _____	Incoming: The set is $[-2, 7)$. The line shades $[-3, 1)$ and separately marks 4. Encode the complete set.  Your response: _____
Incoming: The set is $\{-6, -3, 3, 6, 9\}$. Only two filled points are shown on a half-unit scale. Encode them without shading between.  Your response: _____	Incoming: The interval is $(-1, 4)$. The endpoints lie at the third and seventh ticks to the right of zero on a 0.2 scale. Read coordinates, not tick numbers.  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.

Verify the supplied graph using boundary, interior, and exterior values.

The original condition is $-1 < x \leq 4$. The proposed representation is hollow -1 , filled 4 , shading between. Use the supplied checks: -1 ; 0 ; 4 ; 5 .

Audit the proposal across all possible orderings of the real parameters.

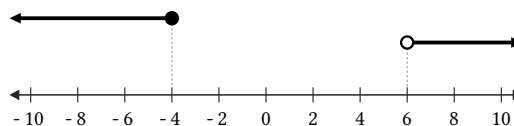
The original condition is $a \leq x \leq b$. The proposed representation is the closed segment $[a, b]$. Use the supplied checks: $a < b$; $a = b$; $a > b$.

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Full Worked Solutions - excerpt

Worked example

Problem. Although the displayed window stops at -10 and 10 , arrows continue. State the full set.



Answer. Use $(-\infty, -4]$ union $(6, \infty)$.

Explanation and check.

Window edges are not endpoints; arrows indicate unbounded continuation.

Worked example

Problem. Represent the singleton $\{2\}$ on a number line.

Answer. Draw one filled point at 2 and no shaded segment or arrow.

Explanation and check.

A singleton contains one coordinate only, so adjacent values must stay unshaded.