

5-7 Solving Inequalities (Pages 251–254)

You can solve rational number inequalities using the same skills you used to solve inequalities involving integers.

<p>Graphing Solutions of Inequalities</p>	<ul style="list-style-type: none"> • The solution set for an inequality usually contains an infinite number of values. This set is represented by a graph on a number line. The graph usually has an open or closed circle to indicate where the graph starts and an arrow that points left or right. • When the inequality symbol is $<$ or $>$, then the graph begins with an open circle, to show that the end point is not included in the solutions. • When the inequality symbol is \leq or \geq, then the graph begins with a closed circle, to show that the end point is included in the solutions. • Check by selecting a sample point and substituting it in the inequality to see if that point makes the inequality true.
--	--

EXAMPLES

A Solve $p + 3.2 < 4.1$.

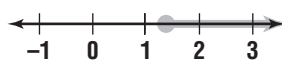
To solve, subtract 3.2 from each side.
You get $p < 0.9$.
Graph this solution on a number line.



Check by trying a sample point, for example, 0.
Is it true that $0 + 3.2$ or 3.2 is less than 4.1 ? Yes.

B Solve $0.3 \leq q - 1.1$.

To solve, add 1.1 to each side.
You get $1.4 \leq q$, or $q \geq 1.4$.
Graph this solution on a number line.



Check by trying a sample point, for example, 2. Is it true that 0.3 is less than or equal to $2 - 1.1$ or 0.9 ? Yes.

Try These Together

1. Solve $b + 5.2 > 8.9$.

HINT: The graph will have an open circle.

2. Solve $m - 56.1 \geq 24.31$.

HINT: The graph will have a closed circle.

PRACTICE

Solve each inequality and check your solution. Graph the solution on a number line.

3. $h - 1.09 \leq 0.57$

4. $x + 20.4 < 5.2$

5. $a + 6.1 \leq -2.7$

6. $w - 45.01 \geq 20.59$

7. $p + 0.89 > 3.72$

8. $k - 9.78 \leq 4.2$

9. $z - \frac{2}{11} > 1\frac{4}{11}$

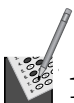
10. $\frac{3}{8} + q < \frac{1}{2}$

11. $t - \frac{1}{7} \leq \frac{4}{21}$

12. $\frac{1}{9} + n > \frac{1}{3}$

13. $c - 1\frac{5}{6} \geq \frac{1}{3}$

14. $w + \frac{7}{8} \leq 1\frac{1}{2}$



15. **Standardized Test Practice** Solve $x - 3.84 < -12.76$.

A $x < 8.92$

B $x < 16.6$

C $x < -8.92$

D $x < -16.6$

Answers: 1–14. See Answer Key. 15. C