

Study Guide

Solving Multi-Step Inequalities

Solving an inequality may require more than one operation. Use the same procedure you used for solving equations to solve inequalities.

Procedure For Solving Inequalities
<ol style="list-style-type: none"> 1. Use the distributive property to remove any grouping symbols. 2. Simplify each side of the inequality. 3. Undo any indicated additions and subtractions. 4. Undo any indicated multiplications and divisions involving the variable.

Example: Solve $21 > -7(m + 2)$.

$$21 > -7(m + 2)$$

$$21 > -7m - 14$$

Use the distributive property.

$$21 + 14 > -7m - 14 + 14$$

Subtraction is indicated; use addition.

$$35 > -7m$$

$$\frac{35}{-7} < \frac{-7m}{-7}$$

Multiplication is indicated; use division.
Reverse the inequality symbol.

$$-5 < m$$

The solution set is $\{m \mid -5 < m\}$, or $\{m \mid m > -5\}$.

Solve each inequality. Then check your solution.

1. $11y + 13 \geq -1$

2. $-3v + 3 \leq -12$

3. $\frac{q}{7} + 1 > -5$

4. $-1 - \frac{m}{4} \leq 5$

5. $\frac{3x}{7} - 2 < -3$

6. $\frac{4x - 2}{5} \geq -4$

7. $9n - 24n + 42 > 0$

8. $4.6(x - 3.4) \geq 5.1x$

9. $7.3y - 3.02 > 4.9y$

10. $6y + 10 > 8 - (y + 14)$ 11. $m + 17 \leq -(4m - 13)$ 12. $-5x - (2x + 3) \geq 1$