



7-6 Solving Multi-Step Inequalities

(Pages 351–354)

You solve inequalities by applying the same methods you use to solve equations. Remember that if you multiply or divide each side of an inequality by a negative number, you must reverse the inequality symbol. When you solve inequalities that contain grouping symbols, you may need to use the distributive property to remove the grouping symbols.

EXAMPLES

Solve each inequality.

A $5y - 17 \leq 13$

$5y - 17 + 17 \leq 13 + 17$ Add 17 to each side.

$\frac{5y}{5} \leq \frac{30}{5}$ Divide each side by 5.

$y \leq 6$

B $3(-5 - 2s) > 3$

$3(-5 - 2s) > 3$

$-15 - 6s > 3$

Use the distributive property.

$-15 - 6s + 15 > 3 + 15$ Add 15 to each side.

$\frac{-6s}{-6} < \frac{18}{-6}$

Divide each side by -6.

$s < 3$

Don't forget to reverse the inequality sign.

Try These Together

Solve each inequality.

1. $3x + 6 > 24$

2. $4x - 3 < 15$

3. $18 \leq 22 - 2n$

PRACTICE

Solve each inequality.

4. $3x - 5 < 4x - 8$

5. $5b + 2 > 3b - 1$

6. $6k - 2 < 5k - 5$

7. $2.7g + 12 > 3.2g$

8. $6.9y - 2.2 < 3.9y - 1.3$

9. $18 + \frac{x}{5} \leq 20$

10. $16 - \frac{z}{6} \geq 24$

11. $\frac{c+5}{2} < \frac{10-c}{3}$

12. $\frac{n-7}{4} \leq -12$

13. $9a - (a + 2) > a + 17$

14. $\frac{b+2}{3} > \frac{b+4}{4}$

15. $\frac{6x+4}{5} > \frac{2x+7}{3}$

16. Consumer Awareness Ericel has \$50 to spend for food for a birthday party. The birthday cake will cost \$17, and he also wants to buy 4 bags of mixed nuts. Use the inequality $4n + 17 \leq 50$ to find how much he can spend on each bag of nuts.



17. Standardized Test Practice Solve the inequality $\frac{2x+4}{3} \leq \frac{3x+1}{4}$.

A $x \leq 20$

B $x \leq 3$

C $x \leq -15$

D $x \leq -17$

Answers: 1. $x < 6$ 2. $x < 4\frac{1}{2}$ 3. $2 \geq n$ 4. $x > 3$ 5. $b > -1\frac{2}{3}$ 6. $k < -3$ 7. $g < 24$ 8. $y < 0.3$ 9. $x \leq 10$ 10. $z \leq -48$
 11. $c > -\frac{13}{5}$ 12. $n \leq -29$ 13. $a < 2\frac{1}{5}$ 14. $b > 0$ 15. $x > -\frac{10}{1}$ 16. at most \$8.25 17. D