

**6-3 Study Guide and Intervention** *(continued)***Solving Multi-Step Inequalities**

Solve Inequalities Involving the Distributive Property When solving inequalities that contain grouping symbols, first use the Distributive Property to remove the grouping symbols. Then undo the operations in reverse of the order of operations, just as you would solve an equation with more than one operation.

ExampleSolve $3a - 2(6a - 4) > 4 - (4a + 6)$.

$$3a - 2(6a - 4) > 4 - (4a + 6)$$

$$3a - 12a + 8 > 4 - 4a - 6$$

$$-9a + 8 > -2 - 4a$$

$$-9a + 8 + 4a > -2 - 4a + 4a$$

$$-5a + 8 > -2$$

$$-5a + 8 - 8 > -2 - 8$$

$$-5a > -10$$

$$a < 2$$

Original inequality

Distributive Property

Combine like terms.

Add $4a$ to each side.

Combine like terms.

Subtract 8 from each side.

Simplify.

Divide each side by -5 and change $>$ to $<$.*Look*

- ALL WORK ON ATTACHED LOOSELEAF
- USE GRI.

The solution in set-builder notation is $\{a | a < 2\}$.**Exercises***↑ use**↑ read, the set of all a's such that a is less than 2.***Solve each inequality. Then check your solution.**

1. $2(t + 3) \geq 16$

2. $3(d - 2) - 2d > 16$

3. $4h - 8 < 2(h - 1)$

4. $6y + 10 > 8 - (y + 14)$

5. $4.6(x - 3.4) > 5.1x$

6. $-5x - (2x + 3) \geq 1$

7. $3(2y - 4) - 2(y + 1) > 10$

8. $8 - 2(b + 1) < 12 - 3b$

9. $-2(k - 1) > 8(1 + k)$

10. $0.3(y - 2) > 0.4(1 + y)$

11. $m + 17 \leq -(4m - 13)$

12. $3n + 8 \leq 2(n - 4) - 2(1 - n)$

13. $2(y - 2) > -4 + 2y$

14. $k - 17 \leq -(17 - k)$

15. $n - 4 \leq -3(2 + n)$

Ⓐ Define a variable, [Ⓑ] write an inequality, and [Ⓒ] solve each problem. Then check your solution.

16. Twice the sum of a number and 4 is less than 12.

17. Three times the sum of a number and six is greater than four times the number decreased by two.

18. Twice the difference of a number and four is less than the sum of the number and five.