

Grouping Symbols (Pages 176–179)

The first step in solving any equation that contains grouping symbols is to remove the parentheses or other grouping symbols. You may need to use the Distributive Property to remove the grouping symbols.

EXAMPLES

A Solve $3(x - 2) = 4x + 5$.

First use the Distributive Property to remove the parentheses.

$$3x - 6 = 4x + 5$$

Next, collect all the terms with x on one side of the equal sign by subtracting $3x$ from each side.

$$3x - 6 - 3x = 4x + 5 - 3x$$

$$-6 = x + 5$$

Subtract like terms.

$$-6 - 5 = x + 5 - 5$$

Subtract 5 from each side.

$$-11 = x$$

B Solve $2(f - 1) + 3(f + 3) = 22$.

$$2(f - 1) + 3(f + 3) = 22$$

$$2f - 2 + 3f + 9 = 22$$

Distributive Property

$$5f + 7 = 22$$

Add like terms.

$$5f + 7 - 7 = 22 - 7$$

Subtract 7 from each side.

$$5f = 15$$

$$f = 3$$

Divide each side by 5.

Try These Together

1. Solve $24 = 3(b - 2)$.

HINT: Remove parentheses first.

2. Solve $2 + \frac{4}{5}k = 2(k - 5)$

HINT: Use the Distributive Property, then subtract $\frac{4}{5}k$ from each side.

PRACTICE

Solve each equation. Check your solution.

3. $4(2w + 1) = -20$

4. $6(a + 2) - 14 = 10$

5. $16 = 5z - 3(-2 + z)$

6. $5(c + 4) + 2(2c - 1) = -9$

7. $4(3y + 2) = 2(6y + 5)$

8. $\frac{2(p + 4)}{3} = -3p - 1$

9. $2k = 7k + 6(1 - k)$

10. $\frac{1}{4}(m + 8) + 7 = \frac{m}{4} + 9$

11. $4(d - 1) = 2.4d + 4$

12. $3(s + 3) + 4.8 = 4(s + 3.2)$

13. $18 = 8(x - 7) + 5(2x + 4)$

14. $7 + \frac{1}{6}h = 2(h - 2)$



15. **Standardized Test Practice** What is the value of n in

$$4(2 - 3n) - 3(n - 6) = -19?$$

A -1

B 1

C -3

D 3

Answers: 1. 10 2. 10 3. -3 4. 2 5. 5 6. -3 7. no solution 8. -1 9. 6 10. identity 11. 5 12. 1 13. 3 14. 6 15. D