

0.1 Distributive Property

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Distributive Property

Chapter 0 — Absolute Foundations

*Directions: Show all work. Distribute to **every** term inside parentheses.*

Name: _____ Date: _____

Key Idea — Distributive Property

Distribute (multiply) to every term inside the parentheses.

Form: $a(b + c) = ab + ac$ and $a(b - c) = ab - ac$.

Helpful memory: *Whatever is outside the parentheses gets multiplied by each term inside.*

Common Mistakes to Avoid

- **Forgetting a term:** $3(x + 5)$ must become $3x + 15$ (not just $3x + 5$).
- **Sign mistakes:** $-2(x - 4) = -2x + 8$.
- **Parentheses matter:** $-(x - 7) = -x + 7$.
- **Combining unlike terms too early:** Distribute first, then simplify.

Worked Examples (Follow the Steps)

Example 1. Expand: $4(x + 3)$

$$4(x + 3) = 4 \cdot x + 4 \cdot 3 = 4x + 12.$$

Example 2. Expand: $-3(2x - 5)$

$$-3(2x - 5) = (-3) \cdot 2x + (-3) \cdot (-5) = -6x + 15.$$

Example 3. Expand and simplify: $2(x + 4) + 3(x - 1)$

$$2(x + 4) + 3(x - 1) = (2x + 8) + (3x - 3) = 5x + 5.$$

Example 4. Factor using the distributive property (reverse direction): $6x + 18$

$$6x + 18 = 6(x + 3).$$

Your turn (mini-check). Expand: $-(x + 9) \Rightarrow$ _____

Practice A — Distribute (Warm-Up)

Expand. (Distribute to *every* term.)

1. $3(x + 7)$

2. $5(x - 2)$

3. $-4(x + 6)$

4. $2(3x + 1)$

5. $-7(2x - 5)$

6. $\frac{1}{2}(8x - 10)$

Practice B — Distribute with Negatives and Parentheses

Expand and simplify.

1. $-(x - 8)$

2. $-(2x + 3)$

3. $-2(x - 9)$

4. $-3(4x + 2)$

5. $2 - (x - 5)$

6. $7 - (2x + 1)$

Practice C — Combine Like Terms After Distributing

Expand, then simplify completely.

1. $2(x + 5) + x$

2. $3(x - 4) + 2x$

3. $4(x + 1) - 2(x - 3)$

4. $-3(x - 2) + 5(x + 1)$

5. $2(2x - 1) + 3(x + 4)$

6. $5(x - 3) - 2(3x - 7)$

Practice D — Factor (Distribute Backwards)

Factor out the greatest common factor (GCF).

1. $8x + 24$

2. $15x - 10$

3. $12x + 18$

4. $9x - 27$

5. $14x + 21$

6. $6x - 42$

Practice E — Spot the Distributive Property

For each, circle the part where the distributive property is used, then write the simplified result.

1. $3(x + 2) + 3(x - 5)$

2. $10(0.3x + 0.7)$

3. $2(5 + x)$

4. $-(x - 4) + 2(x - 4)$

Challenge (Optional)

These are a bit harder — try your best.

1. Find x if $3(x - 2) = 2x + 7$.

2. Simplify: $2(3x - (x - 4))$.