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: $2\big(3x - (x-4)\big)$.