Multiplying Polynomials

LEVEL 1: The Basics (Monomial × Monomial)

- $2x^3 \cdot 5x^2$
- $a^3 \cdot a \cdot a^2$
- $-4y \cdot 3y^2$
- $-7z \cdot 5z^2$
- $a^2b \cdot ab^2$
- $2x \cdot 4$
- $-6m^4 \cdot 2m$
- $x \cdot y \cdot z$
- $x \cdot x^5 \cdot x^2$
- $3x^2 \cdot 0$
- $3a \cdot (-2b)$
- $x^0 \cdot x^2$
- $n^2 \cdot n^3 \cdot n$
- $(x^2)^3$
- $4x^2y \cdot 3xy^3$
- $-2x \cdot (-3x)$

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LEVEL 2: Dive Deeper (Distribute and Multiply Polynomials)

- $x(x+3)$
- $2x(x^2-4)$
- $-3x(x-5)$
- $(x+2)(x+5)$
- $(x-3)(x+7)$
- $(x+1)^2$
- $(x-6)^2$
- $(x+4)(x-4)$
- $2x(x+4-x^2)$
- $(x-1)(x^2+x+1)$
- $(x+5)(x^2-5x+25)$
- $3x(x-2)^2$
- $(a+b)^2$
- $(2x+1)^2$
- $(3x-5)(3x+5)$
- $(x+1)(x+2)(x+3)$
- $x(x+2)^2$
- $(x+2)(x^2-2x+4)$
- $(y-2)^2$
- $(x+7)(x-2)$

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LEVEL 3: Mastering the Concept

- Expand: $(x^2 + 3x - 1)(x + 4)$

- Simplify: $(2x - 5)(2x + 5)$

- Expand: $(x + 1)^3$

- Simplify: $(x - 3)^2 - (x + 3)^2$

- Multiply: $(3x^2 - x + 4)(x - 2)$

- Factor then multiply: $(x + 5)^2 - (x + 3)^2$

- Expand: $(2x - 3)^2$

- Multiply and simplify: $(x + 1)(x - 1)(x^2 + 1)$

- Expand and Simplify: $(x - 2)(x^2 + 2x + 4)$

- Expand: $(x - 1)^3$

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CHALLENGE PROBLEMS

Q1: Simplify:

- $x(x+1)(x-1)$
- $(2x+3)^2$
- $(x+2)^3$

Q2: Prove that: $(x+y)^2-(x-y)^2=4xy$

Q3: Multiply and simplify: $(x^2-2x+1)(x^2+2x+1)$

Q4: Simplify: $(a+b)^2-(a-b)^2$