LESSON MAKER PRO

Polynomial Power Moves

Combine, distribute, and simplify polynomial expressions.

HIGH SCHOOL · MA.912.AR.1.6

MA.912.AR.1.6 "Solve mathematical and real-world problems involving addition, subtraction, multiplication or division of polynomials."

NAME _____ DATE _____

SIMPLIFY WITH STRUCTURE

When you add or subtract polynomials, combine only like terms. When you multiply, distribute to every term, and when you divide by a monomial, divide each term and simplify the powers of x.

WORKED EXAMPLE

Simplify $(22x^3 - 33x^2 + 55x) / 11x$.

1. Divide $22x^3$ by $11x$ to get $2x^2$.
2. Divide $-33x^2$ by $11x$ to get $-3x$.
3. Divide $55x$ by $11x$ to get 5.
4. Write the simplified polynomial.

Answer: $2x^2 - 3x + 5$

PRACTICE 6 problems

1 Simplify: $(8x^2 + 9x - 14) + (6x^2 - x + 13)$

ANSWER _____

2 Simplify: $(17x^2 - 8x + 16) - (9x^2 + 12x - 7)$

ANSWER _____

3 Simplify: $6x(8x - 9)$

ANSWER _____

4 Simplify: $(x + 8)(x - 9)$

ANSWER _____

5 Simplify: $(84x^3 - 108x^2 + 132x) / 12x$

ANSWER _____

6 Simplify: $(-9x^2 + 16x - 17) + (15x^2 - 7x + 28)$

ANSWER _____

APPLY IT Show your work

1 The robotics club plans a rectangular banner. Its length is (x + 16) inches, and its width is (x - 10) inches. Write a polynomial for the area of the banner.

WORK SPACE

ANSWER _____

2 The student council models money raised by a concert as $16x^2 + 27x - 41$ dollars. It models concert costs as $8x^2 - 12x + 19$ dollars. Write a polynomial for the net funds after costs.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Simplify: $(6x - 7)(4x + 9) - (x^2 - 8x + 13)$

WORK SPACE AND ANSWER

ANSWER KEY

Polynomial Power Moves

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Simplify: $(8x^2 + 9x - 14) + (6x^2 - x + 13)$	**$14x^2 + 8x - 1$**
2	Simplify: $(17x^2 - 8x + 16) - (9x^2 + 12x - 7)$	**$8x^2 - 20x + 23$**
3	Simplify: $6x(8x - 9)$	**$48x^2 - 54x$**
4	Simplify: $(x + 8)(x - 9)$	**$x^2 - x - 72$**
5	Simplify: $(84x^3 - 108x^2 + 132x) / 12x$	**$7x^2 - 9x + 11$**
6	Simplify: $(-9x^2 + 16x - 17) + (15x^2 - 7x + 28)$	**$6x^2 + 9x + 11$**

PART 2 · APPLY IT

1. **$x^2 + 6x - 160$ square inches** Multiply the length and width expressions, then combine the middle terms.
2. **$8x^2 + 39x - 60$ dollars** Subtract the cost polynomial from the money-raised polynomial, distributing the subtraction to every cost term.

CHALLENGE

$23x^2 + 34x - 76$

Accept equivalent polynomial forms with terms in a different order. Check that students distribute a subtraction sign to every term in the polynomial being subtracted.