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

CHALLENGE

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

_____

_____

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.